Research Question:

Do counting routines, hundred charts, and ten frames improve number sense for early readiness first grade students?

Improving Number Sense for Struggling First Grade Students

Implications

- Focused intervention, even over a short period of time, can improve students’ number sense and general math skills.
- Counting routines paired with hundred charts and/or number lines improved students’ abilities to say, read, and identify numbers to one hundred.
- Number recognition and counting skills will improve when students are encouraged to visually see a number while saying it orally.
- Students’ understanding of grouping and counting items increased through a repeated use of ten frames.

Limitations

- The duration of the study was less than two months, limiting the amount of long-term learning that could occur.
- Repeated absences and infrequent meeting times made it difficult for students to fully learn new ideas or build on previously taught knowledge.
- Data collected through anecdotal notes and student interviews was of less value than it could have been given the unstructured and unfocused nature of my notes.
- While I noticed student excitement increase during the study, I did not focus on or measure this in the study. This would be something I would note in the future.

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Rationale

- Students who lack number sense skills in kindergarten will continue to struggle in first grade (Jordan, Kaplan, and Ramineni, 2007).
- Research conducted by the University of Missouri found that students who do not have a grasp on basic number sense in first grade will struggle with basic math throughout the rest of their lives (Neegaard, L (2013, March 25). Early number sense plays role in later math skills. The Associated Press. Retrieved from http://bigstory.ap.org/article/early-number-sense-plays-role-later-math-skills).
- Students must first be able to effectively count in order to improve their number sense skills and make meaningful connections.

Literature Resources

- Children from low-income families are more likely to struggle with basic number sense (Starkey, Klein, and Wakeley, 2004).
- Counting practice is an integral part of number sense studies (Mazzocco and Thompson, 2005; Jordan, Kaplan, Olah, and Locuniak, 2006).
- The effects of weak number sense are cumulative, with students falling more behind with each school year (Jordan, Glutting, and Ramineni, 2010).

Instructional Context

- Data was collected in a first grade classroom at a Title I elementary school Northern Virginia.
- Research focused on a small group of three female students, each of whom qualifies for reduced school lunch and speaks a language other than English at home.

Action

- Met with small group for thirty minutes each day.
- Each lesson began with counting routines, with students counting by ones, fives, and tens to one hundred.
- Next, students used hundred charts to identify and/or write numbers or they used ten frames to group and count objects.
- Each lesson ended with students counting to one hundred.

Data Collection

- Pre- and post-assessments on counting, grouping, and hundred chart knowledge.
- Anecdotal notes were taken during each thirty minute meeting.
- All student work and samples pertaining to number sense were collected.
- One-on-one interviews to assess students’ abilities to count independently and identify numbers on ten frames.

Findings

- Pre- and post-assessment scores showed that students’ ability to count, group, and write numbers accurately to one hundred increased significantly.
- Participation levels for all students rose from week one to week seven.
- Students’ abilities to group and identify sets of items increased, especially when students grouped items using ten frames.
- Student accuracy rates when counting by ones, fives, and tens to one hundred increased significantly.