Private Tutoring and Mathematics Education: A Review of the Current Research Landscape and Future Directions

Zehao Li
University of Sydney
zeli0824@uni.sydney.edu.au

Bronwyn Reid O'Connor
University of Sydney
bronwyn.reidoconnor@sydney.edu.au

Ben Zunica
University of Sydney
benjamin.zunica@sydney.edu.au

The tutoring market has expanded dramatically over the past decade particularly in mathematics. In this paper, we problematise the growth of mathematics tutoring given its societal impacts and the current lack of evidence for its effectiveness. In addition to gaps in research on its effectiveness, there exist no comprehensive frameworks for conceptualising effectiveness in tutoring. To address this gap, existing research on the effectiveness of tutoring will be considered to inform the development of a holistic evaluation framework. This theoretical paper will facilitate identification of directions for future research to foster a more nuanced understanding of tutoring's impact.

Introduction

In recent years, the tutoring industry has expanded rapidly, becoming an integral part of education systems worldwide, particularly in countries such as Australia, China, South Korea, and Japan (Bray, 2009; Guo et al., 2020; Zhang et al., 2021). Commonly referred to as 'shadow education', tutoring consists of fee-based supplementary lessons outside regular school hours, aimed at enhancing students' academic performance (Bray, 2009; Zhang et al., 2021). Its growing prevalence reflects the increasing pressure on students and parents to secure academic advantages in highly competitive educational environments (Zhang et al., 2021).

Among the various subjects, mathematics tutoring constitutes a significant share of the market, underscoring its perceived importance in academic success and its role as a foundation for STEM-related career pathways (Zhang et al., 2024). Despite the potential benefits of tutoring, its rapid growth has sparked considerable debate. Proponents highlight its role in addressing learning gaps and improving student outcomes, particularly in mathematics (Zheng et al., 2020). However, as access to high-quality tutoring or tutors that have high qualifications often correlates with socio-economic status (Ömeroğulları et al., 2020), critics point to concerns about an increasing reliance on tutoring potentially exacerbating inequalities. Additionally, there are concerns about tutoring's possible disruption of teaching in normal schooling (Yung, 2020). While research has examined these dynamics in various international contexts, there remains a notable gap in studies focusing on the Australian education system. In this paper, we aim to critically examine the global research landscape on tutoring, unpack how is effectiveness understood in the tutoring context, and conceptualise what effectiveness means in tutoring.

Tutoring: Current Issues and Socio-Economic Impacts

Despite existing research on the academic benefits of tutoring (Guo et al., 2020; Zheng et al., 2020), increasing attention is being given to its broader socio-economic and policy implications. The societal impact of tutoring is particularly evident in China, where families spend an average of USD 5,000 annually, with students dedicating approximately 10 hours per week to private lessons (Zhang et al., 2021). Concerns over its consequences on educational inequalities and burdens on families' educational expense led to the introduction of the 'Double Reduction' policy, which prohibited tutoring agencies from providing instruction aligned with school curricula (Zhang et al., 2024). Similarly, South Korea implemented strict regulations on

(2025). In S. M. Patahuddin, L. Gaunt, D. Harris & K. Tripet (Eds.), *Unlocking minds in mathematics education. Proceedings of the 47th annual conference of the Mathematics Education Research Group of Australasia* (pp. 253–260). Canberra: MERGA.

private tutoring between the 1980s and 2000, aiming to reduce education inequalities linked to socio-economic disparities. However, after the policy was lifted in 2000, participation in tutoring surged, with approximately 75% of students engaging in private lessons, contributing 2% to the national GDP (Kim & Park, 2012). Beyond Asia, similar trends have emerged. In Germany, 8.2% of primary students receive mathematics tutoring before entering high school (Benckwitz et al., 2022). In the UAE, 27% of students are tutored, with 83% of these students being tutored in mathematics (Rocha & Hamed, 2018). In the Australian context, there is a lack of comprehensive national data, which makes it difficult to quantify student participation in tutoring. However, estimates suggest that tutoring in Australia is a billion-dollar industry (Australian Tutoring Association, 2022), with over 45 thousand tutors formally identified by Jobs and Skills Australia (Australian Government, 2024). However, the true size of the Australian tutoring industry is unknown, as the work of many tutors goes unreported. Data gathered by major tutoring providers suggests that approximately 40% of Australian students engage in some form of private tutoring (Apex Tuition Australia, n.d.).

Research claims that the expansion of tutoring is largely driven by societal pressures, including parental expectations and peer competition (Guo et al., 2020). Mathematics, in particular, is often regarded as a high-stakes subject, prompting parents to invest in tutoring as a strategic tool for securing academic advantages (Zhang et al., 2021). However, this shift has raised concerns that tutoring has evolved beyond remedial support into a competitive mechanism designed to outperform peers, particularly in high-stakes examinations (Guo et al., 2020). Critics argue that this transformation undermines the original purpose of tutoring, which was to support struggling students, particularly in challenging subjects such as mathematics (Yung, 2020). Given tutoring is widely used for academic advantage, tutoring exacerbates social inequalities, as wealthier families have greater access to more experienced tutors who have higher qualifications, which ultimately widens the educational divide (Bray & Kwo, 2014; Yung, 2020). This disparity is particularly evident in mathematics education, where access to skilled and qualified tutors significantly influences students' conceptual understanding and problem-solving abilities (He et al., 2021). Additionally, the widespread reliance on tutoring raises critical questions about the adequacy of formal education. Some scholars argue that mainstream classrooms often fail to provide sufficient individual attention or accommodate diverse needs, prompting families to seek external support (Benckwitz et al., 2022).

Considering these global trends, tutoring presents significant challenges in relation to parental anxiety, equity, academic competition, and formal education. While the format of tutoring varies across countries, a fundamental question remains central to scholarly debate: Is tutoring truly effective? Correspondingly, what does 'effective' mathematics tutoring mean?

Researching the Effectiveness of Tutoring

Given the concerns raised and common perceptions of tutoring's ability to enhance students' academic performance, it is important to be able to measure the efficacy of tutoring in meeting the perceived needs. Research on the effectiveness of tutoring in improving student learning outcomes remains inconsistent across countries and educational contexts (Guo et al., 2020; Ömeroğulları et al., 2020). Scholars have identified multiple factors contributing to this variability (Guo et al., 2020; Zhang et al., 2021; Zheng et al., 2020). One major challenge lies in the context-dependent nature of effectiveness, as its conceptualisation varies significantly across different educational settings and stakeholders who view tutoring as a commodity for satisfying their own needs. Bray and Kwo (2014) highlights that research design and findings are highly sensitive to local contexts, meaning that stakeholders from different education systems and policy environments may have divergent criteria for determining what constitutes effective tutoring. Factors such as government policies, school structures, and learning environments shape these perceptions, making it difficult to establish a universal definition of

tutoring effectiveness. Moreover, this contextual diversity has led to a lack of a standardised conceptual framework for reliably evaluating student learning outcomes and teaching quality (Zhang et al., 2021). While many studies focus primarily on academic achievement as a measure of effectiveness, others adopt a broader perspective, assessing the development of cognitive skills, problem-solving abilities, and student engagement in mathematics (Guo et al., 2020; Ömeroğulları et al., 2020; Zhang et al., 2024; Zhang et al., 2021). Given these challenges, this section examines how scholars have assessed tutoring effectiveness, identifies limitations in existing research, and highlights key areas for further investigation in the Australian context.

Mixed Results in Global Research on Effective Tutoring

Despite the widespread belief in tutoring's ability to enhance student performance, research has yielded mixed findings regarding its effectiveness (Zhang & Liu, 2022; Zhang et al., 2021). While some studies report significant academic benefits, others suggest more modest or even negligible impacts. One common approach to assessing tutoring effectiveness involves comparing students' standardised test scores before and after receiving tutoring (Zhang et al., 2021). This method, though methodologically valid, has produced mixed results depending on factors such as tutor qualifications, tutoring intensity, quality of instructions, and programme structure. For instance, a meta-analysis by Nickow et al. (2020) found that tutoring programmes generally have substantial positive effects on student achievement, particularly when delivered by trained teachers or paraprofessionals. Similarly, Zhang et al. (2021) highlighted that tutoring is most effective (as measured by school examination scores) when conducted during school hours and structured into frequent, short sessions. However other studies (Zhang & Liu, 2022; Guill et al., 2022), suggest that private tutoring's impact on student achievement is relatively weak, implying that the benefits may be overstated or contingent on contextual factors. Additionally, White et al. (2023) argue that the effectiveness of tutoring depends on instructional quality, tutor-student relationships and the alignment of tutoring with students' academic needs. These conflicting findings underscore the need for a nuanced understanding of tutoring's impact. While tutoring can enhance academic performance, its effectiveness is influenced by multiple factors, including student motivation, programme design, and socio-economic context (Bray & Kwo, 2014). Moreover, the definition of effectiveness varies across studies (Zhang et al., 2021; Zheng et al., 2020), with some emphasizing short-term gains in test scores and others considering broader educational outcomes. This complexity leads to a crucial question: how should effectiveness in tutoring—particularly in mathematics—be defined?

Issues With Defining Effectiveness in Mathematics Tutoring

As discussed earlier, any study evaluating tutoring effectiveness must first establish a context-informed understanding of what constitutes effective tutoring. Defining effectiveness requires a critical review of existing literature to examine how scholars have conceptualised and measured tutoring outcomes. Many studies begin by identifying the motivations driving students and parents to seek tutoring. For instance, Guo et al. (2020) and Zheng et al. (2020) highlight that students engage in tutoring for a variety of reasons depending on their personal or local contexts (e.g., prior achievement, motivation in learning mathematics, pressure from examinations, local educational system and resource distribution), and these motivations shape how effectiveness is perceived. Some families prioritise tutoring as a means to improve performance on high-stakes examinations. For these families, higher test scores and improved class rankings serve as primary indicators of effectiveness. In contrast, other families adopt a more holistic perspective, valuing tutoring for its role in enhancing conceptual understanding, problem-solving skills, and fostering a genuine interest in mathematics.

While defining effectiveness through student and parental motivations provides valuable insights, this approach overlooks perspectives from other key stakeholders, such as teachers

and curriculum developers, whose work is also influenced by tutoring. Although academic performance aligns with parental expectations, in the Australian education context, deeper mathematical thinking, reasoning skills, and conceptual understanding are often more emphasised in school instruction by teachers and curriculum developers (He et al., 2021). If tutoring effectiveness is measured solely by short-term academic gains, it risks neglecting broader educational objectives. That said, He et al. (2021) identified that tutors often ignore the holistic aims of (mathematics) education, that they prioritise student's fluency in replicating procedures and overlook the enhancement of skills like reasoning, communication, and logical thinking, which are critical skills for successful mathematics learning. Additionally, affective factors, such as a students' confidence in solving mathematical problems and their mindset toward learning, are difficult to quantify but essential in evaluating tutoring's role in mathematics education, as those factors may directly or indirectly contribute towards students' long- and short-term success in learning mathematics. Effectiveness in tutoring is further complicated by variability in student backgrounds, including prior knowledge, levels of achievement, and learning needs. As a result, tutoring outcomes can be both short-term (e.g., immediate test performance) and long-term (e.g., sustained mathematical competency and independent problem-solving skills). These complexities highlight that effectiveness in tutoring cannot be reduced to a single metric but should instead be understood and defined through a multidimensional framework that considers academic, cognitive, and affective development.

Key Factors Influencing Tutoring Effectiveness

Ömeroğulları et al. (2020) identified three key factors that influence the effectiveness of mathematics tutoring: socioeconomic status (SES), parental involvement, and motivation and prior performance. SES is a key determinant for access to high-quality mathematics tutoring, with those from higher SES backgrounds having access to experienced tutors with advanced qualifications (Ömeroğulları et al., 2020) and others from lower SES families having limited access to qualified tutors (Guo et al., 2020). These disparities indicate that there remains inequitable access to mathematics tutoring. Active involvement by parents and students is another determinant of tutoring effectiveness (Zheng et al., 2020). Students who receive active encouragement from their families tend to perform better in mathematics and obtain benefits from tutoring (Zheng et al., 2020). Motivation and prior academic performance also play pivotal roles in gaining benefits in mathematics tutoring (Benckwitz et al., 2022; Zhang et al., 2021). High-achieving students, who are more motivated, can achieve better results in standardised assessments from tutoring sessions (Zhang et al., 2021). Conversely, lower-achieving students may require longer periods of support to see meaningful progress. This highlights the influence of individual learner characteristics in impacting the effectiveness of tutoring.

While the above factors can actively impact the effectiveness of tutoring, it is also essential that scholars realise that those factors can also be the driving reason of why students and parents choose tutoring in mathematics. For instance, students and parents may choose tutoring to boost their confidence in tackling difficult questions, to get better results in high-stake assessments which influence their career pathways, or to demonstrate more autonomy involving making educational decisions. As such, those factors can not only influence how tutoring's effectiveness is evaluated but can also shape the impact tutoring has on many different aspects in students' lives which may eventually be used to evaluate the effectiveness of tutoring. As a result, how should the scholars comprehensively evaluate the effectiveness of tutoring in the context of Australia becomes a key consideration for any research to take place.

Evaluating the Effectiveness of Tutoring in Australia: Developing a Conceptual Framework

In the previous sections, this paper has outlined the existing challenges and complexities associated with tutoring, emphasising the necessity for further research in the Australian context. While international studies have explored the multifaceted impacts of tutoring, there remains a substantial gap in the development and application of conceptual frameworks specifically designed to assess its effectiveness. This section aims to address this gap by proposing key considerations that scholars should incorporate when formulating conceptual frameworks for tutoring research in Australia. As outlined previously, Bray and Kwo (2014) highlight the importance of adopting a context-informed conceptual framework, recognising that tutoring operates within distinct educational, socio-economic, and policy environments. As such, it is necessary that scholars assess the contexts in which tutoring is shaped in Australia, such that a conceptual framework can accurately evaluate the effectiveness of tutoring.

Defining Effectiveness in Tutoring Research

A foundational step in evaluating tutoring effectiveness is to establish a clear and multidimensional definition of what constitutes effectiveness. As explored previously, existing studies often conceptualise effectiveness by solely focusing on academic performance (Zhang et al., 2021). However, this approach is limited as it fails to account for interest of other stakeholders and longer-term educational benefits such as cognitive development, problem-solving abilities, and student autonomy in learning (Guo et al., 2020). A robust conceptual framework should consider three key dimensions of effectiveness:

1. Academic Outcomes – measurable improvements in student performance, including standardised test scores, class rankings, and subject-specific proficiency, particularly in mathematics and STEM-related fields.
2. Cognitive and Affective Development – gains in student confidence, self-efficacy, and motivation toward learning, which are critical for sustained academic engagement.
3. Equity and Accessibility Considerations – the extent to which tutoring mitigates or exacerbates educational disparities, particularly in relation to socio-economic background and access to quality instruction.

A framework that incorporates these three dimensions could allow for a more holistic assessment of tutoring effectiveness, moving beyond simplistic measures of academic success to consider broader educational and social implications.

Theoretical Perspectives in Conceptualising Tutoring Effectiveness

To build a strong foundation for evaluating tutoring, established learning theories and educational models can be considered concurrently to holistically conceptualise the effectiveness of tutoring. One commonly cited framework is Carroll's (1963) Model of School Learning, which emphasises the relationship between instructional time, student aptitude, and learning outcomes. While this model provides a useful starting point, it has a narrow focus on instructional input, and neglects psychological, motivational, and socio-economic factors that influence tutoring effectiveness. An alternative perspective is Vygotsky's (1978) Sociocultural Theory, which highlights the role of scaffolding and social interaction in learning. In the tutoring context, this suggests that one-on-one or small-group tutoring may be most effective when it aligns with students' zone of proximal development (ZPD)—the range of tasks that learners can complete with guided assistance but not independently. This perspective underscores the importance of adaptive instructional methods, wherein tutors tailor their approaches to meet the diverse needs of individual learners. Another relevant theory is Self-Determination Theory (Deci & Ryan, 2012), which posits that students are more likely to

succeed academically when their basic psychological needs for autonomy, competence, and relatedness are met. Tutoring that emphasises student agency and active learning may therefore be more effective in fostering deep learning compared to rote memorisation-focused models.

Key Factors Influencing Tutoring Effectiveness in Australia

Based on prior research evidence, several contextual factors must be accounted for when designing a conceptual framework for tutoring research in Australia. These include socio-economic status (SES), student motivation and prior academic achievement, parental and institutional involvement, and the format of tutoring (e.g., online versus face-to-face).

Research conducted internationally consistently indicates that SES plays a crucial role in determining access to high-quality tutoring (Ömeroğulları et al., 2020). Families from higher-income backgrounds can afford experienced tutors with advanced qualifications, while lower-income students often rely on less-qualified tutors or may be unable to access tutoring at all (Guo et al., 2020). To address this global trend and examine whether if a similar trend exists in Australian education setting, a conceptual framework must account for these disparities, and consider how tutoring effectiveness varies across different SES groups.

Student motivation and prior achievement are also critical determinants of tutoring success. From a self-determination theory perspective (Deci & Ryan, 2012), students with high prior achievement are more likely to engage with learning and tutoring with intrinsic motivation. High-achieving students, who often seek tutoring for enrichment rather than remediation, tend to show greater academic gains in standardised test results (Zhang et al., 2021). Conversely, students who struggle with learning might participate tutoring under peer or parental pressure, this may yield in more extrinsic motivated learning in tutoring. Consequently, those students may require more sustained and targeted interventions to see meaningful engagement with learning and improvements in standardised test results. Therefore, research frameworks should differentiate between tutoring's impact on high-achieving vs. low-achieving students by taking into account the diverse motivation and prior achievement exist among students being tutored.

Active parental support has been shown to enhance tutoring effectiveness, as students who receive consistent encouragement tend to perform better (Zheng et al., 2020). Additionally, the relationship between formal schooling and tutoring is critical. If tutoring complements school instruction, students may experience significant benefits. However, if tutoring operates in direct competition with schools, as seen in some Asian contexts, it may undermine classroom learning. Understanding this dynamic is essential for an effective conceptual framework.

The Australian tutoring landscape has undergone significant shifts with the rise of online tutoring platforms, particularly following the COVID-19 pandemic. Studies have shown mixed results regarding the effectiveness of online tutoring compared to traditional face-to-face instruction (Benckwitz et al., 2022). A conceptual framework must differentiate between these modalities and assess their respective impacts on student learning outcomes.

Future Research Implications

This paper has highlighted contemporary issues related to tutoring and identified a significant gap in research within the Australian context. To advance this field, further exploration of tutoring's effectiveness and broader societal implications is important. Research on tutoring in Australia remains limited, both in scope and in the development of a conceptual framework suited to the local context. A well-defined framework is crucial for evaluating tutoring's impact and understanding its role in Australian education. Thus, scholars should build on the key issues identified in this paper to research and study tutoring comprehensively.

Several critical research gaps persist. First, no comprehensive Australian study has systematically compared students' academic performance before and after receiving tutoring.

While international research has yielded mixed findings depending on the country and context (e.g., Bray & Kwo, 2014), the absence of similar studies in Australia underscores the need for robust empirical investigation. Second, as previously noted, tutoring may have long-term effects on students' learning trajectories and career progression (Zhang et al., 2021). Longitudinal studies are necessary to determine whether tutoring influences students' study habits and academic success over time. Although this area of research is still developing globally, it has received more attention internationally than in Australia. Third, there is a lack of research on how external tutoring and formal schooling can coexist in a mutually beneficial manner. A deeper understanding of this relationship could help shift stakeholder perceptions and foster collaboration between tutoring providers and schools, ultimately enhancing student learning experiences. Lastly, given the absence of regulations in Australia's tutoring sector, further research is needed to examine its implications for education policy and government intervention. This is particularly important given the Australian tutoring market appears to be resistant to attempts to bring in place national accountability measures (Dhall, 2024).

Addressing these gaps would contribute to a more nuanced understanding of tutoring in Australia. It would also support the professionalisation of tutoring and strengthen its relationship with formal education—ultimately prioritizing student learning and achievement.

Conclusion

The expansion of tutoring has led to concerns and debates regarding its effectiveness, accessibility, and impact on formal education globally. While tutoring may be perceived as an efficient tool for academic improvement by many stakeholders, this paper has demonstrated that current research findings on tutoring's effectiveness remains inconsistent across various contexts and regions. Furthermore, a clear and comprehensive framework for evaluating tutoring effectiveness is currently lacking, particularly within Australian education settings. This gap highlights the need for a more nuanced understanding of tutoring's role in students' learning beyond simple measures of academic performance.

At the same time, we have identified key challenges in understanding, defining, and measuring the effectiveness of tutoring. Though a variety of indicators have been used, there is still yet an agreement on what constitutes effective tutoring. Additionally, factors such as socioeconomic status, student motivation, prior achievement, tutor qualifications, and the relationship between tutoring and formal schooling further complicate the evaluation of tutoring effectiveness. These complexities further indicate the necessity for an integrated, context-informed framework that can accommodate multiple dimensions of effectiveness of tutoring.

In the Australian context, research on tutoring remains lacking, and the lack of national data further obscures our understanding of its role in students' achievement and its implications on society. To bridge this gap, future research should focus on systematically assessing both short- and long-term impacts of tutoring on students, schools, and society, especially how tutoring interacts with formal schooling, and implication of tutoring on the regulatory landscape. A well-defined conceptual framework tailored to the Australian education setting would greatly assist in advancing our understanding of this discourse and informing evidence and research-based policy decisions. This can therefore foster a more rigorous, equitable, and informed approach to tutoring research, which can contribute to the professionalisation of the industry and ensure that tutoring serves as a meaningful complement to schools, prioritising student development.

References

Apex Tuition Australia. (n.d.). *Why get private tutoring? Exploring the benefits of one-on-one instruction.* Retrieved March 16, 2025, from https://www.apextuitionaustralia.com/our-blog/why-get-private-tutoring-exploring-the-benefits-of-one-on-one-instruction

Australian Government. (2024). *Private tutors and teachers*. Retrieved from https://www.jobsandskills.gov.au/data/occupation-and-industry-profiles/occupations/2492-private-tutors-and-teachers

Australian Tutoring Association. (2022). *WithinTuition*. Retrieved from https://ata.edu.au/wp-content/uploads/2022/10/ATA-Newsletter-September-2022.pdf

Benckwitz, L., Guill, K., Roloff, J., Ömeroğulları, M., & Köller, O. (2022). Investigating the relationship between private tutoring, tutors' use of an individual frame of reference, reasons for private tutoring, and students' motivational-affective outcomes. *Learning and Individual Differences, 95*, 102137. https://doi.org/gqkstd

Bray, T. M. (2009). *Confronting the shadow education system: What government policies for what private tutoring?* United Nations Educational, Scientific and Cultural Organization; International Institute for Educational Planning.

Bray, T. M., & Kwo, O. W. Y. (2014). *Regulating private tutoring for public good: Policy options for supplementary education in Asia*. UNESCO and Comparative Education Research Centre, HKU.

Carroll, J. B. (1963). A model of school learning. *Teachers College Record, 64*(8), 723–733.

Deci, E. L., & Ryan, R. M. (2012). Self-Determination Theory. In P. A. M. Van Lange, A. W. Kruglanski, & E. T. Higgins (Eds.), *Handbook of Theories of Social Psychology (pp. 416-437, Vol. 1)*. Thousand Oaks, CA: Sage. https://doi.org/10.4135/9781446249215.n21

Dhall, M. (2024). A journey along the frontier: My attempts to bring accountability to shadow education in Australia and beyond. *ECNU Review of Education, 7*(1), 111-130.

Guill, K., Lüdtke, O., & Schwanenberg, J. (2022). The effects of private tutoring on students' academic performance: A within-student approach. *European Journal of Psychology of Education, 37*(2), 385–405. https://doi.org/10.1007/s10212-021-00581-x

Guo, Y., Chen, Q., Zhai, S., & Pei, C. (2020). Does private tutoring improve student learning in China? Evidence from the China Education Panel Survey. *Asia & the Pacific Policy Studies, 7*(3), 322–343. https://doi.org/gqm6r3

He, Y., Zhang, Y., Ma, X., & Wang, L. (2021). Does private supplementary tutoring matter? The effect of private supplementary tutoring on mathematics achievement. *International Journal of Educational Development, 84*, 102402. https://doi.org/gjvh8f

Kim, K. M., & Park, D. (2012). Impacts of urban economic factors on private tutoring industry. *Asia Pacific Education Review, 13*, 273–280.

Nickow, A., Oreopoulos, P., & Quan, V. (2020). The impressive effects of tutoring on PreK-12 learning: A systematic review and meta-analysis of the experimental evidence. *NBER Working Paper Series*. https://doi.org/10.3386/w27476

Ömeroğulları, M., Guill, K., & Köller, O. (2020). Effectiveness of private tutoring during secondary schooling in Germany: Do the duration of private tutoring and tutor qualification affect school achievement? *Learning and Instruction, 66*, 101306. https://doi.org/gqmvs5

Rocha, V., & Hamed, S. (2018). Policy Brief: Private tutoring in the United Arab Emirates: Is there a need for regulation? Regional Center for Educational Planning (RCEP).

Vygotskiĭ, L. S. (Lev S., & Cole, M. (1978). *Mind in society: the development of higher psychological processes*. Harvard University Press.

White, T., Kraft, M. A., & Redding, C. (2023). *What Impacts Should We Expect from Tutoring at Scale? Exploring Variability in Tutoring Program Effects*. EdWorkingPapers.

Yung, K. W. H. (2020). Comparing the effectiveness of cram school tutors and schoolteachers: A critical analysis of students' perceptions. International Journal of Educational Development, 72, 102141. https://doi.org/ppt9

Zhang, E., & Liu, Y. (2022). Effects of private tutoring intervention on students' academic achievement: A systematic review based on a three-level meta-analysis model and robust variance estimation method. *International Journal of Educational Research, 112*, 101949. https://doi.org/gqkstc

Zhang, Y., Dang, Y., He, Y., Ma, X., & Wang, L. (2021). Is private supplementary tutoring effective? A longitudinally detailed analysis of private tutoring quality in China. *Asia Pacific Education Review, 22*, 239–259. https://doi.org/ppvb

Zhang, Y., Wu, X., Chen, S., Cui, C., He, Y., & Wang, L. (2024). Differential effects of private tutoring on groups of students' mathematics achievements: A longitudinal study. *Educational Studies in Mathematics, 115*(2), 197–222.

Zheng, X., Wang, C., Shen, Z., & Fang, X. (2020). Associations of private tutoring with Chinese students' academic achievement, emotional well-being, and parent-child relationship. *Children and Youth Services Review, 112*, 104934. https://doi.org/g8n9xg