

Designing Highly Effective School-Based Tutoring Programs

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June 9, 2023

Outside of classroom instruction, tutoring is among the most effective approaches for promoting academic achievement in reading and math (Dietrichson et al. 2017; Kraft and Falken 2021; Pellegrini et al. 2021). A recent meta-analysis of tutoring program effectiveness found an overall pooled effect size of 0.37 standard deviations (Nickow, Oreopoulos, and Quan 2020) a very large effect as compared with all other educational interventions (Kraft 2020).

Tutoring programs differ from one another in ways that can greatly influence their effectiveness. These include the grade levels served, subject matter, context in which the tutoring occurs, and the tutor's background and training. While there are no experiments that directly test how any particular design feature influences program effectiveness, we can generate insights for the design of new tutoring programs by qualitatively examining the design of existing programs in light of evidence of their effectiveness. This means copying design elements from programs shown to be effective and avoiding design features common to less-effective programs. These insights, gleaned from a systematic review of 96 separate studies, can be [summarized](#) as follows:

- Tutoring is most effective when it is somebody's *job*, rather than a volunteer activity. Effects are typically stronger when tutoring is provided by trained teachers and paraprofessionals, rather than nonprofessionals (e.g. retirees or other community members) or parents.
- Overall, effects tend to be strongest in the earlier grades. Tutoring in reading tends to yield higher effect sizes in earlier grades, while math tutoring tends to yield greater effects in later grades.
- Tutoring programs conducted during the school day tend to have larger impacts than those conducted after school.

The optimal tutoring program design involves trained professionals providing targeted one-on-one or small-group instruction in literacy in early grades and mathematics in secondary grades, in-person, during the school day.

Further Design Considerations

Beyond *who* tutors and *when*, a number of key decisions remain in the design of effective tutoring programs. Here, evidence is less conclusive, though descriptions of highly effective programs offer some insights. These important aspects of tutoring program design include training, curriculum, pedagogy, frequency, and dosage.

Tutor Training

Training refers to the full suite of activities designed to ensure that tutors are well prepared to succeed in their roles; this includes pre-service training as well as ongoing training, support, feedback and evaluation from supervisors. The amount of training varies widely among programs, even among those with strong evidence of effectiveness. Some programs provide very minimal

amounts of training (i.e. less than three hours of pre-service training) while others require a hundred hours or more (Guryan et al. 2023). For instance, SAGA Education tutors, who are recent college graduates tutoring high school students in mathematics, participate in over two weeks of full-time pre-service training in the summer prior to the academic year during which they serve as full-time tutors. Additionally, SAGA tutors receive feedback from a supervisor that occurs at least weekly and are placed in a peer-support network of other tutoring fellows (Guryan et al. 2023). Another example of a training-intensive tutoring program is Reading Recovery, which uses certified teachers who further undergo an intensive one-year training course to provide intensive one-on-one tutoring to struggling early readers during the school day (Sirinides, Gray, and May 2018). These training-intensive programs are associated with some of the most substantial positive effects observed in any studies of educational intervention. However, these training-intensive programs also occur at high dosage, align with clear learning goals, and take place during the school day; so the high levels of training are unlikely to solely account for the effectiveness of these programs.

The benefits of intensive training must be weighed against the added costs that training incurs. Several studies have found that tutors can be effective even when the amount of training includes fewer than ten hours of pre-service training combined with low amounts of on-site supervision. In a series of studies, Vadasy and colleagues found that a tutoring program involving non-professional adult tutors working with students on developing basic literacy skills in early elementary grades grew in effectiveness as the program was refined to more-clearly target critical early literacy skills (such as phonological awareness), and as the amount of training that tutors received increased from 6 to 8 hours of pre-service training and 3 to 6 hours of additional training during the school year (Vadasy et al. 1997; Vadasy, Jenkins, and Pool 2000). Providing small amounts of training targeted to a tutoring program's specific goals may substantially improve the effectiveness of a tutoring program with only modest increases in costs.

At the same time, training must not be so minimal or un-focused as to leave tutors totally unprepared to accomplish any academic learning objectives. It is not clear from publicly available documents how much training tutors working with some programs in Wisconsin receive. Handbooks for the [Schools of Hope](#) Americorps program in Madison and [America Reads/America Counts](#) program at UW-Stout indicate that tutors receive limited training and are provided with minimal resources by the program to guide effective tutoring. In both cases, the guidance offered in the tutoring handbook amounts to a few pages of written 'tips' with links to external resources such as short videos and handbooks from other programs.

Strong training programs typically emphasize the specific goals of a tutoring program and provide a review of the content and introduction of the pedagogical methods needed to achieve them. For example, Vadasy's program of early literacy tutoring emphasized training tutors in the specific steps of phonological awareness. The success of district-scale tutoring initiatives may also depend on developing a broader set of relevant skills and competencies. For example, [Brown University's Online Tutoring](#) program includes orientation workshops regarding the history and diversity of Providence's urban communities to promote greater cultural competence and empathy on the part of tutors, who are students at the Ivy League college. Identifying the skills that are most critical to tutors' success, and incorporating them into a strategy for hiring, training, and retention, is an essential component of all successful programs.

Curriculum and Pedagogy

Tutors' effectiveness is also determined by the materials they use to teach, the goals of their teaching lessons, and the alignment of these with the schools' overall goals. Some tutoring programs are designed to implement curricula that are entirely distinct from the curriculum sequence of their students' schools. Typically, the goal here is remediation for students who lack the foundational skills needed to access course content. Highly effective tutoring programs including Reading Recovery and Number Rockets are designed with discrete curricula to ensure students master certain foundational skills regardless of what is taking place in the mainstream curriculum. Reading Recovery emphasizes phonics, which may contrast with classroom reading instruction that emphasizes comprehension. Similarly, Number Rockets is a school-based tutoring program for first grade that contains scripted lessons on basic mathematical skills. Though less common, this approach can also be used to provide enrichment, extensions, and above-grade level skills to engage and motivate advanced learners.

On the other extreme are programs that provide little or no clear information about the material to be covered in tutoring sessions; tutors may simply be asked to help students one-on-one with existing class assignments or homework, or left to improvise their own lesson plans and materials. There is little evidence that such programs meaningfully impact student success.

It seems obvious that programs with clearer expectations and greater resources that align with goals for student learning will lead to greater success. But it is also important to consider what the costs of this approach may be: must additional materials be purchased for tutors to use? How much additional training is necessary to effectively use them? There is also a trade-off in professional autonomy from using a scripted curriculum, which may affect the number and quality of tutors the program is able to recruit. Finally, one must consider tutor longevity and turnover in assessing the student returns on the investment in tutor training.

Frequency and Dosage

In general, tutoring is more effective when it occurs several days a week for thirty minutes or more on each occasion. Programs with the greatest evidence of effectiveness are those with the highest dosage, typically meaning sessions of 45 minutes or more, five days per week. The SAGA program that greatly boosted high school math achievement in Chicago involved 60-minute sessions with tutors that occurred on each school day - effectively, an additional full class period in which students were assigned to small-group (two-to-one) math instruction (with a paraprofessional tutor who is effectively the full-time instructor of this course) (Guryan et al. 2023). Reading Recovery calls for daily 30-minute sessions, while Number Rockets calls for 40-minute sessions at least three times per week.

On the other extreme are tutoring sessions that meet only weekly, or for as little as ten to twenty minutes; evidence for effectiveness of these programs is less pronounced (Nickow et al. 2020). However, high-dosage does not guarantee great results: in an experimental study of high-dosage reading tutoring for middle school students in New York, Fryer found no significant effects on achievement scores (Fryer and Howard-Noveck 2020).

Finally, the frequency and dosage of tutoring may matter for the training and development of tutors. Although there is little literature on the determinants of which individual tutors will be most effective, research on *teacher* training suggests that tutors may become more effective as the

frequency and duration of their tutoring sessions increases. Instructional training is more effective when trainees are given multiple, repeated opportunities to get a lesson right. Tutors may have a difficult time developing relationships with students, improving their pedagogy, and creating continuity in their lessons if sessions are infrequent.

Supplement vs Supplant

What students would otherwise be doing with the time that is given to tutoring is an important cost to consider when designing school-based tutoring programs. After-school programs are attractive because they add to existing instructional time (supplement), rather than replacing it (supplant); however, evidence shows after-school programs are typically less effective (Nickow et al. 2020). Tutoring sessions scheduled during the school day may be more effective because the academic nature and goals of the tutoring are more obvious, tutors are provided with greater on-site supervision, students are primed to be more attentive, and attendance is less optional.

At the same time, scheduling tutoring sessions during class time poses the risk of removing students from instruction they otherwise need to succeed. At least one high-frequency, high-dosage tutoring program has produced *negative* achievement effects because the tutoring was of low-quality (provided via remote virtual tutors) and supplanted students' access to core instruction during the school day (Robinson 2023).

College Students as Tutors

Research on the effectiveness of college students as tutors indicates that they can be highly effective, though not typically as effective as trained teachers or paraprofessionals, and that their effectiveness depends significantly on the structure and design of the tutoring programs in which they participate.

Volunteers or Employees? College tutors may be volunteers or part-time employees in federal work-study programs. Volunteers may be recruited and organized through student-run community service organizations or by faculty/researchers. Volunteer programs are often structured as a short-term commitment, such as three hours per week over a seven or ten week period, often tied to the term of the college's academic calendar (Young et al. 2018). Work-study programs typically involve more intensive time commitments, such as the America Reads program which requires students to tutor for 900 hours over the course of a calendar year to receive their work-study stipend (Allor and McCathren 2004).

Training and Curriculum: Whether volunteer or employment-based, college student tutoring programs are most effective when the tutoring intervention has clear, well-targeted goals and tutors are provided adequate training and resources to achieve them. This was the case with one reading comprehension intervention staffed with volunteer college student who tutored students in early elementary over seven weeks (Young et al. 2018). Programs with very minimal training (e.g. three one-hour sessions over the course of the year) can be effective if tutors are provided with materials that provide easy-to-follow instructions and ongoing support and supervision from trained professional staff (Allor and McCathren 2004).

Resources for Design, Planning, and Implementation of an Effective UW – MMSD Tutoring Partnership

Finally, we considered resources for the development of a program adapted to the unique opportunities and constraints in Madison. Stanford University's National Student Support Accelerator has developed an extensive library of resources for effectively designing and implementing district-scale tutoring programs. Highlights include:

- A [toolkit](#) for guiding education practitioners through the design and development of high-impact tutoring programs.
- A [playbook](#) specifically for tutoring partnerships with Higher Education Institutions (HEI)
 - [Profiles](#) of other HEI-District tutoring partnerships
- A [cost calculator](#) enabling quick estimation of how program design decisions impact cost

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