Case Report

Improving K-12 Schooling in Response to the COVID-19 Pandemic Through Tutoring: One Step Forward in Addressing an Ongoing Public Health Concern

Timothy E. Morse * and Giang-Nguyen Nguyen

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Improving K-12 Schooling in Response to the COVID-19 Pandemic Through Tutoring: One Step Forward in Addressing an Ongoing Public Health Concern

Timothy E. Morse * and Giang-Ngyuen Ngyuen

School of Education - Department of Teaching, Leadership and Research, University of West Florida, 11000 University Parkway, Building 85, Room 183, Pensacola, FL 32514, USA

* Correspondence: tmorse@uwf.edu

Abstract: Research has established that relatively higher levels of educational achievement are associated with better health outcomes. Thus, while providing every student with a high-quality education is always a public health concern, this matter garnered exceptional attention following the COVID-19 pandemic. It disrupted schooling across the globe, requiring elementary and secondary schools to address many resulting issues, including their students' learning loss, interrupted learning of grade-level curricula, need for accelerated learning, increased absenteeism, and staffing shortages. Consequently, this paper reports the many circumstances surrounding one approach employed widely in the United States to address the learning issues resulting from the pandemic: tutoring. First, the extent of students' academic declines following the pandemic is documented, as is the association between educational attainment and health outcomes. Next, several facets of tutoring are explained, including (a) an operational definition, (b) research support of its effectiveness before and after the pandemic, (c) the characteristics of two types of effective tutoring germane to this paper, and (d) its fit within a school's systems of interventions for all students. The paper concludes with a case report about relevant work performed at a high-needs school in the southeastern United States to establish a sustainable tutoring program resulting from the pandemic. It is one example of how K-12 schooling in the United States has improved in response to the COVID-19 pandemic.

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1. Improving K-12 Schooling in Response to the COVID-19 Pandemic Through Tutoring: One Step Forward in Addressing an Ongoing Public Health Concern

The COVID-19 pandemic adversely impacted children's schooling throughout the world. Even in countries that could continue presenting instruction online when in-person classes were discontinued, the students demonstrated lower academic achievement levels than before the pandemic. For example, in the United States, students' scores on an academic achievement assessment referred to as the nation's report card – the National Assessment of Educational Progress (NAEP) – revealed a significant decline. Nine-year-olds showed the greatest score decline in reading since 1990 and the first-ever significant drop in mathematics scores. Similarly, the average reading score for 13-year-olds was significantly lower than in 2020 (when scores were reported for a testing cycle completed before the pandemic's onset), while the decline in mathematics scores was the greatest ever (Walton, 2024). The largest losses occurred in urban and rural areas (Kennedy & Aceves, 2024). However, declines were reported across nearly all student groups, such as those who are Black, Hispanic, and White (Walton, 2024).

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1.1. Educational Attainment and Health Outcomes

If left unattended, the impact of these performance declines on a student's overall health and well-being could be significant. Research has established that an individual's educational achievement and attainment are linked to better health and higher earnings (Dorn et al., 2021). Higher levels of education can lead to employment that allows for (a) relatively better insurance coverage; (b) multiple ways to access the healthcare system; (c) the capacity to afford a balanced, nutritious diet and meaningful exercise program; and, (d) the ability to make informed decisions involving complex health-related issues.

Likewise, the U. S. Department of Health and Human Services (Office of Disease Prevention and Health Promotion, 2024) reported the link between one's literacy skills and health. The department noted that limited literacy impairs access to health information, such as medication instructions and communication with health care providers. Additionally, it noted that research has revealed a positive correlation between chronic conditions (e.g., diabetes, cancer) and limited literacy skills.

1.2. Tutoring: A Proven Approach Used to Address COVID-19 Instructional Issues

Upon students returning to in-person instruction in the United States following the COVID-19 pandemic, schools addressed many resulting instructional issues, including learning loss, interrupted learning of grade-level curriculum content, high rates of student absenteeism, and staffing shortages (Morse, 2024a). One strategy some schools adopted was to accelerate learning (Takabori, 2024), which involves just-in-time instruction about prerequisite skills students have not learned but underly the grade-level curriculum that is the focus of instruction. However, another strategy that appears to have been quite popular is tutoring. Mitchell et al. (2024) reported that 80% of school districts launched pandemic-related tutoring, while Kepp (2022) reported that two-thirds of schools used federal COVID-19 relief funding to increase existing tutoring programs, resulting in what could be described as a tutoring renaissance.

For this paper's purposes, tutoring is defined as the provision of instruction by a person, referred to as a tutor, to one or a small group of students (i.e., tutees) to address an instructional need that cannot be met satisfactorily through the existing instruction presented in the tutee's school programming. Most often, tutoring involves remedial instruction provided to about 8% of the students exhibiting noteworthy academic achievement deficits (Salcito, 2024), with the hoped-for outcome being their resolution. Further, it is supplemental instruction that is provided in addition to ongoing instruction (Burman, 2023).

Tutoring is recognized by the United States federal government as an evidence-based practice (Fong, 2021; House, 2022). According to Robinson and Loeb (2021), "Research consistently demonstrates that tutoring interventions have substantial positive effects on student learning" (p. 1). Specifically, over 150 randomized trial studies have documented that tutoring interventions substantially positively affect student learning (Loeb, 2022). Students have realized gains across grade levels and content areas (National Student Support Accelerator, 2023a). Particularly noteworthy have been the positive outcomes demonstrated by students in schools serving communities with low SES households (Devers & Hebert, 2023).

1.3. High-Impact Tutoring

1.3.1. Components

Importantly, researchers have identified the key components that comprise the most effective type of tutoring program, which has been characterized as high-impact tutoring (HIT). It consistently produces six months to over two years of learning gains following a single year of tutoring (Robinson & Loeb, 2021). However, it is important to note that effects vary across tutoring programs due to differences among their components. Presently, more is known about effective tutoring programs than the impact of the programs' components (Robinson & Loeb, 2021).

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Be that as it may, given the learning gains realized from a high-impact tutoring program, identifying its components is important for everyone committed to its success. These components are listed next.

Small group size (ideally one-on-one but no more than four students in a small group)

At least three sessions per week of 30-50 minutes, which can be adjusted to be developmentally appropriate (i.e., shorter sessions for younger students)

Consistent tutors who build beneficial relationships with their tutees

The provision of coaching to the tutors, as well as ongoing, proper oversight

Tutoring sessions that are embedded in the school day

Data-informed instruction that includes formative assessments and identifying students' needs

Use of high-quality instructional materials and curricula aligned with the tutees' general education classroom instruction (National Student Support Accelerator, 2023a; Robinson & Loeb, 2021)

1.4. Post-COVID-19 Impact

Not surprisingly, positive outcomes from high-impact tutoring conducted upon return to in-person schooling after the pandemic have been reported. Results from one large-scale study conducted during the 2022-2023 school year involving 98,000 students across 283 school districts revealed that the students who received high-impact tutoring outperformed the control group (i.e., students who did not receive tutoring) on measures of academic achievement for mathematics and English language arts. Several factors were examined to determine their influence on the gains. The students who participated in the most tutoring sessions realized higher academic achievement gains. Further, among these students, those who demonstrated higher levels of engagement during their sessions made greater gains. Altogether, tutees who attended the most tutoring sessions and demonstrated the highest levels of participation improved their performance by 1.46 grade levels (Devers & Hebert, 2023).

Aggregated data at the school district level have also been reported. One district in Texas reported that its performance rating increased two-fold from the 2021-2022 to 2022-2023 school years due, in part, to its high-impact tutoring initiative (Nanez et al., 2023).

While the high-impact tutoring described can be depicted as the gold standard, ways to employ effective tutoring that meets a unique need and is less costly and less resource-intensive have been explored. This circumstance highlights the need to distinguish between a tutoring approach's effectiveness (i.e., whether its impact is very effective, meaning high, or somewhat effective, meaning low) and the resources involved with its implementation (i.e., whether a large amount of resources are involved, meaning a high dosage, or a relatively small amount of resources, meaning a low dosage). An emerging, effective, low-dosage approach is short-burst tutoring.

1.5. Short-Burst Tutoring

Short-burst tutoring derives its name from its relatively limited dosage. The tutoring sessions involve a one-on-one instructional format conducted in the general education classroom with a typical instructor-led, scripted lesson comprising 5 to 10 minutes. However, the length of each lesson and the number of lessons per week are determined on a case-by-case basis. Simultaneously, the tutees independently complete computer-assisted instructional activities.

Formative assessments decide whether and how to adapt each student's programming, such as varying the number of days per week a student participates in tutorial sessions. Every aspect of this type of tutoring focuses on grade-level skills (e.g., basic phonics skills) students must master so that they will not fall behind to the extent that they need more intensive remedial instruction.

Short-burst tutoring has two appealing aspects: the academic gains students realize and the per-pupil cost. In one study reported in January 2024 (Sparks, 2024), kindergarten students who received short-burst reading tutoring scored on average 11 percentile points higher on their district's reading test than those who only received general education classroom instruction. The students who

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continued receiving short-burst reading tutoring in first grade were 16 percent less likely to be identified as at-risk readers by the middle of the school year, and 96 percent read at least on grade level by the end of the school year compared to 76 percent of the untutored students. The tutoring program's per pupil cost was reported to be $350-$450 annually. In comparison, the high-impact programs described previously can cost anywhere from $1,000 to $4,000 per pupil.

1.6. Tutoring as Supplemental Instruction

With research having established tutoring's effectiveness in various forms, a practical matter needing to be addressed is how to incorporate tutoring within existing school programming. As supplemental instruction, tutoring can be a noteworthy component of a school's multi-tiered system of supports (MTSS) framework (National Student Support Accelerator, 2023a; Rader, 2024). Schools in the United States widely use this framework to establish an organizational scheme for accounting for the performance of every student (Bailey, 2018). The scheme involves developing a system of interventions provided to students based on their performances, particularly concerning ongoing progress monitoring (Harlacher, 2023; Potter, 2023). While this framework can address students' academic, behavioral, and social-emotional needs (Lane et al., 2009), this paper describes it solely as relating to their academic needs.

An MTSS framework is typically depicted graphically by a triangle divided into three sections, each referred to as a tier. An MTSS framework often consists of three tiers that serve as categories for the interventions students are provided based on their academic performances. Tier 1 sits at the triangle's base and represents all students' instruction in the general education classroom. This high-quality instruction should be effective with 80% of a school's students.

Tier 2 and Tier 3 sit atop Tier 1 and are called higher-level tiers. They consist of supplemental interventions for students who do not demonstrate adequate academic achievement from Tier 1 instruction. Tier 2 services are typically provided to 15% of students. The intent is to remediate a student's academic achievement deficit so they can perform at grade level after receiving only Tier 1 instruction. Tier 3 services are provided to 5% of a school's students who demonstrate significant, persistent academic achievement deficits despite receiving Tier 1 and Tier 2 services (Morse, 2024b). While the hoped-for outcome is remediating a student's academic achievement deficit, it is not uncommon for a student to be provided Tier 3 services for an extended period, including their entire school career.

Schools face two primary challenges in implementing tutoring within their MTSS frameworks. One challenge is scheduling this supplementary instruction so students do not miss Tier 1 instruction. A second challenge is designing tutoring to address each student's unique needs (National Student Support Accelerator, 2023b). This latter matter was addressed by an elementary school in the southeastern United States as it grappled with establishing and sustaining a tutoring program following the pandemic.

1.7. Tutoring's Post-COVID-19 Window of Opportunity

As the one-time federal stimulus funds used for tutoring wane, what remains to be seen is how schools proceed with tutoring. The post-pandemic interest in tutoring has created a window of opportunity for schools to decide whether to employ it and, if so, how (Safran, 2024). Given that many schools used the stimulus funds to expand existing tutoring programs, it is likely that many will be continued. Safran (2024) posited that schools will exercise one or a combination of the following options.

Continue with the expanded tutoring program made possible with the federal stimulus funds.

Revert to the tutoring program in place prior to the pandemic. In most instances, the program would involve presenting remedial instruction to 8% of the school's students.

Broaden either program described in (a) and (b) above by making tutoring available to every student.

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Begin a distinctive tutoring program. This option might be chosen by a school that does not have a tutoring program but has become interested in starting one because of what they have learned about tutoring from the publicity it received after the pandemic.

Option d, begin a distinctive tutoring program, was exercised by the elementary school featured in the case report below. Upon returning to in-person instruction, benchmark testing revealed their kindergarten students were performing significantly below grade level and much lower than previous years' students. Typically, the school must provide remedial instruction about basic mathematics and reading skills to at least 20% of the students. However, a much higher percentage required this remedial instruction upon returning to in-person instruction following the pandemic. Consequently, the principal expressed interest in finding a way to address this recurring need.

By chance, the school's partnership with a researcher from a nearby university enabled the school to explore establishing a distinctive tutoring program for the school's lower elementary students (kindergarten-first grade (K-1)). The case report below details how the school pursued creating a distinctive K-1 tutoring program during the aforementioned window of opportunity.

2. Case Report: The Evolution of a Kindergarten-First Grade Tutoring Program Resulting From the COVID-19 Pandemic

2.1. Purpose of the Present Investigation

The investigation aimed to determine how the school might establish a distinctive high-impact tutoring program for all its K-1 students. A key component of the study was resolving a hypothesis about the effectiveness of a developmentally appropriate, evidence-based explicit instruction procedure for teaching basic mathematics and reading skills. The study also sought to socially validate its various aspects.

Three research questions guided the investigation:

How would the school's staff configure the components comprising HIT to meet their distinctive needs for kindergarten and first-grade students?

Would an instructional strategy hypothesized to be developmentally appropriate prove effective in teaching K-1 students basic mathematics and reading skills (rote counting, letter and numeral identification, solving addition and subtraction basic facts, and phonics skills)? The lesson involved an evidence-based, explicit instruction approach that accounted for a developmentally appropriate dosage (a 10-minute lesson presented 4 days per week) available to the instructors and students.

What social validity rating did school staff assign to three aspects of the study: the topics it addressed, the instructional strategy used during the tutoring sessions, and all the outcomes realized?

3. Method

3.1. Sample

The focus school is an elementary school in the southeastern United States and is attended by 466 pre-kindergarten through sixth-grade students. The student body comprises a majority-minority student population residing in low-SES households. Altogether, the lead investigator solicited involvement from over a half-dozen schools across two school districts. The school that participated in the investigation was the only one to grant permission for the study and complete the requisite paperwork.

The principal, two lead teachers for the school's after-school program, a school counselor, and a kindergarten and first-grade teacher were the participants who contributed input (a) about an appropriate HIT protocol for the school and (b) the study's social validity. The principal selected the staff based on their overall experience at the school and in the after-school program where the HIT tutoring protocol for lower elementary students (K-1) would be implemented.

The part of the study that focused on the effectiveness of the instructional strategy involved seven general education students, ages 5-7, whom the school identified as needing Tier 2 services in

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mathematics or reading (6 females, one male; 5 African American, 2 Caucasians). The strategy was field tested with the students during lessons presented in their after-school program. School personnel provided data to establish potential learning targets. Informed, written parent consent and child assent for participation in the investigation were obtained as one part of the university's institutional review board approval process. Further, participation in the research study was voluntary and participants could withdraw at any time; in the event of a withdrawal, the study would continue with all remaining participants.

The lead investigator and two undergraduate students attending a local university and enrolled in its undergraduate research experiential program presented the lessons. Over 60% of the lessons were presented by the students.

3.2. Instrument

Data for answering the first research question was obtained through a questionnaire soliciting open-ended responses from the school's staff about configuring their distinctive tutoring protocol. The lead investigator wrote relevant questions about the seven components comprising HIT, as identified by Robinson and Loeb (2021).

A criterion-referenced assessment was created for each academic skill taught during the lessons presented in the after-school program. Each skill was assessed twice during daily probes conducted at the beginning of each lesson. The resulting data answered the second research question.

The third research question involved a social validity questionnaire. Each of the questionnaire's items comprised a 5-point Likert scale the participants marked to indicate their "level of agreement" with statements about the value of the investigation's aspects.

3.3. Design

A mixed methods research design was used to obtain data to answer each research question. Qualitative methodology addressed the first and third research questions, and quantitative methodology addressed the second.

The lead investigator summarized and synthesized the staff's responses to the HIT questionnaire and then presented the information to the group for consensus agreement about the emerging tutoring protocol.

A single case design was used to answer the second research question. For each of the seven participants, the multiple probe design involved at least three demonstrations of the effect of the instructional strategy (i.e., an explicit instruction approach) on every mathematics and reading skill taught. A minimum of 5 baseline data points established a stable or contra-therapeutic trend, followed by an intervention phase with a change in the data's level and therapeutic trend to skill mastery. The procedure for independent and dependent variable reliability checks involved data collection across all conditions, a minimum of 20% of all sessions with a criterion for agreement of 90% or more.

Descriptive statistics (mean, median, mode) were calculated for the Likert scale scores obtained from the social validity measure.

4. Results

The compilation of the staff's responses to the high-impact tutoring questionnaire has been used to formalize an HIT protocol for lower elementary students that will be employed in the school's after-school program during the 2025-2026 school year. The protocol consists of the following elements:

a one-on-one instructional format

tutoring sessions conducted during the after-school program, which has a low absenteeism rate (i.e., less than 1%)

university students serving as tutors through a work-study program or as volunteers

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initial tutor training and ongoing coaching by university faculty,

targeted learning outcomes that are aligned with the school's mathematics and reading curricula,

use of high-quality instructional materials from the curricula,

presentation of instruction 4 days per week during sessions lasting 10 minutes, using an evidence-based practice (i.e., the field-tested instructional strategy based on an explicit instruction approach)

tutoring for all students, resulting in an equitable supplementary instructional program.

The instructional strategy proved effective across all academic skills and participants. Visual analysis of the line graphs indicates experimental control was established as stable or contra-therapeutic data trends during all baseline phases were followed by changes in level and therapeutic trends only when the intervention was applied.

The school's staff confirmed the investigation's social validity. On a 1-5 Likert scale, the staff assigned a rating of 5 (highly satisfied) to all three aspects of the investigation: the topics it addressed, the instructional strategy used during the tutoring sessions, and all the results.

5. Discussion

It is doubtful that schools throughout the United States will abandon all types of tutoring when the federal government's COVID-19 relief funds are unavailable. It is a proven intervention that, at the very least, can address a widespread need for remedial instruction. Therefore, many schools are considering how they will continue employing tutoring. In a few instances, schools that have not implemented tutoring heretofore may elect to do so after learning of tutoring's virtues through others' responses involving tutoring to the instructional issues raised by the COVID-19 pandemic.

The case report revealed one school's initial foray into tutoring based on others' uses following the pandemic. The investigation revealed how a school designed a distinctive tutoring protocol that included proving a developmentally appropriate instructional strategy and dosage. Additionally, the investigation revealed the school's commitment to equity by making tutoring available to all students.

A significant outcome of the investigation was its focus on a developmentally appropriate instructional strategy and dosage. Robinson and Loeb (2021) remarked that more is known about effective tutoring programs than the impact of the components comprising each type of tutoring. If more can become known about the effect of the components comprising each type of tutoring, every school will be equipped to configure tutoring comprised of components that align with the school's unique purpose for employing it. Future research should investigate the impacts of these variables. Robinson and Loeb (2021) identified some of them and their relevance.

The time when tutoring is offered. Tutoring is more effective during the school day instead of outside the day's schedule. Nevertheless, schools with robust, well-attended after-school programs will likely experience a high probability of successfully integrating tutoring into them.

Students' needs and opting in or out. Tutoring must address a student's needs, but that does not always mean having to provide remedial instruction. Hence, tutoring is likely more successful when made available to all students for varying purposes. This arrangement would eliminate the need for parents to decide whether tutoring is appropriate for their child, a process known as opting in. Further, this approach can eliminate the negative stigma attached to tutoring when associated exclusively with remedial instruction.

Benefits beyond academic gains. Understandably, schools will focus on collecting data to determine whether tutoring results in students demonstrating meaningful academic achievement gains. Data-driven decision-making is a component of the high-impact tutoring discussed above. However, schools should also consider measuring possible residual impacts from tutoring. Student attendance may improve because tutees want to have the opportunity to work with their valued tutors. Likewise, a student's overall behavior may improve due to experiencing gains in academic achievement.

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Training and ongoing support. Tutors need training about their role, including ongoing support following initial training. Salcito (2024) highlighted the need for this training by sharing his experiences that personnel who were effective general education classroom teachers often needed specific training to the role of an effective tutor.

Alignment with the general education curriculum. It is imperative for the content students are taught during tutoring sessions to be aligned with their general education classroom's curriculum. Additionally, tutors should use the same high-quality instructional materials the school uses to teach the curriculum.

Tutor consistency. Tutoring is more likely effective when the same tutor instructs the same students throughout all tutoring sessions. This is one reason for calls to investigate having the same tutor work with the same students across multiple consecutive school years.

Building tutor-tutee rapport. One component of the high-impact tutoring described previously is the establishment of a positive rapport between the tutor and tutee. Schools must consider whether to let this happen naturally or require that tutors be provided with a means for developing a positive rapport with their tutee.

Stakeholder buy-in. A universal approach to tutoring, which involves all students and not just those needing remedial instruction, will likely increase the buy-in of various stakeholders (e.g., parents, teachers, school board members, and business leaders in the community). This could increase the probability that a tutoring program will receive community support, enabling it to continue across multiple school years.

Impact on tutors. Teachers, paraprofessionals, and adult volunteers have proven to be effective tutors. Regarding paraprofessionals, schools should consider how their effectiveness as tutors may carry over to similar assigned tasks during the school day. Also, the tutoring experience may lead some tutors to pursue teacher licensure. This outcome would address the current teacher shortage.

The school's decision to make tutoring available to all students signifies how tutoring can be individualized and extend beyond high-impact tutoring that only involves remedial instruction, thereby exemplifying a holistic approach. Four types of tutoring schools might use for the described purposes include these kinds.

High-impact tutoring for remediation. This type of typical tutoring involves three to five 30- to 50-minute instructional sessions weekly designed for students needing remedial instruction to address a noteworthy academic achievement deficit. In addition to the dosage described, this type of tutoring would involve all the components that were previously described as high-impact tutoring.

Short-burst tutoring. This type of tutoring would be a part of a school's general education classroom programming (i.e., Tier 1 services). The tutoring would be aimed at students needing a relatively small amount of supplemental instruction to maintain grade-level performance.

On-demand tutoring. Students would solicit this tutoring when they need a little extra help with a skill when it is being addressed in the general education classroom.

Enrichment. Tutors could serve as expert mentors to students demonstrating advanced academic achievement and completing projects designed to extend their knowledge and skills about a topic significantly. Or, enrichment could involve addressing any topic that is of interest or needed by students but is not covered in their school programming.

Configuring tutoring so every student can access it will address concerns raised about its role in promoting equality and equity (Barshay, 2023; Loeb, 2022). Equality will be addressed when schools ensure that every student can access tutoring. Arranging tutoring in ways that address students' varying needs will result in equity (Archer, 2018).

This approach reflects how tutoring can be addressed holistically as one part of any school reform endeavor. School reform is an often-used term for changing existing school practices (Stewart et al., 2005). School reform involves replacing ineffective and insufficient practices instead of overhauling existing practices wholesale. Thus, many schools in the United States must consider tutoring's role in their ongoing efforts to provide their students with the best education possible.

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Schools that perform better on behalf of all their students will indirectly address the impact of education on students' overall health and well-being.

6. Conclusions

Appropriately viewed, school reform allows for an optimistic approach to changing educational practices. Whereas schools in the United States revisited tutoring to address some catastrophic impacts on students' learning due to the COVID-19 pandemic, they now can consider how this intervention can bring about notable, lasting improvement to the educational process. To the extent this occurs, schools can take pride in having identified a silver lining among the dire circumstances they faced resulting from the pandemic. Ironically, they will also address a noteworthy, tangential way to improve their students' health and well-being.

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