Performance Enhancing: Music

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Rationale/Introduction

"Music is a language that doesn't speak in particular words. It speaks in emotions, and if it's in the bones, it's in the bones" (Richards, 2022). As an intern for Robinson High School and Middle School, I am able to teach in an environment that promotes the use of music as a teaching mechanism. The use of music can elevate a student's participation/motivation in the class and in their sport. Throughout my observations and teaching, I have observed many students and student-athletes be affected by what they are listening to. A research study and survey were conducted in the gymnasium on the impact that music has on the students when in a dynamic environment and managing a skill they desire to improve.

Question/Wondering

How might specific music effect a student's participation as well as performance improvement in a specific sports environment?

Methodology/Results

While working with the boys' basketball team for Robinson High School, I noticed many students performing at a different pace and interacting with their teammates in a different manner. The main factor between these differences were the music played and when the music was played. Using this information, I began to play different types of music as well at different intervals in the practice and game days in order to see what may have boosted their motivation. As well as an observational experiment, I asked each player different questions regarding their choice in music. These questions came as listed: Do you prefer silence or music? Listen to music as a team or your own music? Explicit or nonexplicit? Is there a difference if yes? Does playing in game with music effect performance? (NBA play style) What specifically does music help with? What specifically does music not help you with (hinders)? Does music build confidence? Does listening to nonpreferred music hinder performance? Another set of questions asked were how the most popular genre of music affected them individually as well as the release date of the song.

Before the test was conducted, the students were reacting negatively to the repeated songs that had been released for a while as well as country music. These two factors were then reevaluated and new songs as well as more variety was added to the song playlists and the players were more active and had more energy. This coincided with the survey that released in which the average scores were noticeably higher in both rap/pop and in newly released songs. On the other hand, there were some outlier scores in which country was the preferred genre choice and, in some cases, it was preferred to have no music at all. However, these subjects still had high scores in other category's and also stating they would focus on the beat of the music rather than the specific words that are being sung.

Implications/Recommendations

As a teaching intern who helps with Robinson High School as well as works for Baylor Men's Basketball team, I would highly recommend that as a coach, to put effort into a music playlist. A student's motivation to compete and be able to participate can be very dependent on what they are listening too. It can help them focus onto the task at hand and be able to hone their focus on their craft. The survey as well as observational study both support this idea that exercise that last a long period of time can be greatly improved by the use of music. Motivation can be enhanced even further when the music being played is of preference to the general population of your class and/or team.

References

Brooks, Kelly; Brooks, Kristal (2010). Enhancing Sports Performance Through the Use of Music. Journal of Exercise Physiology Online. Apr2010, Vol. 13 Issue 2, p52-57. 6p.

Organizational Methods Affect Student Confidence

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Rationale/Introduction

As I began my intern year teaching Freshman Pre-AP English, it didn't take long to notice that my students were struggling to balance their new high school responsibilities. Intensified sports programs, rigorous expectations that accompany the Pre-AP pathway, extracurricular option overwhelm, and typical high school interpersonal conundrums compounded by hormonal changes all seemed to take center-stage while my students' academic confidence took a hit. It was clear that my students needed a bit more scaffolding as they transitioned into this new and overwhelming high school world. While I could do little to help them balance their status as student athletes, their workloads in other classes, to eliminate scheduling conflicts, reduce home responsibilities or guide the determination of their own personal priorities - I realized assistance in organization methods might be a solid place to make a small difference. Disorganization, lost assignments, missed deadlines, and late-work penalties were all easily avoidable. It was my hope that by scaffolding my students' organization with planning sheets and calendars, I could improve their learning, boost their confidence as academic achievers and, therefore, empower them to better manage their blooming responsibilities.

Question/Wondering

How does organization support affect academic performance and student confidence?

Methodology/Results

My methodology for this organizational research consists of collecting several forms of data including observational notes, student self-reports, and weekly calendar checks. It incorporates a mixed-method study with a larger focus on qualitative research with small amounts of quantitative support. My participant sample consisted of 120 Pre-AP freshmen, aged 14-15.

In preparation for my research, I considered which planning styles might be most beneficial for my students. Rather than making this decision based on my own preferences, I opted to remain grounded in student-choice. I printed many different planning sheet layouts including: a couple different weekly options, a monthly Sunday-Saturday option, a monthly Monday-Friday option, planners with floral detail, and a simple assignment tracker with check boxes. I hoped this variance might help students find what works best for them. In addition to these paper planners, I knew that many students would prefer to keep track of their assignments and deadlines digitally. In these instances, I was prepared to teach my students how to use their phones and chromebook calendars to their advantage. However, as class time is a finite resource, I was not able to spend much time formally instructing my students on best organizational practice. As a result, outside of providing the necessary tools and offering myself as support, much of the 'instruction' around these tools was conducted in brief warm-up activities and small caches of protected "planner time." It is my belief that results could only be amplified with more instruction periodically woven into the school year, perhaps hit most heavily at the beginning of both fall and spring semesters.

Before offering the planners to my students, I conducted a survey pertaining to my student's current organization strategies and workload management. Of these responses:

- 31% of students agreed "I have too many assignments and due dates to keep up with. I'm stressed out;" 57.5% of students claimed "I try to stay organized but I still forget a lot of things;" and only 11% of students wrote their deadlines down and felt as if they had a "solid handle on things."
- 74.7% of students reported thinking their grades would be higher if they were more organized.

- 37% of students said they never had a teacher show them how to be organized, 39% claimed that they had been taught some form of organization but it didn't work for them, and 24% of students kept using an organization process that was previously taught to them by an adult.
- Overall, 70% of students admitted to using no calendar or organizational method at all to keep track of their assignments and due dates.

After conducting this survey and establishing that assistance in this manner was indeed a place of need for my students, planners were presented to students at the beginning of the next grading period. Students were free to use any layout of their choice for the first week, and they were prompted to attempt a different layout each following week. This was an effort to help students explore different organizational options until they found what worked best for them. Calendar checks were conducted randomly throughout the week; if students were using their planners regularly, they banked extra credit points.

Along with students' individual planning sheets, I added a large "deadline calendar" to the classroom wall near our absence station. This is an area of the classroom where students should take assignments and notes they missed during an athletic event or other absence. I used this calendar to note upcoming due dates, progress report dates, and the ends/beginnings of new grading periods. Students were prompted to use this calendar to assist with their personal planning sheets, but they were still encouraged to use the same planners to maintain due dates and deadlines in other content areas.

In addition to the planning sheets, I also provided my students with free pocket folders. I'd observed countless students using no folders at all, folding their assignments and tucking them into various backpack pockets, and losing assignments all together. I encouraged students to take one folder per content area and keep all English assignments in one folder, math assignments in another, etc.

By the end of three weeks' time, I conducted a check-in survey with students to obtain their thoughts on their planner use:

- 38% of students reported using their planners/folders regularly, 40% reported using their planners/folders but admitted to inconsistency, and 22% claimed they weren't using their planners/folders at all.
- 59% of students attested that planner/folder use made them feel more organized and helped them miss fewer deadlines.
- 72% of students attributed higher grades than the previous grading period to increased organization, and 57% reported higher confidence managing their increased workload.

For the following three weeks, students were not checked for planner use but new sheets were still provided at the beginning of each week. Planner use and stamina did diminish when extra credit points were out of play, but students continued using their folders to keep assignments organized and I noticed a reduction in scrambling to find assignments. Overall, I conclude that added scaffolding in regard to student organization absolutely made a positive impact on student academic performance and confidence managing responsibility as my freshman transitioned into high school rigor.

Implications/Recommendations

Following this study, I do believe there is a correlation between organizational methods and academic performance. It would be prudent to work accountability into a regular grading practice, as intrinsic motivation may not be enough to ensure consistent use by students. I would like to see similar methods implemented in all content areas to provide students with a predictable routine and regular support. (If all English classes provided blue folders, math classes red, science classes green, etc, I think students might be even more successful.)

High school is a big step up from middle school, and freshmen often feel overwhelmed by the increased workload and expectations. Effective time management and organizational skills are not innate - they must be taught or modeled for students. Students who feel stressed do not perform their best academically. Supporting students in this very basic way can set them up for success in and out of the classroom.

Reducing Student Stress

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Rationale/Introduction
Large numbers of students experience testing anxiety (von der Embse et al., 2018) due to several factors including, but not limited to, outside work, economic disadvantages, grades, familial pressure, and high-stakes testing. Rather than focusing on the source of testing anxiety, this research will seek to identify methods of reducing classroom and testing anxiety by controlling physical elements of the classroom environment. Namely, this project will examine how aromatherapy and dimmed/warm lights affect students' self-perceptions of anxiety and stress on testing days.

Question/Wondering
How can we as educators help students who are prone to academic stress, particularly as it occurs during high-stress events such as testing days, and what role does the classroom environment play in high-stress situations? It has been observed that changes to the physical space of the classroom can impact student levels of stress, but these studies typically focus on the everyday life of the classroom. This project tries to understand how changes to the environment impact student self-perceptions of stress during typically high-stress moments such as tests. The focus of this research is not on how reduced stress will lead to better performance on tests. Instead, it treats reduced stress as an end in and of itself. How can we as educators make students feel more comfortable, even if it has minimal or no impact on performance?

Methodology/Results
For this project, students filled out a survey indicating how much they agreed with a particular statement on a scale of 1-5. Questions were largely based on the State-Trait Anxiety Inventory as a method of collecting data regarding student anxiety. The data was collected via google forms. Because the primary focus of this research concerns how students perceive their own stress, self-evaluation and reporting was a necessary method. For both sets of data, students were given the google form one school day after they had completed the previous exam.

The results confirmed that most students generally struggle with anxiety, particularly on testing days. The majority of students noted moderate amounts of stress throughout the school day but reported that the amount of stress during testing increased dramatically. Likewise, the collection of data after altering the environment showed that an altered environment did in fact reduce stress on a typical class day, but the largest change in student perception occurred on test days.

The results showed a consistent and observable change in student stress levels across the classes that completed the survey. The State-Trait Anxiety Inventory saw student reported anxiety drop roughly 8.5% from reported stress before and after altering the environment. Likewise, positive traits of stability increased by approximately 8.6%, demonstrating an inverse, and therefore more credible, relationship between student-reported stress and stability.

Implications/Recommendations
From the data that we have collected, it is evident that students are generally equally aware of their stress and their stability (students were not indicating that they are very stressed but also very calm). Likewise, as students reported levels of stress and stability after receiving instruction in the altered environment, student reports of stress went down while student reports of confidence went up. The most drastic of the changes occurred when students evaluated stress as it exists during high-stress situations (testing days).

This leads to the conclusion that physical environment plays a role in student perception of themselves and their time at school, especially when other factors are at play. While the changes in student stress were consistent and observable in regular scenarios, the results were intensified during testing days.
Furthermore, students who reported low levels of stress during testing were impacted less by the altered environment than those who were prone to academic stress.

This information ought to inform how to go about creating classroom environments. Alterations to the typical routine and components of the physical area are helpful in every situation, but they are even more impactful when students are prone to higher levels of stress.

Reference(s)

Von der Embse, N., Jester D., Roy D., and Post J. (2018), Test anxiety effects, predictors, and correlates: A 30-year meta-analytic review. *Journal of Affective Disorders*, *227*, 483-493.

Kutlu, A. K., Yılmaz, E., and Çeçen, D. (2008), Effects of aroma inhalation on examination anxiety. *Teaching and Learning in Nursing, 3*(4), 125–30.

Mott, M. S., Robinson, D. H., Walden, A., Burnette, J., and Rutherford, A. S. (2012). Illuminating the effects of dynamic lighting on student learning. *SAGE Open, 2*(2), 1-9.

Liu, Huang, Z., Li, Z., Pointer, M. R., Zhang, G., Liu, Z., Gong, H., and Hou, Z. (2020). A field study of the impact of indoor lighting on visual perception and cognitive performance in classroom. *Applied Sciences*, *10*(21), 7436-7453.

Purposeful Phonics

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Rationale/Introduction

When observing my Kindergarten classroom, I noticed that one student was significantly behind the others when it came to phonics. This resulted in struggles with academic and literacy progress. After researching, I decided that targeted one-on-one intervention would be the best practice to help my student catch back up to grade level. Researchers J. Askew and Simpson state that, "Research supports the effectiveness of one-to-one tutoring and indicates that one-to-one instruction may be essential for children who are at high risk." Throughout my research, I studied the relationship between one-on-one phonics intervention and the student's weekly improvement in her understanding of different phonics concepts. Two to three days per week I pulled my student for one-on-one intervention for 10 minutes and provided her with targeted instruction. I documented her progress in guided reading, letter-sound recognition, sight word recognition, blending, and other concepts of phonics to determine whether one-on-one intervention is successful in improving her phonics understanding.

Question/Wondering

How does integrating 10-minute one-on-one intervention each morning affect a kindergarten girls' weekly improvement in phonics?

Methodology/Results

For this study, I selected one female student from my kindergarten class that struggled with phonics concepts. I tracked her guided reading progress, letter-sound recognition, sight word recognition, and blending, in order to determine whether or not one-on-one intervention was helpful in fast-tracking her academic progress in the area of phonics. I started by analyzing her I-Station results, which is where I found her main need for intervention in letter recognition and letter sounds. In early January, my student tested in the range of level 1, which indicates that the student is at risk of not meeting grade level expectations. I began working with my student 2-3 times per week and going over important phonics concepts such as letter name and sound recognition, sight words, guided reading, blending, and more. I took anecdotal notes over what I believed to be most essential to her academic progress, what she struggled with and succeeded at. I varied my lessons each day to go over what I believed my student needed the most that day. Each week I saw significant academic progress as she went from recognizing 46% sounds and letters to 85% of letters and sounds. By the end of March, my student tested in the high range of level 2 on her I-Station letter knowledge and sound scores, which indicates that she is in the 40th percentile rank of all the students who have taken this test. This collection of data led me to further support my theory that targeted one-on-one intervention is beneficial to students' academic progress. As Vaughn, Wanzek, and Murray write, "Students with learning difficulties need frequent opportunities to respond and practice with teacher feedback throughout lessons to accelerate learning."

Implications/Recommendations

In conclusion, this study provides further evidence that one on one intervention significantly improves students' academic progress, specifically in phonics. Taking the student aside and working one on one with them, getting to know their strengths and weaknesses, is not only essential to catching students back up to grade level, but necessary. A strength that I gathered from this study was that I worked to make my one-on-one time with my student engaging. My student enjoyed working on her phonics skills. I believe that her eagerness to learn, work hard, and her positive attitude contributed to her dramatic progress over the several months that we met. One weakness of this study is that it is so broad. There is not one specific technique that I did to independently accelerated her academic growth in

phonics. If I were to repeat this study again, I would narrow down specific techniques that I did in order to help her reach greater academic growth.

Reference(s)

Askew, Billie J., and Anne Simpson. "Does One-To-One Teaching Really Matter?" *Journal of Reading Recovery*, 2004, https://doi.org/https://www.oakland.edu/Assets/Oakland/readingrecovery/files-and-documents/differentiatedinstructionthroughone-to-oneteaching.pdf.

Vaughn, Sharon, et al. "Intensive Interventions for Students Struggling in Reading and ... - Ed." *Center on Instruction*, https://files.eric.ed.gov/fulltext/ED531907.pdf.

The Effect of Lighting on Student Engagement

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Rationale/Introduction

A student's learning environment is one of the most easily controlled variables that affects student success in the classroom. Middle schoolers are naturally easily distracted, so finding the environment that is easiest to focus in is critical. Students immediately react whenever there is a change in the classroom's lighting level, but how is their level of engagement actually affected? By altering the lighting level, during different instructional strategies and in different class periods, I will observe how the lighting level affects the engagement of students with different abilities and how it affects engagement with different kinds of activities.

Question/Wondering

How does the level of lighting affect student engagement in different class activities?

Methodology/Results

In this research study I used both qualitative and quantitative methods to measure my data. I decided to use both approaches, because it is important to measure the numerical academic effects in addition to the perceptions and preferences of the teachers and students. Students learn best in an environment they are most comfortable in, however if their preferred lighting environment causes them to perform poorly academically, then it is ultimately not beneficial. The quantitative data I gathered consisted of results from quizzes taken in different lighting levels, the percentage of work completed in different lighting levels, and a survey asking students to rank their preferred level of lighting. This allowed me to measure the effects of lighting on students' academic performance and to get a better sense of the preferences of the whole class rather than the few I interviewed. The quiz results revealed that in both inclusion and non-inclusion classes students performed better with the lights fully on. The completion check revealed that inclusion classes completed less of their work than non-inclusion classes with the lights off. The student surveys revealed that students in both inclusion and non-inclusion classes prefer the lights off or dimmed when they work. The qualitative data I gathered consisted of teacher observations and student interviews. For the teacher observations, I took note of the noise level and the level of engagement as I perceived it at the end of every class period. To conduct the student interviews, I interviewed one white male and one African American female from a non-inclusion class and one African American male and one Hispanic female from an inclusion class. I chose the students randomly and asked them the same questions after lessons with different levels of lighting and different types of activities. This allowed me to gain insights that could not be reflected in the quantitative data such as noise level, the ability to focus, and the general mood of the classroom. The data from the qualitative research led me to conclude that having the lights off helps non-inclusion classes focus on independent or group work, but makes independent or group work more challenging for inclusion classes. Meanwhile, having the lights off during direct instruction helps inclusion classes stay focused during direct instruction, but makes it harder for non-inclusion classes to stay engaged during direct instruction.

Implications/Recommendations

The results of my research show that levels of lighting in the classroom have a different effect on student engagement depending on the class activities and the make-up of students. Individual classes will have different reactions to the lighting levels, and it takes the intentionality of the teacher to figure out what mix works. A strength of my study is the many combinations of lighting level, class type, and activity. The variety of the combinations allowed for important comparisons to be made. A weakness of my study is that I did not compare quizzes with equal levels of difficulty, and I did not have an abundance of quizzes to compare. This could have skewed the data towards lighting on days with simpler quizzes.

Reference(s)

Dunn, Rita, et al. (1985). Light up their lives: A review of research on the effects of lighting on children's achievement and behavior. *The Reading Teacher, 38(*9), 863–69.

Samani, Sanaz, Samani, Soodeh. (2012) The impact of indoor lighting on students' learning performance in learning environments: A knowledge internalization perspective. *International Journal of Business and Social Science, 3*(24), 127-136.

Returning to Normalcy: A Case Study on Student Attitudes to Post-COVID Learning

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Rationale/Introduction

Far too frequently we hear about the "irreversible damage" that the COVID pandemic inflicted upon students' social and cognitive abilities. Unfortunately, these supposed damages are usually mentioned as an umbrella term for new student behavior following the pandemic. If there's one thing that's certain about life, it's that everything changes and evolves given enough time. Education is no different. Not only are educators tasked with the day-to-day operations of a school, but, in response to the pandemic, must discover effective teaching methods that are compatible with a post-pandemic student population.

Question/Wondering

What were the effects of the COVID-19 pandemic on student learning, and what teaching methods are appreciated by students in a post-pandemic classroom?

Methodology/Results

We determined that a survey would be the best form of data collection for our research. This is because a survey would allow us to collect nearly all our students' observations about their remote learning experience and their experience in school following the pandemic. For best results we determined that qualitative and quantitative data should be collected simultaneously, therefore the survey contained a mix of quantitative questions with a limited answer choice for us to establish a general baseline for remote learning activity, and open-ended qualitative questions designed to attain further insight into the attitudes of our students into their remote learning experience. There were a total of 115 survey participants; all of them twelfth graders enrolled in one of our Macroeconomics classes. (Most of the survey participants were in our AP Macroeconomics class, in addition it should be noted that these seniors experienced remote learning during their freshmen and sophomore years.). Survey participation was anonymous to encourage honest answering. Data was collected from the survey; the quantitative questions were self-explanatory but for the qualitative data we combed through the data to find key words or phrases and measured their frequency. The results revealed a duality about their remote learning and post-pandemic classroom experiences. On one hand, survey participants indicated that most of them did not enjoy their remote learning experience due to difficulty to focus, loneliness stemming from isolation, and a limited variety of learning methods provided to them by their teachers. Cheating ramped up with tests being exploitable online, and survey participants indicated that most of them felt pressure to cheat due to their class rank falling, and some of them admitted to cheating. However, on the other hand, survey participants indicated that they enjoyed their newfound independence during the pandemic and lament that the post-pandemic school system is too draconian in design to be compatible with the learning methods they had been familiar with during the pandemic.

Implications/Recommendations

Our research indicates that student attitudes throughout the pandemic and post-pandemic world are more complex than originally thought. Our research can be categorized into three main parts. First, students revealed that their social and cognitive abilities had been affected, mostly negatively, by the pandemic and lockdowns, which is the dominant narrative surrounding student experience during the pandemic. However, survey participants celebrated their independence and ability to learn at their own level and pace while learning remotely. Secondly, survey participants indicated that their primary methods of learning during the pandemic included video lectures, videos, and online assignments. This is not surprising considering these methods work well in an online environment, but what is surprising is that the participants, mostly, appreciate lectures and independent learning in a post-pandemic classroom. This could be due to either a loss of sociality between students or could be the result of students preferring teaching methods they've trained themselves to learn from. Finally, survey participants indicated that they preferred the laxity of remote learning and indicated that there could possibly be an excess of administrative rules that they find unnecessary. This complexity of the pandemic combats the narrative that the pandemic was entirely a negative experience for students across the board and suggests that further inquiry into the attitudes of students about their remote learning experience is not only fruitful, but necessary for allowing a classroom to evolve to meet post-pandemic student learning needs.

Reference(s)

Ismaili, Y. (2021), Evaluation of students' attitude toward distance learning during the pandemic (Covid-19): A case study of ELTE university, *On the Horizon, 29*(1), 17-30.

When Should Teachers Utilize Demonstrations?

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Rationale/Introduction

In the science classroom, we are able to model content to the students through demonstrations. "Models are central tools for communicating and reasoning in science and essential to scientists for explaining phenomena and for predicting possible outcomes" (Göhner et al, 2022). It is imperative for science teachers to use demonstrations and modeling of the content during instruction in order to engage students. But the question becomes, when is the most effective time to model content through using demonstrations?

Throughout my years at Baylor University, I have learned that if I was to use demonstrations before initial instruction, that my students would be more engaged and interested, and therefore, learn the content better than if I was to model concepts after instruction. While in the classroom as an intern, I have found it more difficult to use models/ demonstrations every week either because the concepts are too complex to model, or I feel as if it is more important to cover the content first than spend the time to prepare and demonstrate a single concept. When reflecting, I realized that although they can be time-consuming, I needed to incorporate more demonstrations into my instruction. But again, the question becomes: When is the best time to utilize demonstrations?

The purpose of this study was to determine whether student learning increases more if demonstrations are used at the beginning or at the end of initial instruction. Data was collected during a physics unit of an honors eighth grade science classroom by comparing the results of the "Knowledge Application" administered at the end of the week.

Question/Wondering

How does student performance differ if science demonstrations are implemented at the beginning or end of a lesson?

Methodology/Results

The research for this study was conducted over the first two weeks of a physics unit in an eighth-grade science classroom at River Valley Middle School in McGregor, TX. This study included a total of eighty-six students with 40 males and 46 females. Of these students, 4.7% were Asian, 8.1% were Hispanic, 79% were Caucasian, and 8.1% were multi-Racial. All students were composed in four classes that were chosen at random out of the six content classes in the day. For the first week of the study, classes A and B participated in the demonstration before initial instruction and classes C and D participated after initial instruction. The demonstration took place on the first day out of 5 days of instruction. On the fifth day, the students took a Knowledge Application where they answer questions about the content material. No other variables were changed for any of the classes. During the second week of data collection, the variable of when the demonstration occurred flipped for each class. Classes A and B participated in the demonstration after initial instruction while classes C and D had the demonstration before initial instruction. The students then also took their Knowledge Application on the fifth day of instruction for that week's content material.

In the first demonstration, three students were given a straw and a sphere. Each student had a sphere with a different mass (cork, acrylic, and steel). The students were then told that they would have to race from one line to another on the floor using only their lung power. The students not involved in the demo were asked to make predictions of who would win/ who would lose. (Each student was able to observe the three spheres before the demonstration). After the demonstration, the students either confirmed or rejected their hypotheses and were asked to decide if this represented balanced or unbalanced forces and why. For the second week's demonstration, the teacher put a distance-time graph onto the board with three different types of lines. The students were then asked to write what they thought the different types of lines meant (diagonal, straight, and curved). A volunteer demonstrated to the class the meaning of the graphs. The students then either rejected or confirmed their hypothesis. After the end of the fifth day, I collected the students' Knowledge Application grades and compared them from week 1 to week 2.

After the completion of the two weeks, the Knowledge Application class averages were compared. The data showed that when classes A, C and D observed the demonstration after initial instruction, their student performance was higher than when the same class observed the demonstration before instruction. Class B had no change in Student

Performance from week 1 to week 2. Class A's student performance increased by 2.6 points when switching from before instruction to after instruction. Class C had a decrease of 1.3 points when switching from after instruction to before instruction. And lastly, Class D decreased by 2.6 points when observing the demonstration after instruction. An additional discovery was that the students directly involved with the demonstration, rather than observing the demonstration, proved to have a better understanding of the content material in relation to their student performance on the Knowledge Application in comparison to their class average. 67% of the students involved with the demonstration in the first week's demonstration surpassed their class average, and 75% of the students involved with the demonstration did better than their class average.

As for the result of this study, the student performance on the Knowledge Applications showed that demonstrations used after initial instruction in the classroom had a higher student performance average than those who observed the demonstrations at the beginning of instruction.

Implications/Recommendations

Prior research provides evidence of the importance of using demonstrations in science classrooms (Göhner et al, 2022). This study provided evidence for effective sequencing of demonstrations during classroom instruction. This study influenced my view on when to utilize demonstrations of content material in the classroom. According to the data, using visual demonstrations after initial instruction promotes higher student performance in comparison to using demonstrations before initial instruction. It would be interesting to further this research with an additional study to track student engagement throughout the lesson. The future study could support the data found in this study by showing if engagement in the lesson is affected when using demonstrations before or after initial content instruction.

Reference(s)

Göhner, Bielik, T., & Krell, M. (2022). Investigating the dimensions of modeling competence among preservice science teachers: Meta-modeling knowledge, modeling practice, and modeling product. Journal of Research in Science Teaching, 59(8), 1354–1387. https://doi.org/10.1002/tea.21759

A Case Study on the Disproportionate Representation of African Americans and Minorites in AP Classrooms

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Rationale/Introduction

It is common to walk into an AP classroom and see an overwhelming number of the seats filled with white students ready to learn and very few minorities. Are AP classes somehow racist? Is there a barrier of entry? Is it cultural or socioeconomic? All of these questions ran through my mind and helped start the foundation for this case study. My next step was researching the issue I had come across. In doing so I learned that while 15% of students enrolled in schools are African American only 6.7% of AP tests come from African American students. While Hispanic students were closer to being accurately represented, they still have less representation than they should have. By studying and learning the cause for this gap in representation for African Americans, Hispanics, and other minorities, I will be able to implement more ways to improve learning and inclusion for minorities in advanced classes.

Question/Wondering

What causes the demographics of an AP class to disproportionately misrepresent minority students compared to white students?

Methodology/Results

In this research study I used multiple case studies to try and determine what caused minorities to be underrepresented in AP classes. In doing so I thought I should expand my search to see if there is a connection between why students tend to do poorly in class and why certain students excel. Would the similarities of students doing poorly be linked to why some students didn't take the leap to try AP classes? This was a fundamental question that proved to be the most important thing I could have asked myself before starting my research. I started with asking all my students to fill out a Google Form that had about 8-10 questions. These questions ranged from if they felt supported at school, at home, to what motivated them and why they took AP classes. My first thought was that there would be a huge push from parents for their students to be in AP classes, and this may be the cause of misrepresentation. However, this wasn't the case at all. A majority of my students took AP classes on their own accord. So, I then focused on where they felt supported, mainly if they felt supported at home, and compared those to my on-level class results. While overall most students from both AP and regular classes felt supported at home there were definitely more students in on-level classes whose parents were less involved or didn't feel supported at all. The second biggest difference between on-level classes and AP classes were students' outlook and goals. Almost all my students in AP classes were focused on college and had been since they started high school. They had plans and knew what they needed to do to achieve those plans. In my on-level classes most of my students' goals were to just pass and get out of high school or pass so they could play sports and other extracurriculars. I used this data to select comparison groups. In the first set of data, Group A, were students who felt supported at home and, Group B, were students who did not. In the second set of data, Group A, were students who had a heavy focus on academia and, Group B, were students who did not. The results were that Group A outperformed Group B both times when looking at grade averages. This didn't directly answer the question which led me to my last form of data collection. I decided to sit down top performers and students who struggled along with students who were new to AP classes. The biggest difference in the lives of AP students who excelled and who did not were students from single parent households. Both had parents go to college who have an expectation for themselves to attend, but one parent was absent from the household. In on level most of the kids came from single parent backgrounds and their parents did not complete college. The kids may personally have goals to attend college but have no real expectations from family. Their main concern wasn't academia, but just getting out of high school or being eligible to participate in extracurricular activities. Most of the kids interviews in on-level were more similarly related to those who were failing or doing poorly in AP. The biggest difference was parents' attendance of college. While some kids in on-level

come from two parent households, like AP, they were the ones who excelled in class and would've been the most prepared for AP classes. It seems the reason students choose to take AP classes depends mostly on what their home lives look like and not innately due to culture or socioeconomics (though all of these can be intertwined). The second biggest reason would be lack of a plan after high school or no plans to attend college.

Implications/Recommendations

This study will affect the way I approach the way we (my students and I) look at the future. It will be a goal of mine to make sure my students have a plan for the future and begin to formulate one if they don't (regardless of the grade I teach). This will be something I do at the beginning of the year and work on with the students occasionally throughout the year and something we end the school year with as well. I would recommend to administrators and the district for better education on students' futures and what they need to succeed. Unfortunately, there isn't much we can do to fix students' home lives, but many students both in on-level and AP who were doing poorly only realized towards the end of their high school careers that grades and GPAs matter when applying to higher education. Much like the way we start every class with an objective for what the students should learn by the end of class, school as a whole should have an objective or mission that the kids themselves are aware of and work towards.

Reference(s)

Bittman, B., Davies, A., Russell, W., & Goussakova, E. (2017). Advance placement and the achievement gap in the 21st Century: A multiple linear regression of marginalized populations in AP enrollment. *Research in Social Sciences and Technology, 2*(2), 36-58.

Kolluri (2020) Rigor restricted: Unequal participation in advanced placement. *The Phi DeltaKappan, 102*(4), 30–35.

Carter, & Vavrus, M. J. (2018). *Intersectionality of race, ethnicity, class, and gender in teaching and teacher education : Movement toward equity in education*: Brill Sense.

Student Choice & Silence: Improving Silent Sustained Reading Stamina

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Rationale/Introduction
Nationally, school reading levels have been on a downward trend since the gap created during the COVID-19 pandemic. At the secondary level, this means any progress lost during middle school results in a catastrophic decrease in district testing achievement within the freshman and sophomore years specifically, most notably when it comes to reading tests. In a 2022 study conducted by researcher Megan Kuhfeld, 5 million students in grades 3-8 scored .09 to .17 standard deviations lower on district reading exams than their same-grade peers prior to COVID-19. Additionally, the study claims "students of color attending high-poverty elementary schools saw the largest test score declines in reading" (Kuhfeld et al., 2022).

Out of all 14,756 Waco ISD students in 2019, 88.09% were labeled economically disadvantaged, and 91.21% of them were students of color (Waco ISD, 2019). This data places Waco ISD as a direct target of learning loss over the pandemic. A Waco Tribune article published in March of 2023 highlighted the district's plan for academic reconstruction, noting that 2,062 students were labeled Tier 3 for reading interventions, meaning they are at least three grade levels behind or have failed the STAAR test more than once (Hoover, 2023).

If the impact of silent reading can positively shift reading scores on standardized testing, it is important to take a closer look at how teachers are encouraging students to read silently in the classroom. Both with the pandemic learning gap and the rise of technology, students are at a disadvantage when it comes to reading stamina, mostly because attention spans have never been shorter. The National Library of Medicine published research studying the complexities of screen time and its correlation to shortened attention spans. Though it does also attribute this loss to a shift in societal norms and other neurological intricacies, the study does acknowledge technology's "persistent detrimental impact on the brain" and concludes that educators face a relatively new challenge in rethinking how to capture students' attention (Lodge, 2019).

Question/Wondering
This study will answer the question of how levels of student engagement are impacted when students are given a choice during silent reading versus when they are not.

Methodology/Results
Broken down into three parts, this study was conducted over separate school days. On the first day, the teacher asked all present students to scan a QR code linked to a Google Form and fill it out in order to collect qualitative data. The survey contained 6 questions: 2 collecting their name and class period, 2 multiple choice, and 2 short answer. Each question was geared toward discovering student preferences and giving students a change to explain why they feel that way. The students were given 10 minutes at the end of class to fill out the survey with the incentive of a participation-based daily grade.

On the first sample collection day, students were instructed to silently read A Long Way Gone by Ishmael Beah for 15 minutes. This novel was selected because the class had already begun reading it together, so students were slightly familiar with it and had some background context. The teacher set a visible 15-minute timer on the projector screen, and no other instructions were given.

During this time, the teacher walked around the room with a clipboard, monitoring each student and adding a tally mark to a blank sheet of paper each time they were off task in order to collect quantitative data. Students were considered off task if they were distracted and stopped reading for more than a few seconds. Pulling out a phone at any point resulted in an automatic tally mark. If the off-task student didn't return to the reading on

their own within about 2 minutes, the teacher gently reminded them to keep reading before walking away. If the student became off task again, the teacher would add another tally mark to the class total. This continued until the timer went off and the students were instructed to put their books away.

On the second sample collection day, the process was repeated, however this time, students were instructed to read any book of their choosing. They could read a book they already had with them, or they could pick any book out of the classroom library. If they wanted to, they could choose to continue reading A Long Way Gone. Once they all had selected a book, they were instructed to begin reading. The teacher set a 15-minute timer on the projector screen, and no other instructions were given. The teacher walked around the room and monitored the students using the same tracking method as the first day.

Though not every student prefers choice when it comes to silent reading, the large majority of the sample group of students in this study did. Out of the students who do prefer being given choice, the general consensus of the group was that books selected by teachers often don't target their specific interests, and therefore reading them is not as engaging. In many cases, the tone students used to describe reading teacher-selected texts was much more negative and affiliated with emotions like feeling "forced" and shutting down. This was not surprising data, as the evidence does suggest a greater amount of incidents of pausing, stopping, and/or getting distracted from reading when the book was teacher-selected.

Furthermore, the results of the Google Form survey support this evidence because student responses indicated a strong preference for having choice offered when silent reading. 82.5% said they preferred silent reading when offered choice, whereas 17.5% preferred having the book chosen for them (Figure 4). This not only coincides logically with the data, as it shows that students read longer when they are participating in a preferred task, but it offers an explanation for why students have a preference in the first place.

What was surprising in the survey, however, was the number of students who expressed a need for complete silence in order to read independently. When asked what they thought would make silent reading more enjoyable, 11 students mentioned needing a quieter setting to be able to read. Although 5 students said they wanted music in the background, the students who wanted silence wrote very passionately about it. One student said it would be better if "the room was GENUINELY silent, with some music with no words in the background," while another said it would be better if the "teacher wasn't talking or having music on." Students also mentioned how they wanted to not be interrupted or talked to during silent reading. There were a few other varied responses, including how the length of silent reading time makes it too tiring or how hearing other students' breathing is a distraction.

Implications/Recommendations

The results of this study support the claim that students enjoy silent reading more when they are offered a choice of reading material and will participate in the activity for longer periods of uninterrupted time than they will when not given a choice. In addition, the study revealed the majority of the sample group of students strongly preferred enforced silence in the classroom while reading and believed that they would perform better if those conditions were met. Prior to this study, silent reading time in this specific classroom often included the teacher playing pop music with lyrics on a speaker. The teacher typically would also use this time for conferencing with students about grades and having general side conversations with both students and/or other teachers in the room. After reading the results of this study, however, the teacher plans to make a shift in instructional practices and will not be playing music during silent reading time. Instead, students will be given the option to listen to their own music if they use headphones. The teacher will also stop talking during silent reading time, as that has been identified as a key distraction. In tandem with offering student choice, enforcing a silent room is the next step to improving student engagement during silent reading.

To take it a step further, this study could be extended by integrating regular sessions of silent reading into all class periods, but splitting the students up randomly and offering half a choice during silent reading time and not the other half. Then after they take the STAAR exam at the end of the year, the researchers could compare how levels of growth differed between the two groups of students. This development was not feasible within the time frame allotted for this study, however, it would further explore the question of how offering choice impacts a student's engagement levels when reading and how that affects their overall levels of reading comprehension.

Reference(s)

Kuhfeld, M., Lewis, K., & Peltier, T. (2022, August 17). Reading achievement declines during the COVID-19 pandemic: Evidence from 5 million U.S. students in grades 3–8 - reading and writing. SpringerLink. Retrieved March 19, 2023, from https://link.springer.com/article/10.1007/s11145-022-10345-8

Lodge, J. M., & Harrison, W. J. (2019). The Role of Attention in Learning in the Digital Age. The Yale journal of biology and medicine, 92(1), 21–28.

A Heart to Heart With Sight Words

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Rationale/Introduction

In a kindergarten classroom, it was observed that six students were struggling with recognizing sight words. This likely impairs their fluency when too much time is spent trying to decode an irregular word. Research from the University of Florida Literacy Institute discusses the importance of promoting students' orthographic mapping rather than relying on visual memorization. They suggest a strategy called "heart words" (UFLI, n.d.). Because even irregular words have predictable parts, students will only have to learn one or two letters "by heart". I will intentionally set time during reading groups for students to practice their sight words through multi-sensory experiences.

Question/Wondering

In what ways will a multi-sensory approach of orthographic mapping sight words influence a student's ability to instantly recognize these words?

Methodology/Results

This study was conducted with six kindergarten students - two girls and four boys. Three students are Caucasian, two students are Hispanic, and one student is African American. Four of the students are six years old and two students are five years old. These students fall in the low to middle socioeconomic status range. For a pre-assessment, I asked each student to read 26 sight words in isolation. These words were chosen based on the words that have been previously taught in a whole group setting this year. The number of words read correctly from my assessment ranged from 5 to 16 words. Given this information, I decided to split the students into two groups of three. I felt that this would be the best way to maintain a productive learning environment and allow me to easily manage groups. During reading centers, I would pull one group for 10-15 minutes and then pull the second group.

For each day I pulled my groups, I intentionally chose 2-3 words that we would practice. These words were the ones each student in the group read incorrectly. I utilized word cards inspired by the ones from the University of Florida Literacy Institute. These cards have colored boxes to represent each sound in the sight word and hearts to show irregular parts of the word. I would hold up a card, say the word, and then have students repeat the word back to me. We would then tap the sounds in the word with our fingers. We would discuss the irregular part of the word and place a heart above the letters that do not make their typical sound. For the remaining time we had together, students used sensory materials. Students wrote words on top of sandpaper, using sand, and using a sensory bag filled with gel. After they wrote the word, they would say the word out loud. We would then rotate materials.

After two weeks of regularly implementing this method of reviewing sight words, I asked students to read the same 26 sight words in isolation. Four of the six students showed growth in some way. Of these four students, the number of words read correctly now ranged from 19 to 24. The other two students did not show growth. One of these students had inconclusive data. There were words he had read correctly on the pre-assessment, that he did not get correct on the post-assessment. Overall, I observed more students attempting to sound out unfamiliar words instead of giving up or reading a completely different word. Additionally, I gave students a survey where I asked them questions about this new way of practicing sight words. All six students said they enjoyed using the different materials. 5/6 students stated writing the words in sand was their favorite material to use. 5/6 students said they felt that using the sensory materials helped them to learn more sight words.

Implications/Recommendations

Throughout my inquiry, I was able to analyze the effect that multi-sensory activities had on students' ability to recognize sight words. During the 10-15 minutes I had with each group, we utilized our sense of sight, hearing, and touch. Because the task could sometimes get repetitive, I noticed some students would occasionally get off-task. I implemented a sticker chart to increase motivation. Students who remained on task would get to put a sticker on their mat for each word that they practiced. Recognizing this early on was a strength in my research. I was able to motivate students and keep them engaged. This aspect was discussed largely by Brudvig (2022)

who stated, "It is up to the educators of these children to help them find the motivation to learn and be successful in literacy" (p. 1).

If I had given myself more time to conduct this research, I would have liked to analyze data using other data points. It would be interesting to see how the data would differ if I asked them to recognize sight words within texts. I think it also would have been important to ask families if they practice sight words with their child at home and if so, for how long. This would have given me more information about the students' backgrounds.

Through this research, I discovered that sight word instruction does not have to solely rely on memorization. It is important to explicitly teach students strategies for decoding. At the time that I gave the pre-assessment, students had not been directly taught digraphs yet. This likely affected their ability to decode the words that contained digraphs. Something I appreciate about the "heart words" method is that teachers can decide what part their students need to learn by heart. This can change from the beginning of the year to the end as students learn more phonics rules.

Reference(s)

Brudvig, A., Anderson, T., & Moore, J. (2022). *Goal Setting in Kindergarten: Motivating Young Learners to be Successful in Learning Sight Words*. Retrieved from https://files.eric.ed.gov/fulltext/EJ1355750.pdf

Irregular and High Frequency Words. UF Literacy Institute. (n.d.). Retrieved from https://ufli.education.ufl.edu/resources/teaching-resources/instructional-activities/irregular-and-high-frequency-words/

Questions for Curiosity – Cultivating Lifelong Learners

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Rationale/Introduction

The purpose of school is to teach students about the world around them; however, students are rarely given the opportunity to research and learn about things they are interested in. Students go through school each day on autopilot, simply taking in information and storing it in their short-term memory. Asking questions is what ultimately leads to innovation and new discoveries. If teachers do not encourage students to explore their own curiosities, then they are preventing the students from developing as lifelong learners (Zion, 2007). At age 5, about 98% of children have no issues with thinking outside the box. By age 25, however, only about 2% of them are able to express the same higher-level thinking as their younger counterparts. Kids go from asking around 100 questions a day at age 3 to only a few by the age of 11 (Stokoe, 2012). Research clearly shows that people of all ages learn better when they are curious about the topics they are discussing (Engel, 2013). As such, it is imperative that teachers explore their students' interests and design lessons that invoke curiosity and engagement. Teachers spend the vast majority of their time asking students questions about the material, but many forget to let their students ask questions that might lead towards a deeper understanding of the material.

Question/Wondering

How would high school students' engagement, curiosity, and problem-solving be impacted by encouraging students to ponder and research their own questions about the world?

Methodology/Results

This study was conducted over the course of two weeks in six high school geometry classes at Midway High School. Of those classes, three were on-level and three were honors. On the first few days of the research, I observed the classes, taking special note of the kinds of questions that came up during lessons. In total, the on-level classes had a mean of 4 questions per class, and honors had 6, with most questions revolving around clarifications. For the second step of my research, I needed to determine how the students rated their own curiosity, engagement, and research skills. On a scale of 1 to 5, the students rated themselves as having an overall mean score of 3.8 on engagement in school, and when asked how curious they considered themselves to be, the students reported an overall mean of 3.7. The last ranking question asked about the students' confidence in their research and problem-solving skills, with a mean score of 3.5 across all classes. The last survey question was a simple interest survey, in which the students indicated they were most interested in the topics of music, TV, and food. From this survey, we can conclude that the students in honors courses tend to consider themselves to be more curious and engaging, but all students were somewhat neutral about their research skills.

After the survey and interest questions, I asked my students to come up with three questions that they had off the top of their heads. The goal of this was to promote curiosity and brainstorm questions for the next part of the research. Of the responses that I received, about 92% of them had at least 1serious question. About 14% of students asked me questions about myself, and a handful even asked themselves questions. Since I did not give strict guidelines for their questions, it was up to the students to think of questions out of any category of their choosing. Around half of the questions were scientific, asking about the universe's creation, black holes, the history of math, and even the possibility of wormholes and time travel. Alternatively, 21% of the responses had at least one question that was not serious, such as asking when the class would end or why they had to take math class. About 7% of students I surveyed did not give a response to the questions, stating that they either had no questions or could not come up with any. While I walked around the class, nearly half of the students in each class expressed trouble with coming up with questions. They understood the directions, but many students wanted me to tell them what to write about. This process was significantly interesting since it aligned with previous research done by Robert Stokoe, in which he noted that people began to ask fewer questions as they got older, reserving their curiosity for only a few select moments and passion projects (Stokoe, 2012). Similarly, this question of my survey followed research done by Susan Engel, in which she noted the absence of questions in the classroom and attempted to determine why the students stopped asking questions about things they wonder (Engel, 2013).

For the next step of the research process, I had each student write down a "researchable question" on a given piece of paper a few days later. Across all 6 classes, about 65% of them turned the response sheet in. Of all those who turned it in, around 79% submitted serious questions. On the other hand, about 21% of them gave goofy nonsensical questions, such as asking, "What is 9+10?" or even "When does class get out?" Around 76% of the answers were serious, answering their questions reasonably and factually, while around 22% of the answers were purposefully incorrect or unreasonable. Interestingly, there were also around 3% of responses that did not have an answer to begin with. In one notable trend, the students either stated that their answer came from "the internet" / "google" / "Wikipedia", or from "me" / "my brain" / "logic." About 65% of the students stated resources from either the internet or some form of literature, while around 27% of them claimed their source was themselves. On the other hand, 8% of students did not cite a source at all. By the end, the number of serious responses was higher than I projected it to be. By this stage, I only expected around half of the students to write down questions that followed their serious inquiries. If I were to do this again, I would have all the students complete the form in three stages, in which we took more time, as a class, to discuss the questions, answers, and sources that one another came up with.

The next step in my process was to observe any possible changes in classroom climate. I predicted that most of the changes that I would see in the classroom would be minimal due to time constraints; however, I did notice a significant change. Depending on the class, I observed anywhere from around a 30% increase to a 200% increase in questions during class time. While most students asked questions about the material they were learning, many students would also ask questions about unrelated math concepts, theoretical ideology, my opinions and experiences, or even questions about other school subjects. While this research process may not have reached every student, I was able to connect with many of them. In the end, encouraging curiosity and setting up a creative and accepting environment goes a long way toward building positive classroom relationships and increasing academic engagement.

Implications/Recommendations

While my research was limited, I did see results. In the beginning, only a handful of students from each class routinely answered questions during the lesson. It was great to hear the students engage with the lessons by asking and answering questions. It is important for us, as teachers, to encourage the growth of our students as lifelong learners. As has been said time and time again, curiosity is the groundwork for a successful and prosperous society - however, schools rarely give students the opportunity to let their curiosity take hold. Mathematics is renowned for repetition and monotonous lessons in which students get used to copying notes, filling in formulas, and repeating practice. While this system may work for some people, it holds back many students from expressing their curiosity and engaging with the material in a more meaningful and insightful manner. No matter how one incorporates it into the classroom, encouraging students to grow as lifelong learners has a positive and meaningful impact on the classroom environment. When students ask deeper questions, it directly correlates to an increase in intellectual conversations about the material. Similarly, by letting students explore topics that interest them and draw their curiosity, teachers increase the likelihood of students engaging with the lesson. The students are inherently curious about the world around them, so it is a disservice to constrict our students in such a way that they cannot express themselves. As stated by Robert Stokoe, "The important thing for all students is not to stop questioning because what is essential for their current and future learning is the ability to ask questions. The acquisition of knowledge and learning derives its energy through questioning" (Stokoe, 2012, p. 64).

Reference(s)

Engel, S. (2013). The case for curiosity. *Educational Leadership*, *70*(5), 36-40.

Stokoe, R. (2012). Curiosity, a condition for learning. *The International Schools Journal*, *32*(1), 63.

Zion, M. I., & Sadeh, I. (2007). Curiosity and open inquiry learning. *Journal of Biological Education*, *41*(4), 162-169.

Online Distractions in the Classroom:
Do Students with Accommodations have an Unfair Disadvantage?

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Rationale/Introduction

Foerde, Knowlton and Poldrack (Foerde et al., 2006) studied the memory dependent lobes of the brain and how they function based on the introduction of distractions. Their research determined that distractions can cause less flexibility of knowledge application, meaning that what is learned will be harder to apply. With the introduction and reliance on technology in a post-COVID classroom, the increase of internet access for students has produced positive and negative effects on performance in the classroom. An online classroom environment adds a freedom of learning that many students react well to, adding access to resources and online study tools (Ferrer et al., 2023) that are available at all times. Many students adapted well to the introduction of "blended" learning which is the combination of "online [learning] with face-to- face instruction" (Rasheed et al., 2019). However, students that did not adapt well, often struggle with the transition. With constant access to the internet, students are often "pulled away from the learning environment" (Seemiller, 2017) and into the online distractions that present themselves. This study examines the effects of distractions on content mastery in a blended learning environment for 7th grade science students with accommodations.

Question/Wondering

How do online distractions affect test scores of special education, at-risk students, students in insights classes, and general education students?

Methodology/Results

This research was conducted on 7 on-level science students between the ages of 12 and 13. Of the 7 students selected for the study, 3 were female and 4 were male. Out of these 7 students, two were coded for attention deficit hyperactivity disorder (ADHD), two were coded as "at- risk", meaning that they are affected by environmental conditions that negatively affect a students' performance in the classroom or threaten the student's likelihood of graduation, two were coded as general education and two were coded for "insights" classes, meaning that they had previously failed a STAAR test. One of the students was coded with more than one accommodation. While conducting my research, I monitored the student's online activity over the span of one week leading up to a unit test. I used an app called Apple Classroom to monitor the number of times students were distracted by an online source in increments of 10 minutes per day. Each day, the students received direct and clear instruction concerning expectations.

With clear instructions given about their daily tasks, I was able to measure how often the students became distracted due to online applications such as games, checking grades or doing other class work.
Throughout the week leading up to the unit test, I tracked and counted the number of times online sources caused a distraction. Data collection was taken over four days, in 10 minute increments. Using the data collected from Apple Classroom and the results on their unit

assessment, I was able to determine a correlation between distraction level, test grade, and the accommodations each student received. The higher number of times a student was distracted over the week, the lower their test scores. This high number of distraction and low percentage of content mastery also aligned itself with the level of required student accommodations.

Student 1 and Student 3 presented the highest number of distractions and the lowest test averages. These two students were coded as ADHD and "at-risk" with insights respectively. The general education students, students 5 and 6, had the highest test scores with the lowest number of distractions.

Implications/Recommendations

While reflecting on the findings of this study and the research that supports the increase of distraction level due to the introduction of technology in the classroom, I have decided to consider the decreased use of technology in my future classes. I believe that the new "blended" classroom environment is a wonderful addition to future instruction, but the decrease in student performance due to online distractions is something to be reflected upon. I believe that the right balance of technology-based learning and hands-on activities will promote great student success in the classroom. For future studies, an increased time of data collection with additional summative assessment comparisons would be very beneficial.

Sources

Ferrer, J., Iglesias, E., Blanco-Gutiérrez, I., & Estavillo, J. (2023). Analyzing the impact of COVID-19 on the grades of university education: A case study with economics students. *Social Sciences & Humanities Open*, *7*(1), 100428. https://doi.org/10.1016/j.ssaho.2023.100428

Foerde, K., Knowlton, B. J., & Poldrack, R. A. (2006). Modulation of competing memory systems by distraction. *Proceedings of the National Academy of Sciences*, *103*(31), 11778–11783. https://doi.org/10.1073/pnas.0602659103

Rasheed, R. A., Kamsin, A., & Abdullah, N. A. (2020). Challenges in the online component of blended learning: A systematic review. *Computers & Education*, *144*(1), 103701. https://doi.org/10.1016/j.compedu.2019.103701

Seemiller, C. (2017). Curbing Digital Distractions in the Classroom. *Contemporary Educational Technology*, *8*(3). https://doi.org/10.30935/cedtech/6197

Math Matters, It's a Fact

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Rationale/Introduction

In a 2nd grade classroom, it was observed that students were struggling with their math lessons because they kept making simple calculation errors. This affected student comprehension of new math concepts because their focus was on math facts, rather than the new lesson at hand. I have decided to pull a group of four students for explicit fact fluency practice, in hopes that automaticity will increase student performance.

Question/Wondering

Could students start to understand more complex math concepts with the addition of explicit math fact fluency practice?

Methodology/Results

Since the beginning of the semester, I kept noticing that students were making careless mistakes on their math assignments. This was not due to the lack of ability to perform, but because of simple addition and subtraction errors. I decided to pull a small group of 4 students with ranging abilities, so I could work on math fact fluency with them, in hopes that both their confidence and automaticity would increase.

For 3 weeks, I collected data on 2 female and 2 male students of various ethnicities, ranging from the ages of 7 to 8 years old. Originally, my plan was to time these students on a math fact sheet 4 days a week. However, after the first week, my plans quickly changed due to lack of enthusiasm and structure. I conducted a pretest so I could collect baseline data and proceeded to give them the same test for the post test, 3 weeks later. One note to add is that spring break occurred in the midst of my data, causing my data to not be linear. I pulled my small group for 30 minutes, with the intentions of doing a warmup, a fact sheet for 2 minutes, then having them correct any mistakes and finish the rest of the worksheet untimed. To bring in self-monitoring, I wanted them to fill out a chart that encouraged them to beat their score from the previous day. As mentioned earlier, my structure changed because I realized I needed more concrete and hands on activities to catch the attention of my students. I still pulled my students for 30 minutes, but I only tested them on the fact sheet on the first day of the week and the last day of the week. When we were not reviewing the sheet, we were playing addition and subtraction strategy games, speed doubles, and Sum Dogs. The objective of the addition and subtraction strategy game was to be the first team to complete the page of problems. To add some competition, students would have to roll a dice and only solve the problems that were allotted under the number that they rolled. The speed doubles game turned into a race where students would see who could solve their doubles facts the quickest. Sum Dogs was the most fun for the students because they competed against each other while being tested on both addition and subtraction fact families. During these games, I was able to make both informal and formal observations on student approaches towards math problems. Later, I asked them their strategies and most of them said, they already know the answers, they use their fingers, or they count in their heads.

Within the small group, the students were expected to work diligently on their fact fluency. I found that focusing on automaticity for simple math facts improved student work, confidence, and content knowledge. During a timed pretest of 2 minutes, student A completed 15 problems correctly, student B completed 33 correctly, student C completed 35 problems correctly, and lastly, student D completed 33 problems correctly. As for the posttest, I saw an increase in number of correctly completed problems in every student. Student A increased to 26 problems, student B increased to 39 problems, student C increased to 42 problems, and student D completed 40 problems. Not only did the students increase the number of problems they were able to do under a timed test, I also saw improvement in their assignments and confidence. In order to get accurate data, I noted the students class work such as exit tickets and other assessments. Although a majority of the time, my group knew the content being taught, they would fail to make 100s because of simple calculation errors. One week post data collection, I was grading assessment papers and every single student in the group received a 100. The sheets were focusing on multiplication.

To explain further, the sheet required the students to write the multiplication equation and the repeated addition equation. I ended up pulling the group once more to discuss their grades and ask them about their strategies. These students blew me away by explaining their thinking regarding the repeated addition. They said that they were able to complete the problems because of the practice they had been receiving through our small group time. Even though the data shows good results, it also warms a teacher's heart to see their student's confidence grow. Student A first came to the group timid and sad due to their weakness in math, which caused them to not like the subject. I asked this student how they felt after the explicit training, and they said they love math because they are not intimidated by the numbers anymore. This student told me multiple times about how happy she was to do math because it is not as stressful to recall the facts. Even her teacher noted her automaticity skills, which made her face light up, grinning ear to ear. I learned that understanding math facts can help students learn the math concepts quicker. "Automaticity is an important piece to the success of a student because as the student progresses through different math concepts, the brain will have difficulty processing two things at once. The math facts have to be committed to memory in order to learn more complex concepts" (Baker and Cuevas 2018). In this study, Baker and Cuevas noted that automaticity regarding addition helped students understand multiplication better. I found the same ideas to be true and noticed that fewer errors were made.

Implications/Recommendations

Although I knew that math concepts stack on one another, meaning you need to understand concept one in order to understand concept ten, I never realized how much automaticity of facts would increase a student's confidence and overall success. Knowing this, we have continued to implement fact fluency within our lessons. Many times, students will warm up by practicing their facts and then they will also get on fact practice games, when they finish their station work. Throughout my inquiry, I quickly realized the imperfectness of my methods. As mentioned earlier, my idea was to focus on math sheets only. I wanted to drill the facts only using pencil and paper. Two days later, and I grew tired of my methods. I changed to hands on methods that included competition and self-monitoring. The strength of this study was that it intrigued the students and caused them to want to come back every day. A weakness would be consistency because my students would get pulled from group for varying reasons, which caused them to miss a lesson, at least once a week. The timing of the data was also hindering to the program because spring break occurred. The students' brain went on vacation mode and I noticed regression in the data. With all that being said, I am thankful that we were able to bounce back and see overall improvements. If I were to do the study again, I would want to make the duration of the data a few weeks longer. I would also want to pick one strategy to teach the students everyday. For example, I would want to teach them touch math or a similar concept. This would allow us to have more structure and a mini lesson. It would also create unity within the group because they would all be using the same strategy. As for next steps, I would want to track math accuracy to see if handwriting had anything to do with their quality of work. With more time, I would also focus on students' timeliness. I found that if the students were eager to finish quickly, they would write numbers backwards and squished together, which prohibited them from reading their own writing. This caused calculation errors because numbers were read incorrectly. Lastly, I wonder how attitude and behavior contributed to the results of this study. Some days students were tired and lacked the enthusiasm to work. When they were off task and distracted I noticed that they would not get as many problems correct.

Reference(s)
Baker, Austin T. and Cuevas, Josh (2018) "The Importance of Automaticity Development in Mathematics," Georgia Educational Researcher: Vol. 14 : Iss. 2, Article 2.
DOI: 10.20429/ger.2018.140202

Oral Reading vs. Silent Reading:
Which is More Effective at Improving Reading Fluency and Comprehension?

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Rationale/Introduction

In looking at my fifth-grade Special Education Inclusion students, many perform below grade level in Reading and Language Arts. Their ongoing progress monitoring for reading fluency and comprehension is measured by iStation and IXL and suggests they would greatly benefit from additional practice and instruction to support these skills. Mostow, Nelson-Taylor, and Beck (2013) state that guided oral reading positively impacts students' "spelling, fluency, and reading comprehension" (p. 266). Research was conducted in the classroom with two girls and one boy of multiple ethnicities and socioeconomic statuses, to see if supporting them with 15 minutes of oral reading practice every day, facilitated by me in a small group setting, is more or less effective than 15 minutes of independent silent reading for the same length of time.

Question/Wondering

How does guided oral reading versus independent silent reading affect the overall reading fluency and comprehension of three fifth-grade students with Dyslexia performing below grade level in Reading and Language Arts?

Methodology/Results

In my Special Education Inclusion classroom, many of my students are identified with Specific Learning Disabilities in the areas of Basic Reading Skills, Reading Fluency Skills, and/or Reading Comprehension. This impacts their ability to read grade-level texts and understand what they are reading, which can adversely affect their performance in all subject areas. I focused my research on three of my students, one boy and two girls, who are some of the lowest performing readers in the class based on ongoing progress monitoring scores measured by iStation and IXL. These students are identified with Specific Learning Disabilities related to Reading, as well as have a Dyslexia diagnosis. Prior to implementing my research procedures, I consulted with the Dyslexia teachers and the fifth-grade Reading and Language Arts teachers to make sure that I was using appropriately challenging books and assessments for the three students I focused on, considering their current reading levels and diagnoses.

Data was collected over the course of six weeks. Although I focused my research on three specific students, my research procedures were used with my whole class. I split the 11 students that I have in my classroom during our WIN time into two groups, one group with the higher-level readers and one group with the lower-level readers. The three students I was primarily looking at were all in the lower-level reading group. At the beginning of the six weeks, I formally assessed each student's fluency and reading comprehension using an Oral Reading Fluency assessment and a multiple-choice test I created over the passage that they had to read. I had them read the passage aloud for a minute while I marked any errors they made, and then I calculated the words read correctly per minute. Then I had them read the rest of the passage before answering the multiple-choice questions. These two assessments allowed me to assess both fluency and comprehension, and the same assessments were used before, during, and after the implementation of my research procedures. For the next three weeks, after giving the pre-assessment, one group read fourth-grade level chapter books silently by themselves, while the other group did oral reading with me with fourth-grade level books. The lower-level reading group read orally for the first three weeks and silently for the last three weeks. This was done for the first 15-20 minutes of class. In my guided oral reading group, we took turns reading aloud, myself included, so that I could model fluent oral reading. I would also stop and ask questions about the book to determine how well the students were understanding what they were reading. I noticed that my questioning prompted them to follow along more closely with the story, especially when it was their turn to read aloud. My mentor teacher monitored the students who were reading silently, and reported to me that she often had to give them on-task reminders and she observed that even if the students had the book open and appeared to be reading, they didn't seem to make much progress through the book. After those first three weeks, I assessed the students again and then switched the two groups for the last three weeks before assessing them a final time.

My data, which is presented in the table below, shows that for each of the three students both fluency and reading comprehension improved following the three weeks of guided oral reading. The students' words read per minute (wpm) is listed as part of the fluency score, as well as the accuracy with which they read.

	Fluency Score #1	Fluency Score #2	Fluency Score #3
Student A	67 wpm, 93% accuracy	69 wpm, 96% accuracy	69 wpm, 96% accuracy
Student B	99 wpm, 94% accuracy	105 wpm, 96% accuracy	144 wpm, 96% accuracy
Student C	83 wpm, 89% accuracy	59 wpm, 97% accuracy	90 wpm, 96% accuracy
	Comp. Score #1	Comp. Score #2	Comp. Score #3
Student A	63%	88%	75%
Student B	38%	63%	50%
Student C	25%	88%	75%

After the three weeks of silent reading, their fluency stayed about the same, but their reading comprehension scores decreased. These results clearly indicate that all three students benefitted more from the guided oral reading than they did the independent silent reading. Their fluency improved from the first assessment to the second, after reading orally for three weeks, but it either stayed the same or slightly decreased from the second assessment to the third, after reading silently for three weeks. Their reading comprehension scores significantly increased when looking at the first assessment compared to the second, but those scores then decreased from the second to the third assessment. Overall, my findings align with other studies that show how oral reading is more beneficial than silent reading in regard to improving student fluency and comprehension.

Implications/Recommendations
The results of my action research indicate that small group guided oral reading can significantly improve students' fluency and reading comprehension skills. My findings also show that independent silent reading does not have that same effect. Knowing now how effective guided oral reading can be will definitely impact my future instructional decisions. Incorporating more oral reading into lessons would not only help students become more fluent readers, but it also improves their ability to comprehend and retain the information that they are reading. Guided oral reading can also easily be modified based on whatever lesson, book, or activity you're doing. If I were to implement these procedures in my classroom again, there are several things I would change. Primarily, I would like to promote better focus and engagement in the students who are reading silently. It was easy for them to sit there and make it look like they were reading, even if they were just staring at the same page the entire time. I think implementing some sort of incentive or reward for finishing the books might encourage and motivate them to read. Furthermore, I think I would get more accurate results if I used a different story for each assessment, rather than using the same story and questions each time. Using the same story and multiple-choice test each time gave students the opportunity to potentially remember certain words, pronunciations, or questions for the next time. I'm unsure how much of a difference this would make, but it may give us a more accurate representation of students' fluency and comprehension skills. As for further wonderings and studies, I think it would be interesting to see how independent oral reading affects fluency and comprehension compared to guided oral reading.

Reference(s)
Mostow, Nelson-Taylor, J., & Beck, J. E. (2013). Computer-Guided Oral Reading versus Independent Practice: Comparison of Sustained Silent Reading to an Automated Reading Tutor That Listens. Journal of Educational Computing Research, 49(2), 249–276. https://doi.org/10.2190/EC.49.2.g

The Calm Before The Storm

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Rationale/Introduction

Meghan Wall-Rocke, master student and author of "*Replacing Traditional Morning Work with Build Bins in the Early Grades*" once stated, "Through play and the support of teachers, students can master skills through activities that are open-ended, give students autonomy, and support oral language development in the classroom." (Wall-Rocke 2021). When thinking about my initial observations during the first few weeks of being an intern, I noticed that students had a hard time in the morning before school started, transitioning into learning content. Thinking about Wall-Rocke's quote and the need for smoother, and more engaging transitions in the morning, I began brainstorming on how the use of hands-on STEM bins in the morning before school would foster a positive and productive learning environment and cultivate students to be more hands-on in their morning routine.

Question/Wondering

How does the use of free-choice stem bins impact a first-grade classroom's engagement levels at the beginning of a school day.

Methodology/Results

This study was conducted in a first-grade classroom with eighteen students comprised of nine female students and nine male students. For my project I collected data over a span of four weeks where I would observe the classroom's engagement level at the beginning of the school day. For my study, I implemented free-choice morning STEM bins which consisted of various hands-on STEM task-related morning bins. Before the beginning of the week, I would set up the 6 different STEM bins to have various engaging materials including plastic geometric pattern blocks, Legos, play-doh, mini construction building blocks, snap cubes, and index cards with popsicle sticks. Each STEM bin included a task card for students to create an object or place with the materials in the bin. Every two weeks I would change out the various task cards. The task cards had the printed word of the task along with a picture for struggling readers to have a visual aid as well as a picture of the materials that belong in the bin. Each STEM task promotes student collaboration, problem solving, critical thinking skills as well as connects real world applications for the young learners in a risk-free learning environment. In the morning, students in Mrs. Bailey's first grade class would come into the classroom, unpack their things, and then choose which STEM bin bucket they wanted to stay at until announcements. The only three rules to the STEM bin buckets were to 1-Be respectful to others and the materials, 2- no more than 4 friends to a bucket, and 3- materials for each bin do not leave that their areas. While students were at their STEM bins, I would great students coming into the classroom each morning as well as take anecdotal notes on the classroom environment. I would think about the classroom noise level, whether students were engaged, and the type of conversations students had with one another.

For my research study, I collected my data over four weeks (January 31st- March 2nd) on a google spread sheet. On my spread sheet I had six columns which evaluated the following: the date, if the STEM bins were used in the morning, whether the students were fully engaged while using the STEM bins, the voice level of the students while the STEM bins were out (talking voice level, loud voice level, and outside voice level), my anecdotal notes from the morning, and description of the classroom environment level (unengaged and noisy, semi-engaged but loud, and peaceful and productive). These questions helped guide me in analyzing if my goal of using STEM bins in the morning had any impact on the class's engagement level in the classroom and how the engagement was impacted. I collected data every day for this study after announcements were over for a total of four weeks.

After the four weeks of data collecting was completed, I then began to go through and analyze the data. I took notice to the days the STEM bins were used vs when they weren't and the effects the engagement had on the classroom voice level and the classroom environment overall. When analyzing data, I also considered my anecdotal notes from each morning when looking at any outliers. From my research I reported that out of the seventeen total days of data collect (two days uncounted from snow days), thirteen of the days using the STEM bins in the morning resulted in

green- a positive and productive classroom environment or 77%. Only two days out of the 17 days resulted in red- an unproductive and noisy classroom environment, 11.1%. The days that resulted in red where due to the STEM bins not being utilized, so students came into the classroom with nothing to engage them or center their focus, thus creating an unproductive and chaotic classroom environment before announcements. The other two days in the seventeen total days, resulted in yellow- semi-engaged but loud, 11.1%. These two days I really reflected on the anecdotal notes to see what might have caused a negative impact on the engagement level. The two days resulting in yellow occurred separately for their own distinct reasons. The first day to result in yellow, was due to severe weather. This was on January 31st, the day before the snowstorm hit Texas, which riled up the class. The next morning to result in yellow was on February 9th, which was caused by a huge emotional outburst from a student which riled up a few other students in the class.

Overall, from my data analysis, the classroom engagement increased significantly on the days when STEM bins were used in the morning vs the days they were not. I conclude from my research that the use of free-choice STEM bins in the morning, does positively impact a first-grade classroom's engagement levels at the beginning of a school day.

Implications/Recommendations

In conclusion this study has proved that utilizing free-choice STEM bins in the beginning of a school day does impacts student engagement levels in the classroom. My research conveys that implementing STEM bins in the beginning of a school day significantly increases student engagement levels and positively affects the classroom environment. Current research states "when learning is meaningful and authentic, children become more engaged and motivated." (Wall-Rocke, 2021) which supports my study of how STEM bins impact student engagement levels in a first-grade classroom. A strength I observed in my study was how genuinely intrigued students were in the STEM bin tasks since the task cards reflected students' current interests (trucks, building, animals). If I were to repeat this research project again, I would improve my study by switching out the task cards weekly instead of every two weeks. I noticed by the middle of the second week, students got bored of engaging in the same six different tasks as week one. By changing out the different task cards weekly, students would be continuously challenged and engaged. Moving forward, I will continue to utilize STEM bins in the morning as they positively impact classroom engagement levels.

Reference(s)

Wall-Rocke, Meghan. "Replacing Traditional Morning Work with Build Bins in the Early Grades" *Scholar Works California State University, San Marcos*, 2021, http://scholarworks.calstate.edu/concern/theses/j3860c62p

Engagement with Interactive Read Alouds in a Kindergarten Classroom

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Rationale/Introduction

In a kindergarten classroom, it was observed that many students had difficulties staying focused and engaged during Interactive Read Alouds. Instead of listening intently and answering questions excitedly, the students disconnected from the lessons. This affects their ability to learn reading and comprehension skills. Rao (2016) states, "Interactive read-aloud is one such strategy to help young children with their literacy development through opportunities to interact with peers, teachers, and the text" (p. 227). Research was conducted in the classroom with a randomly selected group of four boys and two girls of multiple ethnicities and reading levels. Baseline data was collected through student engagement forms, reading comprehension questions answered correctly, and a student feedback survey.

Question/Wondering

How will researching, developing, and implementing more engaging interactive read aloud lessons affect my kindergarten students' abilities, specifically a randomized group of six, to stay focused and participate with the books I read?

Methodology/Results

As an intern who observes or teaches four days a week in the same kindergarten classroom, I was able to observe that many of my students were struggling to stay focused and on task for our interactive read alouds. These students are capable of staying engaged, however, by the end of the day they are exhausted and worn out with school. By conducting engagement forms during some average read alouds, versus read alouds that had strategies such as puppets or acting incorporated, I was able to observe the effect these strategies had on the students and their focus and participation.

I collected data for the engagement forms and student feedback survey on two randomly selected females and four randomly selected males of varying ethnicities and socioeconomic status. I collected data for reading comprehension questions answered correctly on the whole class, as the whole class participates in answering the questions during and after reading. My inquiry started with me reading the interactive read aloud books at the end of the day the same way I always did, which was simply reading the book and asking the students to answer the questions from the card. While reading the books, I filmed myself so I could go back and get a closer look at the six students to see if they were paying attention to the story. I filled out the form and checked off if each of the six students were engaged or not at 30 second intervals during a ten-minute period. Some of the time I had the substitute or my mentor teacher fill out the form while I was reading. I also calculated how many questions I asked during and after the story and how many of those questions the students got right. For baseline data, I found that my students stayed engaged for an average of 71% of the time during the week. They answered about 63% of the comprehension questions that were asked correctly.

After I collected the baseline data, I used my research to implement different strategies with my interactive read alouds to make the readings more engaging and interactive. I incorporated some puppets and finger puppets, props such as fake food, acting, movement, turn and talks, and more. I collected the data the same way I did before implementing my research, as well as I asked the six randomly selected students some questions about the books we read and how they felt about them on a student feedback survey. I found that on most of the read alouds, the percent the students paid attention and stayed engaged went up by about ten percent. There were two outliers on the low side, however, most of the percentages of student engagement ranged from 81% to 100%. From the three weeks I implemented my research, the students stayed engaged for an average of 84.5% of the read aloud time, which is about 13% higher than before I implemented any strategies. This shows that there was a small positive effect on my

kindergarten students' abilities to stay focused. There was also a positive effect on their comprehension skills and motivation levels. The students answered 87% of the questions that were asked correctly, which is 24% higher than the amount of questions they answered correctly before implementation. My qualitative data from the student feedback survey showed that my students enjoy the readings more when I incorporate acting out the story, using puppets, and using movement. Five of the six students stated they loved the fish and the pig puppets that were used. One student stated he did not like the puppets, but he liked getting up and copying the movements that were used in some stories. This data shows an overall improvement with my students' engagement during read alouds, which has positively affected their abilities in many other ways.

Implications/Recommendations

Throughout my inquiry, I was able to observe and analyze the effect incorporating different strategies to make the readings more engaging had on student focus and participation. I was pleased with the results obtained from the student engagement forms and the amount of questions the students got correct, especially since there were a few complications during the data collection process. Some of those complications include having a long-term substitute in the classroom instead of my mentor teacher and having some days off school due to weather. In the future, I will continue to implement different methods to make the read aloud process more interactive and engaging. By providing different strategies like puppets and acting, the students can stay focused and are set up for more success. Throughout this study, I wondered if increasing the engagement would be possible for my students, especially for the students who are exhausted by the end of the day. Although this was possible and had a positive effect on the students, I recommend having interactive read alouds earlier in the day when possible. This way, students are more awake and focused during such an important time in the school day.

Reference(s)

Barrentine, S. J. (1996). Engaging with Reading through Interactive Read-Alouds. *The Reading Teacher*, *50*(1), 36–43. http://www.jstor.org/stable/20201705

Morrison, & Wlodarczyk, L. (2009). Revisiting Read-Aloud: Instructional Strategies That Encourage Students' Engagement With Texts. *The Reading Teacher*, *63*(2), 110–118. https://doi.org/10.1598/RT.63.2.2

Rao, Newlin-Haus, E., & Ehrhardt, K. (2016). Repeated Interactive Read-Aloud: Enhancing Literacy Using Story Props. Childhood Education, 92(3), 226–235. https://doi.org/10.1080/00094056.2016.1180900

Can Incentives Impact Student Engagment?

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Rationale/Introduction

The researcher wanted students to feel comfortable, excited about learning, and more engaged throughout lessons. According to Whitfield (2020) "[being confident] is a powerful mindset to have in the classroom and can encourage students to feel better about the work they have completed, as well as themselves" (p. 1). At times this mindset is achieved in the researcher's classroom, but it is more in a one-on-one setting with the student and teacher or the student and their peers and not during a whole group discussion. The goal is to achieve this mindset so that all students will be able to feel comfortable in a whole group setting and increase their engagement and content knowledge.

Past studies have focused on whether or not an incentive could motivate students to engage in class discussions. In 2011, Ekwueme and Orim determined that "games relax tension, clear boredom, and foster an environment where teaching and learning are pleasant, interesting, exciting, stimulating, motivating, and at the same time improve student's performance in Mathematics" (p. 2). This study will focus not on one incentive, but on multiple incentives to determine what motivates students to engage in whole-class discussions.

Question/Wondering

In what ways will having different incentives, such as having rewards in the classroom using a ticket system and implementing a variety of games impact student engagement in a pre-algebra classroom?

Methodology/Results

This study occurred over the course of a five-week span. The researcher examined two pre-algebra classes from Midway Middle School that had a low participation rate. These classes were very similar in grades and student accommodations. In the first class, there were 25 students and in the second class, there were 28 total students resulting in 53 participants altogether. In this study, the two classes were examined separately from each other, and each class period was referred to as period eight and period nine.

The researcher had three forms of measurement for looking at student engagement when implementing different incentives. Before implementing any incentives, the researcher gave a pre-assessment through a google form survey to each student. The survey consisted of a variety of questions like, "What is one thing you wish we did more of in class? If you got to choose a game to play during class, what would your first choice be? What incentive would help you to participate in the classroom? What motivates you to learn in class?" After the responses were examined, the researcher decided that implementing a ticket system for students to gain rewards and having a variety of lessons that involved games would be the best treatment to examine the effect on student engagement.

Once the students had taken their pre-assessment, the first week the researcher did not implement any incentives. The researcher first got a baseline of data using an engagement form at the beginning of the first 10 minutes of class once the lesson started and sampled six different kids picked at random in each class period to see how they were engaging without any rewards or incentives observing their actions every two minutes during the 10-minute time slot of observation. The researcher also used a tally system on an excel spreadsheet each day. So as the researcher sampled six students each day over a 10-minute period at the beginning of the lesson, the researcher would also make a tally on the spreadsheet anytime a student raised their hand and answered a question, answered a question out of turn, asked for help, or any sign of student participation that helped their learning during whole group instruction. This allowed for the researcher to have initial student participation data in order to determine which students may or may not need incentives in the classroom to participate but to also see if the ones that already participated without these measures would continue to stay engaged.

After the first week, the researcher introduced the two incentives. The first incentive was giving a ticket to students who participated in any way. Students received a ticket each time they answered a question, asked for help, or contributed to the whole class discussion. The students would get a ticket if a question they answered was right or wrong because the researcher is not focused on the answer but on which students participated. At the end of each class, period 8 and period 9 both had a class container where students would drop their earned tickets. Every Thursday of every week the researcher had a drawing at the beginning or end of class. The number of tickets pulled from the jar would change from week to week and would depend on how many students participated during that week. If their name was drawn, they would get a king-sized candy bar of their choice based on how many times their name was pulled.

The second incentive the researcher implemented was the use of games. Games were a privilege to play, so the students would have to be on their best behavior to play but as long as the researcher saw engagement the game would continue. The games were never the same and changed from week to week. After the fifth week, the researcher gave a post-assessment survey which consisted of nine questions such as, "Do you feel like you participated more in class because you got to do more activities/games? Did the tickets improve your participation in class? Did you like candy as your reward or would something else have made you participate more? Would you have participated without tickets and gotten a prize each week?" This allowed the researcher to gauge whether the student felt like they gained confidence in participating in a whole group setting and if the tallied results lined up with how the students felt they did.

When the researcher analyzed the results, the researcher started by comparing each class's tallies from week to week and looking at the 10-minute observations to see how many times the six random students participated at the beginning of class. Period 8 results showed participation from week one, when there were no incentives, to week two when the researcher started incentives, the participation as a whole group increased by 35%. For period 9 it increased by 40% percent. For period 8, looking at week 2 to week 3, gained 20%, and from week 3 to week 4 gained 10%, and from week 4 to week 5 gained 8%. Period 9, from week 2 to week 3 gained 22% and from week 3 to week 4 gained 15%, and from week 4 to 5 gained 5%. The researcher also noticed that within the first 10 minutes of class, student engagement was still low from weeks 1 and 2 inferring that the students did participate but could have taken them longer to gain confidence in participating.

Comparing the days when the researcher implemented games as compared to utilizing notes, overall student participation increased by 23% and 10% respectively. Throughout the five-week study, students in period 8 increased their engagement by 80% and students in period 9 increased their engagement by 68%.

Implications/Recommendations
Based on the analysis of data, the researcher noticed that for both class periods, both incentives (tickets and games) helped increase student engagement. Students were more engaged in both classes on the days that games were played no matter if tickets were distributed. In period 8, the researcher also found that more students participated from week 1 to week 5 as compared to period 9. While students' participation increased in both class periods, results showed that the same students participated in period 9 instead of a variety of students participating like in period 8.

Based on data from the survey, individual students who did not increase their overall participation indicated that "candy did not motivate them" or that they were "still bored." "Getting a reward did not matter to them; however, they did like the games." Even though the classes' overall engagement increased, the two incentives utilized in this study did not motivate all students. Therefore, more studies should be conducted to focus on strategies to motivate all students.

Reference(s)
Orim, R.E. & Ekwueme, O.C. (2011). "The Roles of Games in Teaching and Learning of Mathematics in Junior Secondary Schools." Global Journal of Educational Research, https://www.ajol.info/index.php/gjedr/article/view /79059/0.

Whitfield, D. (30 July 2020). "4 Benefits of Giving Awards to Students." Total Recognition, https://totalrecognition.com/uncategorized/4-benefits-of-giving-awards-to-students/.

Implications of Alternative Seating on Engagement

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Rationale/Introduction

In my first-grade classroom, my students have three seating options that are rotated once or twice a day. These options include a typical plastic desk chair, a small exercise ball, or a stationary bike with a small desk attached. If students are utilizing the typical desk chair or the ball seat, they remain at their desks. If they are using the bike desk, then they are in a different portion of our room. For the purposes of this research, I will be describing the alternative seating as the ball seat, desk chair or bike desk options. I have observed that some kids benefit from all forms of alternative seating, some benefit from one form over the others, and some kids only remain engaged during the instructional time if they are in the typical desk chair option. Hulac, Mickelson, L. R., Briesch, A. M., Maroeca, H., Hartjes, C., Anderson, K., & Ederveen, K. (2022) imply that "the effectiveness of [these] alternative seating method[s] are mixed" within any given classrooms. Due to this observation in my own classroom, I have decided to research the engagement levels of a random selection of two boys and two girls over a period of three weeks during my direct teaching math instruction.

Question/Wondering

In what ways do three seating options impact the engagement of four first-grade students in my classroom during fifteen minutes of direct teach math instruction?

Methodology/Results

During my internship in a first-grade class, I observed that a large number of students prefer various alternative seating options to the traditional desk chair their classrooms are equipped with. Due to this fact, our classroom rotates through ball seats, bike desks and traditional desk chairs. Unfortunately, our classroom is only supplied with six ball seats and two bike desks. This means not every student gets the opportunity daily to sit in one of the alternative seating choices. While serving as an intern, I wanted to observe which seating choices would positively or negatively affect the engagement of a small selection of students.

This research homed in on how alternative seating choices impact engagement levels compared to a traditional desk chair arrangement. I focused on two female and two male students ages 6 and 7 years old. I observed these students over three weeks during the direct-teach portion of my math instruction. Baseline data had been observed through anecdotal notes throughout the start of the Spring semester in all seating choices. During my three weeks of gathering data, I noticed that each student had a different success rate in each of their seating choices. Student A had to be redirected the most while they were on a bike desk and the least when they were on the ball seat. Student B had far fewer redirections needed while on the ball seat and was least successful in both the bike and regular desk chair. In other words, they required the same quantity of redirections for both their desk chair and the bike desk. Student C, however, was most successful on the bike desk. Finally, Student D was the most engaged on a ball seat. Student C is the only participant who performed the best on a bike desk. All other students were the most engaged and required the least number of redirections on ball seats.

The engagement of my students also showed improvement towards the end of my data collection. I believe this is because my students had gotten more into their routines within our classroom and had more time to readjust to classroom procedures after their winter break.

Implications/Recommendations

I found that the best seating choice for my students was not universal. I expected there to be more similarities between my participants that there was. Student A, B, and D were all the most engaged on ball seats, however, the

quantity of redirections they required for the alternative seating choices varied greatly. Ultimately, I would allow all students to explore their seating arrangements over multiple days and subject areas. This would provide me the opportunity to gauge which seating option was best for each individual student if I were to assign the alternative seats. If I were to not assign the seats, I would rotate as a class like we do now. We rotate when students arrive in the morning and after lunch. This maximizes the opportunities students have for experiencing the variations in seating. Space and functionality is also a key factor to consider when providing alternative seating. For example, my classroom has access to three bike desks, but there is only room for two. Rearranging space constantly allows for there to be the best possible arrangement and balance for alternative seating options.

Ultimately, I would love to use alternative seating options within my future classrooms as long as I have the means to do so. Students all learn in different ways and providing them with opportunities to evaluate their own learning style will grow their metacognition skills and make them a better learner.

Reference(s)
Hulac, Mickelson, L. R., Briesch, A. M., Maroeca, H., Hartjes, C., Anderson, K., & Ederveen, K. (2022). Stability Balls and Student on-Task Behavior. Journal of Behavioral Education, 31(3), 543–560.
https://doi.org/10.1007/s10864-020-09412-3

The Correlation between Beliefs on Respect and Engagement

Primary Researchers
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Rationale/Introduction

During my internship, I have had conversations with multiple students who argue that respect for a teacher must be earned and not immediately given in the classroom. I have witnessed complacency and resistance in my 12th grade Financial Math students who believe this to be true. Complacency in the classroom tends to be students playing games on their iPad or putting their heads down while the teacher instructs. The form of resistance is typically shown in breaking classroom management practices and tends to be the same students routinely. In the article, *Early Adolescents' Perceptions of the Classroom Social Environment, Motivational Beliefs, and Engagement,* Patrick and Kaplan (2001) explain the relationship between social factors and their effects on a student's cognitive engagement in the classroom, including promoting mutual respect. Furthermore, it describes how engagement is enhanced when there is a level of mutual respect and a positive relationship with the student. At Midway High School, students are given options of elective math courses to choose from for their math credit. These specific math courses vary in rigor and content. This study explores how high school students' perspectives on respect impact their engagement within these diverse math electives.

Question/Wondering

How do students' perspectives on respect impact their engagement within diverse math electives?

Methodology/Results

The data from this study was collected in four high school level math classes with four different math teachers. In this study, I collected data from students of various ages and both business and mathematics classes. Ultimately, I chose to research a single class period from Mrs. Biberdorf's on-level geometry (10th), Mrs. Courson's financial math (12th), Mrs. Null's accounting 1 (10th and 11th), and Ms. Layden's AP Statistics (11th and 12th). I began my study by administering a survey to all four class periods to all the students, which totaled to 97 students. Once I collected and analyzed this data, I selected eight people from each class. I made sure four believed respect is earned, while the other four believed it should be immediately given. To create a diverse sample, I analyzed their gender and race when selecting participants. After a total of 32 students were selected, I visited each class period and observed their engagement in the classroom. I noted their on-task and off-task rates, and I performed one-on-one interviews with a total of 13 students. The following explains more in depth the studies and exact data that was found from each of the different research methods.

The initial survey consisted of questions that asked the student about their beliefs on if respect should be earned or immediately given, their engagement in their specific class period, their relationship with the class and teacher, and personal demographics. In my collected data, 54% of the students were seniors, 32% sophomores, 12% juniors, and 2% freshmen. In response to the survey question about engagement within the classroom, 32% of the students claimed to not get off task, 54% sometimes get off-task, and 14% get off task regularly. 98% of the students in all the classes responded they had a very positive relationship with their teacher. Only two students stated that their relationship with their teacher was 50% or below. Lastly, my most pressing question about their belief revealed that 33% of the students believed respect should be earned, while 43% believed it should be automatically given. About 24% of the students surveyed believed it depends on the situation. This data allowed me to select specific students to observe different beliefs and explore if their beliefs affected their engagement first-hand in the classroom.

After I selected 32 students total, eight from each classroom, I observed if their beliefs on respect correlated with their engagement through direct observation. The students selected were kept confidential to ensure the data would be valid. With absences, I ended up observing a total of 26 students. After watching the students in the classroom, I noticed business math electives had a lower percentage (70% and below engagement) of overall class engagement of the students observed from both the students who believed respect is earned and those who believed it should be given. The business electives had a higher percentage of students who believed respect should be automatically

given on-task. The students who believe respect should be automatically given were on task an average of 75% of the time. The students who believed respect should be earned were on task an average of 64% of the time. However, the core math classes had a higher percentage of students who believed respect should be earned on-task throughout the lesson. These students were on task an average of 82% of the time. Based on my observations, the business students who believed that respect must be given in the classroom were more engaged in class. On the other hand, the greater percentage of students in core math classes who believe that respect must be earned had a higher engagement within the classroom.

In order to better understand why the students engaged differently in diverse classes depending on their beliefs, I conducted interviews with students following the class observations. Each class was narrowed down to 4 students. With absences, the study resulted in having 13 students total interviewed. These students were selected based on their survey answers and high/low engagement within the classroom, and they were asked a series of 10 questions. The surveys were individualized for the two separate beliefs on respect. When beginning the interview, I reminded the students of their past survey results for context. Of the four classes, 11 of the 13 students interviewed said that their parents and their upbringing affected their beliefs on respect. The majority of students kept the same beliefs as their parents, while two claimed their beliefs aligned with their generation. Regarding engagement, 54% of students said they pay more attention in their required courses due to rigor, 23% said their engagement does not change in different classes, and 23% said they pay attention more in electives due to choosing them and being interested in the content being taught. 28 of the 32 students said their teacher impacted how focused they would be in the classroom. In addition, students mentioned their teacher's tone in speaking with students, accessibility in answering questions, relatability in conveying the content, and organization of the class affect how engaged they are in class.

Implications/Recommendations

In the end, all students will enter a classroom each year with their own personal beliefs. These personal beliefs will affect how they engage and respond to a teacher. It is not a teacher's job to change these students' beliefs but individualize the content instruction for each student to produce student engagement. This study helped me realize that creating active content for the students to apply their classroom knowledge to the real-world is imperative for classroom engagement. Teachers can motivate students of either belief by building personal relationships within the first weeks of school. The teacher can also create a welcoming environment that is open for students to make mistakes, allowing it to be a space for growth. These recommendations make it much easier for a student to listen and be receptive to correction.

Weaknesses of the study include that the students were aware I was watching within the classroom and could have acted differently. Other factors included various students who were chosen were missing and not described in the data, and the types of lessons for each class varied to some degree. Some strengths included the depth of my study with a sample of almost 100 students, the equality of both sides of beliefs, and consistency in results from my various assessments. In future studies, I would create a classroom and teaching type as a control to see if any of my data would differ or be more accurate. An additional wondering includes if teachers incorporated positive practices into their classes if there would be an increase in respect and motivation within their classroom.

Reference(s)

Patrick, Ryan, A. M., & Kaplan, A. (2007). *Early adolescents' perceptions of the classroom social environment, motivational beliefs, and engagement*. Journal of Educational Psychology, 99(1), 83–98. https://doi.org/10.1037/0022-0663.99.1.83

The Impact of Motivation on CTE Class Performance

Primary Researchers
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Rationale/Introduction

CTE classes are a unique opportunity for students to gain skills and knowledge in a real-world context beginning in high school. These elective classes range from graphic design to accounting to forensic science, and the list goes on. CTE classes allow choice for the students outside of their typical core classes to pursue an area they are interested in or passionate about. "The biggest challenge in evaluating CTE is that students typically self-select into such programs, or student choices are circumscribed by the types of programs offered in nearby schools" (Jacob, 2017, para. 10). This brings a diverse group of students with different purposes and motivations for taking these classes. This leads to varying student needs, and makes preparing lessons that will be beneficial for each student difficult. My rationale for choosing to study student motivation in CTE classes in correlation with their performance stems from my desire for CTE classes to be maximized through identifying motivations to better benefit and serve the students. This research will give me a better idea on why my students enrolled in their CTE course which will inform me on the type of content and projects that will equip students for what they are currently interested in and with what they want to pursue post-high school. To analyze how student motivation in CTE classes impacts their performance, I focused on upper-classmen students who are currently enrolled in Practicum in Graphic Design. I gathered data through classroom engagement observations, student work, a survey, and student interviews.

Question/Wondering

In what ways does student motivation for taking CTE classes impact their performance?

Methodology/Results

To research how student motivation in taking CTE classes impacts their performance, I collected data in three different areas from 32 Practicum in Graphic Design students. These students are all upper-classmen in their third or fourth year of graphic design. The different forms of data collection as well as the conclusions that were drawn from this data are further explained below.

Student surveys and interview data were collected during two Practicum in Graphic Design class periods. First, students all completed a short Google Form survey to gather background information, such as their year in Practicum and involvement in CTE classes beyond graphic design. This survey also included their basic thoughts on pursuing a graphic design related field after high school and their overall enjoyment in the class. From this survey, I found that 87.6% of students gave graphic design either a 4 or 5 on a scale of 1-5 when asked how much they are enjoying graphic design. In addition, 87.6% of the students surveyed said they were interested or may be interested in a career that relates to graphic design. These statistics convey a correlation between students enjoying the class and therefore, wanting to continue with graphic design in the future.

After the initial survey, each student completed an interview. To interview all 32 students, each student filmed a video of themselves in the Flip app. This video format removed the pressure of sharing their thoughts directly with one of their graphic design teachers and allowed me to hear the students' authentic thoughts. When having to verbally express how the students felt, all but one student said they enjoyed graphic design. In the videos, I also found that when asked why they began taking graphic design, 50% of the students said they took the class out of genuine interest. These interests ranged from wanting to pursue graphic design in college to wanting to explore a different art form, and more. On the other hand, 33% of students chose graphic design because they needed to take another class. Considering 87.6% of students responded in the survey they enjoy the class, and based on the fact that these students are all in their third or fourth year of taking graphic design, I concluded the majority of students who didn't have a strong desire towards graphic design when they originally enrolled have grown to appreciate it.

For my classroom observation data, I observed both Practicum classes on the first day they were assigned a 5-day independent project. Every 5 minutes, I recorded full class engagement levels to see how many students were on or off-task. This observation was done in the second period of their two period Practicum class. In both classes, there was a steady decrease in engagement as it got closer to the end of class. For the last 25 minutes out of a 90-minute class period, less than 50% of students were engaged with the class material. Students were either working on other classwork, playing games on their computer, talking to one another, or staring blankly at their screens. These engagement levels may correlate with core student motivation but could also be the result of a long class period. Due to the overall lack of engagement during the observed class period, no correlation with student motivation could be determined from the collected data.

Student work was also assessed as a part of my data collection. Students were given 5 class periods to complete a large design project. They were graded according to a rubric that was shared with the students when the project was assigned. After adequate time to complete the project and being aware of the due date, 25% of students had not turned in their project. On the other hand, 50% of students got a 100 on the project. Of the 50% of students that got a 100 on the project, 86.7% were students who had noted a genuine interest in taking graphic design. The data from my research shows a correlation between students who were interested in taking graphic design and their motivation towards their classwork.

The student interviews, survey data, and student work that I have gathered prove that there is a correlation between the motivation of students and their overall performance in CTE classes. The data points to the conclusion that when students had an interest in graphic design prior to taking the class, they tend to be more engaged and perform better in the class overall. While many students who did not have significant interest in taking graphic design originally grew to enjoy the class, the motivation does not match those who were interested from the beginning. This is evident in their performance and engagement levels.

Implications/Recommendations

Overall, this research demonstrates the growing disparity between those who had a genuine interest when they enrolled in graphic design compared to those who did not have a meaningful interest. Because there are two distinct groups that CTE classes are catering to, this is important to keep at the forefront while planning lessons. Oftentimes, graphic design assignments are built around real-world scenarios graphic designers would face. After analyzing the data and seeing how separate the two groups are, creating lessons that will bridge the gap would be beneficial. This can be implemented through continuing to create a connection for how graphic design is useful for anyone, regardless of profession. Some career paths will relate more to graphic design than others but aiming to expand the scope of graphic design will be helpful for all students.

This idea is important to carry over to other CTE classes as well. Helping students broaden their perspective of various CTE class options will add meaning and intention as students learn and build knowledge. This leaves students with skills in the given content area as well as practical ideas on how they can use it in their daily lives or in the general future.

This study addresses a topic that is important for all teachers, but specifically CTE teachers to consider. This group of students was a very focused group, where they were able to share their honest opinions. Their engagement and performance were collected on a typical class day and with a normal assignment. Collecting data from a variety of CTE classes would be a beneficial extension of this study and would be a better representation of the CTE department as a whole.

Reference

Jacob, B. A. (2017, October 5). *What we know about career and technical education in high school*. Brookings. Retrieved March 21, 2023, from https://www.brookings.edu/research/what-we-know-about-career-and-technical-education-in-high-school/

The Effects of Problem-Based Instruction

Primary Researchers
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Rationale/Introduction

At Baylor University, it has been taught how important it is for students to discover ideas on their own to increase their conceptual understanding. In the article "A Problem-Based Approach to Mathematics Instruction," Erickson (1999) states, "Although no one claims the existence of one correct way to teach, using good problems to plan instruction with the focus on student thinking and reasoning is one strategy that holds promise," (p. 1) reflecting that many educators believe learning through discovery is more effective for student learning. In contrast, the article "Instruction vs. Discovery Learning in the Business Classroom," discusses the importance of direct instruction. Kotee (2021) states, "A recent study by the Programme for International Student Assessment (PISA) suggests that direct instruction results in higher efficacy of learning than discovery-based methods" (p. 1.) This study showed that direct instruction resulted in higher achievement than problem-based instruction. Due to the differentiated opinions among educators, it would be beneficial to explore the effects on student achievement when implementing problem-based instruction vs direct instruction.

Question/Wondering

In what ways does problem-based instruction vs. direct instruction affect student mathematical achievement?

Methodology/Results

Over a three-week period, data was collected from two 6th-grade mathematics classes at Midway Middle School. A total of 46 students, separated into two on-level classes with 8 students with 504 modifications as well as 14 gifted and talented students, participated. There were 29 males and 17 females. The students were of varied ethnicities, including 22 Caucasian students, 7 Hispanic students, 4 African-American students, and 2 Asian students. The two classes had very similar grade averages and test grades prior to this research. The research spanned over one unit, which covered fraction, decimal, and percent conversions as well as ordering rational numbers.

To begin, the 7th-period class received direct instruction of notes, guided practice, and independent practice, while the 9th-period class participated in discovery Desmos activities, Nearpods, and group activities to share ideas and discover concepts on their own. The students were observed in each period, and notes were taken on their participation and progress. A variety of formative assessments as well as one final unit exam were reviewed to compare any differences between the two classes. The grades were also compared to previous assessments to determine an academic baseline for each class period prior to the research. The third form of data collection was a student survey given to the students after the three-week unit that asked the students whether they enjoyed direct instruction or discovery, as well as which instruction method they felt helped them to learn better. Prior to this research the students received a mixture of both types of instruction and could therefore determine which they enjoyed more. All forms of data were collected, reviewed, and analyzed to determine how each instructional approach might impact student achievement.

Throughout the unit, it was consistently noted that the class receiving direct instruction was more engaged in asking and answering questions. The class who received problem-based instruction often seemed discouraged and reluctant to participate. They struggled with forming thoughts on their own and with communicating their ideas. Results showed 56.5% of the study participants preferred direct instruction from the teacher as opposed to discovery lessons. In addition, 80.4% of the students felt they learned more from direct instruction. The class that received direct instruction had an average of 90.49% for the marking period, while the class that participated in discovery lessons had an average of 89.11%, showing very little difference between the final grades for the unit. The discovery class had a slightly lower average on each in-class grade, but no major difference was shown. Although daily grades did not show much difference, a difference was shown in their test grades. Previously, the two classes showed very similar test averages with the last test showing that both classes had an 84% test average. After the new unit, the class that received direct instruction's test average was 81.3%, while the class that participated in problem-based

instruction had a testing average of 72%. These two classes that previously had the same testing average now differed by almost 10%.

Implications/Recommendations

The results showed that implementing direct instruction vs. problem-based instruction did have an effect on the unit test grades and it was noted that the students felt they learned better through direct instruction. This study supports the findings highlighted by Kotee (2023), but did not support the findings of Erickson (1999) or the teachings of Baylor University. One weakness of this study was that it did not consider each student individually, but instead overall class performance. It should be noted that this may not be the case for all students, but when comparing the two classes as a whole, the class that received problem-based instruction performed worse in one area. One strength of this study was the similarity between the two class periods. When looking at their prior class averages, test grades, sizing and demographics, they were almost identical. Based on these observations, the researcher suggests continuing this study for more than just one unit and examining the effects of problem-based instruction on individual students as well as entire classes.

Reference(s)

Kotee, T. (2023). Instruction vs. Discovery Learning. AACSB. Retrieved from https://www.aacsb.edu/insights/articles/2021/07/instruction-vs-discovery-learning-in-the-business-classroom

Erickson, D. K. (1999). Connecting Research to Teaching: A Problem-Based Approach to Mathematics Instruction, The Mathematics Teacher, 92(6), 516-521. Retrieved Mar 16, 2023, from https://doi.org/10.5951/MT.92.6.0516

Student Choice vs. Teacher Assigned Grouping

Primary Researchers
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Rationale/Introduction

Being a teacher of remedial students brings many unique challenges. Although it is challenging teaching students in a subject that they have not gained credit in or achieved a passing grade in their state test, I also like to see it as a significant opportunity to grow my students desire to learn about English and literature, along with finding different solutions to help them succeed in their testing. In my classroom, there are two major challenges that constantly come up in class: lack of engagement and lack of completion in assignments. Many times my students do not see the point or the "why" of English, along with genuinely not being interested in the topic of conversation being discussed in class. After figuring out that many students appreciated working with their fellow classmates and were more successful, I strived to find a clear solution by proposing an action research question that dove deeper into if our students were more successful working with classmates of their choice or having the teacher assign their groups ahead of time. Jaleh Hassaskhah and Hamideh Mozaffari are both professors in the English department at Guilan University in Iran have researched the significance of small groups within student work: "Lack of tolerance on the part of learners to just listen to the teachers' lectures, and the need to hone students' interactive and problem solving skills are among the main reasons for this rapid growth. In fact, this mode of learning serves two primary purposes: (1) it aims to increase learner's autonomy, and (2) to influence and enhance the quality of learning" (Hassaskhah, Mozaffari 147). Because students working in groups is extremely effective and an extremely relevant topic of research, I wanted to see specifically if there were different ways to maximize student engagement and completion. Later in their research they discuss that there are different effects of student-choice groups and teacher assigned groups, and I wanted to see for myself. Although I have seen the dynamics between most of my students and how they work with one another, I wanted to focus on the difference between engagement and completion and if there was a significant difference or not to be best equipped for future lesson plans.

Question/Wondering

How do student choice and assigned groups impact engagement and assignment completion of group work in the classroom of English III Remedial students?

Methodology/Results

In order to collect the data that would provide enough evidence for this research project, there were three specific parts to the data collecting process. The first part of the process consisted of creating a lesson that was geared towards group work that allowed students to choose the people they wanted to work with. I initially told students that they were going to be completing a lot of group work throughout the week and they were extremely excited. For the student-choice assignment, students were assigned five stations to complete different text structures that there are when they read. They were allowed to choose whoever they wanted to work with and were required to rotate around the room with them and complete all five stations. The following day, the students were going to complete a two part assignment about the ethos, logos, and pathos in a text we read earlier in the week called "Just Walk By: Black Men and Public Spaces" by Brent Staples where the teacher assigned their groups. Students were required to match up different excerpts from the text and put them under which rhetorical appeal they thought it was (ethos, logos, or pathos). Once they were finished, they had to complete a constructed response on one sheet of paper that discussed one of the excerpts they matched. Once the students were finished, they were required to turn in the constructed response paper. The last part of the data collection process was for each student to complete a Google form based on the two assignments they completed over the past two days. Students were asked questions about which assignment they preferred, along with whether or not they enjoyed working with the classmates they chose or the ones they were assigned with,

etc. This form helped me see some of the factors that I needed to consider while I was reflecting on the outcomes of engagement and completion within the two assignments.

Overall, both the student-choice and teacher assigned group assignments went the way I expected them to based on my observations while I was teaching. Because most of our students already sit with their friends, many of them grouped up together and began working immediately. From the outside looking in, student engagement and assignment completion seemed fairly average and normal of what a typical class day is like. The typical distractions happened, but students seemed to enjoy the assigned work. Once I announced to students that I was going to assign them myself into groups, most students either instantly sighed or complained the entire class period. In the end, the students compiled and followed directions, but what I noticed what was different about their assigned groups was most of the groups split up the work with one another and try to get it done as fast as they could so they could get done as fast as possible and not necessarily have to interact as much with each other. When comparing the class averages for both of the assignments, four out of six of my classes had a higher average in the teacher assigned groups as opposed to the student choice groups. The Google form that each student filled out was intriguing to see how they believed their student engagement and completion of assignments were and revealed much of what I needed to do with my students moving forward. Around 70% of students stated they would rather choose their groups as opposed to the teacher assigning them. I asked them why they prefer student choice or teacher assigned and most of the students that chose to choose their groups said they either did not work well interacting with people they did not know well or they believed that they were more successful working with their friends. When it came to the assignments, around 52% of students claimed they liked both of the assignments equally, 26% said they enjoyed the ethos, logos, pathos assignment (teacher assigned) more, and 21% claimed they enjoyed the text structure assignment better (student choice). These results have shown that students prefer to work with their friends, but are more successful based on their performance and submissions when they are in groups that are assigned by the teacher.

Implications/Recommendations
In the end, both strategies of working in groups are effective to my students and both student choice and teacher assigned groups have different advantages and hindrances. Around 80% of students who filled out the form said they would rather work in groups than independently. With the results of my study, I will continue to strive to incorporate as much group work as I can into my instructional practices to make sure that my remedial students are being given the best opportunities to learn themselves, but also making sure they are independently being able to synthesize and analyze content. Based off of students class averages and completion, teacher assigned groups do seem to be more successful than students choosing, but I do believe comparing just two days of assignments will not give a complete answer on whether or not one is specifically better than the other for remedial students, but I will strive to strategically assign groups for assignments that are based on their skill level, ESL students, SPED/504, etc.

Reference(s)

Hassaskhah, J., & Mozaffari, H. (2015, January). *The impact of group formation method (student-selected vs. teacher ...* Academy Publication. Retrieved March 24, 2023, from https://www.academypublication.com/issues2/jltr/vol06/01/18.pdf

Incentives and their Effects on Reading Fluency

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Rationale/Introduction

The ability to concentrate is crucial for academic success. However, many students struggle with this skill, affecting their performance across different subjects. Reading fluency is one of the primary concerns observed in the classroom, with many students lacking the ability to decode words accurately, impacting their comprehension. The purpose of this research is to investigate whether incentivizing reading fluency with tangible incentives such as erasers and pencils will improve students' decoding skills within a three-week period. In this study, a Guided Reading Group was formed, consisting of six students reading at Level E. The aim was to collect data on the effectiveness of incentives on reading fluency (accuracy, rate, and prosody) in improving their decoding skills.

Question/Wondering

How do tangible incentives engage students' attention when reading and lead to positive academic performance?

Methodology/Results

Six 1st-grade students were selected for the study, needing LLI time as they were not progressing to Level I by the end of the year. At the beginning of the study, they were all reading at Level E. The data was collected weekly on the words missed by students, affecting their accuracy. During the first week, there were no incentives given, and no improvement was observed. However, during weeks 2 and 3, the students jumped from a Level E book to a Level F and then a Level G, showing significant improvement in their reading fluency during the period where they received incentives. Incentives were given based on who had the most improvement with the book they read first that day compared to the previous day. Students were motivated to come to W.I.N times due to the incentives they received, and one student was removed from the group due to significant growth. A spreadsheet was used to monitor each student's progress during the study.

Implications/Recommendations

The data collected during the three weeks of the study showed a significant improvement in the students' reading fluency, indicating that tangible incentives can be an effective way to engage students' attention and improve their academic performance. However, it is important to note that each student is different and may respond differently to incentives. To further this research, testing without incentives for one month and with incentives for another month could be done to see if the amount of time affects the results. Overall, the use of tangible incentives can be a useful tool for teachers to motivate students and improve their academic performance.

Reference(s)

West, Trina M. *The Use of Incentives for Motivating Students to Read*. State University of New York at Fredonia, May 2014, https://soar.suny.edu/bitstream/handle/20.500.12648/360/Trina_West_Masters_Project_Ma y2014.pdf?sequence=1.

Low Affective Filter in the Language Classroom

Primary Researchers
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Rationale/Introduction

In the Spanish 2 and 3 classrooms, barriers can impede the student's ability and acquisition of the language (Ramdaniyah & Sumarna, 2019). The teacher and the classroom environment impact this affective filter. At the beginning of the spring semester, students' attitudes and behaviors changed towards the class. Their motivation and desire to learn was noticeable through their work ethic and a few expressed complaints about the class. It was necessary to create a change for an engaging learning environment in the language classroom for 110 students in grades 9-11.

Question/Wondering

How does enhancing the class routines and encouraging motivation impact the classroom environment?

How do Spanish popular cultural music and artifacts, as well as social-emotional practices, create a low affective filter environment?

Methodology/Results

Prior to the research I observed unmotivated and indifferent behavior from several students toward the Spanish class. First, I took anecdotal notes on my perception of their actions and behavior. Students were quieter than before, they would roll their eyes upon entering the classroom, and even expressed their unwillingness to attend class. Next, students in both levels of Honors Spanish 2 and 3 filled out an open-ended response survey answering questions about what they liked or did not like in class and how they would change what they did not like in class currently. Many gave input of activities or strategies they would like to see in the classroom and said they enjoyed the class because of their friends and teachers. Students also answered that they disliked having to participate in front of the class, being assigned too much homework, and feeling pressured to work too quickly without any time to rest. During two weeks of class, students were given the option to work in different numbered groups with their choice of partners. Every day they listened to and watched two Spanish music videos, wrote personal reflections, spent 5 minutes on personal time, and ate candies typical to Latin America. Students showed engagement while watching Spanish music videos. They made comparisons between Hispanic culture and their own. They worked actively and enthusiastically when completing assignments with their partners of choice. Students were more eager to complete their work when having a social-emotional class introduction such as a personal reflection, personal time, or music. Lastly, a post-survey was completed asking students how much they liked or disliked the activities they did in class and if they deemed any activities important in their language acquisition. On a scale from one to five, 95 out of 100 students rated the Spanish popular culture music videos a four or five. There was a variety of flexible grouping preferences (individual, table partner, or small groups). More than half of the students thought personal time or reflection was necessary in class as well as cultural lessons. This study supports the findings that the affective filter is lower when the teacher creates a safe learning environment by adapting to students' input on cultural interest, personal learning preferences, time, and reflection.

Implications/Recommendations

Based on the results I concluded that students are motivated and enjoy learning when the teachers create an engaging and less stressful environment by including social-emotional practices and cultural artifacts such as songs and treats into a lesson. These activities can relieve classroom tension by increasing a less stressful routine and making the learning environment more engaging. This study could expand by measuring the amount of language acquisition improvement using varied time increments of cultural music. For future research, I would like to investigate how often to include social-emotional practices and music in Spanish to help create a low affective filter classroom and how the frequency impacts the target language acquisition.

Reference(s)

Ramdaniyah, N. A., & Sumarna, Y. (2019). The distinction of language class between high and low affective filters. *International Journal of Language Education and Cultural Review*, *5*(1), 73-76. https://doi.org/10.21009/IJLECR.051.08

Building Fraction Logic with Manipulatives

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Rationale/Introduction

Various forms of data revealed a small group of students' lack of conceptual understanding when comparing fractions. These students resorted to strategies that are scarcely founded on logical understanding. To address the misconceptions, I intervened with a small group of 5 students in the spring semester of 2023. During this instructional time, I stressed the use of concrete manipulatives to assist students in forming logical thought processes to compare fractions without physical tools, as outlined in "Using Number Sense to Compare Fractions" (Bray and Abreu-Sanchez, 2010). I collected student data in the form of anecdotal notes, written explanations, and exit tickets to monitor students' comprehension.

Question/Wondering

In what ways does using concrete manipulatives affect a small group of five 4th grade students' conceptual understanding of comparing fractions?

Methodology/Results

The research group consisted of 5 Caucasian students whose average age was 10 years old—2 boys and 3 girls. This group was chosen based off of the Learning Inventory of Needs Math screener exam administered at the beginning, middle, and end of year. After the middle of the year testing, 4 students were labeled as needing intervention, which indicates a lack of mastery on a grade level concept. Another student was labeled as striving in this skill. This indicated to me that these 5 students needed further instruction on comparing fractions.

Before beginning instruction, I administered a pre-assessment where students compared different fractions and explained their reasoning. Students attempted to use the "butterfly" method, which is a shortcut when comparing fractions. If the student could not explain *why* the butterfly method worked, they were not allowed to use it. None of the five students could explain why this method worked and were left with guessing or drawing models, which quickly became tricky when the numerators got larger. The average of these five students' pre-assessment scores was a 68% with two of the students scoring 80%, two 70%, and one 40%.

To address this, I met with these five students for 30 minutes a day as a small group for 3 weeks. I created lesson plans which followed strategies outlined in Bray and Abreu-Sanchez's "Using Number Sense to Compare Fractions," which include using circle fraction tiles to build four logical thinking processes when comparing fractions (2010). In their article, Bray and Abreu-Sanchez explained the value of the circle fraction tiles and how they appear to students. When a piece is missing from the whole circle, it is obvious how many pieces are missing or how close the fraction is to ½ or 1 whole. This contrasted with the manipulative originally used to teach fractions in the fall, which consisted of different size pieces of a bar. The bar manipulative is not as obvious when comparing fractions because the whole is not as obvious—a bar can be as long as students imagine whereas a circle can only be filled to a certain extent. I introduced the circle manipulatives to students and allowed them to explore representing different fractions with the circles.

To begin addressing comparing fractions, I began with presenting students with fractions that have the same denominators within word problems. When students built these fractions, I asked how we could remember to compare these fractions without the tiles. Students were able to come up with a strategy for when the denominators are the same in fractions: when there are the same number of pieces, or denominators, we can look at how many pieces there are, the numerator, to compare the fractions. All five students were successful in using this strategy on day two of instruction.

The next skill I addressed was comparing fractions that have the same numerator, or same amount of pieces out of the whole. Students explored these types of problems and were led to another thinking strategy: when two

fractions have the same amount of pieces, we look to see what size the pieces are. Students came up with an additional thinking strategy to help them remember this: the bigger the denominator, the smaller the pieces and vice versa. Three out of the five students were successful in using the strategy on day two of instruction. I met with only the two that did not grasp the strategy the next day to further their comprehension. After four days of instruction on this skill, students completed an exit ticket (without using their manipulatives), where they compared these two types of fractions and explained their reasoning. The group average was an 88%, with the lowest score being a 75%.

I used the rest of the time on the more challenging comparisons, where fractions had different numerators and denominators. The next skill we practiced was comparing fractions to ½. I gave students word problems that included comparing a fraction to ½ which they solved with their manipulatives. Then I prompted conversation on how thinking of ½ can be useful when comparing fractions. We generated other models that represented ½ so that students recognized equivalent fractions to ½. I administered another exit ticket this day. The results averaged 77%, with two of the students scoring 50%. We continued to practice this skill for the next two days. As we worked the next two days, I introduced how we can compare fractions to not only ½ but also to one whole to incorporate Bray and Abreu-Sanchez's final strategy (2010). I gave students lists of fractions and had them write whether it was closest to 0, ½, or 1 whole. All five students did this correctly without manipulatives, showing they had built enough conceptual understanding with the manipulatives to not need them anymore.

After the final day of instruction, I administered the same assessment used as a pre-assessment to measure students' overall growth. The students took the assessment one-on-one with me and were prompted to use the strategies we had learned. The results showed 4 students earning 100% and one earning 80%. The average of these scores increased from the pre-assessment by 14 points.

Throughout this process I collected data through exit tickets, which were composed of abstract problems and short answer questions that revealed students' conceptual understanding. I also collected anecdotal notes daily on how students answered key questions and their mathematical reasoning. Anecdotal notes and students' responses to short answer questions reveal they have developed many more comparing strategies than shown in the pre-assessment.

Implications/Recommendations

This study had many strengths as it was based on true research as referenced (Bray and Abreu-Sanchez, 2010). I also relied on my daily data and observations to make choices for the next day of instruction, which is of utmost importance when meeting students' needs. In the future, I will definitely seek to use these strategies when teaching comparing fractions and will incorporate the values of this research project into my teaching philosophy as well. This project emphasized student-based learning experiences that gave students real context and hands-on involvement in building their own understanding.

This study could have improved with more consistent meetings. Because of many uncontrollable interruptions, there were days my group could not meet, pushing back instruction. Students might have retained more knowledge if instruction had not stretched on as long. This instruction could have been more meaningful if it was the initial introduction students had to comparing fractions. They had already been taught other comparing strategies in the previous semester, meaning I was occasionally working against misconceptions.

It would be valuable to conduct a research study with the whole class using the circle fraction manipulatives as an initial teach to comparing fractions.

Reference(s)

Bray, W. S., & Abreu-Sanchez, L. (2010). Using Number Sense to Compare Fractions. *NCTM Publications*, https://doi.org/10.5951/TCM.17.2.0090.

The Power of Music

Primary Researchers
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Rationale/Introduction

Math can be very challenging for students, especially for those who have attention or learning differences. Mathematics builds on previous concepts, so it requires people to retain and apply information. This can be particularly challenging for those who have ADHD, Dyslexia, or other learning differences. The students in this study have a hard time focusing during math class, so it takes away from their learning.

The use of electronics and technology in the classroom has increased over the years. Students are used to multitasking using technology. For example, students work on school assignments while listening to music or watching a show. Teachers can incorporate technology due to the student's way of living. An approach that can be beneficial to the classroom is the use of music. It has been proposed that "basic emotions are the immediate affective responses to music" (McKeever, 2017, p. 2). Music is universally understood. Brain scans show that "there is an overlap of approximately eighty percent in brain areas that are involved in the processing of music and math" (Cavanaugh, 2005, p. 2). The purpose of this study is to examine the effects of jazz music on students' mathematical performance in the classroom.

Question/Wondering

In what ways does jazz music impact students' mathematical performance?

Methodology/Results

The students in this research are participating in a study over one unit of math that looks into whether or not jazz music impacts students' mathematical performance. The unit was over dividing fractions and whole numbers. The participants in this study are fifth graders at Robinson Intermediate School. There were a total of 33 students. The class periods that were chosen, the first and third blocks, are both inclusion classes. Both classes have a high number of students with dyslexia, ADHD, and other learning differences.

To begin the study, each student in both blocks was given a pre-assessment that contains five questions from the unit that the students were going to learn. The students have not been formally taught the information, so it measured what they knew prior to instruction. They were given fifteen minutes to complete the pre-assessment, then the pre-assessments were collected and kept so that they were later used to compare mathematical growth on the post-assessments.

The next part of the study incorporated jazz music. Jazz music was softly played every day of the unit throughout block 1. Jazz music was not played throughout the unit in block 3. Anecdotal observations from both blocks were written, and daily work was collected throughout the unit. At the end of the unit, the students in both blocks 1 and 3 were given a post-assessment with the same questions that were used for the pre-assessment. Students were given fifteen minutes to complete it. At the end of the unit, a survey was sent to block 1 (jazz music was playing) that asked the students if they noticed the music, if it was a distraction, and if they noticed if it helped them improve their performance.

Across the data, both class periods showed significant improvement from the pre-assessment to the post-assessment. The pre-assessment scores for block 1 (jazz music playing) were lower than the pre-assessment scores for block 3. Ten students scored a 0, one student scored a 20, five students scored a 40, and two students scored a 60. On the other hand, the pre-assessment scores for block 3 were higher. Four students scored a 0, two students scored a 20, four students scored a 40, three students scored a 60, and two students scored an 80. While both blocks showed improvement, block 1 (jazz music playing) showed a significant change in scores for each student. Based on the questionnaire given to students in block 1, 41.2% of the students did not notice the music, and 58.8% of the students did notice the music. Out of the ten students who said they noticed the music, nine

students said that they were able to concentrate better with the jazz music. Most of the students said the music was relaxing and helped them focus. When all the students were asked if the music bothered them, only one student said that it was distracting. Out of the 17 students, 11 students said they prefer to listen to music while learning.

Implications/Recommendations

The results showed that the class period with the jazz music showed a significant improvement in scores than the class period without the jazz music. This supports the previous research finding that there is an overlap in the processing of music and mathematics (Cavanaugh, 2005). However, the improvement in scores can depend on the difficulty of the math material.

A weakness of the study was the amount of time that was spent on the study. The data collection was taken over a period of six school days. This makes it challenging to know whether the music really did affect the students' math performance or if it was the level of difficulty in the material. The study should be repeated over a longer period of time. Music could be played during block 1 over one mathematical unit while block 3 does not have music. Then block 3 would have the music play over the next unit of study while block 1 does not listen to music. This could provide a more accurate measure of the impact of music and mathematical performance.

Reference(s)

Cavanaugh, Linda Kay. (2005). *A Study of the Effects of Music on Middle School Students' Math Test Scores*. ProQuest Dissertation Publishing.

McKeever. (2017). *The Effects of Classical Music on Children with Learning Disabilities in a Sixth Grade Mathematics Classroom.* ProQuest Dissertation Publishing.

Explicit Instruction of High-Frequency Word Parts

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Rationale/Introduction

While working with a small group of second-grade students with Reading Disabilities, I noticed they have difficulty remembering high-frequency words (also known as sight words). The students attempt to sound the words out phonetically, but in doing so, they cannot pronounce the words correctly, as many high-frequency words do not follow the typical sound-symbol patterns of English. "Heart Word Magic is a complimentary teaching tool to help students learn to read and spell high-frequency words and sight words, particularly those that aren't very decodable." (Heart Word Magic, 2015). I want to see if providing explicit instruction, using the Heart Word Magic tool as an aide, for these students will result in improved mastery of high-frequency words.

Question/Wondering

I would like to know if explicitly teaching two second-grade males and one second-grade female to recognize the regular and irregular parts of various high-frequency words will improve their retention of high-frequency words.

Methodology/Results

This action research was conducted with the intent to improve the retention of high-frequency words in a small group of three second-grade students who I work with for 30 minutes each school day. My small group of three second-grade students consisted of two Caucasian males and one Caucasian female of various socio-economic backgrounds. Two of the students (one male and one female) are diagnosed with a Reading Disability with the condition of dyslexia and the other male exhibits dyslexic tendencies.

First, I collected a list of 100 high-frequency words to use for my research. Before implementing my research procedures, I assessed each student individually on their prior knowledge of high-frequency words using my list of 100 high-frequency words by having them read each word and noting which words they knew and which ones they did not know. The data showed one male knew 50 words on the list, the other male knew 58 words, and the female knew 23 high-frequency words. I used this information to determine which words the students unanimously did and did not know, which helped me determine which high-frequency words to teach the students. Next, I started my research procedure by having the students complete a Heart Word Magic worksheet where they had to write five high-frequency words, the word parts of each word, and identify the "tricky" part(s) of each word (the part of the word that is not spelled how it sounds) which is part of the word they needed to "know in their hearts." The students also colored a heart above the "tricky" part of the word to indicate the part of the word they needed to "know in their hearts."

As I taught the students new high-frequency words, I explicitly taught the regular and irregular word parts. I emphasized the irregular word part and explained why that specific part of the word was "tricky." For instance, ai in the word *said* is the tricky word part because it does not say its typical long sound *"ā;"* instead, *ai* says the short sound *"e."* This explicit instruction greatly supported the students' mastery of pronunciation and spelling of the word said. In addition, I reviewed high-frequency words they had already mastered during each session we worked together. Once I taught the students new words, I would have them write high-frequency words on the back of their paper for extra practice with spelling the high-frequency words, or I would go through flashcards as practice for the automaticity of sight words. This extra reinforcement kept the students from regressing and even gave them more confidence when spelling and reading high-frequency words. Eventually, the students would come to our small group spelling new words we had learned together.

After implementing explicit instruction, I assessed each student individually on their new knowledge of high-frequency words. One of the males now knows 79 high-frequency words, the other male knows 73, and the

female knows 53. Each student learned at least 15 new words in only a few weeks. Therefore, my research did prove that explicitly teaching the regular and irregular parts of high-frequency words improved the students' retention of high-frequency words tremendously. Each student mastered several more sight words after explicit instruction of regular and irregular parts of high-frequency words.

Implications/Recommendations

I highly recommend explicitly teaching the regular and irregular ("tricky") parts of each high-frequency word because this particular instructional strategy improved the students' retention of words and word parts. This instruction will not only improve students' automaticity of high-frequency words, but also improve their reading and writing. Having high-frequency word automaticity will allow the students to read more fluently, as well as help students to spell those words correctly when writing. I was extremely pleased with the results of my research because each student learned significantly more high-frequency words. While the students gained much confidence in spelling high-frequency words, they did not gain as much confidence when reading those words. One thing I would change about how I conducted my research would be to encourage the students to read the words with more confidence. I did tell them to be more confident when reading the words, but not consistently enough. Overall, this study far surpassed the positive results I could have imagined.

Reference(s)

Heart Word Magic. (2015). *Heart Word Magic / Really Great Reading*. Reallygreatreading.com.https://www.reallygreatreading.com/heart-word-magic

Cultural Relevance within Discrimination, Gender, and SES in Education: How do Students Respond?

Primary Researchers
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Rationale/Introduction

Terms like "racism" and "discrimination" are not mentioned within the TEKS of 11th grade US History. Minorities, including African Americans, Chicanos, American Indians, and even women are only mentioned through social issues and movements. My research purpose is to connect with my students through social studies content material. The purpose for education and this study is to encourage our students to interact with and potentially change the world. Research shows that studies like these can benefit and allow our students to share their perspectives in school, including their feelings about their daily educational experiences, and how these experiences impact them within educational inequity and the narrative of American history (Reese-Gaines, 2022). Furthermore, this study allows students to share and reflect their thoughts as a citizen and future voter in the United States. Data will be collected through questions asked under the umbrella of discrimination, gender, and SES within education.

Question/Wondering

How do students respond to questions regarding discrimination, gender, and socio-economic status within education?

Methodology/Results

This study was conducted in an 11th grade US History class, including multiple questions regarding discrimination, gender, and SES within education. Approximately split between genders, the demographic of this study was 49% Hispanic, 42% African American, 8% White, and 1% Other. Responses were collected in a variety of ways that connected to our daily content. Students either wrote down the answers on their notes as a warmup, typed into a Google Form as part of their assignment, or wrote on an exit ticket paper. The study started with focus on one topic per week. Beginning with racial and gender discrimination the first week, students indicated that a linguistic and racial barrier exists, overlooking racism as many do not think much about it. Regarding job discrimination, students believe they are considered "inexperienced and stupid" by adults. Adults hire students to fill vacant positions and work long hours, but in turn the students are belittled and taken advantage of. In the second week, gender discrimination was observed through bullying, sexism, dress code, and the Pacer test. Students think that gender and the idea of how someone should act was perceived through a societal standard. Moreover, racial discrimination was seen through culture, racial identity, and slurs. When asked a question concerning money and a student's education, students saw perspectives from both sides. On one side, money helps with better access to technology and educational opportunities. But if students work hard, they can determine how much to learn using the tools available. Overall, additional money can dramatically improve a learning environment and is seen as making things easier, yet it is not absolutely necessary. Responses to the questions were taken throughout the day, provided in different forms, and written at the beginning, middle, and end of the lesson. Ultimately, the data analysis was written verbatim, summarized per class period, then analyzed into overall themes. Furthermore, students are impacted by socioeconomic status and education disparity, with facets of race, socio-economic status, and gender tied together, but also by opinions, stereotypes, and the students' home living environment.

Implications/Recommendations

While this study was beneficial in my realization of deeper underlying problems of society and education, I wish I had more time allotted so I could have a balanced conversation with my students behind the reasoning with their answers. High school is a very challenging time in student's lives, as students navigate through a place where they are constantly learning new information and challenged both inside and outside the classroom. This study shows that more happens outside the classroom than teachers can probably see, and unfortunately

teachers focus more on standardized tests than discussing material related to civic action. In addition, the study should also have had its own days of the week, rather than parts of days over a week. Finally, I wonder if my students' answers would materially change if I were to individually interview and record them in the hall for my research.

Reference(s)

Reese-Gaines, S. A. (2022). *Beyond SES and Education Inequity: A Phenomenological Multiple Case Study on Grade School Children and their Mental and Emotional Disposition, Cognitive Development, and Academic Performance Due to Socioeconomic Status*. [Doctoral dissertation, Baylor University]. ProQuest.

Problem Solving with CPA Model

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Rationale/Introduction

In my fourth-grade classroom, I have noticed three students that consistently underachieve when solving fourth-grade operations within word problems. A lack of mathematical reasoning and visualization is evident when analyzing the students' work. In conversations with the students, it becomes apparent they have isolated what they think are "keywords" and made illogical presumptions that misrepresent the math narrative. The Concrete-Pictorial-Abstract (CPA) model of instruction has been known to improve students' abilities within concepts such as math operations and fractions. This research will study the model's effect on students' ability to apply operations within multi-step word problems.

Question/Wondering

How do math interventions utilizing the CPA model affect students' ability to solve multi-step word problems in three low-level, fourth-grade students?

Methodology/Results

In this study, three white female students were identified as needing intervention in multi-step word problems through district benchmarks and progress monitoring assessments. To evaluate the CPA model's influence on these students' math problem-solving skills, I met with the small group in 30-minute increments three days a week for three weeks to provide intervention instruction. Each week they utilized a different step of the CPA model.

During the first week, I provided each student with manipulatives that directly related to the word problems the group worked to solve. For instance, a word problem had students calculate the number of tables needed for an event, given the number of people. Provided materials included brown paper circles and rectangles to represent the two types of tables mentioned in the word problem. All three students worked through the word problem individually before the group discussed the processes and thinking. On the fourth day, I individually assessed the students, referred to as Students 1, 2, and 3, using concrete materials to solve a multi-step word problem. Though Students 1, 2, and 3 ended with the correct answer, they each sought support while working through the word problem. None could successfully solve the problem independently despite their access to concrete materials.

In the second week, I introduced pictorial models to represent the operations in word problems. Students used these pictures to work through word problems individually before the group discussed their methods and thinking. After three days of this intervention, the students individually solved a given word problem using pictorial representations. Student 1 found the correct answer using the correct abstract operational methods, but the drawings did not accurately represent the three operations in the word problem. Student 2 accurately represented and solved the two steps of the word problem but did not show an attempt at the final step. Student 3 accurately represented and solved the first step, but step 2 was not accurately depicted or solved. Student 3 also did not show an attempt at the final third step.

To conclude the intervention, the final week reverted to the initial teaching students received abstract computation of multi-step word problems. During the week, students were again given the opportunity to complete the word problem on their own before the group would discuss methods and thinking. At the end of the week, I pulled each student to complete a word problem and explain the reasoning. Student 1 correctly identified the operations necessary for the word problem, multiplication, and addition and correctly solved the first step. However, Student 1's second step did not operate on the correct numbers in the word problem. Therefore, Student 1 did not find the correct solution. Student 2 correctly identified the addition necessary in the problem but did not identify multiplication until she explained her process. Student 2 went so far as to describe

the entire correct process for solving the word problem but then decided that the incorrect steps shown in her work were the proper solution to the problem. Student 3 also identified the correct operations but performed them on the numbers in the order they came in the word problem.

The students' assessment data did not support my intervention strategy. Students showed little growth in their conceptual understanding of given word problems.

Implications/Recommendations

Through this study, I have found that teaching students word problems using the CPA model is ineffective. If students do not have a conceptual understanding of an operation, they will not be able to successfully solve mathematical scenarios. In the future, I believe I will employ the CPA model when initially teaching operations. In analyzing my research results, I wonder if building a foundational understanding of the concrete construction and visual representations of the four operations would produce more success in students as they solve multi-step word problems.

Reference(s)

Putri, H. E., Suwangsih, E., Rahayu, P., Nikawanti, G., Enzelina, E., & Wahyudy, M. A. (2020). Influence of Concrete-Pictorial-Abstract (CPA) Approach on the Enhancement of Primary School Students' Mathematical Reasoning Ability. Elementary School Forum (Mimbar Sekolah Dasar), 7(1), 119–132.

Purwadi, I. M. A., Sudiarta, I. G. P., & Suparta, I. N. (2019). The Effect of Concrete-Pictorial-Abstract Strategy toward Students' Mathematical Conceptual Understanding and Mathematical Representation on Fractions. International Journal of Instruction, 12(1), 1113–1126.

The Calculator Conundrum

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Rationale/Introduction

The question of the correct use of calculators and technology in the math classroom is not a new one, but it is an issue that I have seen more clearly after working in a high school geometry class. There are many different barriers that affect this question, but one of the "internal barriers include beliefs about whether students should use technology to learn mathematics or concerns that students will become over-reliant on calculators." (McCulloch, 2018, p.27) Our job as teachers is not simply to teach students how to find a solution, but to gain a greater understanding of the subject in a way that builds on previously mastered concepts. One study reported that teachers "found that weaker students can become dependent on the calculator to the point where their mathematics is weaker when they don't have access to one." (Thomas et al., 2006, p. 233) Teachers often see students view calculators as a machine that will give them the correct answer rather than a tool to help them learn conceptually, in ways such as performing complicated functions or helping to visualize equations in graphs or tables. This year, I began to observe students losing their ability to compute simple math calculations because they had become accustomed to using calculators to compute for them, which in some ways made calculator use seem ineffective rather than productive. My action research project explores the implications of calculator use in the classroom and how teachers can reinforce previous math skills in a way that allows for productive calculator use and the engagement of students' mental math ability.

Question/Wondering

In what ways does reinforcing the use of mental math in Geometry instruction support the productive use of calculators in the classroom, where the utilization of pre-taught math skills is still required?

Methodology/Results

Throughout my Quadrilaterals Unit, I studied my action research question in two of my five on-level 10th grade Geometry classes in ways that challenged them to re-engage mental math skills, limit calculator use, and self-assess their own understanding of the purpose of calculators in the classroom. Each class period included a diverse population of different races and socioeconomic backgrounds. Both classes included a representation of both genders, while it could be noted that the third period has a majority male population.

For my research, I had each class period complete a mental math activity at the beginning of the class period for 3 days of the unit. This required students to spend 3 minutes each day refreshing their mental math abilities on problems that were tailored to the unit that we were learning. I implemented expressions from four different categories: addition and subtraction, multiplication and division, multiple operations, and solving for 'x'. Students were instructed to put calculators under their desks and then use their iPads to scan a QR code for a Google Form. Throughout the course of the unit, student performance increased as the days went on, with the average score increasing from 65.7% to 74.4% to finally 77.9%. Additionally, scores in each of the four categories increased as well, apart from the solve for 'x' category likely because the skill of solving square roots was introduced only on Day 3.

To address my wondering, I also made observations throughout the unit of student performance. To introduce the concept to students, on the first day of the unit I required students to spend the first seven minutes of independent work time without a calculator, before the mental math activities began. I walked around the class during these seven minutes to observe student work and then I asked students to write the number of problems that they completed at the top of their paper. This served the purpose of helping the students acknowledge their own completion and to help give me a gauge of the range of completion throughout the students. Generally, students either completed around two to three problems or completed none at all. Throughout the unit, I also spent time recording observations of specific student groups to see their progression after spending time practicing mental math at the beginning of the class period. I specifically worked with the same small group of three students each day.

Before this study, I knew these students particularly struggled with math skills that they should have mastered. However, as we progressed through the unit, I noticed that they began to solve simple expressions by hand rather than reaching for the calculator. For example, I noticed them adding angle measures and subtracting the result from 180 degrees to solve for a missing angle measure. Another scenario that happened was of the opposite result. Students that, prior to this unit, were fairly strong in their previously mastered math skills would put simple math expressions in the calculator to speed up their work. During this unit, they seemed to continue this trend. These observations provided mixed results of student reactions to the mental math exercises each day.

Additionally, I had students complete a survey at the end of the unit that required them analyze their own understanding of the purpose of mental math. When asked if mental math was useful inside the classroom, the students surveyed on average responded that it was 77.4% useful, with a standard deviation of 25%. When asked if they feel that they are losing mastery of previously learned skills when calculators are heavily used in the classroom, 54.4% responded 'No, I just use calculators to make completing problems faster,' while 20.59% responded 'Yes, but I think if I tried to do simple math by hand, I could figure it out.' Students were additionally asked to provide two reasons why calculators are used in the classroom and most of the responses were a varied version of "to make solving problems faster." I think that this is a true statement, as sometimes calculators do rightfully serve that purpose, but it is easy to take advantage of this use in a way that diminishes other necessary skill sets.

Implications/Recommendations

As a result of my study, I think that it is important for teachers to find ways to consistently reinforce mental math skills in classrooms, as well as emphasizing to students why it is important that we do so. My study was personally done in an on-level class, where calculators are heavily relied on. However, I have taken note that in other higher level math courses, such as Honors Geometry, calculators aren't even present at the desks unless time is specifically designated for them. From the mental math practice, it seems clear that continual practice of mental math in the classroom does lead to improvement and can be beneficial to student learning, so I think that it is important for teachers to intentionally find ways to encourage students in this way. One suggestion that I utilized as an introduction to this study was to set aside a certain time period at the beginning of an assignment where students are required to attempt the questions or get as far as they can without the use of calculators. This is a low-risk solution because it does not jeopardize their grade, as they are able to go back and check their work if need be, but it requires them to consistently engage in essential math skills. When I did this in my classroom, it was a one-time arrangement, so some particular students did not engage during the time set aside. However, I think if this was made a consistent expectation throughout the year, then teachers might see higher student engagement.

Reference(s)

McCulloch, A. W., Hollebrands, K., Lee, H., Harrison, T., & Mutlu, A. (2018). Factors that influence secondary mathematics teachers' integration of technology in mathematics lessons. *Computers & Education*, *123*, 26–40. https://doi.org/10.1016/j.compedu.2018.04.008

Thomas, M. O., Hong, Y. Y., Bosley, J., & Delos Santos, A. G. (2006). Use of calculators in the mathematics classroom. *The Electronic Journal of Mathematics and Technology*, *2*(2), 229-242.

Being Flexible with Math

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Rationale/Introduction

Two students have been struggling in math due to distractions and behavior issues. Research says that "Flexible, welcoming spaces had a startlingly large effect on learning in math – 73 percent of the students' progress that was attributed to classroom design was traced back to flexibility and student ownership." (Merrill, 2018) Flexible seating is always offered during read-to-self time during English Language Arts. The students are always so engaged and focused on what they are doing when they are offered flexible seating. My wondering is if they were offered flexible seating during math, away from distractions, would their daily math grades improve?

Question/Wondering

In what ways will flexible seating for struggling students in math help with academic performance and behavior issues?

Methodology/Results

I offered flexible seating to two third-grade students that have been struggling in math. The selection of the students for this study was based on their GLA and Interim scores from the beginning of the year (BOY) and middle of the year (MOY) assessment data. I offered student 1 to have three choices for flexible seating. She could stay at her desk as long as no one else was around, sit at a secluded desk on Tuesdays and Thursdays, or sit on the carpet in any of the squares that are furthest away from distractions. Student 2 was offered to stay at her desk as long as no one was around, sit at a secluded desk on Mondays and Wednesdays, or sit on the carpet in any of the squares that are furthest away from distractions. The assignments that were worked on during flexible seating consisted of Stemscopes, task cards, IXL, and IStation. I did notice over the past couple of weeks that they were focusing more on their work because the distractions were a little bit more limited. Each day when math came Student 2 would come up to me expressing her excitement to sit in her flexible seating for the day. I noticed a change in her behavior when she would sit in her flexible seating spot. She became more focused and did not talk to anyone during that time. Student 1 still tended to get distracted by turning around and looking at her friends rather than focusing on her work the entire time. I found myself having to remind her about the point of having flexible seating. The results were not what I had hoped. I was hoping their scores would improve a little bit because of the option for flexible seating and what flexible seating has done for students during reading. However, their daily math scores did not improve but Student 2's attitude toward math did.

Implications/Recommendations

After conducting this research study, I think flexible seating can be beneficial in all subject areas if the environment is in the correct tone and mood for it. If there is going to be group work, then all students need to participate in the group but should be offered flexible seating. Trying to have group work while students were trying to work quietly and independently did not help limit distractions across the room. I can see how flexible seating is beneficial for reading because all students are reading quietly which provides a stable and controlled environment for ultimate focus. I think if they were able to have more time with flexible seating and a quieter environment, there would have been an improvement in their scores. During math, there are usually group stations that are happening. The groups tend to talk a lot when they are working together but sometimes it can turn into off-topic conversations which ultimately leads to distractions. I believe providing an environment that is quieter or even providing headphones to limit noise can help with the temptation of distractions.

Reference(s)

Merrill, S. (2018, June 14). *Flexible Classrooms: Research Is Scarce, But Promising*.
Edutopia. https://www.edutopia.org/article/flexible-classrooms-research-scarce-promising

Integrating Multiplication Fact Practices Along With Timed Fact Practices

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Rationale/Introduction

Multiplication fact fluency is an essential and foundational skill for students to acquire in their mathematics education and to progress and find confidence in their mathematics skills. There are many ways to test fact fluency, from timed practices, playing games, rote memorization, and more. The challenge is finding the best way to improve multiplication fact fluency, whether it be one specific way or a conglomeration of different methods. Seemingly the most popular strategies are "...teaching facts, the other emphasizes the use of timed practice drills. Recent research indicates that students might benefit from an integration of these two approaches" (Woodward, 2006, abstract). By finding the perfect balance of multiplication facts intervention and timed fluency tests there will be a greater improvement on a conventional recall fluency test (Reed et. al, 2015), thus an overall improvement in students' multiplication skills.

Fact fluency is an essential skill in a student's mathematical journey and is necessary to ensure the progression of their mathematical understanding of deeper, more intense concepts. If students lack this foundational mathematics skill, they will have greater issues and more difficulties as they progress through their mathematics education. Most studies seem to focus on the results of implementing only one methodology. Some students may require varied ways of instruction or intervention to show true growth in their multiplication fact fluency.

Question/Wondering

How does integrating different multiplication activities along with timed fact practices help students increase their multiplication fact fluency?

Methodology/Results

The students in this research study participated in a five-day long small group examining if there was an improvement in their fact fluency by participating in a variety of different multiplication activities along with multiple fact practices. The students chosen are in the fifth grade at Robinson Intermediate school. All three blocks were given the same fact practice to answer 25 questions in two minutes. The researcher then chose three groups with six students each based on their performance of this fact practice. The students chosen were the 12 students for Groups 1 and 2 that had the lowest scores out of all three class periods, and the third group was chosen as the control group and would not participate in the study. Groups 1 and 2 were conducted during their recess time and fact practices were completed during class time.

The researcher gathered data based on student performance on multiplication fact practices (each one 25 questions with a two-minute time limit), performance on multiplication activities, student reflection in a pre and post-survey, and post-multiplication fact practice. Each group of six students participated in five days of small group multiplication activities, completed pre and post-fact practices, and answered pre and post-surveys. The first day consisted of completing the first fact practice being completed before conducting any small group activities. Also completed on the first day was the pre-survey, with the purpose of gauging student attitudes toward multiplication fact practices and understanding their biggest hurdle toward achieving fact fluency. The second day began with the first small group session. During this session, the six students paired up with a partner to complete a game called "Array Capture" where students had to make connections using arrays and multiplication facts. The third day consisted of the students pairing up with a different partner and playing a multiplication variation of the card game W-A-R. The fourth day included practicing the students' fact fluency in a game of Blooket to test their knowledge. On the fifth and final day, the second fact practice was conducted to see if any progress was achieved in their fact fluency and a post-survey was conducted to see if students' feelings towards fact fluency had changed. Also on this day, a post-survey was conducted to see if their attitudes towards multiplication fact fluency changed. This five-day process was then completed again with the second group of six students, as they were another group to collect data from. The third group was used to compare their pre and post-timed fact practice showing if there was a significant difference in their performance without completing the small group multiplication activities.

The survey questions included "How do you feel about learning multiplication facts?", "Do timed fact practices help you learn multiplication?", "Do playing multiplication games help you learn multiplication", and "What ways help you learn multiplication the best?" (Their choices being timed fact practices, multiplication games, and both).

The result of this study shows a 7.33% increase in multiplication fluency for Group 1 and a 13.33% increase in multiplication fluency for Group 2 based on the pre and post-timed fact practices. Within Group 1, 67% of the students scored higher on their post-fact practice than on their pre-fact practice. Within Group 2, 83% of students scored higher on their post-fact practice than their pre-fact practice. For Group 3, there was a 0.67% increase in multiplication fact fluency. Within Group 3, 33.3% of students scored higher, 33.3% scored the same, and 33.3% scored lower on their post-fact practice. When comparing the scores for the pre and post-assessment it was found that there was a significant increase in fact fluency for Groups 1 and 2 than Group 3.

Along with collecting data from the assessments, the researcher also collected data from the pre and post-surveys regarding student attitudes toward learning multiplication facts and fact fluency. The first question asked, "How do you feel about learning multiplication facts?". The data from the pre-survey shows that 41.7% of students rated learning multiplication facts a 5 (love to learn multiplication facts), 16.7% of students rated it a 4, 16.7% of students rated it a 3, and 8.3% rated it a 0. The data from the post-survey for this question shows that 66.7% of students rated learning multiplication facts a 5, 16.7% of students rated it a 4, 8.3% of students rated it a 3, and 8.3% rated it a 1. Another question asked what methods they prefer when it comes to learning multiplication facts and increasing fact fluency. The participants had the multiple-choice option to choose from timed fact practices, playing multiplication games, and both. The results from the pre-survey show that 58.3% of students prefer playing multiplication games alone, 8.4% of students prefer fact practices alone, and 33.3% of students prefer practicing both. The results from the post-survey show that 25% of students prefer playing multiplication games alone, 8.3% prefer fact practices alone, and 66.7% of students prefer practicing both. These questions relate to the research question by showing an improved liking towards learning multiplication fluency after integrating both timed fact practices and multiplication activities.

Lastly, the researcher collected anecdotal notes from each day of the treatment. The notes did not affect the results in any way and were not pertinent to the study.

Implications/Recommendations

The results of this study show that there was an improvement in students' multiplication fact fluency in relation to integrating multiplication activities along with timed fact practices. The researcher implemented the same treatment for two groups of six students and found that the results showed improvement for both groups. The results support the research findings by displaying that a majority of students scored better on their post-timed fact practice than their pre-timed fact practice due to participating in integrated activities (Reed et al., 2015). Also, the survey revealed students felt they learned their multiplication facts better when participating in both timed fact practices and various multiplication activities.

A weakness of this study was the difficulty in coordinating a time to meet with these small groups outside of class time. Student involvement, according to the researchers' anecdotal notes, became more negative as the days progressed due to having to miss recess time. Group 1's attitude towards participating remained positive while Group 2 became more reluctant to participate as the days progressed. One reason this could have occurred was Group 1 could have initially been more enthusiastic to participate than Group 2. One strength of this study was the similarity of the academic performance of these students in math class in general. Each group contained students that were higher on the academic spectrum and some that are lower on the academic spectrum. There was an even spread of academic differences within each group. Because of this, the researcher was able to determine if the study was effective across multiple different academic levels. Based on these observations, the researcher recommends implementing this study over a longer period of time, incorporating it into class time, and choosing a larger number of participants. In implementing this for a number of weeks, with full class participation, more data could be collected to give more results to interpret if integrating multiplication activities and timed fact practices are effective.

Reference(s)

Reed, H.C., et al. (2015). Improving Multiplication Fact Fluency by Choosing Between Competing Answers. *Research in Mathematics Education, 17*(1), 1-19. https://doi.org/10.1080/14794802.2014.962074.

Woodward, J. (2006). Developing automaticity in multiplication facts: Integrating strategy instruction with timed practice drills. *Learning Disability Quarterly*, *29*(4), 269–289. https://doi.org/10.2307/30035554

Affirmations for Student Confidence

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Rationale/Introduction

A student's confidence can be the determining factor of their willingness to learn and be successful in a math class. Hord et al. (2016) found that "students gain confidence and start building some knowledge of a topic, issues with memory and processing that were negatively affecting their learning decrease" (p. 614). By gaining confidence, students are able to work through their challenges and learn without second guessing themselves. Nebesniak and Heaton (2010) had similar findings, "Confident math students are willing to try problems, learn from mistakes, and help others" (p. 99). As well as becoming more successful academically, growth in confidence can change the mindset of the learners to be more open to challenges.

In a study to identify how the Self-Affirmation Theory takes place in the world of education, Easterbook et al. (2021) found that "an initial boost to performance can produce an increase in confidence, which can have beneficial effects on subsequent performance, which can further increase confidence, and so on. There may also be non-recursive, domino-like effects that the initial intervention causes, which can bring about long-term positive outcomes" (p. 686).

The researcher observed a class that had many students engaging in negative self-talk, which would then inhibit their motivation to continue working on the activity. Using the knowledge found from the cited studies, the researcher decided to focus the action research on a way to combat against the negative self-talk and change the way students view their own learning.

Question/Wondering

How does student confidence in math change when implementing daily affirmations?

Methodology/Results

The participants of this study participated in a six-week-long study analyzing the effects of daily affirmations on students' confidence in their math ability. The sample consists of 57 sixth-grade math students at Robinson Intermediate School. The students are split into three class periods each with 20 or 21 students. The sample contains 28 students who qualify for SPED and 29 who are ethnic minorities. 40% of the sample are average-achieving students while the other 60% are low-achieving students.

To collect students' initial feelings about their math ability and confidence, they were asked to complete the Attitude Rating Survey. The survey was a series of statements where students used a Likert scale to rate how strongly they agree or disagree with each statement on a scale from 1 (strongly disagree) to 5 (strongly agree). The researcher also conducted interviews with fifteen randomly selected students. The interview contained questions that expanded the survey to find out why students felt the way they did about the topics in the survey.

After the initial data was collected, the researcher implemented the class motto, a series of positive "I" statements that the class would say aloud before the start of instruction. Once students had become comfortable with the class motto, the researcher would select one student to lead each class period in saying the class motto for that day. As well as implementing the Class Motto, the researcher engaged in only positive affirmations when talking with students and using words of encouragement when a student faced an academic challenge. Examples of this are, "You got this!" and "Challenges help you learn.".

To measure students' progress throughout the six-week study, students participated in a weekly journal entry. Questions for the journal entry focused on how they felt about their math ability, their feelings about the class motto, and if they felt a change in their confidence.

In the last week of the study, students once again completed the same Attitude Rating Survey to analyze if and how their answers had changed and how they view their math ability after implementing positive self-affirmations. The researcher also conducted a second round of interviews with the same fifteen students to examine any significant developments in their confidence.

Data for the survey was analyzed by each individual student and their answer for each question. The averages were calculated for each question to identify how the entire sample felt about each question. Averages were also calculated per student to identify how their individual confidence compared to others. The data from survey one to survey two were then compared to each other to establish any implications that can be made from the study. The weekly journal entry and interview responses were analyzed and sorted into categories to identify changes in students' confidence and record their thoughts and feelings.

The Attitude Rating Survey contains ten statements, five that are a positive mindset and five that are a negative mindset. After comparing the results of both surveys, the research found that 58.97% of students showed a decrease in ratings for the positive mindset statements and 53.85% of students showed a decrease in ratings for the negative mindset statements. Based on this information, most of the students moved to a more negative mindset and decreased confidence in their mathematic abilities. The data from the surveys showed an overall increase in negative mindsets and lowered confidence.

The results from the weekly journals contradicted the survey results. At the beginning of the study, 35% of students shared that they have low confidence in their math ability. As the weeks went by, 52.6% of students shared that they enjoyed the class motto and felt like it helped them learn. The other 47.4% of students did not like the class motto because it was "cringy" or a waste of time. In the last week of the journals, 52.6% said they are more confident in their math ability, while 47.4% said that they felt less confident in their math ability. Most of the students said that their confidence level increased because they understood the content better and were receiving higher grades.

While interviewing students the researcher found that 96% of responses from students did not change between the first interview and the second interview. Only two of the students interviewed did not believe that someone could be good at math if they tried hard enough. Both students responded "no" and explained that they put a lot of effort into the class and still did not seem to be getting better grades. Out of the fifteen students that were interviewed 66.6% of them had no change in confidence level, 20% had increased confidence, and 13.3% had decreased confidence.

Implications/Recommendations
The results from the study concluded that students had a slight decrease in confidence or did not experience a change in confidence after the implementation of the Class Motto. The data in this study did not support previous research findings due to the decrease in students' confidence after participating in daily affirmations. The study is limited because it was conducted across a six-week period. The study would have been stronger if data were collected to measure students' academic performance alongside measuring how their confidence changes. A longer period of time for the study to take place would get a more accurate measure of students' confidence before and after affirmations are included in the daily routine.

Reference(s)
Easterbrook, M. J., Jarris, P. R., & Sherman, D. K. (2021). Self-affirmation Theory in Educational Contexts. *Journal of Social Issues*, 77(3), 683-701. https://doi-org.ezproxy.baylor.edu/10.1111/josi.12459

Hord, C., Marita, S., Walsh, J. B., Tomaro, T., & Gordon, K. (2016). Encouraging Students with Learning Disabilities. *The Mathematics Teacher*, 109(8), 612-617. https://pubs.nctm.org/view/journals/mt/109/8/article-p612.xml

Nebesniak, A. L., & Heaton, R. M. (2010). Student Confidence and Student Involvement, *Mathematics Teaching in the Middle School*, 16(2), 96-103. https://pubs.nctm.org/view/journals/mtms/16/2/article-p96.xml

How to Limit the Amount of Late Work in the Classroom

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Rationale/Introduction

Over the last year, there has been a massive influx in the amount of late work my students are turning in. Students are expected to turn in their assignments completed and on time, especially in Advanced Placement courses. AP classes are used to prepare students to continue into higher education and push students with rigorous academic work. Therefore, we hold our students to a high standard and try to prepare them for what they might expect in an undergraduate environment. For example, we expect their assignments to be in on time and well thought out, and if it is significantly past the due date we do not take the assignment. However, turning in assignments late has quickly become an overwhelming problem in many of my class periods. Students' grades are suffering because they are getting up to fifty points taken off or even receiving zeros for turning in their assignments far past the due dates. Therefore, in order to encourage promptness and lessen procrastination and bad habits, I would like to see if a teacher-led incentive program paired with competition between class periods will lead to a decrease in the number of assignments turned in late.

Question/Wondering

Can a teacher-led incentive program limit students' amount of late work?

Methodology/Results

In order to see if a teacher-led incentive program will limit students' amount of late work, I tracked the number of students, in my World History AP classes, who turned in their assignments after the deadline. For each task, I wrote down who turned each assignment in late, the number of late assignments per class period, and the total amount of late assignments. I did this for three homework assignments to get a baseline for how much work my students were turning in after the assigned due date. I then implemented the teacher-led incentive program paired with competition between class periods. Each class chose a prize to win if their class turned in the least amount of late work starting from that point on. The students chose rewards such as a movie day, bonus points on a test, etc. Every couple of days, the students were reminded about the competition, were given updates on their stances, and were told if they were improving. After three assignments with the incentive program in place, the results showed that the last three class periods of the day saw slight decreases in the amount of late work turned in. As for the first three class periods of the day, two turned in more late work than their baseline and one class period stayed the exact same. Therefore, some class periods saw greater changes in behavior compared to others. In the end, sixth period won the least amount of late work competition, averaging just one piece of late work per assignment compared to their original average of three pieces late per assignment. Also, while collecting data, I was able to keep track of the students who were turning in their assignments late. With this data, I saw three groups of students start to develop, those who stopped turning in late work once the competition started, those who began turning in late competition once the competition started, and those who consistently turned in assignments late throughout the whole study. The data showed that sixteen students started turning in their work on time once the competition started, eleven of the students turned in assignments late only after the competition, and twenty-three of the students were chronically late with most of their assignments regardless of the incentive program. Both the mixed results of the changes in the behavior of the class periods' and students demonstrate that the incentive program worked well for some and had no effect on others. Therefore, the teacher-led incentive program somewhat limited the amount of late work students turned in.

Implications/Recommendations

From the results of the data, the conclusion is drawn that the teacher-led incentive program worked better for some students and classes better than others. Various students and class periods overall have higher intrinsic motivation than others, which I believe made extrinsic motivation even more appealing. This is where the difference in how the class periods did in the competition is seen. The class period that won exudes qualities of drive, outgoingness, and being full of competitive spirit. The students were highly motivated to beat the other classes and win their movie day. They were engaged in the process and were always asking questions about the current standings and how they could improve. Other individuals and classes demonstrated some of these traits, however, it was not as much of a collective drive as it was for my sixth-period class. A weakness is that the sample only took into account three assignments before the incentive program and three assignments after. I believe if there was more data and if the incentive program went for a longer duration there might have been larger margins of change.

Reference(s)

Frost, Raymond & Matta, Vic & MacIvor, E.. (2015). Assessing the efficacy of incorporating game dynamics in a learning management system. *Journal of Information Systems Education, 26*(1), 59-70.

Increasing Cleanliness of The Classroom During Transitions in Under Two Minutes

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Rationale/Introduction

In a second-grade classroom, it was observed that much of the class struggled with keeping up with their belongings and maintaining a clean classroom. This affected our ability to make it to the next activity on time and the overall cleanliness and organization of our space. Stated in an article by Tarun Stevenson regarding use of timers for transitions, "Tie it into the timer, then what happens is they start to race the timer. They start to work not against you but against the timer, that will create a sense of urgency. It will also help them to visually manage their pace at which they are responding. Tie it to something they care about. Set a time limit and then break the task down." Research was conducted in the classroom with eleven boys and ten girls of multiple ethnicities and socioeconomic statuses. Baseline data were collected through timing transitions, pictures, and anecdotal notes.

Question/Wondering

In what ways will the use of a timer and cleanup checklist along with positive reinforcement and rewards impact students' ability to maintain a clean classroom?

Methodology/Results

As an intern in a second-grade classroom, I have observed and seen the effects of a scattered classroom. Throughout the first semester I began to realize the students would lose track of their things easily. Another issue we ran into with this was since we have flex furniture, when it was time to choose a new seat, they would mix up their things with the person who was sitting in the spot previously. They also would take a large amount of time transitioning between subjects which took away from our lesson time. Using timers, incentives, and anchor charts, I was able to observe the effect of structured transitions on a tidy classroom.

I began my data collection in the class by keeping track of times, items left behind on the floors or desks, and the noise level of the students during transitions for one week. I did not tell the students that I would be keeping track of how quickly they could clean up, their noise level, and what they were leaving behind on the floors and desks. Each day between subjects I would tell them it was time to clean everything up and head to their carpet spots. While they were transitioning, I set my timer and took out my notepad. I did not guide them in any way or count them down to make them speed up. The noise levels are rated on a scale of 0 to 5 with 0 being no talking. While transitioning I was looking for students to clean up everything at a voice level 0 in under 2 minutes and 30 seconds.

After collecting my baseline data, I created two anchor charts stating the expectations of transitions, and a checklist of what needs to be done. On my checklist I stated: iPad must be at the charging station, supplies back in caddy or lost and found, AR books put in backpack or drawer, all work turned in, chair pushed back into the spot, jackets on the hook, and all trash thrown away. I discussed with the class and set clear expectations of what I want transitions to look like in our classroom. I kept the anchor charts in a visible place in the classroom and reminded the students of the expectations each day. During the transition times I set a timer on the tv screen and told the students if they can clean up in under two minutes while following all the expectations, they are rewarded as a whole class. By the end of the three-week data collection, students could clean up the classroom in under 1 minute and 30 seconds at a voice level 0.

Implications/Recommendations

Throughout my research, I observed and analyzed the effect timers and incentives have on classroom cleanliness. One thing the students often struggled with was noise level. When the students are eager to earn a reward, they often become unruly and loud. I have noticed students running around the classroom, yelling at

one another, and arguing about who's materials and supplies are left behind. I will continue to remind students of the transition expectations and hold them to staying at a voice level 0. Eventually, I would like to get to the point where I do not need to remind the students and they will just know exactly what they need to be doing during a transition. So far, I have seen much improvement in my classroom atmosphere during transitions. I would recommend the use of timers and incentives to motivate students to take responsibility for their materials and keep the classroom orderly.

Reference(s)

Stevenson, Tarun. "Tarun Stevenson, Author at Calmer Classrooms." *Calmer Classrooms*, 3 Oct. 2021, https://calmerclassrooms.today/author/laura/.

Impacts of Technology Based Small Group Math Instruction in Kindergarten

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Rationale/Introduction

In a kindergarten classroom, it was observed that students seemed to struggle more with applying a concept they practiced using technology rather than one they had practiced with hands on manipulatives. According to Outhwaite (2019) "combining child-centered, curriculum-based, apps with interactive touch-screen tablet technology for children aged 4–5 years old… promotes the development of early math skills" (pg. 10). Research was conducted in the classroom to assess the impact of consistent small group technology supplementation on the acquisition of mathematical fluency. This small group consisted of three boys and three girls who were considered on track with mathematics standards. These students were of multiple ethnicities and socioeconomic statuses. Baseline data from already existing technology instructed mathematics showed a range of success rates while practicing concepts independently. It was collected from observing LION data and results from IXL lessons.

Question/Wondering

How does technology instruction centered on small group supplementation impact the acquisition of basic mathematical fluency for average achieving kindergarten students?

Methodology/Results

While interning and participating in TA over this past year and a half, I have worked in 4th grade, 2nd grade, and kindergarten students. The second and fourth grade experiences stressed the use of integrated technology as a convenient and efficient way to improve comprehension and overall grades of students. Within the kindergarten classroom there is technology used for practice and review, but not to the same level of guided practice that had been prescribed and shown successful for the upper grades. I wanted to find out if the integration of technology into concentrated small group activities would benefit kindergarten students with comprehending and applying mathematical concepts. This would be measured in success on the guided practices and the resulting grades on the worksheet assessments completed independently as a whole class.

I collected data on a study group of three girls and three boys and a control group of three boys and three girls. The students in the study were of varying ethnicities and socioeconomic backgrounds, ranging from five to six years of age. I collected baseline data for one week looking at the number of attempts and final grades of each student's daily work and IXL assignments that are in the standard curriculum. I interacted with the students and their work as I normally do and observed the results from their work. All of the students' work, control group and study group, were remaining at one to two attempts for 100% correct content during the baseline data collection. This is the average for on track students in this kindergarten class.

After baseline data was collected, I began creating and implementing online interactive activities for guided math groups. Using these activities to further instruction and give students a new perspective on the concepts we covered; I continued to monitor the groups for comprehension and improved application of the skills we learned in full class activities. At each small group meeting I set clear expectations for the work we were doing and provided extra explanations to support their understanding of the apps in use and how the math concepts were supported by them. In groups students responded positively and were engaged. However, the results from the data were stagnant on their application of concepts in class. Students for all three weeks of data collections resulted in the same one to two attempts for correct and completed assessments.

Implications/Recommendations

I was able to observe the effects of technology integrated small groups in the math curriculum throughout my inquiry. All of my students under observation were of average achievement and on track for their grade level by district benchmark and in class standards. While implementing this method of mathematics support to look for evidence that technology based support was beneficial to student comprehension and overall grades it was found to be inconclusive data. If I were to repeat this research again I would attempt this method with the higher or lower level students. It might be easier to definitively determine the outcome of these scaffolded groups and get more decisive data with the high or low ends of a class. I have to conclude from the data I have collected that technology based guided small groups neither hurt nor helped comprehension of basic mathematical fluency concepts for average achieving kindergarten students.

Reference(s)

Outhwaite, L. A., Faulder, M., Gulliford, A., & Pitchford, N. J. (2019). *Raising early achievement in math with interactive apps: A randomized ...* Raising Early Achievement in Math With Interactive Apps:A Randomized Control Trial. Retrieved March 16, 2023, from https://psycnet.apa.org/fulltext/2018-30648-001.pdf

Small Group Instruction for Fifth-Grade Fraction and Decimal Content

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Rationale/Introduction

On-level fifth-grade students often struggle to conceptually understand math concepts, specifically the relationship between fractions and decimals. These students need differentiated techniques that benefit their learning styles and weaknesses. Reagan Tunstall stated in, *How to Launch Guided Math*, that small group math instruction is "developmentally appropriate to specific students' needs" (2021). Research was conducted in the classroom with five students of various ethnicities during thirty-minute small-group sessions. Baseline data was collected through clinical interviews and matched assessments. Data was cumulated based on their discourse and daily work as well as answers to a small group efficacy survey.

Question/Wondering

How does implementing small group instruction in math impact on-level fifth-grade students' application skills when relating fractions and decimals?

Methodology/Results

As an intern that is greatly involved in the classroom community, I observed that many on-level students were struggling to conceptually understand math concepts and use them in a variety of contexts. This lack of transferable abilities became particularly apparent when introducing fractions and decimals, and I decided that these students needed differentiated techniques that would cater to their learning styles and mathematical weaknesses. I collected data on five on-level fifth-grade students, age 10. The group consisted of three females and two males all of varying ethnicities, including African American, Caucasian, and Hispanic. Students in this group generally came from the middle-class income group. To conduct research, I began by interviewing my small group of students by having them complete a task involving fractions and decimals and collecting their initial thoughts on small group instruction. I did the same for another group of five students who are only receiving whole group instruction in this content area so that I could compare and accurately determine the effectiveness of small group instruction upon the completion of the research. During the initial assessment, I did not provide any prompts or redirection for students. Students A-E scored the following, in order, on their pre-test: 20%, 0%, 0%, 20%, and 0%. Compare group students F-J scored the following, in order, on their pre-test: 40%, 40%, 0%, 40%, and 40%. Survey data showed that 100% of research students believed they would be more successful on math assignments if they regularly received small group instruction. In contrast, only 80% of students in the compare group agreed with this statement.

After the initial assessment, I spent two weeks presenting problem-based activities to students during thirty-minute small group sessions four days a week and collecting information based on their discourse and answers to a survey on small group efficacy. Small group activities included the creation of a set of number lines that compared equivalent fractions and decimals as well as representing numbers with KP Tile manipulatives so that students could visually see the fractions and decimals they were comparing. I collected anecdotal notes on student discourse throughout our time together to informally assess their growing understanding. During the final week of my instruction, I interviewed each student a final time through the completion of a mathematical task. I also discussed their concluding thoughts on the effectiveness of small-group instruction. Small-group students showed significant growth in their understanding and only required, on average, two prompts to complete the task. Their average improved by 92%. Compare group students also showed improvement in their scores but required up to 5 prompts to complete the task and only grew by 28%. Survey results showed that the majority of students still prefer to work in a small group because it helps them be more successful on assignments.

Implications/Recommendations

This inquiry allowed me to observe and analyze the effect that small group instruction has on a student's ability to accurately relate fractions and decimals. By working with on-level students, I knew that while they could often complete operations involving fractions and decimals, they did not possess an advanced understanding of their relationship, which would make abstract operations easier. Overall, I was satisfied with the results obtained from this research because it showed significant improvement in students' ability to compare and relate fractions and decimals. Knowing this, I plan to implement small group math instruction throughout my years of teaching and would encourage other educators to do so as well. Small-group discourse and manipulatives played a major role in increasing student comprehension, so implementing these practices is an essential element for teachers to include in fraction and decimal instruction. If I were to do this research again, I would have reformatted the matched assessments to include fewer operation-based questions and more comparison questions. I believe doing so would have created a more well-rounded assessment style.

Reference(s)

Reagan Tunstall. (2021, October 15). *Small Group Math Instruction*. Tunstall's Teaching Tidbits. https://www.tunstallsteachingtidbits.com/2021/10/small-group-math-instruction.html#:~:text=Plain%20and%20simple%2C%20teacher%2Dled

The Effect of Incentives on Student Engagement

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Rationale/Introduction

The academic engagement of a student is vital to build and achieve habits for lifelong learning. Unfortunately, many students in Title I schools do not possess many personal goals, which results in low levels of success within the classroom. In an effort to increase students' care for their own learning through the use of personal incentive, this research examines how the ability to gain an incentive affects student engagement throughout the entirety of a class period. Ultimately, the goal of this research is to discover how to instill and maintain personal responsibility within students leading to higher levels of overall engagement in the classroom.

Question/Wondering

How does personal incentive affect individual student responsibility and overall levels of student engagement?

Methodology/Results

The study was conducted in a 10th grade on level World History class at a Title I school. Before the collection of data began, four students from each class period, sixteen total, were selected at random to complete a survey about paying attention and participating in class. Over the next four days, the following research procedure unfolded: On day one, a base observation was performed and the number of students per class period demonstrating on average between 0-25% levels of engagement, 25-75% levels of engagement, and 75-100% levels of engagement within the class period was recorded. On day two, the same observation took place, and students demonstrating on average between 0-25% engagement received a red sticky note on their desk, students demonstrating on average between 25-75% engagement received a yellow sticky note on their desk, and students demonstrating on average between 75-100% engagement received a green sticky note on their desk. Students were not told the significance of the sticky note given to them. At the end of the class period, students with a green sticky note received a piece of candy, and all students were told that they would have other opportunities throughout the week to earn a piece of candy by demonstrating 75-100% levels of engagement. Day three was a repeat of day two, accompanied by a reminder at the beginning of the class of the outcome of the sticky notes from the day before. Finally, day four included the same observations of levels of engagement, but no sticky notes were placed on desks. At the end of the class period, students demonstrating on average 75-100% levels of engagement received a piece of candy.

On average, there was a 21.13% overall increase from Day two to Day three when there was a sticky note on the desk of students within the range of 75-100% level of engagement. On average, there was a 38.40% overall increase from Day one to Day four of students within the range of 75-100% level of engagement. On average, 75.48% of all students fell within the range of 75-100% level of student engagement.

Fourth period had the highest percentage of fully engaged students with 84.13% of students demonstrating 75-100% levels of engagement. First period had the second highest percentage of fully engaged students with 78.21% of students demonstrating 75-100% levels of engagement.

Fifth period had the third highest percentage of fully engaged students with 71.11% of students demonstrating 75-100% levels of engagement. Second period had the fourth highest percentage of fully engaged students with 68.47% of students demonstrating 75-100% levels of engagement.

Implications/Recommendations

The results of this research prove that students at a Title I high school are more likely to demonstrate higher levels of engagement in the classroom when there is an incentive offered to them if they do so. The student interviews as well as the pre- and post-surveys reinforced this claim, as many interviewed/surveyed students admitted to being more willing to pay attention and participate when they know they will receive candy or some other reward. Other

incentives that benefit student engagement include, but are not limited to, the opportunity to receive bonus points on a test when the test review is completed and turned in, not getting points taken off late work being turned in and getting to participate and/or play in extracurricular activities such as athletics, fine arts, and ROTC as long as the student is not failing.

Reference(s)

Dolkas, C. (2022). *Student Engagement in the Classroom* [Master of Arts Degree in Curriculum and Instruction Thesis, California State University San Marcos]. https://scholarworks.calstate.edu/downloads/794083785

The Benefits of Successful Co-Teaching Models

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Rationale/Introduction

Implementing the seven co-teach models into the mathematics classroom has become an idea that many teachers and education professionals have bought into, but how beneficial are they actually? This research was done to study the effects of the parallel and supplemental co-teaching methods to see whether they actually significantly impact students' mathematical progress. A recent dissertation stated, "co-teaching often means the number of students in a class drastically decreases. This allows students to receive individualized instruction,"(Williams, 2020, p. 30). The parallel method splits the class into two groups where the teachers teach the same lesson to the smaller groups of students. Supplemental teaching allows room for small groups so that those who need help with specific skills and procedures are able to receive individualized assistance. The research study observed two seventh-grade math classes over the course of two weeks. One class used these two co-teaching methods every day and the other did not use any. The co-teach models allowed students to have more individualized learning and receive one-on-one help.

Question/Wondering

In what ways do the supplemental and parallel co-teaching models impact students' mathematical progress?

Methodology/Results

The students in this research participated in a two-week study examining their mathematical progress based on whether they were in a classroom that used co-teaching models or not. There were twenty-one 7th grade math students in 8th period and twenty-seven students in 9th period. Both classes were on-level 7th grade math students. In the 8th period, there were thirteen girls and seven boys while the 9th period included twelve girls and fifteen boys, all of whom are of a variety of ethnicities. Over the course of the research study for 8th period, students did not experience any form of co-teaching other than one teach-one observe. This method is defined as one teacher leading the lesson while the other watches for either a teaching technique or student evidence (Picanco and Darragh, 2012).

In contrast, the 9th period students received either supplemental or parallel instruction every day. Supplemental instruction is designed for one teacher to instruct the students at grade level while the other teacher works with those who need extension or remediation (Picanco and Darragh, 2012). Parallel teaching occurs when the co-teacher teaches the same lesson to a smaller group of students at the same time (Picanco and Darragh, 2012). Another classroom was used during 9th period each day so that students were split into two groups; the goal was more individualized instruction due to the smaller class size. The small groups that the 9th period was split into were different each day depending on students' needs. For this research, student surveys were taken, various formative assessments were used, and a summative assessment at the end helped to analyze the students' mathematical progress.

To begin the research, students were assigned a multiple choice pre-assessment test on Schoology which asked the students four questions that the new unit would be covering. The students were to learn the area and circumference of circles and composite figures. The students in group one, 8th period, made an 11.765 average on their pre-test. This shows that 10% of the material was known by the class, but is not completely accurate because there is a possibility that students just guessed the multiple-choice questions correctly. For group two, 9th period, the students had an average of 22% on their pre-test. Similar to group 1, there is a likelihood that their guessing was correct and they did not actually know 22% of the material in the unit. For both classes, no student received a 100% on their pre-test and every student made a 50% or lower except for one student in group two who made a 75.

The next two weeks were spent teaching students the area and circumference of circles and composite figures. Students in group one were taught by one teacher and they stayed in the same classroom the entire time. For group two, each day students would be put into two groups by the teachers. These groups were different each day; sometimes students were with the mentor teacher and other days they were with the student intern. Each day for group two the teachers either did a parallel teaching day where they taught the same exact lesson but just in two separate classrooms, or they used the supplemental method and took a small group to another classroom to get additional content specific to the students in the group. Halfway through the study, students from both groups took a common formative assessment (CFA) as a means to assess student progress. Group one's average for the CFA was 46.88%. This was about 35 points higher than the average score of the pre-test. In group two, the students' CFA average was 65.88%. This was not only significantly higher than group one but the average was 43.16 points higher than the average of the pre-test. This common formative assessment tested students' knowledge of the specific TEKS that were a part of the unit and allowed the teachers to grade based on student understanding rather than whether the whole problem was answered correctly or incorrectly. Based on the results of these scores, the small groups in group two were put together so that students were set up for success.

The last assessment that students took during this research study was their end-of-unit test. This assessment was taken on Performance Matters and students were given an entire class period to complete it. For group one, there was one student who received a 100% and the lowest grade in the class was a 12%. In group two, five students received a 100% on the test and the lowest grade in the class was a 40%. The first group had a class average of 60.24% and the second group had a class average of 73.27%. The overall growth from the pre-test to the post-test was 48.47 points for 8th period and 50.55 for 9th period. In the eighth-period class, there was a student who did worse on the post-test than the pre-test and many other students who had little to no improvement. On the other hand, the lowest amount of growth from the 9th period was a ten-point improvement from the pre-test to the post-test.

The post-study survey included questions asking students their opinions on small groups versus whole groups, whether they have been impacted positively or negatively by splitting the class into two groups, and whether they had any strong reasoning either way. While 50% of the students stated that they enjoyed working in small groups, another 42% said that they were neutral and didn't have a strong preference on whether they preferred small groups or not. In the 9th period, 63% of students stated that splitting the classroom had a positive impact on their learning and mathematical success; another 25% of those students responded with, 'neutral,' as their response. Out of both classes overall, 77.8% of students had a positive response when asked to describe their honest response to being put into smaller groups to be taught lessons.

Implications/Recommendations

The results showed that though it was minimal, the co-teaching models positively impacted students' mathematical progress. Students in group two showed that through post-tests and student surveys, their success in class was correlated to their small group and parallel classroom lessons. The students in group two scored higher on their tests and had a higher point growth; the lowest score in 8th period was 28 points lower than the lowest in 9th period. This supported previous research that stated that co-teaching models are successful because when two teachers are in the room, children get more guidance and differentiated instruction (Picanco and Darragh, 2012). One of the weaknesses of the study was the length of time that the research was conducted. The results of this study would be more reliable if conducted over a longer amount of time. Because there were only two weeks, the students in the 8th and 9th periods were not able to switch to where the 8th period would use the co-teaching methods and the 9th period would not. This would have further proved the positive impact that co-teaching models have on students' mathematical progress. Students preferred the co-teaching models over having whole group lessons with one teacher and they benefited from working together and learning in smaller groups. A strength of this study was the ability to use two different classrooms to break students into smaller-sized groups where they could learn, hear, and see the board easily. The idea that co-teach models in the mathematics classroom are beneficial and impactful to students' mathematical progress was proved to be true.

Reference(s)

Picanco, K. E. & Darragh, J. J. (2012). Reimagining Partnerships: Using the Co-Teach Model to Prepare 21st Century Teachers. Northwest Journal of Teacher Education, 9(2). https://doi.org/10.15760/nwjte.2012.9.2.12

Williams. (2020). Co-teach Partnerships: Understanding the Relational Dynamics of a Successful Co-teach Team. ProQuest Dissertations Publishing.

The Efficacy of Fine Motor Development in Handwriting

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Rationale/Introduction

In a second grade classroom, I observed a specific student whose handwriting was illegible. I learned that his handwriting had previously been legible, but declined as he progressed through first grade and into second grade. Many studies indicate that there is a strong relationship between fine motor skill development and handwriting performance, proven by Seo (2018) who claimed that "children are able to acquire more mature fine motor precision" when participating in fine motor skill activities. Research was conducted in the classroom on one seven year old white male student. The baseline data was collected through multiple handwriting samples and a student survey.

Question/Wondering

In what ways will fine motor skill development impact a male, second grade student's handwriting legibility?

Methodology/Results

While teaching as an intern in a second grade classroom for four days of the week, I was able to identify a student that struggled significantly with handwriting. This student is very smart and is one of the top readers in the class. However, he is unable to communicate his thoughts through writing which hinders his performance on assignments such as spelling tests and reader's responses. According to his former teachers, this student had good handwriting when he first began writing, but it deteriorated as he continued through first grade and into second grade. I conducted my research with this student in a
one-on-one small group setting during student WIN ("What I Need") time.

I collected my baseline data by having this student complete an official handwriting sample and writing survey in order to evaluate his handwriting as well as his attitude towards handwriting. I also collected and scored current samples of a reader's response and a spelling test. Each sample was scored out of 16 points based on a rubric I created that analyzed line awareness, letter sizing, letter formation, and overall neatness of the student's handwriting. For the handwriting samples, the student scored 9/16 points on his official sample and averaged a 6.5 on his classroom work samples. In the writing survey, his answers indicated a poor overall attitude towards writing and he mentioned to me that he did not think that he was a good writer. Over the course of three weeks, the student completed various fine motor hand exercises in conjunction with handwriting practice of specific letters each day. While he was completing the exercises, we discussed the importance of writing slowly and carefully, and why it was important to have neat handwriting.

After four weeks of collecting data, the student completed an identical official handwriting sample and writing survey. After analyzing the sample results the student's score rose to 11/16, a 13% improvement from the original sample. I also collected a current reader's response, spelling test, and handwriting practice sheet. The average score of these samples increased from 6.5/16 to 11/16, which indicated an improvement of 28%. The results from his handwriting survey showed positive advancement in his attitude towards writing which was also evidenced through his own comment about writing, saying that he "used to be [nervous] but now [he] isn't".

Implications/Recommendations

For the duration of my research, I was able to observe the efficacy of fine motor development on handwriting performance through the use of hand exercises and routine handwriting practices. Although there has been extensive research on this general correlation, I faced the unique challenge of trying to

remediate this student's handwriting back to its original, neat condition. After conducting the study, the student's handwriting performance improved significantly, and his attitude towards writing changed positively. Apart from the fine motor development in his hands, during this study, I wondered what effect his motivation and attention to detail would have. In the future, I will continue to have students work to develop fine motor skills in their hands alongside completing general handwriting practice in order to maintain a more holistic approach to the skill of handwriting.

References

Seo. (2018). The effect of fine motor skills on handwriting legibility in preschool age children. Journal of Physical Therapy Science, 30(2), 324–327. https://doi.org/10.1589/jpts.30.324

How School Related Absences Affect Student Performance

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Rationale/Introduction

Between school related clubs and sports, there is rarely a day during the school year that there are zero school related student absences. Students miss school for various reasons, whether it be for a sport event or for a club such as FFA and ROTC. When student involvement is expected, so should student absences. As a future teacher, I was curious whether these absences would affect student performance, specifically if student assessment grades would increase, decrease, or remain the same. The study that I conducted took place during the dates of 1/24/2023 to 2/13/2023, the content covered during this time was similar in difficulty to the previous unit. Student performance was based on test scores from the previous unit, Genetics, and the unit covered during this time period, Evolution. Data of school related student absences was taken every day during every class period, and double checked with school office records. No variation in instruction was made to the teaching methods implemented in the school class periods, and data of non-school related absences was not considered in the results. Honors Biology students at Midway High School are expected to complete assigned work in the classroom management system Schoology whether they are present in class or absent for any reason. If students fail to complete the missed work, they are considered unprepared for the following school day.

A published discussion paper titled, *Too Busy for School? The Effect of Athletic Participation on Absenteeism* (2014) by Cuffe, Waddell, and Bignell provided the results of a similar study. Instead of including all school related student absences, this study includes only those related to sporting events, and did not consider student content mastery. Results of this study are very similar to what I found in my research, students who participate in school related activities are less likely to miss school for non-extracurricular reasons, therefore maintaining high levels of achievement in their classes.

Question/Wondering

What is the effect of school related student absences on student mastery of ninth grade biology content?

Methodology/Results

The study was conducted with a total of 180 students during the dates of 1/24/2023 to 2/13/2023 in an Honors Biology classroom at Midway High School in Waco, Texas. The student age range was 14 to 15 years old. The race/ethnicity breakdown of these students was 70.5% white, 17.2% Hispanic, 5% African American, 5% Asian, and 2% multiracial. Of these students, 93% were active participants in a school club or sport. *Midway High School Student Handbook* (2022) states, "A student who receives a grade below 70 at the end of a grading period in any academic class may not participate in extracurricular activities for at least three school weeks" and "To receive credit or a final grade in a class, a student must attend the class at least 90 percent of the days it is offered."

Student absence information was collected for all students who missed class for any reason, but only school-related absences were considered when tracking student performance differences from the genetics unit to the evolution unit. The types of absences included in the study included absences due to various sport tournaments, FFA events, as well as other reasons. Student performance was based on the comparison of two test scores, and how students' test grades changed. During the data collection process, I recorded data using an Excel spreadsheet and double checked it with the data posted by the Midway attendance office after the end of each school day. Following the completion of the data collection process I sorted the data to only include school- related student absences and whether student test grades from the Genetics Test to the Evolution Test increased, decreased, or remained the same. Finally, I determined whether there was a trend between the number of days missed and the variance in test scores.

Implications/Recommendations

Implications from the trends evaluated show that 36.6% of students who missed school for a club or sport event scored lower on their Evolution test than on the previous Genetics test. Of those students, 66% missed school for 3 or more days during the unit. More than half of the students evaluated (53.6%), who missed at least one day of school, performed better on the Evolution test than they had on the Genetics test. Only 9.8% of students' test scores showed no change in performance when they missed a school day.

Overall, the research conducted suggests that student biology content mastery will not be affected by absences due to school events. Students who choose to be a member in a school sport or club want to be able to participate, but in order to do so, they must be present in the classroom and receive a passing grade at each progress report grade capture, despite having to miss various school days due to tournaments, away games, or club events. In my future classroom, I intend to have a plan in place such as a Google Form that all student athletes or club members can use to submit their assignments when they miss a day of school due to school- related events. By having and enforcing the use of a tool like this, students will know exactly how they need to handle the missed content. This would also help when grading assignments that students submit late due to the absence. Looking forward, if I were to conduct this research again, I would include all student absences in my research, school related and non-school related. I would also like to know if there is a difference in the way absences affect student performance in a non-Honors level biology classroom. Would the results be similar or different to those shown in the Honors classroom I studied?

Reference(s)

Cuffe, H. E., Waddell, G. R., & Bignell, W. (2014, September 27). *Too busy for school? The effect of athletic participation on absenteeism*. SSRN. Retrieved March 2, 2023, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2502266

Midway Student Handbook - midway ISD / midway ISD ... (n.d.). Retrieved March 15, 2023, from https://www.midwayisd.org/cms/lib/TX01000662/Centricity/Domain/2062/2022-2023%20MISD%20Student%20Handbook.pdf

Challenges of Grouping

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Rationale/Introduction

Grouping is an essential facet in the daily workings of a classroom as students are pushed to learn about teamwork, leadership, and to grow academically. In their paper on dynamic grouping, Chen et al. (2020) state, "Collaborative learning can help students to make progress not only in gaining scores but also in deep learning and critical thinking" (p. 37); however, they also comment that there are many factors that go into creating groups that can cause issues. Whether those factors are gender, academic ability, or group size the same issue arises: how can teachers most effectively group the diverse students in their classrooms?

Because grouping is used for activities and small group work on a daily basis in the classroom, it is important to decide how to combat those issues early on, but it can be a challenge when a teacher starts the year with little to no knowledge of their students' abilities and personalities. Thus, it is essential to take on an attitude of flexibility. In his article on grouping, Bierden (1970) states, "To provide for individual differences a grouping technique should make it easy for a student to move from one group to another as his needs, interests, and abilities change" (p. 207). However, teachers may tend to create initial groups based on some sort of criteria and keep those groups permanent for the sake of consistency. This brought on the question of which method is more conducive to student progress and which method do students prefer. In this study, the methods researched and observed were flexible grouping (frequently changing based on observations) and permanent grouping (created using test scores at the beginning of the year).

Question/Wondering

How does using permanent vs flexible grouping impact student mathematical progress?

Methodology/Results

The students in this research are in 5th grade at Robinson Intermediate, and they participated in a one-month-long study examining the impact of flexible and permanent grouping on student mathematical progress. Two mathematics classes (Block 2 and Block 3) were chosen to participate in the study with a total of 38 students. Based on their grades from 4th grade, the students from Block 3 primarily had students who scored in the upper 3 quartiles while Block 2 had students who mostly scored in the lower 3 quartiles. However, the assessments in this study primarily compare improvement over time rather than focusing on which class scores higher overall. Before the study, permanent grouping was implemented in both classes. In order to observe the differences between classes for the study, the students from Block 2 were grouped in a flexible manner and the students from Block 3 were grouped strictly using a pre-planned grouping list based on their quartiles from their 4th-grade scores. In both classes, the researcher kept a list of students generally split into groups of five. After teaching a small group in Block 2, the researcher would use their notes and observations to consider whether the students in the groups needed to be rearranged based on their experiences as a group that day. The flexibility of those groups in Block two allowed the researcher to rearrange the students as much as needed. The list of groups for Block 3, on the other hand, was never edited. The study began with a pre-assessment and ended one month later with a post-assessment and a self-assessment. During that month, the grouping was implemented for a single unit of study, and the type of grouping used in those classes did not change during the study.

The first method of data collection used a pre-assessment that consisted of questions pertaining to prime and composite numbers, factoring numbers, order of operations, and creating multi-step equations when given a word problem. Additionally, a post-assessment was given at the end of the month which consisted of questions related to how to read, write, and order numbers with decimals. These two assessments were used to measure and compare the students' mathematical ability at the very beginning of the study and at the end. The assessments consisted of different questions but had the same number of questions of similar difficulty levels. Each assessment was administered to the entire class with no time limit in place. The first assessment was given prior to their second unit test and covered the content that was on their test. That assessment was used to measure their ability prior to the implementation of the flexible and permanent grouping. A month later, the second assessment was administered one day prior to their third unit test and covered the same content as their test. After data from both assessments were collected, the researcher used that data to observe and compare how each class changed after experiencing the new grouping methods for a month.

Along with student performance data collection, the researcher kept an anecdotal record while teaching the students in small groups to note differences or similarities between classes or groups as well as changes over time. This record was kept to keep track of factors that could not be observed based on student work or surveys.

This was done using a small notebook that the researcher informally took quick notes in during and after small group work throughout the one-month study. The researcher took note of the time each group spent covering the same amount of information and took general notes on student behavior while in the groups.

Finally, a self-assessment survey was given to the students using a google form. The questions in the survey required the students to disclose whether they preferred groups that change or stay the same, whether working in groups helped them improve, and how they felt about being in groups in general. This survey was used to gather information on students' thoughts and feelings about their grouping in class.

When comparing the results of the pre-assessment and post-assessment, it was found that Block 2 (Flexible) increased from a class average of 82.2% to 88.1% while Block 3 (Permanent) decreased from a class average of 92.9% to 87.4%. Thus, Block 2 improved by 6.1% while Block 3 declined by 5.5%.

Based on the survey, the researcher found that in Block 2 (Flexible) 47% of the students preferred to work in a group while 32% preferred to work independently and 21% had no preference. When asked about how they feel working in groups on a scale from one (feeling bad) to five (feeling great), 6% answered two, 42% answered three, 26% answered 4, and 26% answered five. Similarly, when asked if they feel that working in groups improves their math ability on a scale from one (definitely not) to five (definitely), 21% answered one, 11% answered two, 37% answered 3, 5% answered 4, and 26% answered 5. Finally, when asked whether they prefer to have their groups change (flexible) or always stay the same (permanent), 63% said they prefer changing groups to have them stay the same.

Using the same survey, the researcher found that in Block 3 (Permanent) 72% of the students preferred to work in groups while 11% preferred working independently and 17% had no preference. In response to being asked how they feel working in groups on a scale from one (feeling bad) to five (feeling great), 6% answered one, 6% answered two, 10% answered three, 28% answered 4, and 50% answered five. When asked if they feel that working in groups improves their math ability on a scale from one (definitely not) to five (definitely), 22% answered two, 17% answered 3, 28% answered 4, and 33% answered 5. Finally, when asked whether they prefer to have their groups change (flexible) or always stay the same (permanent), 50% said they prefer changing groups to have them stay the same.

Implications/Recommendations
The results showed that the use of flexible grouping was able to positively impact students' mathematical progress, however, it did not increase their desire to work in groups. Additionally, the researcher found that not only did flexible grouping help increase students' mathematical abilities, but permanent grouping had a negative impact on students' mathematical progress. With the use of the self-assessment, the researcher was able to conclude, however, that regardless of which grouping style was used, most students feel that grouping is enjoyable and beneficial.

One of the weaknesses of the study was the length the study was conducted. Due to time constraints, the study was only able to span a month while the study would've shown clearer results with more time. Another weakness was the differences between the pre and post-assessment. Because the content in the assessments differed, students might have improved due to their different strengths or because the content was easier in one unit than in the other. Regarding the collection of anecdotal records, the way the grouping was facilitated caused the records to be inconsistent and rendered limited to the data collected during the study. One of the strengths of the study was the similar number of students in both classes. While Block 3 does tend to score higher than Block 2 overall, both classes have students with a wide range of abilities which makes both groups good matches with a group study as grouping them can be a challenge. Additionally, the length of time in both class periods made it beneficial as there was often time to pull at least one small group at the end of class. In accordance with these observations, the researcher recommends implementing this study over a longer time period and keeping more in-depth, detailed anecdotal records consistently throughout the study. If the study was done over several months covering multiple units, the data would be much more reliable, and there would be opportunities to switch the grouping styles between the two classes to observe the impact of switching grouping styles.

Reference(s)
Chen, B., Hwang, G., & Lin, T. (2020). Impacts of a dynamic grouping strategy on students' learning effectiveness and experience value in an item bank-based collaborative practice system. *British Journal of Educational Technology*, *51*(1), 36–52. https://doiorg.ezproxy.baylor.edu/10.1111/bjet.12794

Bierden, J. E. (1970). Behavioral objectives and flexible grouping in seventh grade mathematics, *Journal for Research in Mathematics Education JRME*, *1*(4), 207-217. Retrieved Dec 4, 2022, from https://pubs.nctm.org/view/journals/jrme/1/4/article-p207.xml

The Effects of Cross Ciriculum instruction

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Rationale/Introduction

I worked with the advanced high small group in my second-grade classroom. These students have demonstrated a grade level understanding of the Continents, basic needs, and impact of Natural Resources. They were given a Continent and asked to research the various Cultures, effects of Natural Resources, and the diversity of the Continent. The students demonstrated their learning through a presentation, play, activity, performance, or paper. They were given four weeks to research, gather their information, and present their deepened understanding of the content. I worked with them in a small group setting for twenty minutes a day over the four weeks. At the end of the four weeks, the students presented their findings to the class.

Question/Wondering

When the students are given an assignment that requires them to extend their understanding of Math, Science, and Social Studies by creatively presenting their research on a specific Continent of the World, they can demonstrate a deeper understanding of each of the subject areas and make connections to the real world.

Methodology/Results

During my action research I spent three weeks allowing my students to research and create a presentation that demonstrates their understanding of their topic. The students were researching the history, landforms, geography, and population of their continent. The students were given twenty minutes each school day for three weeks to research, compile information, and create a presentation. I had the privilege of assisting and monitoring the students in their research. It was inspiring to watch the students ignite their curiosity for research. The students were able to identify the geography, population, government, and culture of different people groups and places than they have experienced. Their presentation had a minimum requirement of seven slides which allowed the students to connect their learning across the math, science, and social studies content areas. They spent the first week researching their Continent. During the second week they compiled information and recorded it. During the third week they created a presentation to demonstrate their new understanding of the topic. The students each completed their projects with their own creativity. They were able to collaborate about new information they were learning regarding different cultures while connecting information across content areas. When they finished their project, the students were given the opportunity to present their learning to the small group. Through this project the students were able to experience cross curriculum instruction.

Implications/Recommendations

The implementation of this activity allowed my students to demonstrate their understanding of the importance of connecting information across curriculum. By implementing this project into my instruction, it allowed my students to better understand the curriculum research required of them as well as make connections to the real world. The students were given the opportunity to research and explore new people groups. This in turn gave them a deeper understanding of the continent and culture as a whole. They were able to understand the interconnections between the subjects and challenge themselves to think deeply about the effects of community, physical environment, government, and overall culture of a people group. The students were able to connect a wide range of material over a common topic while crafting a well-organized presentation to share their knowledge.

Reference(s)

Strecker, K. (2021, October 5). *Cross-Curricular Instruction.* Curriculum Leadership Institute. Retrieved March 23, 2023, from https://cliweb.org/cross-curricular-instruction/

Adding Choice Boards to Create More Engagement for Second Grade Students

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Rationale/Introduction

I became aware of second grade students' disengagement during reading stations when I noticed their behavior and accuracy declined. Students often disrupted the class and failed to show effort on their assignments. According to Brozo (2007), "Using meaningful assignments increases the students' engagement during the lessons. The students enjoy what they are completing and stay on task. During self-selection of activities, the students are more engaged because they feel ownership". Research was conducted in the classroom with one girl and one boy of different ethnicities and socioeconomic statuses. Both students are in the high-level reading groups. Baseline data was collected through student surveys, engagement forms and accuracy of station assignments.

Question/Wondering

How does adding a choice board to reading stations allow for a small group of students to become more engaged?

Methodology/Results

As an Intern that observes or teaches students four days a week, I have noticed some students who quickly lose engagement during reading stations. They are academically capable but are easily distracted and did not follow instructions properly. Through observing the students' engagement and accuracy during project-based assignments, I observed that students enjoyed working on assignments where they had choice in how to complete it.

I conducted data on two second-grade students of varying genders, ethnicities, academic levels, and socioeconomic statuses. I began by collecting baseline data for one week. The students completed their reading stations without any intervention. I used three forms of collecting data: Engagement Forms, Student Engagement Surveys, and Accuracy Rates. While the students independently worked, I completed an engagement form on each student collecting their on-task rate. Student A had an average of 70% on task rate and Student B had an average of 73% on task rate. After the students completed their stations, I collected data by using a student engagement survey where the students shared how they felt while completing the reading stations. Student A rated his own engagement a 3 out of 5 on the first day, and then a 5 out of 5 the remaining days of the study. Student B rated her own engagement a 4 out of 5 the first day and then a 5 out of 5 the remining days of the study. Finally, after the students completed their stations, I graded their completed work for accuracy. Student A mastered the objective with above 80% accuracy on each assignment. Student B mastered the objective with above 80% accuracy on 4 out of 5 assignments. She did not follow instructions on the fifth assignment.

After I collected my baseline data, I began my intervention with the students. I created a choice board for each day that included two choices per assignment. Choice one was a simple way for the students to share their knowledge. Choice two was a project-based assignment that allowed the students to show creativity while sharing their knowledge. Over three weeks, I used the same forms of data collection to quantify the student's engagement so I could compare the data. I conducted engagement forms to collect the students' on task rates. Student A had an average of 86% on task rate. This was an increase of 16%. Student B had an average of 95% on task rate. This was a 22% increase. After the students completed their reading stations, I collected data by using Student Engagement Surveys. Both students rated their own engagement a 5 out of 5 each day during the research. This was a growth from the baseline data. I also analyzed the student data using their Accuracy Rates. Student A mastered the objective with above 80% accuracy on each assignment. Student B mastered the objective with above 80% accuracy on 4 out of 5 assignments. They did not follow instructions on the fifth assignment. This was the same data as the baseline data.

Implications/Recommendations

Throughout my Inquiry, I was able to observe the effect that choice boards have on students completing reading stations. The students were of varying academic levels, but both were in the top two reading groups within the class. I knew the students had the ability to complete the tasks, but they were not engaged while completing the tasks. I

was pleased with the data from the Engagement Forms. The students both had significant improvement in engagement when choosing their assignment. In having choice, the students showed more focus on the assignments. Throughout the study, I wondered if this would be practical with school curriculum. I was able to use the curriculum to shift the assignments slightly to allow for more creativity. In the future, I will continue to incorporate student choice to increase engagement.

Reference(s)

Brozo, W. G., Shiel, G., & Topping, K. (2007). Engagement in Reading: Lessons Learned from Three PISA Countries. Journal of Adolescent & Adult Literacy, 51(4), 304–315. http://www.jstor.org/stable/40026882

A Token Economy and Visual Timer Approach

Primary Researchers
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Rationale/Introduction

In my ECSE classroom, I've observed a 4-year-old Hispanic female with autism who can consistently and independently check her visual schedule, take the picture to the center, and attach it in its correct place. However, she then proceeds to a more preferred activity, avoiding the center altogether. Fittipaldi-Wert's research "found positive findings for the use of visual supports in acquiring skills, increasing social interactions, and decreasing off-task behaviors." This research project shows the changes caused by using a token board and visual timer to increase this student's time and engagement in centers.

Question/Wondering

How does a token economy and visual timer impact a 4-year-old Hispanic female with autism's engagement in centers?

Methodology/Results

To begin my research and after discussing it with my mentor, I first removed known distractors. This included the sign-in board the student repeatedly removed the names from. Further, I covered a blue floor tile she would lay next to and stare at. Next, I gathered baseline data for one week to clearly understand my student's current engagement in centers. Her routine includes eating breakfast and checking her schedule for a center icon once finished. She places the general center picture on a black foam board on which she has six specific center icons. This student is accustomed to this process but, after placing an icon at its coordinating center, continues to a preferred activity. I prepared a duration chart to record the start and end times of each center and activity where my student interacted, recording any additional observations and context. My student spent 37.5% of the time given playing in centers. She alternated between three centers: fifteen minutes in books, four and a half minutes in sensory, and three minutes in toys over a span of forty-eight minutes during the week. To conduct the intervention, I created and gathered a penny board and icon picture of preferable items. I selected items from a preference survey sent to my student's parents and items she's demonstrated an interest in at school, specifically goldfish, iPad, and swing. As she finished her breakfast, I led her to check her visual schedule for centers and presented a penny board. I gave her two options to work for. She selected a specific center's icon and placed it at its coordinating center. Once there, I rewarded one penny; she received her preselected item upon obtaining five pennies. I periodically gave more pennies as she played with toys, initially rewarding every small interaction with the center. As she learned that she later received her preferred item, I gradually prolonged the time between giving pennies. If she left a center before getting the pennies needed, I lead my student back to the center board to choose from the remaining options. Once she received five, I presented the preferred item. In the case goldfish were selected as the reward, I gave one before continuing centers, but when rewarding with the activities, I set a visual timer for two minutes. Displaying this timer prepared her for an easier transition since she could anticipate her time ending. She repeated the process of choosing another center and earning her chosen reward through pennies as time allowed before the class's beginning circle. Over the span of two weeks collecting data as I did this with my student, she increased her time in centers from 37.5% to 51% of the time given. Compared to the baseline of three centers, she interacted with five centers: books, sensory, blocks, toys, and home. Across the two weeks, she spent 28 minutes in books, 9 minutes in sensory, 4 minutes in blocks, 12 minutes in toys, and 9.5 minutes in home living.

As stated previously, this project set out to change my student's behavior pattern of only matching the center's coordinating icon and leaving to routinely interact in the centers. Based on the data, the percentage of time spent in a center increased for my 4-year-old Hispanic female, and not only that, but she explored two new centers.

Implications/Recommendations

Reflecting on this study, I identified both strengths and weaknesses. This study was strong in that I worked with my student in the mornings after she finished breakfast while other students also participated in centers. This allowed

me to focus on this student more than if I were leading a lesson. Not only that, but it provided opportunities for social interaction with peers. A student, on two occasions, invited this student to play with him. Removing known distractors allowed me to examine how she interacts with centers. Weaknesses also existed, however. A weakness of this study was that the amount of time offered for centers varied daily based on how long she ate. More of a weakness, both baseline and intervention data include me leading the student to choose a center, so it missed the independent component.

This study demonstrated that my student does well with working for a reward on a penny board, so I intend to implement this into instruction. Two areas that might prove beneficial are during whole group activities and table time. I will create reward options as she expresses interest in others.

Wonderings surface as I reflect on this study, one asking the question of how decreasing the reward activity's duration to one minute affects this student. Would that increase the overall time in centers or create frustration? Additionally, I would be curious to see if removing the student's top choices, books, and toys would increase time in unfamiliar centers or create a resistance to centers.

Reference(s)

Fittipaldi-Wert, J. (2007). The use of visual supports for students with autism in inclusive physical education (Order No. 3273355).