



**Literature Overview: Class Size Reduction
Using Paraprofessionals in K–2 Classrooms**
Prepared by the Department of Research & Performance Management

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Strategy

Reduce adult/student ratio (1:13) in Kindergarten through second grade.

Description

All K–2 classrooms will receive a full-time educational assistant that has been supported on foundational skills instruction and best instructional practices.

Recommendations

- When reducing class sizes, having additional certified teachers is likely to produce better results than reducing the adult to student ratio with paraprofessionals.
- If paraprofessionals are used, clear expectations of their role must be understood by both the supervising teacher and the paraprofessional.
- On-going, targeted professional development will improve the successfulness of the paraprofessionals in helping students with academic skills.
- Time should be allocated for paraprofessionals to plan with their supervising teacher.¹⁵
- Paraprofessionals should focus on implementing successful interventions for students in small group and one-on-one settings, but not solely focus on the lowest attaining students.¹⁵

Smaller class sizes (with certified teachers) have shown mixed results on both the long- and short-term academic benefits.

- The TN STAR program from the early 1990's remains the prominent study on small class sizes.^{1, 2, 3, 4} It found that small classes (13–17 students) in grades K–3 had a positive, albeit small impact on math and reading in 3rd and 5th grade. The largest gains were seen in the first year of being enrolled in a smaller class regardless of grade and decreased in the following years.^{5, 6, 7}
 - Follow-up studies showed that these students were more likely to enroll in college with Black students, free and reduced lunch recipients, and students from the poorest tertile of districts having even greater effects. They were also 1.6% more likely to earn a college degree.⁸
 - The cost of program however, barely met the threshold for a positive return on investment.²
- A large-scale study out of Minnesota used a quasi-experimental design to mimic controls and treatment groups. The authors found a positive effect of class size reduction by 10 students for reading and math on 3rd and 5th grade achievement scores. However, these effects were extremely small (0.04–0.05 standard deviations), thus the authors stated, “class size reductions are unlikely to lead to sizable increases in student learning.”³
- Another quasi-experimental design used state data from Connecticut schools. This study found no support for smaller class sizes in the earlier grades on 4th and 6th



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grade achievement scores. Even effects as small as a 2–4 percent increases in scores were accounted for by other factors not related to class size.⁹

- A longitudinal study did not find support for smaller class sizes over a three-year period in Hong Kong primary schools. Students were enrolled in reduced class sizes for zero, two, or three years at the same school and their 3rd grade achievement was compared. Across all schools there were no consistent positive effects of the reduced class sizes, though some within-school positive effects were found.¹⁰
- In Texas schools, smaller class sizes in grade four and five did show positive effects on student achievement in 4th grade and slightly positive effects in 6th grade. However, the authors note that the benefits of the small classes pale in comparison to those resulting from improved teacher quality.¹¹

“By simply increasing the numbers of [teachers’ assistants] in a school, the attainments of all pupils will not necessarily improve.”¹²

- The STAR experiment mentioned above also investigated regular classrooms (22–25 students) with and without teachers’ aids (TA). It found no evidence that students in a regular-sized class with a teacher and TA performed any better on tests in 3rd grade. By 5th grade, students in K–3 classes with a TA performed slightly worse on their standardized tests.^{6, 7} Because there was no significant difference between the treatment- and control-group, they are often treated the same in follow-up studies.^{5, 6}
- A UK based study looked at the amount of TA’s support (as measured by the teacher) on students’ math, science, and reading skills in the mid-2000’s. Students in two cohorts ($n = 8,200$) were tracked over one year on academic skills and other influencing factors. They found no positive effect of the TA support for any subject across any year, and 76% of the results were in a negative direction. Students who often need the most support, such as students with special educational needs, tended to show even starker negative outcomes. Those students who received the most TA support had lower outcomes than those who had received little or no support.^{13, 14, 15}

Interventions where paraprofessionals have been successful often have focused training, adequate support, and clear job roles.

- Paraprofessionals (PP) often report confusion about job responsibilities,^{16, 17} a lack of planning time with the supervising teacher,^{15, 17} and limited training.^{15, 19, 30} Studies that address these issues found more success with their use of PPs. An in-depth literature review of reading interventions in K–3 using PPs found that training, direct and on-going supervision and feedback, and scripted lessons were more important than the number or type of sessions for student success.²⁰
- A meta-analysis showed that targeted interventions using trained and supported TA’s showed positive results when focusing on one-on-one or small group instruction in literacy for struggling students.¹²
- One study focused on the effect of fluency training for PPs on student reading. Paraprofessionals participated in five-hour training sessions focused on fluency



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instruction. They found the training to be effective with more PPs using praise and error correction accurately and to the required extent needed. However, the PPs struggled to maintain consistency with their new skills over multiple lessons. Student reading was not impacted by the PPs' successful training, likely because it remained highly accurate throughout the study.²¹

- Another meta-analysis²² showed that reading tutoring implemented by PPs improved student reading skills compared to control groups (i.e., no tutoring).^{23, 24} However, the studies that also had certified teachers as tutors showed that teachers were more effective than PPs in improving student reading.^{25, 26}
- Conversely, a meta-analysis on successful interventions in elementary mathematics found that paraprofessional-led tutoring (either in a small group or one-on-one) was as effective as teacher tutors. It is worth noting that the paraprofessionals had extensive professional development and were similarly credentialed with most holding bachelor's degrees in these studies.³⁴
- In another study, targeted professional development and coaching allowed PPs to implement various strategies with efficacy. A two-hour workshop follow by hour long in-person coaching sessions resulted in significant improvements in the fidelity of the PPs' implementation with special education students.²⁷ It is worth noting that single-day workshops do not provide this increase in effective implementation.^{28, 29}

Behavior modification and reduction can be supported by paraprofessionals with prior training.

- “Paraprofessionals are among personnel most often tasked with providing intervention for children with [disruptive behavior disorders].”³¹
- Paraprofessionals who are receiving professional development training on behavior interventions reported more “operationally defined behavior concerns” than those without training. The training gave the PP's the ability to accurately identify behaviors and appropriate intervention which is essential in modifying student behavior.³²
- When working with students with different learning needs, one case-study found that training and coaching for PPs ($n = 3$) resulted in more appropriate student behavior and less disruptive behavior for those students.³³

Paraprofessionals who move into teaching benefit from their prior experience in the classroom and are retained at higher rates.

- TA's who transition to full-time teaching positions tend to be more racially diverse, older, have lower test scores, and come in through alternative licensures. They persist in the field longer, and their elementary students show higher growth achievement when compared to other novice teachers specifically in reading.³⁵
- Teachers coming through the Leap to Teacher program, a paraprofessional to teacher pipeline, showed that six years into the program 60% of participants were still in the profession and in the city.³⁶ This higher retention rate was echoed in a study that compared paraprofessionals, emergency licensure teachers, and Peace-Corps teachers, and found that those teachers who entered the profession through first serving as a PP had the highest retention rates.³⁷



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