A Multi-State Analysis of Effective Online Tutoring for Elementary, Middle, and High School-Aged Students

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While tutoring has always been considered a valuable tool for K-12 students, it has attracted renewed interest as a tool to address learning loss during the COVID pandemic. The purpose of this paper is to discuss the need for supplemental instruction, review tutoring best practices that produce significant learning gains, and consider whether these practices remain effective when used in an online tutoring environment. To this end, this paper will evaluate achievement data gathered from multiple data sources on student reading, English, and math achievement from an online tutoring provider that implements such practices.

The Need for Supplemental Instruction

The evidence of the impact of COVID on K-12 is clear: students have fallen further behind, and educators must adopt supplemental learning solutions that complement classroom instruction as it rapidly evolves. A study indicates that students would return to school in the Fall of 2020 retaining roughly 63-68% of what they learned in reading and only 37-50% of what they learned in math from the previous year (Kuhfeld, Soland, Tarasawa, Johnson, Ruzek, & Liu, 2020). Goldhaber et al. (2022) found that students experienced less achievement growth in the 2020/2021 academic year than in pre-pandemic academic years. These missed gains were further exacerbated by race and poverty, with high-poverty districts and minority students hit the hardest.

Tutoring Accelerates Student Academic Success

The U.S. Department of Education recommends addressing lost instructional time through varied instructional approaches, tutoring, and expanded learning time. Specifically, the U.S. Department of Education recommends that:

Learning acceleration focuses on quickly diagnosing gaps in critical skills and

concepts that may impede students from accessing grade-level coursework.

Acceleration provides instruction in prior knowledge and teaching prerequisite

skills that students need to learn at a pace that allows students to stay engaged in

grade-level content and lays a foundation for new academic vocabulary (U.S.

Department of Education, Office of Planning Evaluation, and Policy Development,

2021, p. 18).

Tutoring Contributes to Student Wellbeing

In addition to academic challenges and technology gaps, mental health strains faced by

children rose significantly during the pandemic because of the disruptors of school

closures, loss of contact with friends, and COVID impacts on parent employment, stress,

and home dynamics (Golberstein, Wen, & Miller, 2020). Fortunately, studies also indicate

that positive tutor-student relationships enhance student well-being and confidence (Kara

& Can, 2019; Matthewman, Jodhan-Gail, Nowlan, OSullivan, & Patel, 2018). Fryer, Jr. and

Howard-Noveck (2020) found that high-dosage tutoring had a positive effect and

encouraged school attendance. Students want to engage with tutors who understand the

difficulty of their transition into academic writing, validate their existing and growing

skills, and build relationships through detailed and repeated interactions (Denny, Nordorf,

& Salem, 2018). As Sawchuch (2020) quoted John Hopkins professor Robert Slavin:

The lowest-performing kids tend to sit quietly in school and hope no one will notice

them. With tutoring, there's an adult who gets to know them and cares about them

deeply and gives them loads of opportunity to let them show that they can succeed

(par. 10).

The literature paints a clear picture: student use of tutoring in combination with effective tutoring techniques will improve student learning outcomes during the current COVID education crisis and beyond. As technological access expands and educators and students adapt to new learning modalities, effective tutoring is a critical component of closing the achievement gap and helping students thrive.

Tutoring Helps Bridge Technology Gaps

Students in low-income areas experience even broader learning gaps due to technology challenges and other barriers that limit student engagement in the virtual classroom (Department of Education, Office of Civil Rights, 2021). Tutoring may also help narrow the digital divide, already a significant issue for rural and poverty-stricken communities prior to the pandemic. As a result of school closures during COVID, instructors and students faced challenges of rapid technology adoption and low-bandwidth Internet access across the country. Correia (2020) recommends that educators may improve student engagement in and with online learning by increasing contact points with students, using alternatives to videoconferencing such as asynchronous learning activities, and engaging alternative means of assessing students beyond standard evaluations.

Tutoring Best Practices

The research concludes that tutoring is an effective learning acceleration tool that, when implemented carefully, improves standardized test scores, reduces failed subjects, and suggests additional student commitment to assignments (Gewertz, 2022; Dorn, Hancock, Sarakantsannis, & Viruleg, 2021; Nickow, Oreopoulos, & Quan, 2020). Sembiring (2018) found that effective tutoring is most impacted by the learning strategies introduced by a tutor to their tutee, followed by the program's access and ease of use. These findings

align with those of Sabatino (2014) and Chibani (2014): the development of student

learning strategies through the tutoring feedback process was a key factor in the

effectiveness of overall support.

Although most scholarship about tutoring best practices is written about peer tutor-

tutee environments, most of the practices carry over to professional tutor-tutee best

practices: establish a welcoming environment for the tutee (Matthewman, Jodhan-Gail,

Nowlan, OSullivan, & Patel, 2018); ask open-ended questions that encourage discovery; and

use demonstrations and practice to affirm learning and set goals (Sturman, 2018).

Additional characteristics of successful tutoring programs include:

- Wide tutoring availability to all eligible students (U.S. Department of Education,
  Office of Planning, Evaluation, and Policy Development, 2021).

- Opportunities for meaningful tutor, student, and instructor relationships (Gewertz,
  2022).

- "High-dose" tutoring interactions, at least three days per week for at least 30
  minutes per tutoring session (Kraft & Falcon, 2021).

- Alignment with the student's classroom curriculum (Edgerton, 2021).

- Individualized tutoring approaches (Sawchuck, 2020).

- Availability during the school day, including before or after school (J-PAL, 2020).

- Professionally educated tutors with ongoing training (Nickow et al., 2020)

Evaluating Best Practices

To evaluate the efficacy of tutoring best practices in an online environment, this

paper will examine data collected from students who have received online tutoring via

such practices. Proper longitudinal analysis requires using data from providers that both

implement such practices and have provided services at a statistically-significant scale and timeframe. Most online tutoring providers are relatively new and have not gathered enough data to demonstrate efficacy or do not implement many of the above best practices. Following a comparative analysis of leading tutoring providers, the authors of this study have chosen to focus on sessions conducted by Brainfuse Online Tutoring, a New York-based online tutoring provider. Brainfuse presents an ideal case subject for analyzing best practices in an online setting because it a) has employed the abovementioned practices for over two decades (see Table 1) and b) has gathered statistically significant data during that period. In addition, Brainfuse is one of the few online tutoring providers to have participated in ESSA Tier 1 controlled studies. Brainfuse Online Tutoring provides live one-to-one tutoring sessions, writing feedback, test preparation, and study aids for K-12 students.

Brainfuse offers live online tutoring in subjects where students frequently show a higher need for support outside the classroom, including math, English language arts, science, and social studies. Students and tutors communicate through a multimedia-rich online interface that includes audio/video/chat, file sharing, equation editing, graphing, and other drawing tools. Tutors for K-12 programs are based in the United States, are current or former teachers, and hold a minimum of a bachelor's degree. All materials to support or supplement online sessions (diagnostic tests, worksheets, and lessons) are aligned with the student's state standards. Tutoring sessions are recorded and can be played back by students and stakeholders. In addition, Brainfuse reviews past sessions for training and quality control.

Table 1

Tutoring Best Practices Employed by Brainfuse Online Tutoring

Tutoring Best Practice	Used by Brainfuse	Brainfuse Implementation
Open-ended questions that encourage discovery	Yes	Brainfuse tutors use the Socratic method
Varied learning strategies	Yes	Brainfuse tutors use research-based strategies that meet the student's needs
Easy to use and access tutoring	Yes	Brainfuse is available from any device or browser
Accessible for all eligible students	Yes	support for legacy hardware and connectivity (e.g. dial-up)
Relationship-focused tutoring	Yes	Brainfuse matches tutors with students based on pre-assessment results
"High-dose" tutoring interactions	Yes	Brainfuse provides frequent tutoring for students
Alignment with classroom curriculum and state educational standards	Yes	Brainfuse aligns content with state education standards and teacher expectations
Individualized tutoring	Yes	Brainfuse tutors adhere to the Universal Design of Learning
Conducted during school (including before or after the school day)	Yes	Brainfuse services are available 24x7
Professionally-educated and trained tutors	Yes	Brainfuse tutors are current or former educators

Case Studies: Best Practices in Action

As part of the No Child Left Behind Act, Brainfuse Online Tutoring partnered with several K-12 institutions from 2002-2015 to help improve student learning and achievement through a vetted online tutoring program. The following case studies document the achievements of those partnerships: the Colorado Department of Education Study (2009); the Los Angeles Unified School District Study (2011); and Brainfuse Online Tutoring Multi-State Effectiveness Study (2018-2021).

Colorado Department of Education Study

In June 2009, the OMNI Institute released a report prepared for the Colorado Department of Education on the effectiveness of providers in raising standardized test scores. Approximately 4,000 students participated in Colorado's Supplemental Educational Services program, receiving at least one hour of federally funded tutoring through their school provided by one of twenty-five tutoring vendors. Brainfuse ranked first in the math and reading categories, with a math improvement rate of 30% and a reading improvement rate of 39.3% (see Figures 1 and 2).

Figure 1

OMNI Institute Math Achievement (p.42)

Table 3.2: Math Achievement: Percentage of Students who Improved in Proficiency
Categories and Median Growth Percentile by Vendor

Math Achievement		
Vendor	% Improved	Median Growth Percentile
Brainfuse One-to-One Instruction	30.0	50.0
Chancellor Supplemental Educ. Ser.	21.1	38.0
Advantage Tutoring Services	20.4	59.0
Education Station	19.6	54.0
A to Z In-Home Tutoring	18.2	59.5
Club Z!	16.7	51.0
Tutor Train	16.2	44.0
Controls	*15.9*	*47.0*
Santa Fe Trail BOCES	15.0	67.5
GOALS, Inc.	8.7	33.0
GEO Foundation	4.3	36.0

Figure 2

OMNI Institute Reading Achievement (p.38)

Table 3.1: Reading Achievement: Percentage of Students who Improved in Proficiency
Categories and Median Growth Percentile by Vendor.

Reading Achievement		
Vendor	% Improved	Median Growth Percentile
Brainfuse One-to-One Instruction	39.3	62.5
Advantage Tutoring Services	33.3	52.0
Dept of Extended Learning	32.4	60.0
A to Z In-Home Tutoring	31.6	59.0
Club Z!	29.3	53.0
Summer Scholars	28.7	54.5
Read, Read, Read	27.8	52.0
GEO Foundation	26.5	47.0
GOALS, Inc.	26.1	52.0
Steps to Success	25.7	64.0
Education Station	23.9	45.0
Controls	*23.2*	*44.0*
Center for Hearing, Speech, & Lang	22.7	53.0
John Corcoran Foundation	21.7	43.0
Tutor Train	14.1	35.0
Chancellor Supplemental Educ. Ser.	13.6	34.5

Los Angeles Unified School District Case Study

In 2011, the Los Angeles Unified School District Research United published its annual findings on *The Impact of Participation in Supplemental Educational Services (SES) on Student Achievement.* The study correlates student participation in vendor-provided tutoring with their California Standardized Test scores. In 2009-2010,   the Los Angeles Unified School District ranked Brainfuse #1 among all approved LAUSD tutoring providers in improving student math scores (see Figure 3, 4).
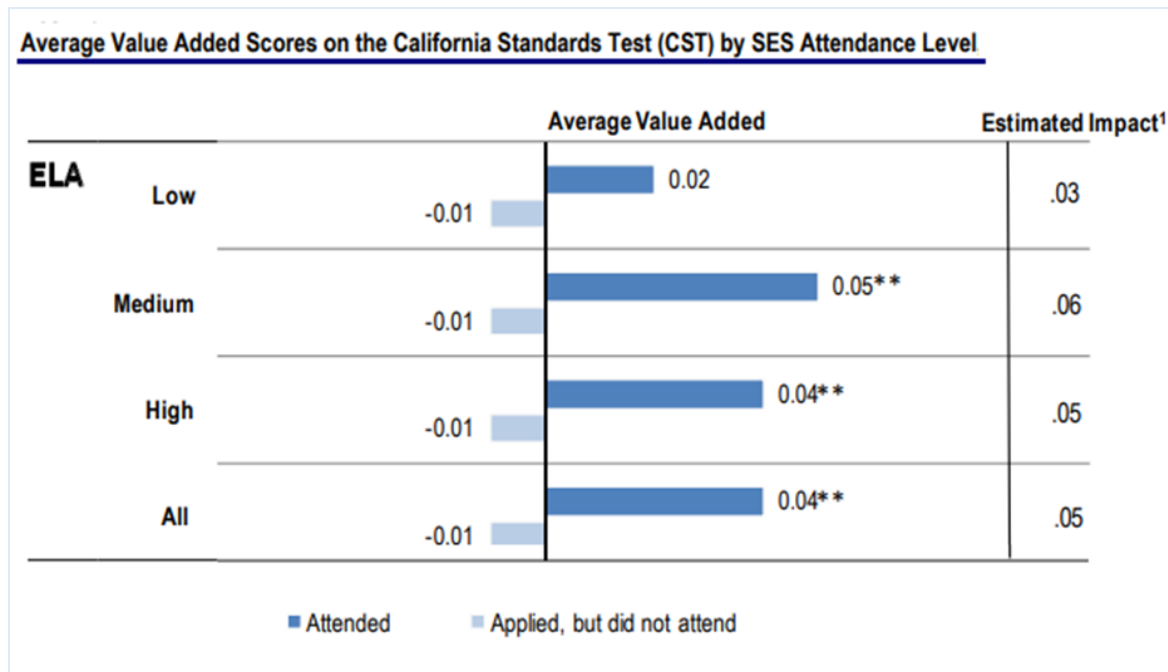
Figure 3

LAUSD Average Value Added Scores in Math
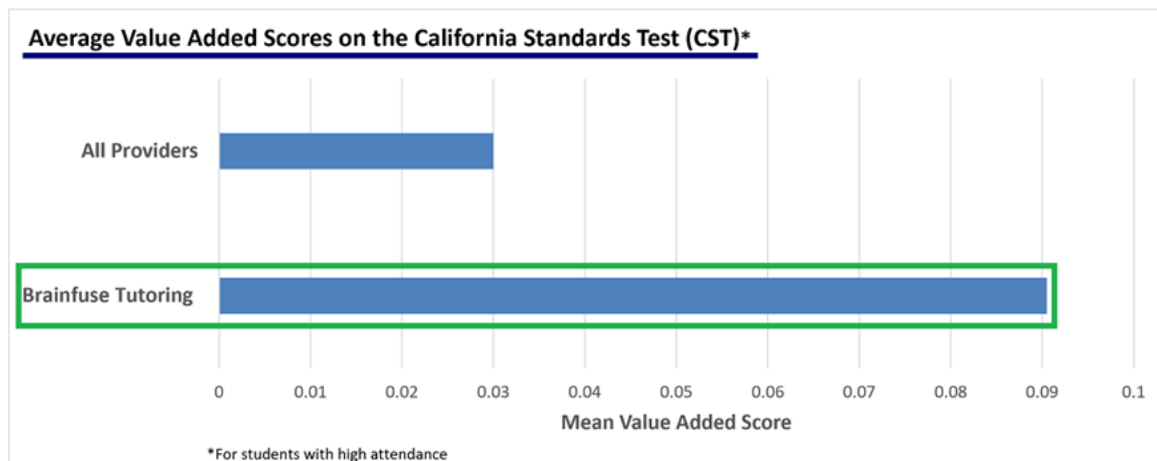
Figure 4

LAUSD Average Value Added Scores in ELA

Brainfuse Multi-State Effectiveness Study (2018-2021)

In addition to the aforementioned large-scale independent studies, Brainfuse has also compiled performance data from its tutoring sessions. The Brainfuse Multi-State Effectiveness Study measured student performance from 2018-to 2021 in twelve urban and rural school districts throughout the country: Anne Arundel County Public Schools, MD; Baltimore County Public Schools, MD; Broward County Public Schools, FL; Chicago Public Schools, IL; Columbus City Schools, OH; Fort Bend Independent School District, TX; Houston Independent School District, TX; Los Angeles County Public Schools, CA; Mukilteo School District, WA; New York City Department of Education, NY; Sacramento City Unified School District, CA; and San Francisco Unified School District, CA. Between 2018 and 2021, students from the above school districts accessed Brainfuse tutoring, tests, and content

from library, school, and municipal portals via Brainfuse subscriptions. Students took pre-and post-tests in the respective subject areas and received Brainfuse online tutoring intervention services between their pre-and post-tests. The results below indicate the average percentage score increases in the respective subjects when comparing pre-and post-test results. Key findings based on pre-and post-test results indicate that after receiving Brainfuse online tutoring, students increased their scores:

- in mathematics by an average of 8.27%,

- in English Language Arts by an average of 3.86%, and

- in science by an average of 19.55%.

Although these case studies primarily focus on the impact of online tutoring on student academic success, the impact of student satisfaction with online tutoring must also be considered. Several studies, including those of Fantuzzo, Dimeff, & Fox (1989); Hendriksen, Yang, Love, & Hall (2014); and Kim & Hahn (2017) indicate that satisfaction with tutoring services or with an overall program that included tutoring services corresponded with overall student success in a course or program. Brainfuse collects satisfaction survey data from students at the end of each tutoring session (completion of the survey is optional). Student survey data from the past ten years indicates high satisfaction with interactions and the perception that tutoring contributed to academic improvement.

Table 2

Post-Session Student Survey for Brainfuse Online Tutoring

Survey Question	Response Yes
Were you satisfied with this session?	98%
Would you recommend this service to a friend?	97%
Did this service help you complete your assignment?	96%
Is this service helping you improve your grades?	86%
Is this service helping you be more confident about your school work?	97%

Conclusion

Effective tutoring includes a number of key best practices, including inclusion for all eligible students, alignment with state standards and classroom curriculum, high-quality instructional material, relationship-based tutoring, individualized approaches, high-dose frequency, and highly trained tutors (Edgerton, 2021; Kraft & Falcon, 2021; J-PAL, 2020). The tutoring use and retention data analyzed in the Brainfuse case studies indicate that these best practices are transferable between a traditional, in-person environment and an online setting. These best practices, as employed by Brainfuse Online Tutoring, improved students' likelihood of academic success and well-being. Both the student satisfaction survey data and retention findings indicate that tutoring conducted according to the best practices outlined in this paper provides critical and valued academic support to students outside of the classroom, providing trusted learning partners and content in timely, relevant, and accessible ways that support accelerated learning opportunities for K-12 students across programs and institutions. Importantly, the Brainfuse case study indicates

that tutoring best practices can be implemented effectively online, empowering school districts to leverage virtual environments to support learners at times and in places where support may otherwise be unavailable, especially as COVID and post-COVID classroom environments change.

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