Moving On: Improving Academic Achievement Through Time Management in a Post-Pandemic Environment

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Many students reported an increased level of academic stress during the pandemic due to factors such as learning modality, time management, and external influences. Time management in particular is often recognized for its importance in relation to student academic success. This study highlighted the impact of the pandemic on time management skills and includes accounts from students and teachers to better understand the complexities of time management issues in different environments. The investigators analyzed the similarities and differences between in-person, on-line asynchronous, and on-line synchronous courses relative to time management. The findings suggest several factors that were critical to timely completion of coursework and intellectual development. The authors offer approaches to improve students' time management skills to increase academic achievement. This paper concludes with practical recommendations when transitioning from on-line courses during the pandemic to in-person and on-line educational environments.

Keywords: Time Management Skills, On-line Education, Academic Achievement, Pandemic Learning.

Introduction

Higher education can be an extremely stressful period in students' lives where they work through new experiences such as transitional and emotional stressors (Bhujade, 2017). These stressors include living away from their family, a heavy workload, and navigating complex higher education programs. Depression, anxiety, and academic stress among college students become a great cause of concern due to these factors. Students can combat academic stress in a variety of ways, such as note-taking strategies, goal orientation and self-control with effective time management. Time management is a group of practices, skills, tools, and systems that help improve the quality of life by consciously controlling time spent on specific activities and is often used to combat academic stress (Gall, 1988; Kim & Ra, 2015). These studies further noted that inefficient time management behaviors result in poor academic performance and increased levels of stress. The COVID-19 pandemic has led to variable learning experiences based on students' access to technology and support during the transition to distance education, which resulted in a range of learning gains and losses (Gall, 1988; Kim & Ra, 2015). This study aims to demonstrate how student time management was impacted by the pandemic and illustrates how time management can relieve academic stressors during uncertain times. These approaches are vital with the transition back to more face-to-face instruction which likely entails another adjustment period for students.

On-line Learning Environments

On-line educational settings include affordances and constraints that support student development and are often compared to face-to-face environments. A 2017 study examined distance education teachers' perspectives about leveraging technological tools to support primary and secondary students' learning (Alsalem, Alamodi, Hazazi, Shibah, Jabri, & Albosruor 2017). The instructors identified technology as a factor that greatly assisted them in developing relationships with both students and families, creating lessons, differentiating learning, connecting peers and providing quality feedback to students. They also reported experiencing ongoing challenges related to gaining technological expertise, overcoming technology faults and coping with additional accountability. Teachers' use of

technology was driven by specific student needs, where teachers drew heavily on both core pedagogical knowledge and technological pedagogical content knowledge.

Moreover, Hurt (2008) interviewed 11 instructors in an attempt to understand the advantages and disadvantages of on-line education. Perceptions of teaching on-line varied from instructor to instructor, but all agreed that face-to-face contact afforded by a seated course is superior to learning on-line. In the second round of interviews, however, instructors noted that the content and rigor of an on-line course can be equal to or superior to that of a seated course. Whether the content and rigor are better than those for a seated course depends on the instructor's preparation. The practical benefits include the convenience and flexibility of doing coursework when time is available. This advantage helps students with demands such as those involved with family obligations, childcare and work schedules. Learning benefits are also numerous where instructors believed that their students are forced to read and write more, learn more on their own and become problem-solvers. Teachers also claimed that learning on-line aided students in developing good technology skills, learning time management and self-discipline. However, there are challenges for educators using distance education to adequately prepare students for their future professions. These obstacles are more prominent in disciplines that prepare people for relational professions, which require people skills and a certain maturity of character that is difficult to teach on-line (Hockridge, 2013). Overall, on-line learning has its affordances and constraints which differ from those in traditional in-person forms of education and prior studies demonstrate that pedagogy is critical for success regardless of modality.

While distance learning is typically voluntary, the global pandemic has demanded on-line education. Instructors concluded that students must possess a certain set of characteristics to succeed in the on-line classroom. Namely, students must possess traits such as "accountability, responsibility, self-discipline, flexibility, time management skills, self-directedness, initiative, problem-solving skills, reading comprehension skills, and basic technology skills" (Hurt, 2008). Of these necessary attributes, time management was particularly needed to deal with the new stressors of COVID-19.

Stressors during COVID-19

The COVID-19 pandemic has dramatically changed the lives of many in terms of communication, working environment, self-isolation and quality of life itself (Makarova, Makarova & Korovin 2022). In addition to the psychological impacts of attempting to prevent the infection and spread of the virus, students faced academic pressures (Moawad, 2020). The closure of educational institutions and maintaining social distancing regulations as a preventative and precautionary measure against COVID-19 have both changed the mode of teaching from an in-person environment to a virtual and on-line framework. In 2020, Moawad researched stress levels of university students in on-line learning during the pandemic. The results indicated that the highest stressors affecting the students were the uncertainty towards exams, the end of the semester and their academic assessment. These stressors occur when a person is uncertain about something they find important, which affects physical and mental health. Demands due to an increase in coursework that students face, specifically with logistic issues such as Internet connectivity, also puts students at risk of increased stress and the potential for larger impacts including depression. This study further discussed the increase of depression symptoms as the semester progressed.

Sprague & Wilbern (2021) studied how college students responded to the mid-semester transition to on-line learning from face-to-face courses due to the global pandemic. Students with prior experience in on-line courses were generally more satisfied with on-line instruction during the 2020 spring semester. Those with minimal to no experience in on-line courses were more dissatisfied than those who took multiple on-line classes. Many students highlighted challenges with technology, lack of resources, diminishing quality of instruction and personal struggles with motivation or time management. Qualitative data indicated that the pedagogy chosen for the on-line environment did not align with many students' expectations which led to dissatisfaction in the instructional approach. Students stated that some professors increased workload, while others modified their instructional approach for the courses they taught which posed additional challenges for students. Some students enjoyed the flexibility that could come with being in an on-line course as it allowed them to work around family and work obligations. The study highlighted the need for instructors to offer a variety of on-line teaching strategies that use both synchronous and asynchronous systems that meets students' space and time needs.

Time Management Skills

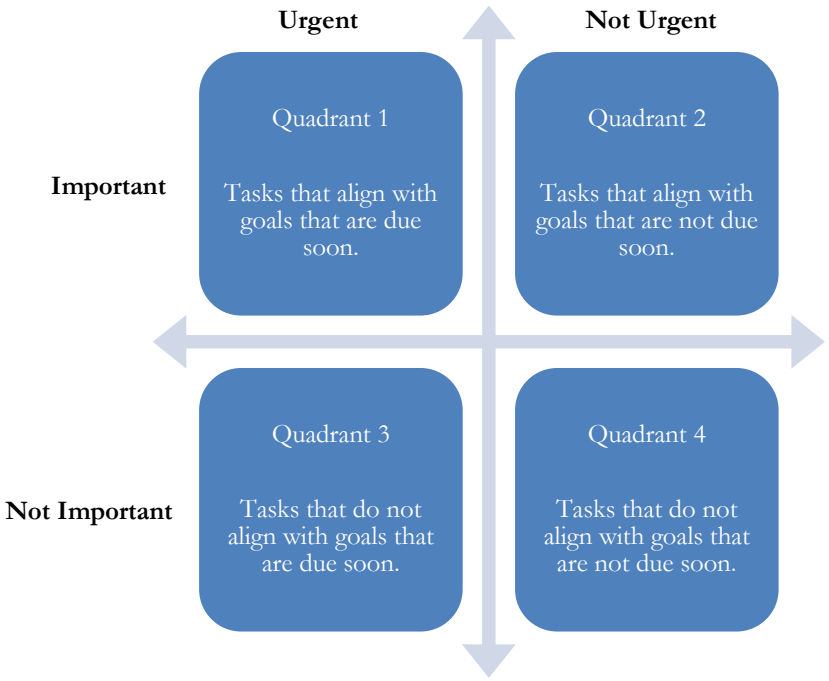
Time management plays a crucial role in improving students' academic performance (Alsalem et al., 2017). Many students experienced issues in managing their time efficiently prior to attending college mainly due to not having difficulties in high school. Common reasons for time management issues include time spent on social networking sites, having no proper schedule, organization, guidance, target objectives and social engagement. In 2017, Alsalem et al. conducted a survey to determine the relationship between time management and academic performance. They

found that students who had the opportunity to practice time management skills attained better academic success across faculty, gender and curriculum. In another study, Britton & Tesser (1991) portrayed how time management practices can predict college grade point averages. The data suggested that self-reports of time management are positively related to academic success. Furthermore, the effects of time management are independent of SAT scores and, in this specific study, had a stronger effect than SAT scores on academic success.

Covey (2020) offered an approach to time management focusing on two factors: urgency and importance. A task is urgent if it requires immediate attention, while a task is important if it is related to one's long-term goals. These factors are combined to create a four-quadrant matrix. Figure 1 illustrates the four quadrants of the time management matrix. The first quadrant includes tasks that are both urgent and important, which usually causes a high amount of stress as the individual is dealing with approaching deadlines or tasks that are relevant to their goals. The third quadrant targets tasks that are urgent but not important activities. One tends to spend a majority of their time in this quadrant if they lack clearly defined long-term goals. Quadrant four includes activities that are neither urgent nor important. People with a lack of purpose tend to spend time on tasks in this quadrant. Productive goal-oriented individuals avoid Quadrants 3 and 4 because these activities are not important. Finally, Quadrant 2 activities are important but not urgent and are directly related to an individual's goals, which take time and effort to achieve. People should strive to stay within Quadrant 2 as it requires being proactive and declining tasks that are not important. This leads to stronger time management, which is a vital component in determining academic performance. This study aims to ascertain the effects on time management relative to the global pandemic.

Figure 1

Stephen Covey's Time Management Matrix



Problem Statement

The pandemic caused a major shift in teaching and learning environments and increased students' stress. With time management being a major component of academic success, this study targeted the impact of the pandemic on time management and approaches that can support students in another shift in learning environments. Therefore, we proposed the following research questions to guide the study:

1. How did the pandemic impact students' time management skills?
2. Which strategies worked best for time management skills during the pandemic?

Research Design & Methods

We used a mixed methods research design to address the research questions. Quantitative data included survey questions and project submission rates, while qualitative data focused on open-ended survey questions and teaching assistant interviews for an in-depth understanding of student interactions. This section of the paper discusses the setting, data collected and the analysis.

Setting

The study was conducted at a research-extensive university in the western United States. Participants included students and teaching assistants from a large-enrollment computer science class. The computer science class was a service course and included students from over 30 majors. The course was taught on-line in asynchronous and synchronous approaches based on different sections of the course. In both instances, the course included a lecture and laboratory component. The lecture targeted underlying computer science concepts, while the lab focused on applications and principles of computer science.

Data Collection and Analysis

The researchers collected project submission rates for students enrolled in the asynchronous version of the course between 2016 and 2021. This data set allowed us to compare on-time and late/non-submission rates between pre-pandemic courses (2016-2019) with those offered during the pandemic (2020-2021). These data were analyzed using a univariate analysis of variance to determine differences between the groups.

The student surveys consisted of both quantitative and qualitative data with questions that highlighted students' behaviors and dispositions towards time management during the pandemic. Responses included feedback from both synchronous and asynchronous on-line learning experiences. A total of 69 students participated in the survey. Measures of central tendency were used to summarize and report quantitative data. The qualitative answers were analyzed using an open and axial-coding structure and expounded on the quantitative measures.

Lastly, teaching assistants for the course who taught both prior to and during the pandemic were interviewed using a semi-structured interview format. These interviews enabled the researchers to acquire an in-depth understanding of student interactions and how they changed with the pandemic.

Results

Research Question 1: How did the pandemic impact students' time management skills?

Students' typical weekly time allocation is summarized in Table 1. There were roughly 98 waking hours per week. Each week, students averaged about 9 hours on social networking sites, 11 hours on jobs, 11 hours on hobbies and 22 hours on education. Approximately 45 hours were spent on a category that students reported as variable activities, which mostly included hygiene, relaxation and travel.

The university's policy for academic credit hours (University of Hawai'i, 2014) highlights one hour of in-class time and two hours of outside of class work per credit hour of class. Therefore, a typical three-credit course requires three hours of in-class instruction and six hours of coursework each week. A full-time undergraduate student enrolls in a minimum of twelve credit hours. Students should allocate 36 hours to school each week based on the minimum full-time credit hours. A gap of 14 hours between the expected time allotment and average allotment for

Table 1

Student time allocation per week

Time Allocation Per Week (168 hours)	
Social Networking Sites	9
Employment	11
Personal Hobbies /Socialization	11
Education	22
Variable Activities	45
Sleep	70

education is indicative of students studying approximately 42% of the baseline requirement. In addition to the low study time, students reported a majority of their educational efforts out of class being fairly close to due dates with 31% starting assignments the day it was due, 39% beginning two days prior to the due date, and 30% starting three or more days prior to the due date. When asked about the method of prioritizing tasks, 91% used urgency as a criterion while 83% used importance. Therefore, most students appeared to focus their educational efforts in Covey's Quadrant 1 (urgent and important tasks).

Students' open-ended survey results and teaching assistant interviews included two major themes that offered explanations for the weekly time allotment. The first theme was work being prioritized over school. Although students averaged 11 hours of work per week, approximately 52% of students were employed during the pandemic, which is ~22 hours of work for those with jobs. Students with jobs discussed the importance of the position and how it helped to fund their educational endeavors. In many cases, these positions were not applicable to their long-term goals but rather a means to acquire an education to attain their goals. Several students reported working full-time (40 hours per week). A representative comment from a student was, "… I typically work about 40 hours a week. So, I tend to do school around my work schedule whenever I have time." TAs echoed the sentiment that students had many other priorities, including work, that came before schooling. They noted getting many of these types of excuses when students requested extensions for assignments. In many instances like this, the 40-hour work schedule led to students reporting less time to study each week and a need to relax and decompress between work and school. Students further highlighted that this issue was prominent with synchronous on-line classes, where many did not attend.

The second theme that emerged was a decrease in socialization due to work and school schedules. Students felt more apathetic due to their work and school life taking a large amount of their efforts throughout the week. Students reported 11 hours per week for socialization and hobbies due to their decreased desire to socialize. A student stated, "After having classes all day and work at night, I don't really feel like doing anything else." This response showcased how a student can feel apathetic at the end of the day and have little time for studying and socialization. Another student echoed the sentiment by indicating, "I usually spend 20-25 hours working, and the rest on school. I don't have much of a social life because of those two things. I stress a lot over them, so it ruins my want to go out."

The researchers also gathered data from the asynchronous offering of the course between 2016 and 2021 to determine whether the pandemic impacted class time management as defined by on-time submission of assignments. Four terms (2016-2019) account for submission rates prior to the pandemic (n=217), while two semesters (2020-2021) illustrate the submission rates during the pandemic (n=81). Prior to the pandemic, the average on-time submission rate for assignments was 82% while the average late/non submission rate was 18% (Figure 2). The submission rate for assignments during the pandemic were 84% on-time submissions and 16% late/non submission rate. Therefore, during the pandemic there was an increase in on-time submissions for assignments by 2%. The researchers further examined quantitative data by calculating the total unique number of students who submitted a late assignment or a non-submission. Forty percent of the pre-pandemic group submitted an assignment late or had a non-submission, whereas the pandemic group had 45% of students with at least one late assignment or non-submission. The researchers conducted a Two-factor ANOVA based on the pandemic grouping and assignment submission rate and found the difference to be significant at $p<.05$ (Table 2). Overall, the pandemic impacted a larger number of students' time management skills in terms of on-time submission of assignments.

Figure 2

Total late/non-submissions and total students with late/non-submissions before and during the pandemic

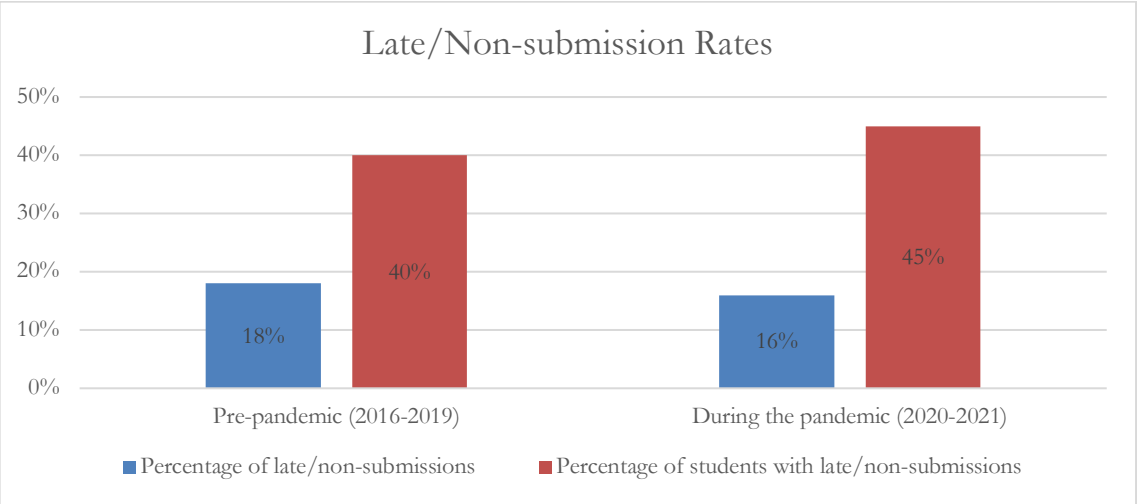


Table 2

Two factor ANOVA for pandemic grouping and assignment submission rate

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Submission rate	1067.428571	6	177.9047619	7.4422311	0.013806819	4.28386571
Pandemic grouping	178.5714286	1	178.5714286	7.4701195	0.03404339	5.98737761
Error	143.4285714	6	23.9047619			
Total	1389.428571	13				

Research Question 2: Which strategies worked best for time management skills during the pandemic?

We coded open-ended survey questions and TA interview data to determine themes for effective time management strategies. Five major themes emerged regarding the strategies that worked and should be employed in future semesters. The themes included planning time to study, using prioritization strategies with a focus on importance, starting assignments ahead of due dates, prioritizing school, and requesting support ahead of due dates. Figure 2 illustrates the major themes with the percentage coverage of student responses. Note the sum of these percentages exceed 100% as students suggested multiple strategies.

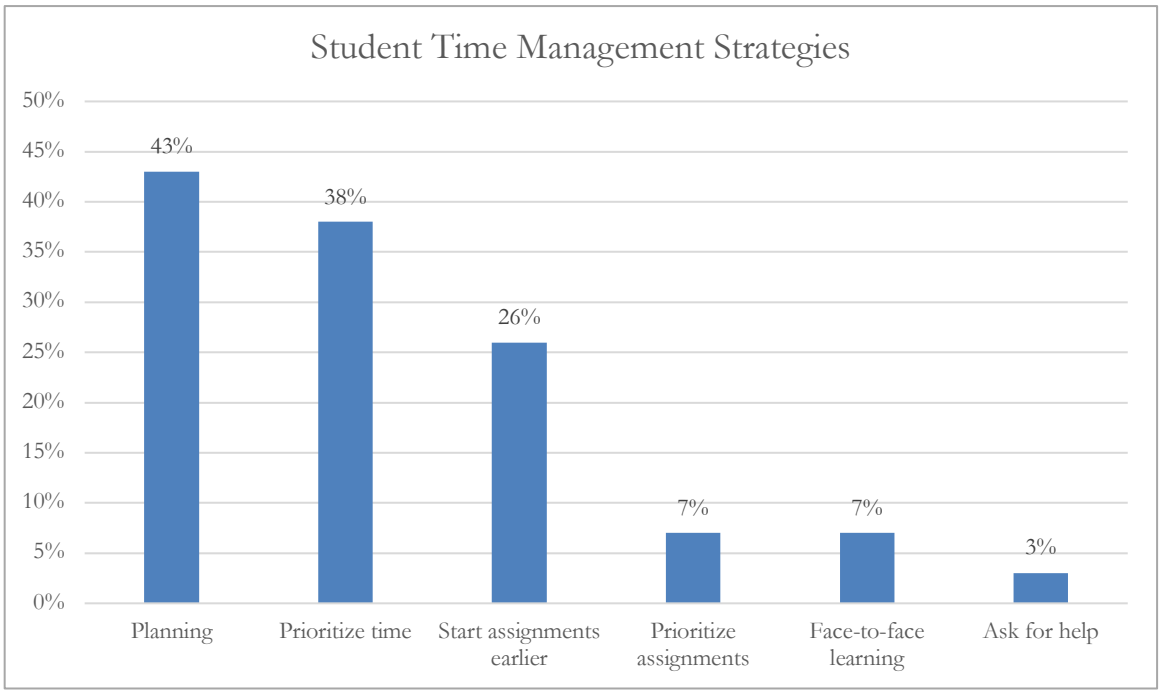
Students expressed the first theme when they mentioned that it is important to "be more on top of due dates and deadlines and work ahead more often." This approach would help them to avoid working mostly in Covey's Quadrant 1 and focus more on Quadrant 2 to improve work quality and reduce stress. This led to the second theme and planning their schedules better to allow for study time rather than having a mixture of class and work without breaks. With the additional time available to study, students and TAs highlighted the value of prioritizing assignments based on importance and ensuring these items are completed early to reduce the number of tasks in Quadrant 1. In addition to prioritizing tasks, respondents discussed their prioritization of time regarding their employment stating, "… not work as much and try to complete my assignments every other night if possible." This was a subset of prioritizing based on importance to ensure their educational endeavors were prioritized above work unless their work was a part of their long-term goals. Lastly, students felt that focusing on importance and starting assignments early would allow them to get more help from teachers and TAs to help improve their learning. TAs confirmed this approach as they discussed instances where students requested support on challenging topics less than an hour prior to the due time for projects. This was a previous constraint when most of their educational efforts were in Quadrant 1. With this approach, getting additional support becomes an affordance of effective time management practices.

Although returning to a face-to-face learning environment is not necessarily a strategy but a preference, 7% of the students shared their insights on the matter. They explained how "being back in person should get me back in the

habit of focusing more on school" and less on other obligations. Others suggested that being on campus with a set schedule would create a schedule for them and improve their time management through regimentation.

Figure 3

Student survey data on effective time management strategies



Discussion

Implications for Practice

The researchers believe their findings illustrate several considerations for higher education instruction. The first implication is informing and reiterating to students the number of hours that should be allocated for one's course per credit hour. The approach could be combined with expected effort on assignments to help students see the link between the general university guideline and the link to courses. Full-time undergraduate students spend 58% less time studying than expected, according to our data, which is just under 3 hours per week per class. While reminding students about logistical measures like this is not aligned with course content, it can better contextualize expectations of their learning. Reinforcing the idea that success requires hard work and explaining the importance of time management can go a long way for students (Hurt, 2008). Additionally, understanding that full-time students must allot 36 hours per week to school could possibly affect the obligations they stack onto their schedules, whether this be for employment, personal hobbies or other responsibilities. The second implication relates to the concept of prioritizing important tasks over urgent ones. Students often find themselves in situations where urgent activities appear to take priority over all other tasks, when important ones should be instead. Teachers should implement a tutorial to teach this concept at the beginning of the term or illustrate it by explaining why prioritizing important assignments can be beneficial and aligns more with their long-term goals, rather than only completing assignments out of urgency. The third recommendation for practice involves planning deadlines and calendaring. Instructors should include a list of coursework with deadlines that students will need to complete throughout the term. It could be beneficial to utilize applications or calendaring software on students' devices that include reminders and alerts. This approach allows personalization of alerts to promote starting assignments early and keeping schoolwork in Quadrant 3 with early deadlines. These approaches can be used together to support students in their educational endeavors as they prepare for a modified approach to learning with more face-to-face and hybrid opportunities.

Future Research

The results from this study reveal opportunities for future research. Although students' on-time submission rates improved during the pandemic, there were more students with time management difficulties. With the return of more face-to-face classes, we are interested in researching the impact of this change in modality on time management. Transitioning to more in-person instruction brings back old challenges that students may not be accustomed to such as commute time. We are also interested in studying automated approaches to time management

instruction. Many faculty find that time is limited in the classroom, so determining whether an automated approach can help teachers to effectively integrate instruction that supports time management improvement is necessary.

Conclusion

The pandemic has affected students' time management skills in several ways. Their submission rates for on-time assignments improved by 2% since entering the pandemic. However, the total unique number of students who missed an assignment due date increased by 5% during the pandemic, which demonstrates a broad impact on the student population for timely submissions. Furthermore, students spend 14 hours (58%) less than the recommended time for studying per week. The authors believe that the low level of study time impacts students' prioritization of assignments, leading to more assignments in Quadrant 1 (important and urgent) and fewer in Quadrant 3 (important but not urgent). With more tasks in Quadrant 1, it is likely that students have more time management challenges because they have less available time for educational endeavors. Therefore, it is important for students to understand their long-term goals and how to prioritize their education and work experiences.

To improve time management for the shift back to face-to-face learning, the students and teaching assistants found that starting assignments ahead of due dates, planning time to study, using prioritization strategies with a focus on importance, prioritizing school and requesting support ahead of due dates are the most impactful approaches. Educators should strive to incorporate some of these strategies to ameliorate student time management challenges and prepare them for lifelong learning.

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