

Impact and Efficacy of Peer Tutoring in Virtual and In-Person Settings

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I Executive Summary

As higher education institutions continue to search for innovative ways to enhance student engagement, satisfaction, and academic outcomes, the adoption of technology-driven solutions has become increasingly prevalent.

This white paper aims to explore the impact and efficacy of the Knack Platform on college and university campuses by addressing these critical questions:

What are the unique features of the Knack approach to tutoring that differentiate it from more traditional academic support services?

How does Knack contribute to building a more inclusive and supportive learning environment for students with diverse needs and backgrounds?

How can peer tutoring, facilitated through platforms like Knack, impact students' academic performance, engagement, and overall learning experience?

What are the characteristics of successful peer tutors on the Knack Platform, and how do these characteristics influence the effectiveness of the tutoring sessions?

How can colleges and universities enhance the recruitment, training, and support of peer tutors to optimize the impact of their peer tutoring programs?

The paper delves into these questions, providing detailed discussions and analyses based on relevant scholarly literature and practical examples. It highlights the potential of platforms like Knack in shaping the future of academic support services in higher education, emphasizing the need for further exploration and research in this field.

II Overview of Knack Tutoring

Introduction

Knack Technologies, Inc., also known more simply as Knack, is a technology company that began as a peer-to-peer college tutoring platform supporting in-person, online, one-on-one, and group interactions. Over the years, Knack has expanded its services to support students and educators through a variety of tools and resources.

The following is an overview of the history and evolution of Knack Technologies, Inc.

Founding and Early Years (2015-2017)

Founded in 2015 at the University of Florida, Knack's founders recognized a gap in higher education, as students struggled to find the right tutoring resources to help them succeed academically. They aimed to create a mobile-first platform that would seamlessly connect students with affordable peer tutors.

In January of 2016, Knack officially launched its tutoring platform, which enabled college students to find and connect with course-specific tutors from their own campuses. Students could search for and select tutors based on subject matter, reviews, and hourly rates. In addition, tutors had the opportunity to build their client base and earn money while helping their peers.



Expansion and Growth (2018-2021)

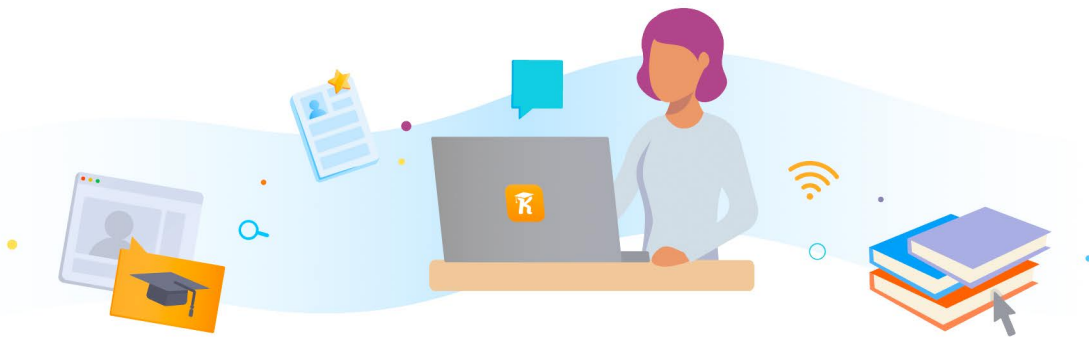
During this period, Knack underwent a transformation that can be seen through several distinct stages. Initially, in the early years of 2015-2017, Knack established itself by offering out-of-pocket paid tutoring services. The success of the platform caught the attention of various investors, leading to a seed round of funding in 2018. This marked the start of a new era for Knack, as it enabled the company to enhance its platform, hire new talent, and expand to additional campuses.

Between 2018 and 2021, Knack expanded its reach and began to form key partnerships with academic institutions. Notably, the company partnered with the University of Florida, where it facilitated more than 31,000 hours of peer tutoring. This period marked an important pivot in Knack's business model: rather than focusing on paid tutoring, the company shifted its focus towards supporting free, fully subsidized tutoring.



The COVID-19 pandemic created new challenges and opportunities for the education sector, as institutions were forced to transition to remote learning. Knack adeptly navigated this shift, playing a crucial role in supporting students and educators. The company offered its platform for free to colleges and universities, helping them transition to virtual tutoring. In response to the changes necessitated by remote learning, Knack also enhanced its online tutoring capabilities. The platform was updated with a state-of-the-art whiteboard-driven experience, advanced real-time collaboration tools, and improved audio/video conferencing. These features allowed students and tutors to engage in more interactive and effective tutoring sessions.

In the years since 2022, Knack has continued to innovate and support education institutions, with a focus on free or subsidized tutoring. As the landscape of education continues to evolve, so does Knack, consistently offering new solutions for students, tutors, and institutions.



Recent Developments (2022-Present)

Since its inception, Knack has continued to evolve and expand its services. The company has introduced new features, such as group tutoring sessions, asynchronous peer tutor training built in accordance with College Reading & Learning Association's ITTPC Standards, and a proprietary career development framework for tutors built in collaboration with the Educational Testing Service (Knack investor and creators of the SAT & GRE).

Moreover, Knack's partnerships with corporations and educational institutions have allowed the platform to reach a broader audience and enhance its impact on education.

Higher Education Institutions Need Innovative Solutions

Higher education institutions worldwide are facing numerous challenges that demand innovative solutions to remain competitive and relevant in today's ever-evolving landscape. These challenges include the rapid advancement of technology, changing student demographics, the need for personalized learning, and financial constraints (Altbach, Reisberg, & Rumbley, 2009; Christensen, Horn, & Johnson, 2011).

One of the key factors driving the need for innovation in higher education is the impact of technology on teaching and learning. The adoption of digital technologies has transformed the way students access information and interact with content (Johnson et al., 2016). Moreover, advances in artificial intelligence and data analytics have opened up new opportunities for personalized learning and assessment (Weller, 2018). Higher education institutions must embrace these technologies and incorporate them into their curricula to remain competitive and meet the evolving needs of students (Schwartz, 2017).

Another factor contributing to the need for innovation is the changing demographics of students. As more non-traditional students, including adult learners, part-time students, and international students, enter higher education institutions, there is an increased demand for flexible and accessible learning opportunities (NCES 2015). Institutions must develop innovative approaches to support the diverse needs of these students, such as online and hybrid learning environments, competency-based education, and prior learning assessments (Fain, 2013; Hill, 2012).

Financial constraints are also a pressing concern for higher education institutions. As public funding for higher education declines, institutions are under pressure to operate more efficiently and demonstrate the value of their offerings (McLendon, Hearn, & Mokher, 2009). This has led to a greater emphasis on outcomes-based funding models and performance metrics, which in turn require innovative approaches to improve student retention, graduation rates, and employability (Dougherty & Reddy, 2013).

In response to these challenges, higher education institutions are adopting various innovative solutions. For example, some institutions are utilizing adaptive learning technologies to deliver personalized learning experiences that cater to individual students' needs and preferences (Weller, 2018). Others are leveraging open educational resources to reduce the cost of course materials and increase access to quality educational content (Wiley & Hilton, 2018). Furthermore, institutions are increasingly partnering with industry leaders to provide real-world learning experiences and enhance the employability of their graduates (Selingo, 2018).

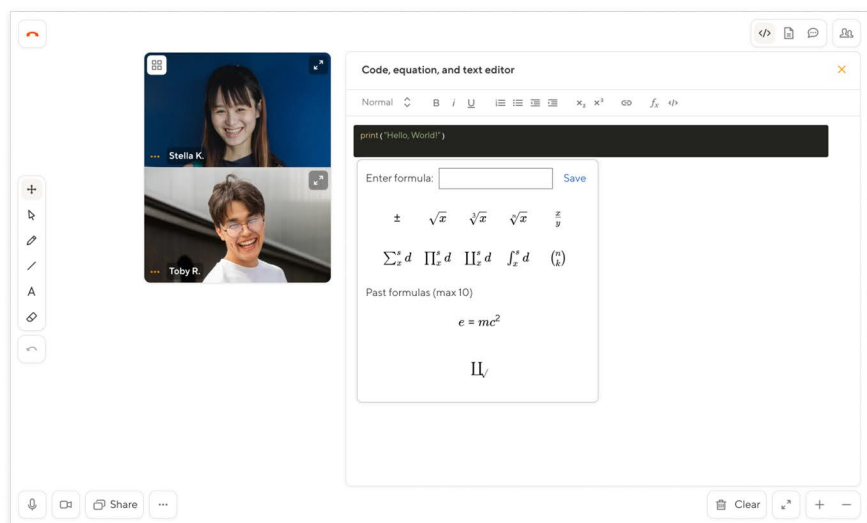
Higher education institutions must continue to innovate to address the numerous challenges they face in the 21st century. By embracing technology, supporting diverse student populations, and focusing on financial sustainability, these institutions can remain competitive and provide valuable educational experiences for their students.

Knack's Peer Tutoring Platform

Knack is the leading student success platform, transforming peer tutoring to prepare students for success in the classroom and 21st-century workplace. Campuses that partner with Knack are able to reach, engage, and retain more students, from freshman through senior year, without increasing the overhead costs traditionally associated with scaling peer tutoring services.

Knack's Peer Tutoring Programs are built upon the sharing economy model (1099 independent contractor classification) – high-achieving students on campuses are onboarded by Knack as supplemental networks for peer tutors, enabling campuses to build an additive network of academic support that's flexible, scalable, and requires very little administrative labor to manage.

Knack's Peer Tutoring Programs are the most affordable and impactful way for a campus to influence student success (e.g., retention, graduation rates, and career-readiness). When campuses partner with Knack, they are able to maximize the dual value of peer tutoring and create a more personalized, equitable, and accessible support experience that also offers flexible, high-impact peer tutoring roles for their top students.



Request session

with Toby R.

Course

CHM 2045 General Chemistry I

Date/time

Sunday, Apr 30th, 2023, 1:00PM

Recurring

☒ Once
 ☐ Weekly

Duration

1 hour

[Request tutor](#)

Overview

Student engagement and satisfaction play a critical role in fostering a positive learning environment and promoting academic success on college and university campuses. Research has consistently shown a strong correlation between student engagement, satisfaction, and various educational outcomes, such as academic performance, retention, and overall college experience (Astin, 1984; Kuh, 2009).

Student engagement refers to the extent to which students actively participate in their learning experience, both inside and outside the classroom (Kuh, 2009). Engaged students are more likely to persist in their studies, have higher academic achievement, and develop a sense of belonging within their institution (Trowler, 2010). Engagement can be fostered through various teaching strategies, such as collaborative learning, active learning techniques, and prompt feedback (Chickering & Gamson, 1987).

Student satisfaction is another crucial factor in determining the success of college and university campuses. It encompasses students' overall perception of their educational experience, including the quality of instruction, campus resources, and support services (Elliott & Shin, 2002). High levels of satisfaction have been linked to increased student retention, improved academic performance, and a more positive campus climate (Astin, 1993).

The relationship between engagement and satisfaction is complex, as both factors are interconnected and influence each other. Institutions that prioritize engagement and satisfaction can experience numerous benefits, such as higher graduation rates, increased alumni involvement, and enhanced institutional reputation (Astin, 1993; Kuh, 2009).



Student engagement and satisfaction are vital components of a successful college or university experience.

By focusing on fostering engagement and addressing student needs, higher education institutions can create a supportive and nurturing environment that leads to improved educational outcomes and overall student well-being.

Methods for Measuring Engagement and Satisfaction

Measuring engagement and satisfaction in tutoring programs is crucial for assessing the effectiveness and quality of the educational support provided to tutees. Evaluating students' experiences can help identify areas of improvement, tailor instruction to their needs, and enhance their overall learning outcomes. This justification examines the methods employed by the tutoring program, which includes the Knack Student Survey conducted after every fourth completed session and the End-of-Term Student Survey.

These surveys are designed to capture key aspects of student engagement, learning outcomes, satisfaction, and recommendations for improvement.

Knack Student Survey

The Knack Student Survey, administered after every fourth tutoring session, employs a combination of quantitative and qualitative measures to assess tutees' experiences. The survey begins by asking tutees to rate their overall satisfaction with the tutoring sessions, providing radio choices for response options. This question serves as a broad indicator of tutees' immediate perceptions of the tutoring sessions and their overall experience.

Additionally, the survey utilizes open-ended and multiple-choice questions to explore specific aspects of the tutoring sessions. For example, tutees are asked to identify strategies they have learned or worked on during the sessions that they can apply independently in the future. This question not only encourages students to reflect on their learning but also provides valuable insights into the effectiveness of the tutoring strategies employed.

Furthermore, the survey includes a question that gauges tutees' confidence in their understanding of the material after the tutoring sessions. By using radio choices for response options, this question allows for a quantitative assessment of tutees' perceived improvement in their abilities to independently complete assignments and work. Additionally, a short-answer question prompts tutees to describe one of their learning strengths and how they can apply it to their study habits outside of tutoring. This question elicits qualitative data that sheds light on tutees' self-perceptions and their ability to transfer learning from tutoring to independent study.

End-of-Term Student Survey

The End-of-Term Student Survey aims to capture a comprehensive assessment of the tutoring program's impact on tutees' academic progress and overall satisfaction. This survey employs a Likert scale with responses ranging from "Strongly Agree" to "Strongly Disagree" to evaluate tutees' perceptions across various dimensions, including becoming an independent learner, increasing subject knowledge, building self-confidence, and enhancing study and learning strategies. These items provide a quantitative measure of tutees' progress and growth throughout the term.

The survey also includes open-ended questions to gather qualitative feedback on specific aspects of the tutoring experience. Tutees are asked to identify strategies learned during the sessions that they can utilize in the future, providing multiple-choice options with an "other" category for additional responses. This question not only provides insights into the effectiveness of tutoring strategies but also encourages tutees to consider the practical applicability of their learning.

To assess overall satisfaction with the tutoring experience, tutees are asked to rate their satisfaction level for the semester. The response options, ranging from "Very Satisfied" to "Very Dissatisfied," allow for a concise quantitative measure of tutees' satisfaction. Finally, the survey concludes with questions concerning potential improvements for future tutoring sessions and tutees' intention to return, providing an opportunity for tutees to provide feedback and suggestions for program enhancements.

Assessment Measure	Assessment Target
Self-Efficacy: "Tutoring helped me become an independent learner."	80% of students will select "Strongly Agree" or "Agree"
Value of Services: "Tutoring helped increase my subject matter knowledge."	85% of students will select "Strongly Agree" or "Agree"
Self-Efficacy: "Tutoring helped me build my self-confidence."	75% of students will select "Strongly Agree" or "Agree"
Study Skills: "Tutoring helped enhance my study and learning strategies."	85% of students will select "Strongly Agree" or "Agree"

Analysis of Knack's Influence on these Metrics

Knack Student Survey

The analysis of the Knack Student Survey data, gathered from student users (tutees) after every fourth completed tutoring session on the Knack platform, provides valuable insights into their perceptions and experiences. The average number of sessions among these users is 10.4, indicating a substantial level of engagement with the tutoring program.



4.77

Average
Satisfaction
Rating

Regarding the question that inquires about the overall rating of the last several tutoring sessions, tutees provided an average rating of 4.77. This high average score suggests that the majority of tutees evaluated their tutoring sessions positively. The distribution of responses, ranging from Excellent (5) to Poor (1), indicates that the majority of tutees rated their experiences as either Excellent or Very Good, signifying a high level of satisfaction with the tutoring sessions.

The question assessing tutees' confidence in their understanding of the material and their ability to complete assignments independently after tutoring sessions yielded an average rating of 4.62. The response options ranged from Strongly Agree (5) to Strongly Disagree (1). This result suggests that, on average, tutees expressed a significant increase in confidence and perceived improvement in their ability to work on assignments and comprehend the material after participating in the tutoring sessions.

In terms of tutees' likelihood to recommend tutoring to a friend or classmate, the average percentages for each response category were as follows: Yes, definitely! (93.9%), Maybe (4.85%), and No, I would not (1.21%). This indicates a strong inclination among tutees to recommend attending tutoring to others, with a vast majority expressing a definite recommendation.

Overall, these findings demonstrate positive perceptions and experiences among tutees using the Knack tutoring platform.

The high ratings for the overall tutoring sessions and the increased confidence in understanding and independent work suggest that the program effectively supports tutees' learning and academic progress.

Furthermore, the overwhelmingly positive response to recommending tutoring to others highlights the perceived value and benefit derived from the tutoring sessions.

These findings underscore the effectiveness and satisfaction associated with the Knack tutoring program, indicating its potential to positively impact tutees' educational journeys.



End-of-Term Survey

The findings derived from the analysis of the End-of-Term Survey, administered to tutees on the Knack platform during the Fall 2021, Spring 2022, Fall 2022, and Spring 2023 terms, offer significant insights into the tutees' perceptions of the efficacy of the tutoring program. Employing a Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), the survey measured tutees' responses to various statements regarding their learning outcomes and overall satisfaction.

4.54

Average Rating

Tutees expressed an average rating of 4.54 out of 5.00 for the statement "Tutoring helped increase my subject matter knowledge."

The results indicate positive tutee perceptions regarding the tutoring program's impact on multiple facets of their learning experience. Tutees rated the statement "Tutoring helped me become an independent learner" with an average score of 4.28, suggesting a noteworthy contribution of the tutoring sessions towards fostering self-reliance. Moreover, tutees expressed an average rating of 4.54 for the statement "Tutoring helped increase my subject matter knowledge," signifying the program's efficacy in enhancing tutees' comprehension and knowledge acquisition within their respective subjects.

Furthermore, the survey revealed that the tutoring program positively influenced tutees' self-confidence and study strategies. Tutees assigned an average rating of 4.30 to the statement "Tutoring helped me build my self-confidence" and 4.40 to "Tutoring helped enhance my study and learning strategies." These results underscore the program's success in bolstering tutees' self-assurance and equipping them with effective study techniques.

An additional finding of note is tutees' perception that their tutors prioritized holistic learning approaches rather than focusing solely on course content. The statement "My tutor(s) made a point to help me improve my overall approach to learning instead of just covering course content" obtained an average rating of 4.38, emphasizing the tutors' commitment to providing comprehensive guidance and support to tutees.

Moreover, tutees attributed improved grades to the tutoring program, as evidenced by the average rating of 4.38 for the statement "My grades improved as a result of tutoring." This finding affirms the positive correlation between the tutoring sessions and tutees' academic performance, validating the program's effectiveness in facilitating scholastic advancement. Nevertheless, tutees expressed a slightly lower average rating of 3.95 for the statement "My experience on Knack made me feel more connected to my campus community or fellow students." This finding suggests the need for further exploration and potential intervention to foster a greater sense of community and connection among tutees within the Knack platform.

The analysis of Knack user responses to the question assessing the extent to which they agree with the statement "After my tutoring sessions, I feel more confident in my understanding of the material and better able to do the work and/or complete the assignment on my own" reveals an average score of 4.32. This Likert scale-based average score suggests a generally positive agreement among users regarding the statement. The scale employed ranged from Very Dissatisfied (1) to Very Satisfied (5), with higher scores indicating greater agreement.

The results indicate that, on average, Knack users express a moderate to high level of agreement, suggesting that the tutoring sessions contribute significantly to their confidence in understanding the material and their ability to independently complete assignments. These findings highlight the positive impact of the Knack tutoring platform in enhancing users' self-assurance and competence in academic tasks, underscoring its effectiveness in facilitating learning outcomes and fostering independent learning capabilities.

These findings highlight the tutoring program's overall success in fostering independent learning, increasing subject matter knowledge, building self-confidence, enhancing study strategies, and improving grades. These results underscore the program's efficacy in addressing tutees' academic needs and providing comprehensive educational support. However, further investigation is warranted to enhance the sense of community and connection among tutees on the Knack platform, thus promoting a more holistic learning environment.



"My tutor was able to present the information learned in class in a much simpler way that was easier to understand.

She gave me tips and shortcuts that will be helpful beyond this class. I truly appreciate her."

- Surveyed Student

Testimonials from Tutors and Tutees

The analysis of tutee feedback regarding their intention to return to Knack tutoring in the future reveals a predominantly positive sentiment. In the end-of-term survey, many tutees expressed their desire to continue using the platform due to the positive impact it had on their academic performance, grades, and understanding of course material. Tutees appreciated the help provided by tutors who were knowledgeable, professional, and dedicated to assisting them. The one-on-one nature of the tutoring sessions was particularly valued, as it allowed tutees to receive personalized support and address their specific learning needs.



“Honestly, I had such a great experience. The only thing I would change would be to go more often during the semester”

- Surveyed Student

“I am an adult learner and struggle to retain knowledge sometimes. It also helps to feel like I am learning content in solely online classes.”

- Surveyed Student



“It worked with my busy schedule as a wife and mom of 2. My tutor was excellent!!”

- Surveyed Student

The convenience and ease of accessing tutors on Knack were also mentioned as advantages, with tutees finding it helpful to have a resource that accommodated their schedules and provided assistance when they needed it. The lack of financial cost, as Knack is provided for free by the university, was an additional factor contributing to tutees' willingness to continue using the service.

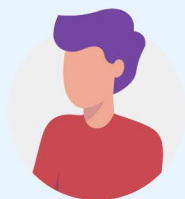
Many tutees noted that tutoring not only improved their grades but also enhanced their study habits, confidence, and overall learning experience. They appreciated the guidance and study techniques shared by tutors, which helped them better understand course content and develop effective approaches to assignments. Tutees highlighted the positive impact of tutoring on their academic progress, noting how it helped them succeed in challenging courses and feel more confident in their abilities.

While there were a few negative comments or reservations expressed by some tutees, the overall tone of the feedback skewed heavily towards the positive aspects of the Knack tutoring experience. Tutees recognized the value of connecting with tutors who had taken the same courses and understood their struggles, as well as the benefits of receiving assistance from students who could relate to their experiences.

The analysis of tutee responses demonstrates a strong inclination to continue utilizing Knack tutoring in the future.

The positive outcomes reported by tutees, including improved grades, enhanced study skills, increased confidence, and personalized support, contribute to their intention to return to the platform.

The convenience, affordability, and professionalism of the tutoring service further reinforce tutees' positive perceptions and their willingness to recommend Knack to others.



"I was able to get help outside of my professor, who I felt uncomfortable reaching out to for help. Tutors made it easier to approach getting help."

- Surveyed Student

"My tutor was awesome! He was super kind and knowledgeable in the subject I was needing help with and my grade was reflective of his help."

- Surveyed Student



"If something could be improved about my tutoring experience it would be that I wish I got involved with Knack earlier in the semester and had more sessions with various tutor!"

- Surveyed Student

Preference Towards Personalized, One-on-One Peer Support

The rapid digital immersion, increasingly diverse student body, deteriorating mental health, and the traumatic effects of both domestic and global events have catalyzed the need for educational reform, particularly emphasizing the necessity of personalized, one-on-one peer support (Bass, 2023). In this challenging context, Bass (2023) advocates for a shift towards student-centered, holistic, and inclusive educational approaches that align with the needs and expectations of modern learners. An essential component of this transformation is the recognition of individual learning needs and preferences, which fosters an environment of acceptance and inclusion.

The one-on-one, personalized peer support not only caters to these unique learning needs but also enhances the overall learning experience, helping students to develop a greater sense of control over their educational journey.

The article underscores the immense potential of personalized, one-on-one peer support to alleviate some of the stress experienced by students in this digitally immersed generation. This method of support promotes engagement, builds confidence, and motivates students, directly contributing to their academic success. Furthermore, Bass (2023) highlights that such personalized learning initiatives are crucial in fostering resilience among students, a skill that is increasingly valuable in our ever-evolving, diverse, and digitally immersed society.

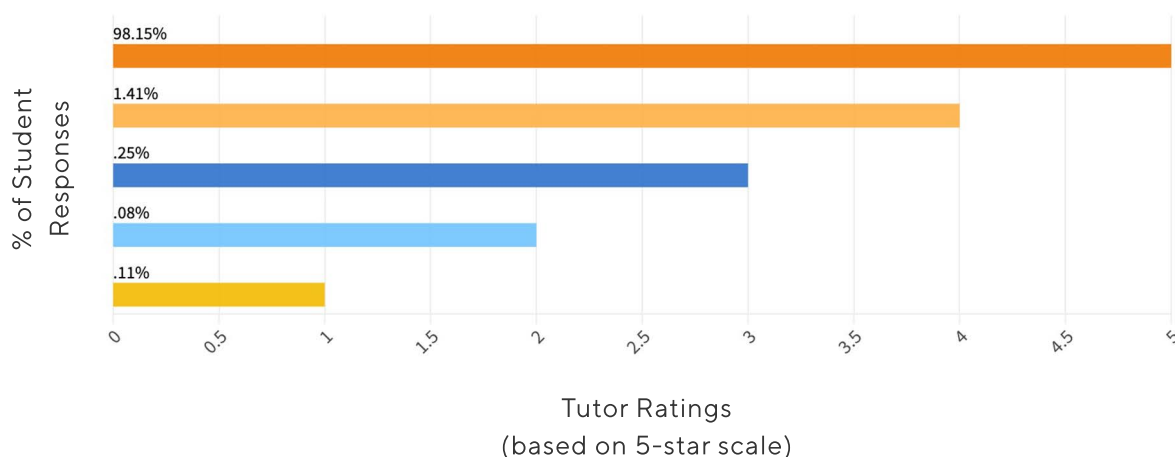
These insights from Bass (2023) demonstrate that to optimally support and prepare students for the future, there is a pressing need for educational institutions to adapt their structures and practices. Moving away from the traditional, fragmented bureaucratic structures and towards a more inclusive, holistic, and student-centered approach is crucial. Personalized, one-on-one peer support emerges as a powerful tool in this scenario, with its potential to significantly enhance student success and well-being.

Learning Across More Unique Courses

Students took advantage of Knack's course specificity, learning across more unique courses than ever before in F'22. This trend suggests that students are looking for support across a wider range of courses. This finding is consistent with the idea that students have unique learning needs that require customized support. By offering course-specific tutoring, Knack can cater to the individual needs of each student, providing them with personalized and targeted support. Additionally, course-specific tutoring can help students build a deeper understanding of the course material, resulting in better academic outcomes.

Tutor Ratings by Tutees

Tutors on the Knack platform are rated by tutees on a 5-star rating scale, with 5 being the highest rating. Below is a breakdown of ratings between August 2020 and today:



The provided data on the ratings received by tutors on the Knack platform between August 2020 and today holds significant implications for both tutors and tutees who utilize the platform. The distribution of ratings showcases an overwhelmingly positive sentiment among tutees, as indicated by the high percentage of 5-star ratings, which stands at an impressive 98.15%. This suggests a high level of satisfaction and contentment with the tutoring services provided by tutors on Knack.

For tutors, this data underscores the effectiveness and quality of their tutoring methods and support. The overwhelmingly positive ratings can serve as a testament to their expertise, professionalism, and ability to meet the educational needs of tutees. This can enhance tutors' reputation and credibility on the platform, making them more attractive to potential tutees seeking assistance. Additionally, tutors can use this data to demonstrate their track record of success and build trust with prospective tutees, increasing their chances of being selected for tutoring assignments.

On the other hand, tutees who have used the Knack platform can find assurance in the overwhelmingly positive ratings. The high percentage of 5-star ratings suggests a consistent and reliable tutoring experience, with the majority of tutees being highly satisfied with the assistance they received. This can serve as a valuable resource for tutees looking for academic support, allowing them to make informed decisions when choosing a tutor on Knack. The data provides a level of confidence that the tutoring services available on the platform have a track record of meeting tutees' expectations and helping them achieve their academic goals.

Furthermore, the breakdown of ratings across the different categories, such as 1-star, 2-star, 3-star, 4-star, and 5-star, provides a comprehensive understanding of the overall satisfaction levels among tutees. The minimal percentages for lower-rated categories, such as 1-star (0.11%) and 2-star (0.08%), suggest that instances of dissatisfaction or subpar experiences are rare on the Knack platform. This data can alleviate concerns for tutees who may be apprehensive about the quality of tutoring services they might receive. It highlights the platform's commitment to maintaining high standards and ensuring a positive tutoring experience for tutees.

The data showcases the overwhelmingly positive sentiment expressed by tutees, underscoring the quality and effectiveness of tutoring services provided by tutors on the platform. This data can help tutors establish their credibility and attract more tutees, while also providing tutees with confidence and assurance in their decision to seek tutoring services on the Knack platform.

Engagement

The fall semester of 2022 showcased a significant upward trajectory for the Knack platform, evidenced by substantial increases in various key performance indicators. Notably, there was a marked 58% escalation in new tutor sign-ups in comparison to preceding semesters. This surge not only highlights the burgeoning interest among pedagogues to engage with the platform but also underscores the expanding variety and caliber of academic support accessible to the student body.

58% Increase in
New Tutor
Sign-Ups



Simultaneously, the platform experienced a 24% increase in students soliciting tutoring services, suggestive of a heightened demand for personalized, peer-based learning. This trend could potentially be attributed to an increased recognition among students of the value that personalized tutoring brings to their educational journey, or indicative of the heightened challenges faced in coursework during the semester.

Furthermore, a significant expansion was observed in the approval of courses for tutors, registering a remarkable 159% increase. This statistic signifies a broader spectrum of academic disciplines being catered to within the platform, thus rendering it more inclusive and diverse. The leap in course approvals may also denote an enhanced quality and credibility of tutors registering on the platform, as their expertise spans across an increasing variety of academic domains.

The marked growth in these key areas during the Fall Semester of 2022 underlines the rapidly increasing acceptance and utilization of the Knack platform in the educational landscape.

Modality

The mode of peer tutoring delivery, whether online or in person, can influence its effectiveness, often contingent on the unique characteristics of the associated institutions. Factors such as institutional size, type, location, and subject matter can impact the distribution of online versus in-person tutoring sessions. For instance in the college of business at a large public institution in Oklahoma 91% of the tutoring sessions were conducted virtually. In contrast, at a medium-sized private school in New York supporting their students across all undergraduate courses, the distribution between online and in-person sessions was nearly equal, with 50.2% online and 49.8% in person.

Such disparities, like those referenced above from two of Knack's partner institutions, may be explained through several considerations. According to Gagne, D.A., & Girard, A. (2018), online peer tutoring can create a sense of comfort for the tutees, leading to a secure environment where they are less inhibited to ask questions or take risks. This virtual mode also enables more time for processing and reflection on the discussed material, potentially encouraging more open dialogue and deeper learning. However, in-person peer tutoring has unique advantages such as immediate feedback, facilitating rapid problem-solving, and a classroom-style learning environment. In-person sessions also provide more opportunities for nonverbal cues and physical engagement, which may enhance comprehension of the material (Gagne & Girard, 2018).

Since August 2020, a significant 79.3% of Knack tutoring sessions took place virtually, while only 20.7% were conducted in person. This marked shift towards virtual tutoring is frequently linked to its convenience. It's crucial to recognize that during Fall 2020 and Spring 2021, due to the constraints imposed by the COVID-19 pandemic, many educational institutions partnered with Knack offered only virtual tutoring, which may certainly skew this overall statistic.

The ability for tutors and tutees to connect virtually from any location, at any time, eliminates the necessity for travel, offering substantial advantages to students with packed schedules who might find scheduling in-person sessions challenging.

The comfort provided by virtual tutoring emerges as a notable factor. Students communicating with tutors from personal spaces such as homes, apartments, or residence halls may experience reduced stress compared to the formal setting of a tutoring center. This relaxed environment could foster enhanced learning outcomes. Furthermore, the ability of virtual platforms to share screens and utilize additional resources aids in facilitating comprehension and explanation of concepts. It's also important to note that certain living or work situations may necessitate virtual meetings when in-person engagements are not feasible.

Despite these advantages, many students express a preference for in-person tutoring over virtual platforms. The effectiveness of the virtual setting may not extend to all types of learners, particularly those who flourish in hands-on or interactive environments. Furthermore, technical complications like poor internet connections or computer malfunctions can disrupt the virtual learning process.

Thus, the selection between online and in-person tutoring tends to hinge on a combination of institutional and individual considerations, resulting in diverse distributions both within and among higher education institutions.

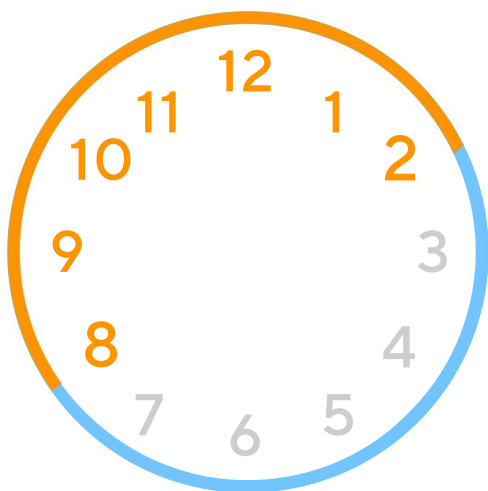
Session Timeframes

Accessibility often serves as a significant barrier when students seek tutoring services.

Traditional institutional models of tutoring typically operate within constrained schedules, predominantly during standard business hours. This can inadvertently exclude a sizable population of students who, due to their unique commitments or circadian rhythms, are unable to avail themselves of such services.

The vast majority of academic institutions offer tutoring sessions within a rigidly defined schedule, frequently circumscribed to typical business hours. This framework, while efficient from an administrative perspective, can often be ill-suited to the diverse needs and availability of the student body.

The limited temporal flexibility can inadvertently overlook non-traditional students, such as those who work part-time, participate in extracurricular activities, or have family responsibilities.



Significant tutoring activity takes place between 8pm and 2am.

Knack's platform addresses this issue by empowering students to control the scheduling of their tutoring sessions. The data illustrates a high degree of engagement at all hours, with sessions held every hour of every day of the week. The majority of tutoring sessions take place during the 4pm to 8pm timeframe, which is somewhat expected given the norms of study hours for most students. However, significant activity is also observed between 8pm and 2am, indicating that many students find these later hours more conducive to their learning.

The relatively less frequent sessions held between 3am and 8am are still noteworthy, providing an avenue for students who, due to various reasons, prefer or need to study during these off-peak hours. This flexibility afforded by Knack not only broadens the accessibility of tutoring services but also encourages increased engagement as students can opt for sessions that fit into their unique schedules.

This 24/7 approach to tutoring has a significant implication: it enables better engagement with key populations, specifically those who might otherwise be disenfranchised by the traditional, more rigid tutoring schedules. By allowing students to control the scheduling of their tutoring sessions, Knack ensures that every student, irrespective of their lifestyle or commitments, can access the academic support they need, when they need it.

The result is a more inclusive, diverse, and successful learning environment.

Recurring Sessions

In September 2022, Knack released a new product feature that gives students and tutors the ability to schedule recurring sessions with one another. Thus far, 22.37% of completed sessions were scheduled as recurring sessions, with an increase from 18.95% in fall 2022 to 26.13% in spring 2023. This suggests that there is considerable demand among college students for regular, ongoing tutoring support.

One possible explanation for why college students schedule recurring tutoring sessions is that they recognize the benefits of ongoing support for their academic progress.

According to a study by Higbee and Galloway (2015), regular tutoring sessions can help students build skills and confidence, which can lead to improved academic performance and persistence. Additionally, research has shown that students who participate in tutoring are more likely to graduate from college than those who do not (Kim & Sax, 2009).

The data also suggests that recurring tutoring sessions can help students persist to graduation. The number of sessions completed in October 2022, which was the highest month, may be attributed to midterms and the need for additional support during this time. However, the consistent number of sessions scheduled in the following months (November to March) indicates that students are not only seeking support during times of high stress, but they also recognize the value of ongoing tutoring for long-term academic success.

The data suggests that college students schedule recurring tutoring sessions because they recognize the benefits of ongoing academic support, and that these sessions can help students persist to graduation.

This information can be used by tutoring platforms and universities to better understand student needs and develop effective support services to promote student success.



Definition of Academic Outcomes

Academic outcomes refer to the various measurable results or achievements that students attain through their educational experiences. These outcomes may include knowledge acquisition, skill development, critical thinking, problem-solving abilities, and personal growth, among others. Academic outcomes are often used to evaluate the effectiveness of educational institutions, programs, and instructional methods (Astin & Antonio, 2012).

According to Astin and Antonio (2012), academic outcomes are essential in understanding the extent to which students meet the learning objectives set by educational institutions. Furthermore, Kuh et al. (2006) suggest that assessing academic outcomes can help identify areas for improvement, as well as guide educators in making informed decisions about curriculum development and instructional practices.

Assessment of academic outcomes can be done through various methods, including standardized testing, qualitative evaluations, and self-assessment (Banta & Palomba, 2014). By measuring academic outcomes, educators can identify successful teaching practices and determine the extent to which students meet their educational goals (Suskie, 2018).

Academic outcomes are crucial in evaluating the effectiveness of educational institutions and instructional practices. They allow educators to make data-driven decisions to improve the quality of education and support student success.

Review of Relevant Studies on Peer Tutoring

Over the past few decades, college and university peer tutoring has gained increasing attention in the realm of education. Numerous studies have explored the effectiveness of peer tutoring and its impact on both the tutor and tutee. This brief review will cover relevant studies that have contributed to our understanding of peer tutoring in higher education settings.

One of the earliest studies conducted by Cohen (1986) demonstrated that peer tutoring in college and university settings can improve academic performance and promote positive attitudes towards learning. In this study, peer tutoring interventions were found to be beneficial for both the tutors and tutees, as it not only enhanced their learning experiences but also fostered interpersonal skills and self-confidence.

More recent studies have built on these findings, indicating that peer tutoring can be a successful tool for improving academic achievement, especially in subjects like mathematics (Topping, 1996). Topping (1996) found that peer tutoring in mathematics resulted in significant increases in problem-solving skills, suggesting that the benefits of peer tutoring extend beyond traditional content knowledge.

The role of peer tutoring in enhancing self-regulated learning has also been explored. A study conducted by Fantuzzo, Riggio, Connelly, and Dimeff (1989) found that college students who engaged in peer tutoring developed better self-regulated learning strategies, leading to improved academic performance. This study demonstrates the potential of peer tutoring as a tool for promoting the development of crucial self-regulatory skills.

In addition to academic outcomes, peer tutoring has been found to positively impact social and emotional aspects of the learning experience. Researchers have found that peer tutoring can help reduce anxiety in students (Hughes, Maccini, & Gagnon, 2003) and enhance motivation to learn (Roscoe & Chi, 2007). These studies show that the benefits of peer tutoring extend beyond purely academic gains and contribute to a more holistic educational experience.

Research on college and university peer tutoring has shown its potential to improve academic performance, promote self-regulated learning, and positively impact the social and emotional aspects of the learning experience.

Although this is only a brief review, the studies cited provide a solid foundation for understanding the benefits of peer tutoring in higher education settings.

Case Study: Florida Research University



A testament to the value and effectiveness of Knack's platform can be seen in its successful partnership with a large research university in the state of Florida. Recognizing the potential of Knack's innovative approach, the institution embarked on a comprehensive, campus-wide tutoring program with Knack to enhance and supplement their existing tutoring resources, aiming to increase tutoring engagement across all student demographics.

The results of this initiative were highly encouraging. Students who utilized tutoring through Knack demonstrated about a 10% higher likelihood of passing their courses, underscoring the significant role Knack plays in bolstering academic success. In a single academic year, the partnership resulted in over 17,800 hours of peer tutoring, reaching over 7,000 students—equivalent to 20% of the student body. Notably, 65% of these students had never before used campus tutoring services, indicating the reach and accessibility of Knack's platform.

Adding another layer of flexibility, 42% of the tutoring sessions occurred outside the traditional Monday-Friday, 9-5 work hours, highlighting the platform's capability to accommodate diverse schedules and learning needs. The partnership saw more than 250 active and trained peer tutors, with 70% of them reporting that Knack was their sole current form of employment.

The results of the program were not only commendable but illuminating as well. For example, of the 893 students who finished a specific course for which tutoring was provided, 589 attended at least one group Knack tutoring session.

Furthermore, there was a positive correlation between the number of attended tutoring sessions and the improvement in grades:

- No tutoring sessions: Average grade of 65.39
- 1-5 sessions: Average grade of 67.76
- 6-10 sessions: Average grade of 72.85
- 11-15 sessions: Average grade of 74.81
- 16+ sessions: Average grade of 77.23

This collaboration between Knack and the large research university represents a tangible example of how Knack's platform can serve as a powerful supplement to traditional academic support services.

It also sheds light on how such an initiative can extend the reach and impact of these services, accommodating a wider range of learning needs and schedules, thereby fostering an inclusive and supportive academic community.

Case Study: Georgia Research University



In a comprehensive analysis of data from a large research university's college of business in the state of Georgia, the impact of tutoring on course success rates, specifically Drop, Withdraw, Fail, Incomplete (DWFI) rates, was meticulously examined. Courses were assorted into three categories based on the effect tutoring had on these rates: significant positive impact, moderate positive impact, and minimal or no significant impact.

In courses such as IS 2200, ECON 1000, and FIN 4260, tutoring was associated with a significant reduction in DWFI rates. Conversely, other courses such as ECON 2106, FIN 3100, and BLAW 2200 demonstrated minimal to no change or even a slight increase in DWFI rates for tutored students compared to their non-tutored peers.

Several factors might contribute to the increased DWFI rates among tutored students in the latter group:

1. **Selection Bias:** Students already facing academic difficulties or challenges with the course content might be more likely to seek tutoring assistance, putting them at an inherently higher risk of DWFI despite receiving tutoring.
2. **Insufficient Tutoring Interventions:** The number of tutoring sessions attended by students in these courses may not have been sufficient to overcome their academic hurdles effectively, thereby attenuating the potential impact of tutoring.
3. **Complexity of Course Content:** If the course content is inherently challenging or dependent on a robust understanding of prerequisite material, tutoring alone may not be enough to mitigate the high DWFI rates.
4. **External Factors:** Personal issues, time management difficulties, or an imbalance of workload across courses might impact students' ability to benefit from tutoring, potentially leading to higher DWFI rates.

To maximize the positive outcomes and decrease DWFI rates, several data-informed best practices are suggested:

- **Promote Tutoring Services:** Especially in courses showing positive impacts, the active promotion of tutoring services using success stories and data-driven results can reinforce the value of tutoring.
- **Continuous Evaluation:** Regular qualitative and quantitative analyses of tutors by tutees, particularly in courses where tutoring shows minimal to no significant impacts.
- **Personalized Tutoring:** Offering tailored tutoring and support can cater to individual learning styles and academic needs. This can be better accomplished by tutees requesting recurring sessions with the same tutor.
- **Robust Communication:** Strong coordination among students, tutors, and faculty can align tutoring objectives with course goals.
- **Early Intervention:** Leveraging data analytics can identify at-risk students early on, enabling timely tutoring and academic counseling interventions.
- **Integrating Tutoring in Curriculum:** Encouraging faculty to include tutoring services in their syllabi and lesson plans can strengthen the collaboration between tutors and faculty.
- **Comprehensive Tutor Training:** Ensuring tutors receive training focused on subject matter expertise, teaching techniques, and communication skills is crucial for their effectiveness.

Overview of Other Support Services Offered by Colleges and Universities

Colleges and universities invest in academic support services to promote student success, retention, and personal growth, recognizing that students enter higher education with diverse educational, cultural, and socioeconomic backgrounds (Tinto, 2012). These services contribute to the development of a more inclusive learning environment by addressing the unique needs of each student, thereby ensuring equitable access to educational opportunities.

Academic support services have been found to enhance academic performance by equipping students with the necessary skills and strategies to excel in their coursework (Crede & Kuncel, 2017). By providing resources such as writing centers, tutoring, and study skills workshops, institutions support students in overcoming academic challenges, resulting in better grades, increased retention rates, and higher graduation rates (Tinto, 2012).

In addition, these services contribute to the personal and professional development of students, fostering essential life skills such as critical thinking, problem-solving, time management, and effective communication (Komarraju, Ramsey, & Rinella, 2013).

By offering targeted support to address individual needs, colleges and universities prepare students for success in the workforce and promote lifelong learning.

Moreover, academic support services play a crucial role in assisting students with disabilities by providing reasonable accommodations that promote equal access to education (Madaus, 2011). These services ensure that students with disabilities have the necessary resources and support to succeed academically, enhancing their overall college experience and paving the way for their future endeavors.

In addition to tutoring, some of these services encompass:

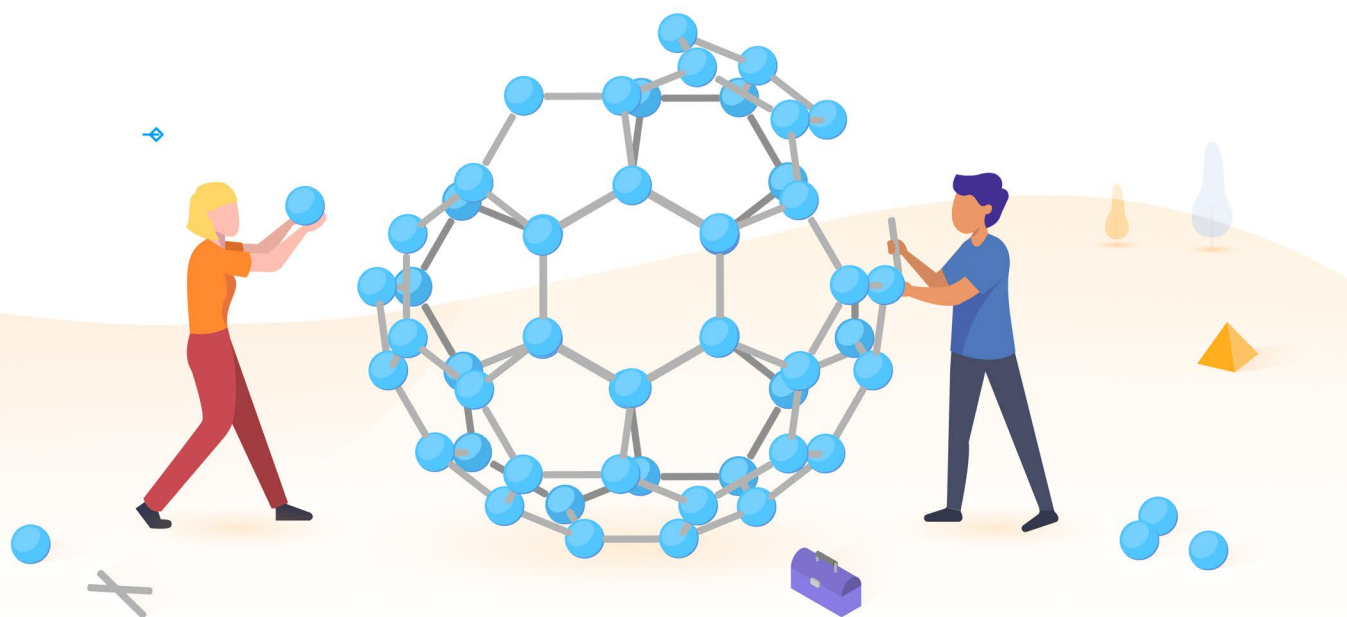
- **Writing Centers.** Writing centers offer individualized consultations, workshops, and resources designed to enhance students' writing proficiency (Brooks, 2016). For example, the Purdue University Writing Lab provides in-person and online support for students across various disciplines, assisting with assignments, research papers, and thesis development (Purdue University Writing Lab, n.d.).
- **Academic Advising.** Academic advisors assist students with course selection, degree planning, and navigating academic policies to ensure progress toward graduation (Kuhn, 2008). The University of Michigan, for instance, offers academic advising through its Newnan Academic Advising Center, where students receive guidance on major and minor selections, academic policies, and study abroad opportunities (Newnan Academic Advising Center, n.d.).



- **Study Skills Workshops.** These workshops provide students with strategies to enhance time management, note-taking, and test preparation skills (Crede & Kuncel, 2017). For example, the University of California, Berkeley, offers a series of workshops through the Student Learning Center that cover topics such as study strategies, reading comprehension, and exam preparation (Student learning center).

- **Peer-led Learning.** This approach involves trained student leaders facilitating collaborative learning sessions for challenging courses (Topping, 2005). Colleges and universities across the country, for example, implement this method through Supplemental Instruction, where peer leaders offer weekly study review sessions for students enrolled in historically difficult courses.

- **Disability Services.** These services offer accommodations and support for students with disabilities to ensure equal access to education (Madaus, 2011). For example, the Office of Disability Services at Harvard University provides accommodations such as extended test-taking time, note-taking assistance, and accessible classroom environments (Harvard University, n.d.).



Definition of a Successful Peer Tutor

A successful peer tutor plays a vital role in enhancing the academic experience of students in colleges and universities. Research has identified several key factors that contribute to effective peer tutoring, which include strong interpersonal skills, a deep understanding of the subject matter, flexibility, and empathy (Cohen, 2021).

Interpersonal skills are crucial for a successful peer tutor, as they facilitate clear communication and foster a supportive learning environment (Topping, 2017). These skills include active listening, the ability to provide constructive feedback, and the capacity to establish rapport with the tutee (Topping, 2017). Tutors who demonstrate strong interpersonal skills can create a positive learning experience and promote academic growth in their tutees (Cohen, 2021).

Subject matter expertise is another essential aspect of successful peer tutoring (Colvin, 2019). A deep understanding of the content allows the tutor to provide accurate and relevant information, answer questions, and clarify misconceptions (Colvin, 2019). Furthermore, tutors who possess a strong command of the subject matter are more likely to feel confident in their tutoring abilities, which can positively impact the overall effectiveness of the tutoring sessions (Cohen, 2021).

Flexibility is a crucial characteristic of successful peer tutors, as it enables them to adapt their tutoring strategies to meet the unique needs of each tutee (Topping, 2017). Effective tutors recognize that individuals learn at different paces and in different ways, and they adjust their approach accordingly (Cohen, 2021). By employing a variety of teaching methods and providing personalized support, tutors can optimize the learning experience for their tutees (Topping, 2017).

Empathy is also a valuable trait for peer tutors, as it allows them to understand the struggles and concerns of their tutees (Colvin, 2019). Demonstrating empathy can help to establish trust and rapport, as well as alleviate the anxiety and stress that students may experience in their academic pursuits (Cohen, 2021). By empathizing with the tutee's challenges and celebrating their achievements, a tutor can create a supportive and nurturing environment that encourages academic success (Colvin, 2019).

Successful peer tutors in colleges and universities exhibit strong interpersonal skills, a deep understanding of the subject matter, flexibility, and empathy.

These characteristics contribute to a positive learning experience, promote academic growth, and provide personalized support for tutees, ultimately fostering a more effective peer tutoring process.



Analysis of Common Characteristics Among Top-Performing Tutors

While numerous studies have explored the impact of peer tutoring, limited research has focused specifically on the characteristics that contribute to the success of top-performing peer tutors. There are, however, common characteristics among these exceptional peer tutors.

- **Strong Content Knowledge and Expertise.** Top-performing peer tutors possess a solid understanding of the subject matter they tutor. They demonstrate a high level of content knowledge and expertise, allowing them to effectively explain complex concepts to their peers (Eddy et al., 2018). By exhibiting mastery in the subject, these tutors can provide accurate and comprehensive explanations, leading to improved student understanding and retention (Sudha & Karpagam, 2020).
- **Effective Communication and Interpersonal Skills.** Effective communication is a crucial characteristic of top-performing peer tutors. They possess excellent verbal and non-verbal communication skills, allowing them to articulate information clearly and concisely (Lin et al., 2020). These tutors actively listen to their peers, ask insightful questions, and tailor their explanations to suit individual learning needs (McDonald, 2018). Moreover, they create a positive and supportive learning environment, establishing rapport with students and promoting open dialogue (Sudha & Karpagam, 2020).
- **Empathy and Patience.** Empathy and patience are key qualities possessed by top-performing peer tutors. They exhibit a genuine concern for their peers' learning and well-being, fostering a supportive and non-judgmental atmosphere (Lin et al., 2020). These tutors patiently work through difficulties and setbacks with their peers, employing strategies such as guided questioning and providing constructive feedback (McDonald, 2018). By demonstrating empathy and patience, they help students overcome challenges, build confidence, and achieve academic success.
- **Adaptability and Flexibility.** Top-performing peer tutors are adaptable and flexible in their approach to tutoring. They can quickly assess the learning needs and preferences of their peers and adjust their strategies accordingly (Eddy et al., 2018). These tutors utilize various methods, resources, and technologies to accommodate diverse learning styles (Sudha & Karpagam, 2020). Their ability to adapt to different situations and tailor their tutoring sessions contributes to enhanced student engagement and learning outcomes.
- **Reflective Practice and Continuous Learning.** A commitment to reflective practice and continuous learning is another characteristic of top-performing peer tutors. They regularly reflect on their tutoring sessions, seeking feedback from peers, mentors, and students (Lin et al., 2020). This reflective process allows them to identify areas for improvement, refine their tutoring strategies, and enhance their overall effectiveness (Eddy et al., 2018). Furthermore, these tutors proactively engage in ongoing professional development opportunities to stay updated with the latest research and best practices in tutoring (McDonald, 2018).

Insights for Enhancing Recruitment, Training, and Support of Tutors

Enhancing the recruitment, training, and support of college/university peer tutors is crucial for optimizing the effectiveness of peer tutoring programs. By incorporating insights from scholars and successful practitioners, institutions can develop strategies to attract qualified tutors, provide comprehensive training, and offer ongoing support.

- **Recruitment.** When recruiting peer tutors, it's critical to seek individuals with the right blend of qualifications and traits for successful tutoring. According to research, a tutor's content expertise, effective communication skills, and authentic will to help others can profoundly improve the quality of peer tutoring programs (Lin et al., 2020). These characteristics not only contribute to the educational development of the students they tutor, but also foster an environment of trust and respect. Moreover, tutors with these traits tend to cultivate a more engaging and productive learning atmosphere, promoting both academic success and personal growth among their peers.

- **Training.** Comprehensive training programs play a vital role in equipping peer tutors with the skills and knowledge necessary for effective tutoring. Training should include guidance on tutoring techniques, active listening, communication strategies, and effective feedback provision (McDonald, 2018). Additionally, tutors can benefit from training on understanding diverse learning styles and adapting their approach accordingly (Sudha & Karpagam, 2020). Institutions should also consider incorporating training on ethical considerations, such as maintaining confidentiality and adhering to professional boundaries, to ensure the highest standards of practice.

- **Support.** Ongoing support is crucial for sustaining the motivation and professional development of peer tutors. Institutions can establish support mechanisms, such as mentorship programs or regular meetings with program coordinators, to provide tutors with opportunities for reflection, feedback, and guidance (Eddy et al., 2018). Offering resources and workshops on advanced tutoring techniques, problem-solving strategies, and self-care can contribute to the growth and effectiveness of tutors (McDonald, 2018). Moreover, creating a collaborative environment where tutors can engage in peer-to-peer support and share best practices can foster a sense of community and professional growth (Lin et al., 2020).



Peer tutoring, as an educational strategy, holds an array of benefits, including improved academic performance, development of vital learning skills, increased student engagement, and the creation of supportive academic communities. Knack, through its innovative platform and approach, extends these benefits by offering a highly accessible and efficient means for peer tutors and tutees to connect and engage.

When contrasted with other traditional support services such as writing centers, academic advising, and study skills workshops, Knack's platform demonstrates a unique capacity to supplement and enrich these offerings.

By leveraging technology, Knack contributes to building a more comprehensive academic support system that caters to the diverse needs and learning styles of students, enhancing not only their academic performance but also their overall learning experience.

A critical component of the success of peer tutoring platforms like Knack lies in the quality of peer tutors themselves. Successful peer tutors, as the paper highlights, possess a blend of strong interpersonal skills, deep understanding of the subject matter, flexibility in their teaching methods, and empathy towards their tutees. Top-performing tutors on Knack additionally demonstrate a high level of content knowledge, effective communication skills, adaptability, patience, and a commitment to continuous learning and improvement.

Finally, the paper underscores the importance of strategic recruitment, comprehensive training, and ongoing support in ensuring the effectiveness of peer tutoring programs.

By identifying tutors with the right qualifications and attributes, providing them with the necessary training to hone their tutoring skills, and offering continuous support for their professional development, institutions can optimize the impact of their peer tutoring programs.

For future research, there's a wealth of opportunity in exploring innovative solutions like Knack in more diverse educational contexts. This could include studies on the solution's impact on non-traditional learners, the implementation of these platforms in various educational systems worldwide, or the long-term effects of such platforms on learners' career outcomes and lifelong learning habits. Furthermore, in-depth research into the recruitment, training, and support mechanisms for peer tutors can offer deeper insights into improving these processes and, consequently, the overall effectiveness of peer tutoring programs. The findings from such research will undoubtedly contribute to the continuous improvement and refinement of academic support services.

As higher education continues to evolve and adapt to changing student needs and technological advancements, peer tutoring platforms like Knack emerge as powerful tools in fostering academic success and lifelong learning. Their role in augmenting traditional academic support services, coupled with the benefits of peer tutoring and the unique capabilities of successful peer tutors, underscores their potential in shaping inclusive, engaging, and effective learning environments.

Further exploration and research into such platforms and their impact on various educational contexts will provide valuable insights and pave the way for future opportunities and improvements in the realm of academic support services.



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