

From Campus to Cloud: Transforming Office Hours in a Post-COVID World

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Abstract

Office hours (OH) have long been a staple of university syllabi, and their purpose is to provide students with dedicated time to seek help from their instructors. Chicago State University (CSU) instructors are required to set aside four hours each week for discussion with students. This approach ensures that students have multiple academic opportunities to ask questions and get help with their assignments. This study aims to identify students who attend CSU Office hours in immunology and microbiology classes, as well as the advantages—or lack of it—that these students receive from participating in these meetings. The data were collected electronically using e-mail and through the university's online portal. Around 50.9% of respondents indicated that they perceived value in offering office hours, indicating the role of these sessions in supporting student learning and facilitating deeper academic interactions. Approximately 46.4% of the teachers stated that office hours had a positive impact, indicating that these additional hours effectively complement their teaching duties and increased student-teacher interaction. A significant majority of students (62%) stated that participation in office hours has a positive impact on their confidence levels. These results emphasize the importance of office hours as a strategy to foster not only academic success but also a positive and engaging learning environment. Institutions may wish to consider these insights to further promote and optimize office hours as a vital component of the educational experience.

Keywords: Office hours, Academic support, Faculty-student interaction, Student success, Educational interventions

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Introduction

Office hours (OH) refer to scheduled times when instructors are ready and accessible to engage with students in their office spaces [1]. OH denotes a type of faculty-student interaction that occurs outside scheduled class times, transcending the boundaries of traditional and remote learning environments. It can be completed in various ways, including one-on-one, in groups, virtually, or in different ways, and it can be led by instructors, teaching, or undergraduate assistants [2]. Students attend

OH to engage in general discussions and exchange information with instructors. The subjects or topics they discuss may vary [3]. In OH, there is more to it than simply addressing course-related inquiries and discussing grades [3]. Irrespective of the subject matter, the objective is to ensure both parties are well-informed and reach a consensus on a solution or plan by the end of the meeting. Examples of common reasons for scheduling an office hour meeting include seeking clarification on questions or comments on course material students didn't feel comfortable asking in class, receiving and discussing

feedback on their assignments or performance, obtaining professional advice, receiving academic support, in a word obtaining advice on various academic or personal matters. The tradition of conducting OH has a long history. Chickering and Gamson more than three decades ago, highlighted faculty-student interaction as a crucial component in their influential report on “seven principles for effective undergraduate education” [4]. Further empirical studies corroborated their conclusions. Furthermore, substantive engagement with instructors boosts students' confidence in their academic achievements and their ambitions for furthering their education. The active engagement of students and instructors in the changing educational landscape has offered a distinct chance to thoroughly assess and reflect on their experiences and teaching methods. The findings could aid educators, user experience designers, and entrepreneurs in understanding how to incorporate digital tools into the ongoing exploration of remote learning in higher education institutions. In 1966, Clark and Trow suggested that higher education institutions serve as socializing entities where students encounter a range of opinions advocated by influential individuals with whom they have direct contact [5]. Studies have established those causal interactions between students and faculty members, acting as socializing agents, can enhance students' educational ambitions, attitudes toward higher education, academic achievement, intellectual and personal development, as well as their persistence within the institution [6].

A recent survey of biology courses emphasized the significance of OH, revealing that details about when faculty members are available were the most frequently cited form of support mentioned in course syllabi for students seeking help [7]. Previous research across different disciplines has suggested possible relationships between attending OH, academic performance, and the responsiveness of instructors. The study concludes that in China, where students often have direct access to teachers' personal contact information, the traditional office hour model may not effectively facilitate communication. It also emphasizes that students' learning habits play a crucial role in off-class interactions. Additionally, the study highlights that the working environment influences teachers' attitudes toward office hours [8].

Studies have indicated that students who attend OH do benefit from it. They found that interactions between students and peers did not always correlate with higher behavioral participation, rather, interactions with instructors and other students showed predictive of higher engagement [9]. Student-faculty collaboration increases communication between these two parties and allows both to engage each student individually and effectively.

Although the benefits of student-instructor interactions outside the classroom are well-documented, these benefits

are not always recognized by students. Cotten and Wilson found that many students do not seek interaction with faculty because they do not recognize the need for it beyond the difficulty of the course [10]. They suggested that faculty should actively and consistently encourage students to approach them. Freeman and Wash utilize brain-based teaching and learning research to demonstrate that active and continuous encouragement reduces stress and results in more effective learning. Institutions mandate office hours to allocate time and space for student-faculty interactions [11]. However, the insufficient use of this resource raises questions about how students perceive office hours [12]. Knowing that participation is optional is one of OH's key characteristics. There is no requirement for students to attend OH, regardless of their academic standing. It also results in some students avoiding OH, which can occasionally lead to a failing exam that might have been avoided with additional support. Professors created multiple lessons and utilized different methods to encourage and boost the usage of particular resources [1]. Instructors at Chicago State University are required to set aside four hours each week for discussion with students. This approach ensures that students have numerous academic opportunities to ask questions, get help with their assignments, and get advice on additional educational problems. By allocating this time, teachers show that they are dedicated to the academic achievement of their students and promote an atmosphere that values accessibility and open communication.

All over the globe, the new coronavirus illness known as COVID-19 has had an enormous impact on humanity. The World Health Organization declared the COVID-19 pandemic in early 2020, resulting in unexpected problems in several types of sectors, with education being one of the most severely impacted. COVID-19 has profoundly impacted higher education, precipitating a swift transition towards online learning [13]. Classical educational settings, including elementary schools to universities, were forced to close their doors as governments throughout the world enforced lockdowns to stop the virus's spread. This moved up the critically needed transition to distance education. The global pandemic highlighted the inadequacies of educational institutions in preparing for such an event. Educators, however, made significant progress in reducing the adverse effects of the pandemic and quickly became accustomed to using online tools such as Zoom, Google Rooms, Skype, Microsoft Teams, and WebEx. Furthermore, an enormous number of apps have been created for distance learning, assessments, and conferences [14]. The primary issue and discrepancy that arose during the outbreak was the widespread popularity of distance learning. A significant barrier that increased inequality in education was the lack of reliable internet connections and electronic devices [15].

Person-to-person contacts disappeared when it became obvious that schools and universities would be closing, and changes had to be made for students to complete their higher education. While distant learning acquired the most interest, the utilization of technology and innovation was essential. To provide online education through platforms, which have been shown to encourage high levels of engagement among users, the majority of colleges have rapidly integrated critical technological devices [16].

Cross-disciplinary research has shown that well-designed online learning can lead to improved student learning outcomes, motivation, and satisfaction [17].

In the last few years, innovative opportunities for higher education and instruction were made achievable by developments in machine learning and artificial intelligence. An instance of this is OpenAI's ChatGPT machine-learning language model. The revolutionary artificial intelligence language model ChatGPT, developed by Open AI, was made accessible in November 2022. This highly advanced technology may provide responses that are identical to that of a human discussion, which makes it an effective tool for numerous uses, including language translation and chatbot interactions. [18].

ChatGPT has proven to be an effective tool for learning complex topics by imitating human interactions and providing individual feedback [19].

ChatGPT into virtual OH could enhance preparation for examinations and serve as a valuable tool for educators [20]. A larger percentage of students using ChatGPT could inadvertently result in reduced workloads for teachers. They are enabled to focus on their time during OH because they aren't confirmed by students [21].

The objective of this paper is to analyze the efficacy of CSU's required office hours, both in practice and in students' and teachers' perceptions in the post-COVID era. The aim is to identify the common issues and obstacles that students and teachers have when it concerns office hours. Recommendations for possible enhancements that might improve the significance of office hours for teachers and students will also be provided.

In our paper we aim to investigate three questions:

RQ1: How do students and instructors assess the effectiveness of office hours in enhancing student learning?

RQ2: What alternative communication methods outside office hours are encouraged by instructors, and how effective are these methods according to both students and instructors?

RQ3: How do online and in-person office hours compare in terms of effectiveness, accessibility, and preference among both students and instructors?

It was predicted that while online office hours would be valued for their flexibility and accessibility, teachers and students would typically find in-person office hours more

beneficial for resolving particular academic difficulties. Furthermore, we postulated that although educators may promote a variety of contact methods outside of regular business hours, such as email and online discussion boards, the degree of efficacy reported by either side would differ based on the channel of communication. It is anticipated that this heterogeneity will influence the selection of online versus in-person formats, with a tendency towards a hybrid model that combines the most advantageous features of both to better serve the diverse requirements of all participants.

Literature review

Office hours are a critical component of the learning environment as they provide students with opportunities to ask questions, clarify their ideas, and engage with instructors outside of class. Previous research has offered the most effective approaches for increasing students' utilization of office hours and maximizing their benefits. By analyzing a data science course over two years, we identified significant individual differences that motivate students to attend office hours. Specifically, it was observed that the majority of students participated in office hours during their problem-solving processes. It was observed that demographic characteristics or initial visits did not significantly influence these differences, suggesting that students might have fixed beliefs about utilizing office hours. Additionally, students predominantly used office hours close to assignment deadlines. Moreover, gender, race, or previous experiences were not significant factors in the use of office hours; however, demographic differences should not be completely disregarded. The study is a preliminary effort not only to elucidate what happens during office hours but also to explore the reasons behind student participation, paving the way for more in-depth analyses in this field. Office hours are a critical component of the learning environment as they provide students with opportunities to ask questions, clarify their ideas, and engage with instructors outside of class. Previous research has offered the most effective approaches for increasing students' utilization of office hours and maximizing their benefits [22].

Jakovec provides substantial evidence of the impact of class attendance and examines the connection between academic success and student engagement outside of the classroom. The study demonstrates a low correlation, showing that while work time significantly improves students' performance on homework, this assistance has little effect on results from tests. The difference highlights the potential of achieving direct instructor connection when students have crucial assignments, such as homework when they can get precise, useful feedback immediately. Furthermore, as the scheduled time of the exam gets closer the advantages of attending the office

hours decrease, based on Jakovec's research. According to this timetable aspect, office hours' time can be effective when it is utilized before the start of essential exams, providing students sufficient time to integrate the knowledge they have been exposed to during the learning process. The study highlights the demand for an organized approach to the use of help tools in educational settings, addressing the standard tendency of waiting till the last minute to make requests for assistance [23].

Using the results of 23 semi-structured interviews conducted between 2020–2021, it examines the experiences of students using virtual office hours. The results indicate that there is a continuum between economic and social reasons that students attend office hours. It was found that online office hours offered a less formal setting and were more convenient for time-limited students [24].

Students are permitted to discuss both personal and academic ills during the virtual office hours. However, despite its importance, there remain few students accessible during office hours, which prompts the issue of what factors contribute to students' resistance to using this tool. This review of the literature focuses on several studies to determine why students are hesitant to come to class during office hours and looks at potential solutions to increase attendance [25].

The most common causes of the student's lack of interest in office hours were their busy schedules, difficulty arranging with faculty office hours, and easier and quicker ways to obtain information than by meeting faculty members. Furthermore, there were negative views of faculty members concerning going to office hours and their characters. The authors advise using a novel approach to motivating instructors to hold office hours, informing students about the significance of office hours, and allocating some of the course's credit to attending office hours [26].

The advent of the COVID-19 pandemic has resulted in notable transformations in the field of higher education. These include a swift transition to online and hybrid learning methodologies. In light of these developments, the purpose and effectiveness of office hours have been subjected to scrutiny as institutions adapt to this new normal. While previous research has shed light on the shift during the pandemic, there is still much to learn about the long-term effects of these modifications in the post-COVID period. This research aims to address several crucial gaps in the existing literature:

1. The swift transition to office hours and online learning has been extensively documented in previous research. However, there is a lack of knowledge regarding the long-term efficacy of these modalities as long-term solutions. The objective of this study is to assess the effectiveness of in-person and virtual office hours in

enhancing student learning in an ongoing hybrid learning environment.

2. The rapid acceptance of digital tools has changed how students and teachers communicate with one another. There is, however, not enough research on how these modifications have impacted the dynamics and planning of office-hour communication. Given these shifting expectations, our study will investigate how teachers and students prepare for and participate in office hours.
3. Although accessibility has been mentioned in passing in certain studies, more research is required to determine whether accessibility of office hours has been improved or worsened by various forms (online, in-person, hybrid).
4. Additionally, there is a gap in the research literature regarding the impact of office hours on student performance and instructional strategies in the context of the post-pandemic environment. This study aims to investigate whether variations in office hour schedules have affected student performance and whether these interactions have caused teachers to adjust their methods of instruction.

Materials and Methods

Study design

The objective of this study is to identify the students who attend CSU Office hours in immunology and microbiology classes, as well as the advantages—or lack of it—that these students receive from participating in these meetings.

We started by developing an anonymous survey that we will give to the students to obtain a sense of the demographics of the students in these courses on immunology and microbiology. There were both open-ended and closed-ended questions with multiple-choice and Likert scales included (**Figure 1**).

Participants

To assess the current situation and to better understand the demographics of the individuals who attend OH and learn what the teaching staff has observed through their experiences at CSU, we designed and conducted a comprehensive survey from both the students and the instructors.

Collection of data

Participants received an email invitation with a link to take part in the study from researchers. Following two follow-up emails that were sent out every three weeks, the online survey concluded after a total of eight weeks. The data were collected electronically using e-mail and through the university's online portal. There was no incentive or reward given to participants for taking part in the study.

The respondents had been informed that the results would be treated confidential and were given full instructions on how to complete the survey.

No personally identifying data was obtained. Faculty announcements and information shared on CSU and faculty learning management system pages informed students about the study and its objective.

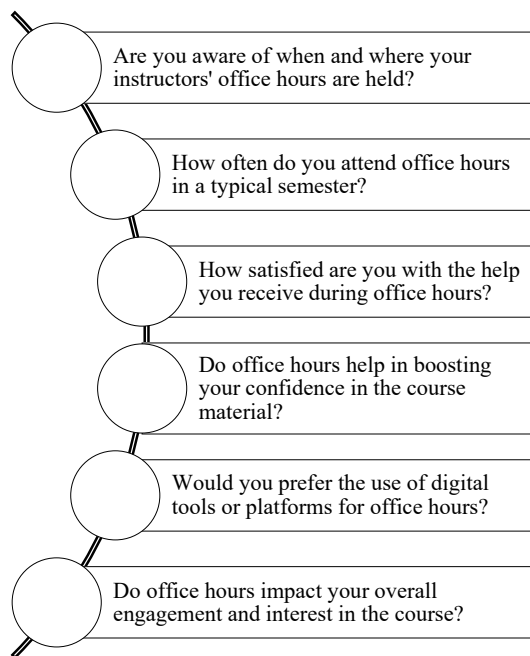


Figure 1. Questions for students

We collected views and responses from the instructional staff, which consisted of the professors, teaching assistants (TA), undergraduate teaching assistants (UTA), and tutors, in addition to the surveys we received from the students (**Figure 2**). We wanted to obtain data from the teaching staff to get a better understanding of the various explanations for why students attend from different points of view. We can observe what they thought was effective or unsuccessful while they held their OH because they are the ones with the OH.

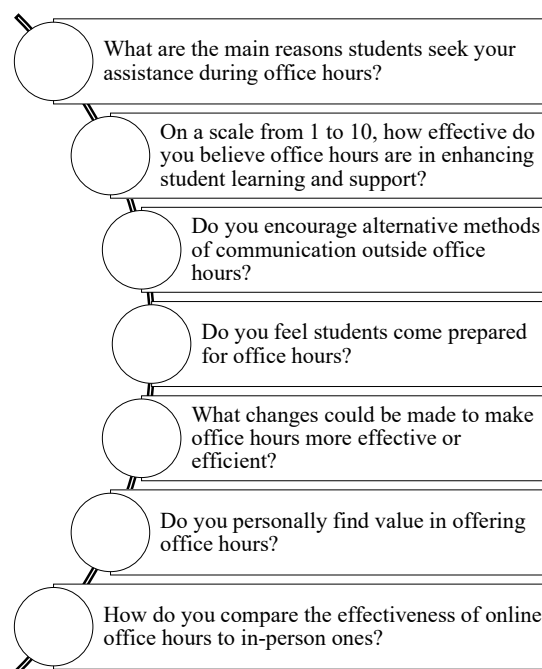


Figure 2. Questions for instructors

Statistical analysis

The data was analyzed using descriptive statistics, including number, percentage, and mean (RStudio, Posit PBC, Boston, MA, USA).

Results and Discussion

The responses to the questionnaire from a diverse group of teachers suggest that the key reasons that students seek help during office hours are primarily academic. Analysis of the data collected revealed two dominant themes. Firstly, a clear majority of teachers reported that students most frequently seek help when they are at risk of failing the course. This concern appears to be the most pressing and common motivator for students to engage with teachers outside of regular teaching hours. Secondly, clarification of unclear questions or issues discussed in class was also highlighted as a major reason for student visits. At the same time, a significant majority, 60.9%, of teachers report that they are in favor of alternative methods of communication. The responses reveal an almost even split among educators, with 51.8% confirming that students usually come to office hours prepared, while 48.2% feel that students do not come prepared.

The survey also asked about possible changes to office hours that could enhance their effectiveness and efficiency. A prominent response from teachers was the suggestion of using online meetings.

Around 50.9% of respondents indicated that they perceived value in offering office hours, highlighting the role these sessions play in supporting student learning and facilitating more in-depth academic interactions.

Conversely, 49.1% of teachers expressed a lack of perceived value in these sessions, which may reflect concerns about under-utilization or the effectiveness of office hours as currently structured.

The impact of office hours on teachers' overall workload and scheduling was evaluated, resulting in a dichotomous response from the surveyed population. Approximately 46.4% of the teachers indicated that office hours had a positive impact, suggesting that these additional hours effectively complement their teaching duties and enhance student-teacher interaction. Conversely, 53.6% of respondents indicated that office hours hurt their workload and schedule.

The majority of educators surveyed indicated that the current allotment for office hours is sufficient to meet the needs of their students.

The survey investigated the relationship between student attendance at office hours and academic performance in their respective courses. In contrast with the prevailing expectation, the majority of respondents indicated that no discernible correlation exists between the two variables. These results indicate that there is no straightforward correlation between attendance at office hours and improved grades or enhanced performance in course assessments.

The survey examined student awareness of the scheduling and location of their instructors' office hours. A slight majority (52.2%) of students indicated awareness of the times and locations of these office hours, suggesting that instructors are effectively communicating with students about these opportunities for additional support.

The survey inquired about the prevalence of students' attendance at their instructors' office hours during a typical academic semester. The distribution of responses demonstrates a balanced pattern of engagement with this academic resource. Approximately 32.2% of students reported attending office hours "very often," which suggests a strong reliance on this form of direct academic support. A further 35.7% of respondents indicated that they attend office hours "sometimes," which suggests a moderate use of this academic resource, likely on an as-needed basis. Conversely, the same proportion (32.2%) reported that they "rarely" utilize office hours.

The study examined student satisfaction with the assistance they receive from instructors during their scheduled office hours. A significant majority (64.2%) of respondents indicated that they were "very satisfied" with the support provided.

The objective of the survey was to assess the impact of attending office hours on students' confidence in understanding and applying course material. A significant majority of students (62%) indicated that participation in office hours has a positive impact on their confidence levels.

A substantial majority (59.1%) of respondents indicated a preference for the inclusion of digital tools in these sessions. Conversely, 40.9% of students indicated a preference against the utilization of digital platforms for office hours.

A significant majority (68.7%) of respondents indicated that their engagement and interest levels are positively influenced by attendance at office hours.

Conclusion

The findings suggest that office hours are primarily used by students as a tutorial resource to improve their understanding of course material and enhance their academic performance. The results underline the importance of office hours as an important support mechanism for students facing academic challenges. These findings highlight a gap in educational approaches in terms of the accessibility of teachers outside traditional settings, which may influence how students seek and receive support. The close split indicates significant variability in how students approach these sessions and suggests that nearly half of the student body may not be maximizing the potential benefits of office hours due to a lack of preparation. This finding highlights the need to potentially increase student awareness and strategies for using office hours more effectively, which could lead to improved academic outcomes and more efficient use of these sessions.

A shift to a virtual format could potentially address various logistical challenges such as scheduling conflicts and physical space limitations, making it easier for more students to attend and engage. In addition, online meetings may provide a more comfortable and accessible environment for students who may feel intimidated by face-to-face interactions. This adaptation could lead to increased utilization of office hours, allowing teachers to provide more personalized support. This division highlights a wider debate within educational institutions about the optimal methods of providing academic support and suggests a possible re-evaluation of how office hours are conducted to increase their perceived value to teachers. The majority points to increased pressures and time commitments that potentially disrupt personal time and escalate work-related stress. The results reflect a significant concern regarding the balance between the benefits of office hours and the additional burden they impose on educators. These findings highlight the need for educational institutions to reevaluate how office hours are structured and implemented, aiming to make them as beneficial as possible while reducing their adverse effects on teacher workload.

Teachers highlighted that the allocated time allows for in-depth discussions and personalized attention, which are vital for enhancing student comprehension and

performance. However, some respondents proposed that while the general allocation may be adequate, there could be potential for flexibility based on varying demands throughout the academic year, such as during midterms or final projects when students might require more comprehensive assistance. This insight suggests that a dynamic approach to scheduling office hours, responsive to the academic calendar and specific course requirements, might further optimize their effectiveness.

Educators have indicated that while office hours provide an opportunity for clarification and guidance, their impact on overall performance might be mitigated by various factors, including the students' study habits, prior knowledge, and engagement in the classroom. Some teachers also indicated that students who are already performing well may be less inclined to attend office hours, or that those who do attend may be seeking assistance to comprehend the material but may not consistently observe immediate enhancements in their grades. This absence of a distinct correlation underscores the complexity of academic success and suggests that office hours represent merely one of the numerous resources available to students. It highlights the significance of a comprehensive approach to student support, integrating diverse academic and non-academic factors that contribute to learning outcomes.

This lack of knowledge among a considerable number of students indicates that the current methods of communicating this information may be inadequate. The data suggests a potential discrepancy in the way information about office hours is distributed, which could limit student's ability to seek assistance and potentially impact their academic performance. These findings emphasize the necessity for institutions to evaluate and potentially enhance the strategies employed to inform students about office hours, ensuring that all students have the opportunity to benefit from this crucial academic resource.

This high level of satisfaction indicates that office hours effectively meet the academic needs of many students, offering valuable guidance and clarification that contribute positively to their learning experience.

The positive impact of office hours on student confidence demonstrates their value as a pedagogical tool that extends beyond their role as a mere remedial resource. They serve as an essential educational support mechanism that fosters enhanced engagement and self-assurance among students. This finding highlights the need for educators to continue promoting the availability and efficacy of office hours as a means of supporting student learning and confidence.

This preference is likely to reflect the growing comfort and familiarity among students with digital communication, as well as the additional convenience and flexibility that such tools offer, enabling students to engage with academic support without the constraints of physical presence.

Another group may place a higher value on the personal connection and immediacy of face-to-face interactions, which can be crucial for addressing complex issues or for students who may feel less engaged through digital means. This significant finding indicates that office hours serve not merely as a venue for academic support, but also as a critical factor in enhancing student involvement and enthusiasm for the subject matter.

Students indicated that the personalized attention and clarification received during office hours facilitate the demystification of complex topics, thereby enhancing the accessibility and enjoyment of the learning process. Furthermore, the opportunity to interact more closely with instructors appears to enhance students' connection to the material, which may lead to increased motivation and more active class participation.

These results emphasize the significance of office hours as a strategy for fostering not only academic success but also a positive and engaging learning environment. Institutions may wish to consider these insights to further promote and optimize office hours as a crucial component of the educational experience.

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