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Mathematical Student Choice in the Elementary Classroom

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Research Question

- How does providing **student choice** in the classroom affect students understanding of **mathematical instruction**?

Literature Review

- Student motivation in the classroom improves if student choice is meaningful and relevant, by including students interest, values and goals (Katz & Assor, 2007; Evans & Boucher, 2015)
- Williams, Wallace and Sung (2016) state that student choice sends messages of trust, respect and worth to students, which benefits students overall engagement in the classroom
- Providing too many choices or choices that are too complex can overwhelm students, decreasing motivation and engagement (Katz & Assor, 2007; Thompson & Beymer, 2015; Evans & Boucher, 2015).
- Jaslow and Vik (2006) use various types of activities to include student choice which helps grow student conceptual understanding.
- Hands (2006) found that allowing students the freedom to demonstrate their knowledge in any format through student choice, benefits mathematical reasoning.

Methodology

- Participants were 19 students in my 1st grade classroom in a suburban Midwest school.
- Two to three student choice activities were provided during a mathematical center, as seen in Table 1.
- Student choice was provided as a means of differentiation (Tomlinson et al, 2001).
- I collected field notes, anecdotal records, lesson plans and audio recordings of conversations with students.
- Through data analysis, I found a common theme that students made their decision based on the hands-on activity and/or the activity that they viewed as the most fun.

Student Choice Activity Options

Friday 10/13	Monday 10/16	Tuesday 10/17	Wednesday 10/18
<i>Doubles</i>	<i>Doubles</i>	<i>Near Doubles</i>	<i>Count Backs</i>
Doubles Book (1)	Slides and Ladders Game(12)	Snake Game (6)	Ghost Computer Game (6)
White Board and Manipulatives (11)	Flap Activity (4)	Gumball and White Board (5)	Playdough and Ten Frame (12)
Dice Game (2)	Dice Game (5)		
Monday 10/23	Tuesday 10/24	Wednesday 10/25	Thursday 10/26
<i>Count Backs</i>	<i>Count Backs</i>	<i>Count Backs</i>	<i>Missing Addends</i>
Cookie WK (10)	Mat and Manipulatives (2)	Mat and Manipulatives (2)	Flower WK with Number Line (6)
Task Cards (7)	Playdough and Ten Frame (18)	Playdough and Ten Frame (19)	Bears in Cave with Manipulatives (15)

Table 1. Each day students were provided various types of activities that attempted to meet the varying needs and interests in the classroom. The number in parenthesis represents the number of students that selected the activity, therefore the bolded activity for each day represents the most popular student choice. With the exception of 10/23 due to the types of choice offered that day, the majority of students selected the activity that included manipulatives/ playdough or a game.

Student Choice Selection

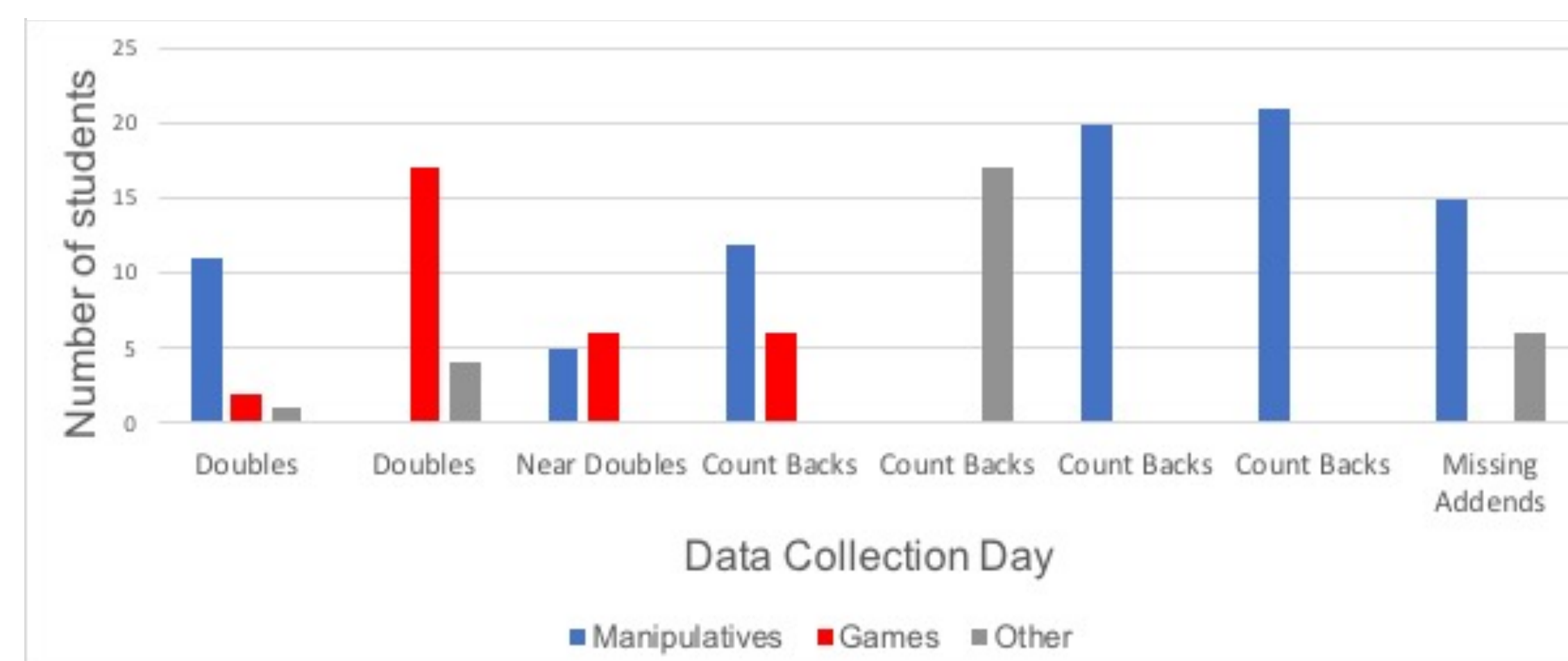


Figure 1. Most students preferred activities that included manipulatives, but some students selected the game activity. When combined, students overwhelmingly selected the game or manipulative option over the other category (task cards, worksheets, book, flap activity). During the second count back day, both activities provided to students fell into the other category, demonstrating the discrepancy in the data for that day.

Results and Data Analysis

- During audio recorded conversations with students, the majority of students shared that they made their decision because “it is fun/cool”. Therefore, demonstrating students desire for learning to be fun.
- Throughout field notes and anecdotal records students demonstrated mathematical understanding of the content, but some students had difficulty correctly using the addition and/or subtraction sign. Demonstrating a need for more direct and explicit instruction even while student choice was incorporated.
- As seen in Figure 1 and Table 1, field notes and anecdotal records, students selected the activity that included manipulatives or game most of the time. Students express their mathematical understanding in a hands-on manner.
- When students were provided with too much choice or too complex choice, frustration emerged as they became overwhelmed as seen throughout field notes and anecdotal records.

Conclusion

- If I were to complete this self-study again, I would collect student work samples and student surveys in order to further assess students mathematical understanding as well as their reasoning behind their choice.
- Across various content areas, research recognizing the relationship between types of student choice and learning styles
- Discussions about student choice throughout teacher education programs can encourage student teachers to adapt their teaching to meet the needs and include interests of their students.