

Physics tutors' perspectives on tutoring before, during, and after the COVID-19 pandemic: A case study at a comprehensive South African university

Sinenhlanhla Fortunate Sihlangu^{1*} , Bonginkosi Vincent Kheswa² 

¹University of the Witwatersrand, Johannesburg, SOUTH AFRICA

²Department of Physics, University of Johannesburg, Johannesburg, SOUTH AFRICA

*Corresponding Author: sineh007@gmail.com

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ABSTRACT

The research investigates the experience of physics tutors at a comprehensive South African university during online and hybrid learning because of the COVID-19 pandemic. A questionnaire was filled in by 12 tutors from a department of physics. The findings were that the tutors could manage tutoring large numbers of students in the online space and hybrid space. The tutors could manage tutor-to-student ratios of 1:200. More than 50% of the tutors found it difficult to adjust to e-tutoring and the main cause of this was unstable internet connectivity. More students were present for online tutorials than face-to-face tutorials but there was little active participation from students. The major challenge that tutors face with face-to-face tutoring is disruptive behavior from students during the tutorial sessions.

Keywords: tutors, online tutoring, hybrid learning, blended learning, online classes

INTRODUCTION

South African Higher Education Institutions and COVID-19

In March 2020, South Africa imposed hard lockdowns with social-distancing restrictions to curb the spread of the novel coronavirus. South Africa like many other countries in the world was in a 'National State of Disaster'. The lockdown and social distancing regulations affected the normal operation of universities. All South African universities had to implement distance learning to adhere to the country's COVID-19 restrictions and to complete the 2020 academic year. Online education was the popular choice amongst the universities for distance learning. A lot of the COVID-19 restrictions continued until the year 2021. Hence, the 2021 academic year was also completed through distance learning. Online learning demanded crucial resources from universities and Department of Higher Education and Training (DHET), such as providing data bundles to students for internet connectivity as well as laptops or tablets for students who could not afford them. By the end of the year 2021, a lot of COVID-19 restrictions had been eased and the number of daily infections significantly reduced. Thus, some Gauteng higher education institutions implemented hybrid learning in the first semester of the year 2022. Hybrid learning is a mixture of online and face-to-face education. This study is based on a comprehensive South African university, which had 80% and 20% face-to-face and online learning, respectively, for undergraduate students.

Universities receive most of their revenue from government grants provided by the DHET and tuition fees. South Africa's 26 public universities generated a revenue increase of 1% in the year 2020 compared to the preceding year (2019) (Stats SA, 2021), which is the lowest revenue increase in the past six years (Lehohla, 2017). The revenue increase ranged from 7.4% and 12.5% between the year 2015 and year 2019 (Lehohla, 2017; Stats SA, 2016, 2018, 2019, 2020). One of the main causes of the low revenue increase in 2020 is the decrease in revenue collected in the form of tuition fees by 2.8% (Stats SA, 2021). A decline in the 2020 tuition fees revenue is caused by a smaller number of students living in and paying for residences due to COVID-19 lockdowns (Stats SA, 2021). In 2020, the majority of the expenditure was used to compensate employees for resources needed for off-campus work. Stats SA (2022) reported that the revenue increase for South African universities was 6.3% in 2021 compared to the preceding year (2020). The cause of the revenue increase is an increase in tuition fees collected by the universities in 2021 (Stats SA, 2022). Universities were able to collect more tuition fees in 2021 due to the gradual readmission of students into university residences and the gradual introduction of hybrid teaching. The financial statistics for higher education institutions for the year 2022, have not yet been released and will be released by the end of October 2023 by Statistics South Africa.

The physics department at this South African comprehensive university assigns 50 students per tutor. Due to the restricted departmental budget in 2022, a maximum of two tutors were assigned to each module. Modules with large numbers (>200) of students were also limited to only two tutors, which meant these tutors were assigned more than 100 students each. Which is more than double what the department usually assigns to a tutor. This paper aims to investigate the challenges faced by tutors during online education and the challenges faced by tutors in face-to-face teaching and learning. How can the needs of tutors be addressed to improve the quality of online and face-to-face tutorials in blended learning?

Role of Tutors in Higher Education

Tutors or teaching assistants are senior undergraduate students or postgraduate students that are registered at a particular university and have been appointed by the university to assist undergraduate students with the syllabus of a module. These tutors are usually chosen based on academic performance in the module for which they are applying to tutor, as well as their overall academic record. They play a vital role in the education of students because students usually relate more to tutors than lecturers. Students also find it easier to communicate with their tutors compared to the lecturers. Thus, tutors are the communication interface between students and lecturers (Dankers et al., 2022). Universities set out budgets for tutors, these budgets are used to remunerate tutors for work completed. The budget can set limitations on the number of tutors that can be appointed. If the tutors are remunerated on a pro-rata basis, then budgets can limit the length of time tutors spend with students. Tutors in higher education institutions are responsible for conducting mandatory group tutoring, individual consultations as requested by a student, and giving feedback on assignments and quizzes (Campbell et al., 2018). Essentially the role of tutors in academia is to increase students' engagement in the module. A tutor's role is not just academic, but tutors also serve as role models to students. Tutors are also well-versed with university policies, services, and regulations. Therefore, they can assist and advise junior students. Giving a senior student an opportunity to tutor also gives them academic work experience and mentorship experience. The many phases of South Africa's response to COVID-19 pandemic had an impact on tutors and the role they play in teaching and learning.

One of the main challenges of online education is the lack of social interaction. In a study by Kheswa et al. (2022), the students responded that face-to-face interaction with tutors was one of the top four important aspects of teaching and learning that were lacking most in their online education. Face-to-face interaction between student and tutor is important to strengthen the student-tutor academic relationship. A lot of the time tutors are peers to students because they are in the same age group and share similar experiences such as studying towards a similar degree (Campbell, 2019). Peers relate to each other and share collaboration, communication, and trust (Pérez-Jorge et al., 2020), which increases the tutees' interest and engagement in learning.

To compensate for the lack of interaction in tutorials, some lecturers at the physics department formed WhatsApp groups for tutor(s) and students. WhatsApp has been found to create a virtual closeness between the tutor and the students (Annese et al., 2022; Pérez-Jorge et al., 2020). In the study by Pérez-Jorge et al. (2020) students reported that WhatsApp tutorials were more effective than face-to-face tutoring, email tutoring, and google hangouts tutoring. The students showed that they were able to improve their relationship with tutors, improve their motivation and interest in the module and get a sense of university inclusion through being in touch with their tutors on WhatsApp (Pérez-Jorge et al., 2020).

Although social media platforms like WhatsApp are effective for learning and support, they are not sufficient to replace the face-to-face contact required for successful learning. Blackboard is the official learning management system (LMS) at this comprehensive university and was the official LMS prior to the pandemic. This made the transition to online education during the pandemic somewhat less complex. The advantage of Blackboard is that it has on-the-go mobile connectivity (Phejane, 2022), assessment capability, and active statistics tracking. One of the tools available on Blackboard is Blackboard Collaborate, which is a virtual classroom. Other video-conferencing software that can act as virtual classrooms are Zoom and Microsoft Teams, which are cheaper than Blackboard (Phejane, 2022). Additionally, assessments can also be conducted through Microsoft Teams (Martin & Tapp, 2019; Sobaih et al., 2021).

For e-tutoring to be successful, digital literacy must be addressed in tutors as well as students. Many universities offer training to tutors and have dedicated programs for tutor training. Because of the pandemic and mandatory distance learning, e-tutoring had to be included in many tutor training programs. The university has a tutor training program that is internationally accredited by the College Reading and Learning Association and offered its tutoring program to tutors at the onset of the pandemic. These tutor training programs train tutors on face-to-face, online tutoring, using the LMS, and using social media networks for tutoring. The success of e-tutoring also depends on a reliable and affordable internet connection. To ensure that students had data bundles to complete their curriculum via distance learning, some South African universities had an arrangement with the four major cellular network providers to provide students with 30 GB of data to participate in online learning (Mhlanga & Moloi, 2020). Tutors had to use this data for their own academic work and to deliver synchronous online tutorials. Despite data being provided to students and tutors, connectivity issues were still experienced by tutors and students in remote areas. Access to good and efficient devices to conduct online sessions is important for successful e-tutoring.

METHOD

The perceptions of tutors were garnered through a survey in which 12 tutors participated, three of the tutors were third-year students and nine of the tutors were postgraduate students. The major difference between third-year and postgraduate students is that postgraduate students also must complete research as part of their academic work. The third-year and postgraduate students that participated in this study currently tutor undergraduate physics courses at this comprehensive university and are registered for various STEM qualifications such as engineering, physics, mathematics, and chemistry at this same comprehensive university. The survey was distributed to all current physics tutors at the university through a google form. Participation in this

Table 1. List of survey questions

Questions
Background questions
I. Which departments have you tutored for?
II. Which department were you tutoring for in semester 1, 2022?
III. Do you have face-to-face or online tutoring experience or both?
Online tutoring experience and adjusting to online tutoring
IV. What platform did you use for online tutoring?
V. Was it easy to adjust to online tutoring?
Experience with tutoring in semester 2022
VI. How many tutors were assigned to the module that you were tutoring? Please include yourself in this count.
VII. How many students were in the class that you tutored?
VIII. Could you manage the number of students that were assigned to you?
Tutoring workload in online education vs. face-to-face education
IX. Did your tutoring workload, increase, decrease or remain the same compared to face-to-face tutoring?
X. Explain how your online tutoring workload increased/decreased/remained the same compared to face-to-face tutoring?
XI. Were you able to manage your tutoring workload and your own academic workload?
Support with online and face-to-face tutoring
XII. What support or resources do you think can be provided to tutors to make learning better for students?
XIII. What challenges did you face with online tutoring?
XIV. What challenges did you face with face-to-face tutoring?

survey was voluntary and no incentive was offered for participation. A total of 57.1% of the physics tutors voluntarily completed the google form. Tutors from the physics department at this comprehensive university were chosen because the authors had easy access to them. The survey was anonymous, and no names were required. The survey was a combination of closed and open-ended questions. The close-ended questions were multiple-choice type questions. The open-ended questions were short-answer and long-answer type questions. Each questionnaire was analyzed individually since the survey had follow-up questions.

The questionnaire is shown in **Table 1**. It starts with the tutors' tutoring background. We were particularly interested in finding out about semester 1, the year 2022 because during that period the university teaching and learning were on hybrid mode. The second set of questions focuses on the platforms used by the tutors for online tutoring and the difficulties they experienced in online tutoring. The third set of questions addresses the impact of budget cuts on tutoring through hybrid mode. In the fourth set of questions, the tutors were asked to compare their workload between face-to-face and online learning. The last set of questions investigates challenges and resources required by the tutors in online and face-to-face tutoring.

Question I, II, III, IV, VIII, IX, and XI were multiple-choice questions that allowed the participant to select an answer that was most applicable to them. Question VI and VII were short-answer questions and question V, X, XII, XIII, and XIV were long-answer type questions. The long-answer type questions were kept minimal so that the survey is less time-consuming for the participants to complete. It was mandatory for all questions to be filled in to complete the questionnaire. Incomplete questionnaires could not be submitted by the respondent. Descriptive statistics, based on frequency distribution, was employed to analyze the results from the survey. The results for the multiple-choice type questions and some of the short-answer type questions are shown in pie charts and bar graphs in the results section. The participants responses for the open-ended questions are also provided in the Results section and some of the participant's open-ended responses are quoted verbatim. Please note the survey respondents had the option of writing or selecting not applicable where necessary. For purpose of this study, respondents are named R1, R2, etc.

RESULTS

Background Questions

Which departments have you tutored for?

As shown in **Figure 1**, 75% of the participants have only tutored in the physics department. A total of 16.7% of the respondents mentioned that they have also tutored at the faculty of engineering and 8.3% of the participants indicated that they have also tutored at the mathematics department.

Which department were you tutoring for in semester 1, 2022?

The tutors were asked, which departments they tutored for, during hybrid learning and 8.3% of the participants tutored at the mathematics department. A percentage of 8.3% tutored at the faculty of engineering. All other tutors (83.3%) served in the Physics department in semester 1, 2022 (**Figure 2**).

Do you have online face-to-face or online tutoring experience or both?

The majority of the tutors (75%) indicated that they have tutored face-to-face and online. A percentage of 16.7% indicated that they have tutored online only and 8.3% of the participants indicated that they have tutored face-to-face only.

The tutors with online tutoring experience only, likely started tutoring during the pandemic and/or blended learning phase. Those with face-to-face and online tutoring experience may have possibly started tutoring before the pandemic. The tutor, who tutored online only, likely tutored during the pandemic and/or during the blended learning phase (**Figure 3**).

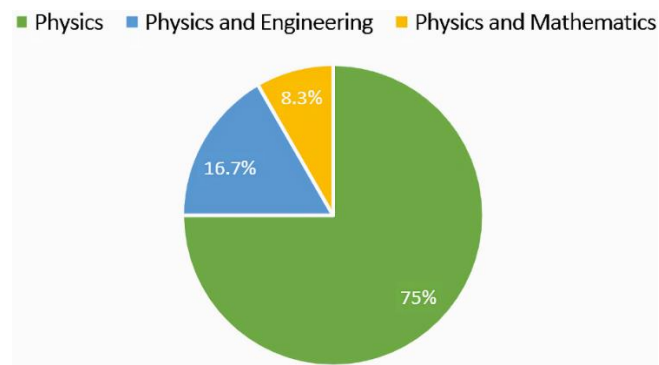


Figure 1. Responses to question I (Source: Authors' own elaboration)

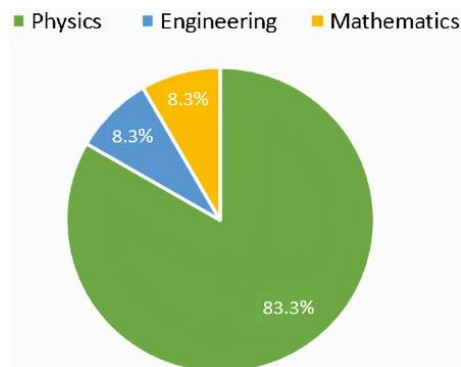


Figure 2. Response to question II (Source: Authors' own elaboration)

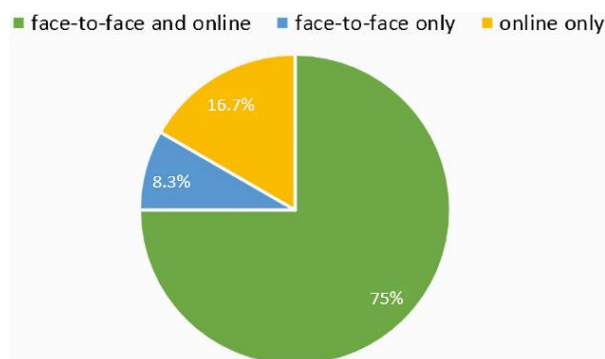


Figure 3. Response to question III (Source: Authors' own elaboration)

Online Tutoring Experience and Adjusting to Online Tutoring

What was the primary online platform, you used for tutoring?

As shown in **Figure 4**, most of the participants use Blackboard Collaborate to tutor, which is an expected result since the university's LMS is Blackboard. A total of 16.7% of the participants used Microsoft Teams to deliver their online tutorials. Microsoft Teams offers most of the same benefits as Blackboard Collaborate for instruction and assessment, hence it is the second most popular choice among tutors. One participant used WhatsApp as a primary tool for online tutoring their tutorial class. The physics department at the comprehensive university encouraged the Physics tutors to use WhatsApp as a secondary tool for e-tutoring. They were encouraged to use WhatsApp to communicate announcements to students, deliver brief explanations to students and for arrangements for one-on-one consultations with the students. None of the participants selected Zoom as their primary online e-tutoring platform and the participant that selected "other platforms" has never tutored online.

Was it easy to adjust to online tutoring?

Figure 5 shows that 41.7% of the participants indicated that they found adjusting to online tutoring easy. Two of the survey participants reported that they were well-trained by the university to use Blackboard Collaborate, hence they had no issues adjusting to online tutoring. The university has a tutoring community that has been active prior to COVID-19. The tutoring community is on blackboard and offered blackboard training to tutors to ensure that tutors are ready to tutor online.

"Tutoring on Blackboard was straightforward after taking the online tutor training."

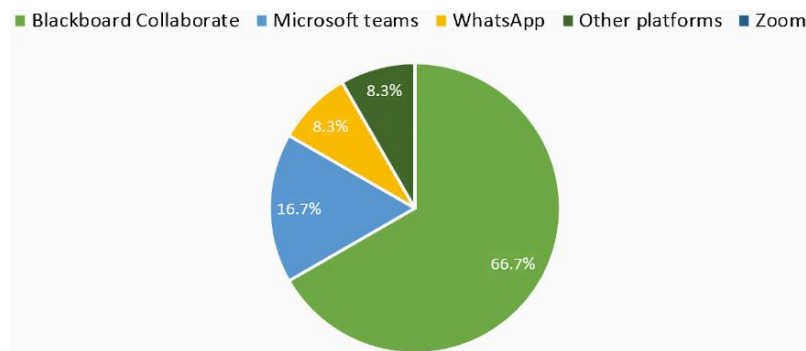


Figure 4. Response to question IV (Source: Authors' own elaboration)

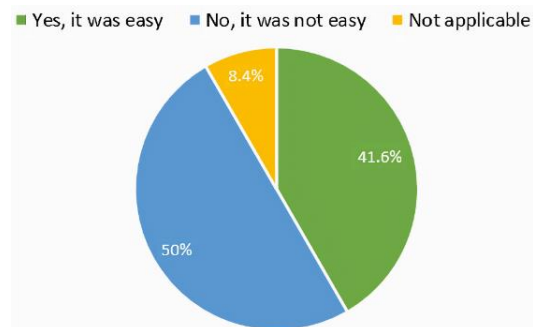


Figure 5. Response to question V (Source: Authors' own elaboration)

Another participant indicated that it was easy to adjust to online tutoring because they had already been taught online for the past two years. Half of the participants did not find it easy to adjust to tutoring online. Two of these respondents reported that connectivity issues played a major role in making the adjustment to online tutoring difficult. The rest of these respondents found it hard to adjust because efficiently communicating with students virtually was difficult.

"It was tasking because it took a few more steps to effectively communicate with students in the duration of the tutorials."

"Students took a long time to give a straight answer like yes."

They reported that not being able to see the students' facial expressions made it difficult to judge the students' understanding. Since they could not see the students' facial expressions, the online sessions took longer than face-to-face sessions.

"Not seeing the facial expressions of the students reflects so much on their levels of understanding."

"It was difficult because not all students were used to online learning, and it was hard to judge whether the students were understanding what was taught."

One of the respondents who used Microsoft Teams to tutor found adjusting to online tutoring difficult because (s)he was not adjusting well to the Microsoft Teams app.

"No, it was not because I was not used to working with Microsoft Teams."

Experience Tutoring in Semester 2022

How many tutors were assigned to the module that you were tutoring? Please include yourself in this count.

Figure 6 shows the number of tutors that were assigned to the modules that the respondents (R1, R2, ..., R12) tutored in semester 1, 2022. A percentage of 25% of the respondents were the only tutors in their class and 50% of the respondents were one of two tutors. A percentage of 16.7% of the participants were one of three tutors and only participant R5, who has tutored face-to-face only, was one of four tutors.

How many students were in the class that you tutored?

Respondents R7, R9, and R12 reported having tutored a class of approximately 200 students. From **Figure 6**, it can be seen that respondent R7 was the only tutor assigned to his/her class. Hence, this tutor was assigned approximately 200 students. This is four times the physics department's tutor-to-student ratio. R9 and R12 had two tutors assigned to their classes of approximately 200 students, hence the tutor-to-student ratio for R9 and R12 was 1:100. Respondents R1, R2, R3, R5, and R11 had 100 to 150 students in the classes they tutored. These respondents were more or less within the physics department's tutor-to-student ratio of 1:50.

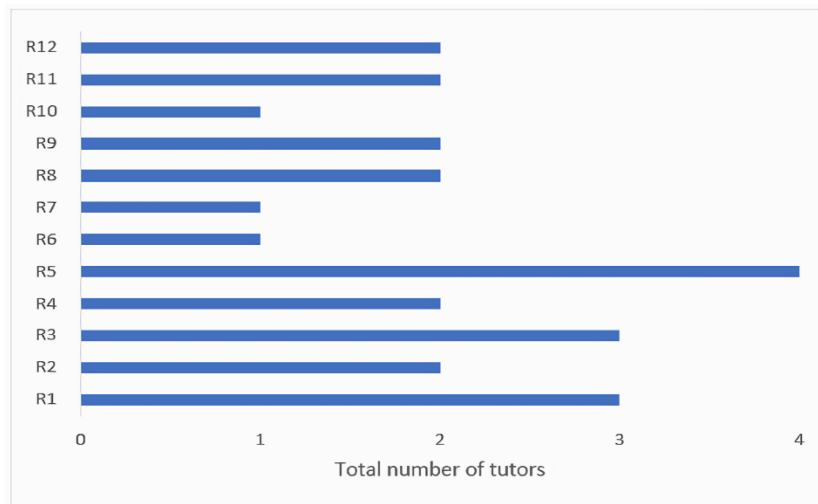


Figure 6. Response to question VI (Source: Authors' own elaboration)

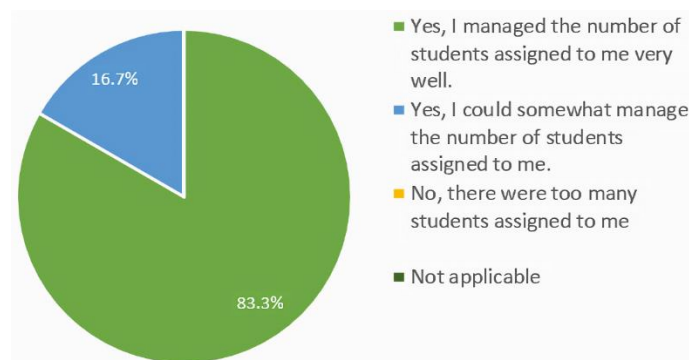


Figure 7. Response to question VII (Source: Authors' own elaboration)

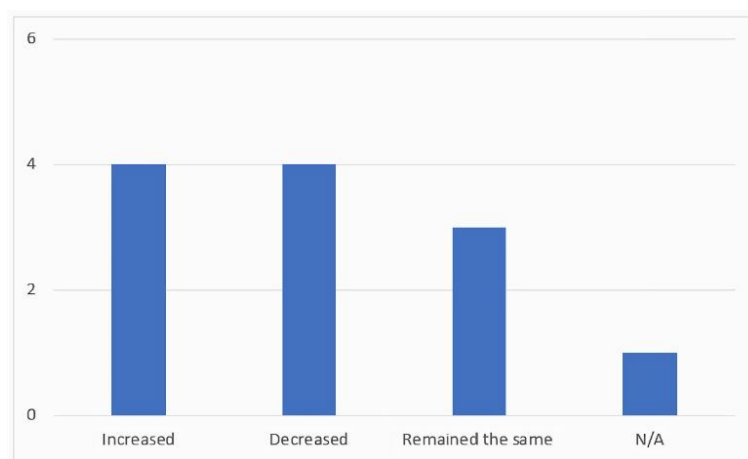


Figure 8. Response to question VIII (Source: Authors' own elaboration)

Could you manage the number of students that were assigned to you?

Figure 7 shows that most of the participants felt that they could manage the number of students assigned to them very well. A total of 16.7% of the participants felt that they could somewhat manage the number of students assigned to them. The remaining 83.3% of the survey participants could manage the number of students assigned to them. None of the tutors indicated that there too many students in their tutorial classes for them to manage.

Did your online tutoring workload, increase, decrease or remain the same compared to face-to-face tutoring?

As shown in Figure 8, there were mixed responses for question VIII with 33.3% of the participants indicating that the tutoring workload increased in online tutoring compared to face-to-face tutoring. Another 33.3% of the participants indicated that the tutoring workload decreased in distance learning. A total of 25% of the participants felt that there was no difference in the workload between online and face-to-face learning.

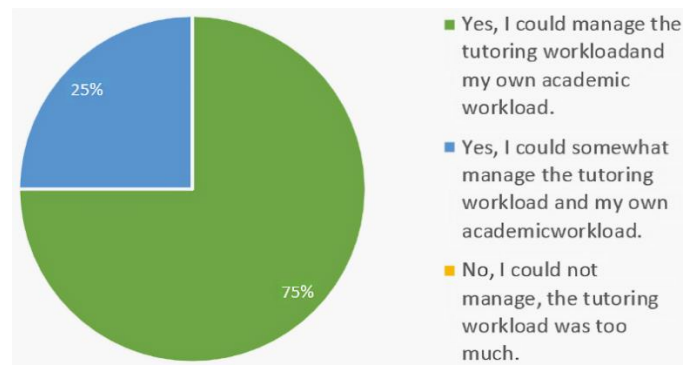


Figure 9. Response to question IX (Source: Authors' own elaboration)

Please explain how your tutoring workload increased or decreased because of online tutoring?

Some of the respondents reported that it takes longer to execute tasks online compared to face-to-face, hence the workload increased. These tasks include online marking, writing calculations, and explaining visual concepts. One respondent also reported that more students were participating in online tutorials compared to face-to-face tutorials. One respondent indicated that the workload increased because they had to mix face-to-face tutoring with online tutoring. Some of the tutorials were delivered online and some of the tutorials were delivered face-to-face, which caused confusion among the students in the respondent's tutorial group.

"The workload increased because on the day of the tutorials some students would come to the venue for a contact session, meanwhile the session is meant to be online. So, I had to deliver the tutorial to the students that are at the venue and the students that are online simultaneously."

Two respondents felt that the online tutoring workload decreased because of less questions from students.

"The workload decreased as the students themselves did not really ask many questions as they would normally have during face-to-face tutorials."

"Less questions coming from students and less face-to-face consultations."

Another respondent added that they did not need to move between lecture venues to deliver online lectures. Hence this contributed to the reduction of online workload.

Were you able to manage your tutoring workload and your own academic workload?

Figure 9 shows that 25% felt that they could somewhat cope, and all other survey participants (75%) felt that they could cope with tutoring and their own academic workload. None of the tutors felt that they could not manage the tutoring workload and own academic workload.

What support or resources do you think can be provided to tutors to make learning better for students?

Three of the survey participants said that the quality of the tutorials can be improved by giving the tutors more time with the students. One of the respondents said:

"Increase the number of tutorial hours in class and consultation time."

Five of the respondents said that they require electronic resources to improve the quality of tutorials. Electronic resources such as faster laptops, digital pens, drawing tablets, and the provision of data were listed by these respondents. One respondent indicated that microphones are required for large classes. This indicates that there is a communication gap between lecturers and tutors because mics are available at the audio-visual unit at the university. Two of the respondents indicated that books, lecture notes, and assistance with solving problems:

"Ideas on how to solve the problems so that they do not always have to research the answers while also having to juggle their own studies as well."

One of the respondents reported that there is a need for a tutoring support system within the department, where tutors can encourage each other, share ideas, challenges, and solutions pertaining to tutoring.

What challenges did you face with online tutoring?

Seven of the participants indicated that the challenge with online tutorials was connectivity issues such as slow internet and internet interruptions. Three of the participants reported that the challenge with online tutoring is the lack of interaction or response from students during a session. One of these participants said:

“The challenge was trying to capture students’ attention. To have students participate in discussions and all that. I felt that it was because they knew that I could not see them.”

One tutor found no challenge with online tutorials and one of the respondents who tutored using Microsoft Teams stated that the challenge was getting used to Microsoft Teams.

What challenges did you face with face-to-face tutoring?

Four out of the twelve participants reported that they had no challenges with face-to-face tutorials. Three participants indicated that students are noisy during face-to-face tutorials. Two respondents complained of time constraints during face-to-face tutorials, with one student stating:

“Most students request one-on-one and due to time constraints, it becomes difficult.”

One of the participants indicated that some students look uninterested and intimidating during face-to-face sessions, which was a bit of a challenge with face-to-face tutorials.

DISCUSSION

Sedaghatjou et al. (2021) reports that one of the main challenges to e-tutoring is digital literacy amongst tutors/instructors. The Physics tutors that participated in our research were able to overcome the ‘digital literacy’ challenge because the university employed one LMS (Blackboard) across all modules and provided Blackboard training to the tutors. Some of the survey participants used other platforms such as WhatsApp and Microsoft Teams to tutor their classes. The university did not provide tutor training for Microsoft Teams hence the participant that used Microsoft Teams had a ‘digital literacy’ challenge. WhatsApp is disadvantageous because it exposes a tutor’s personal phone number to students. Another disadvantage to using WhatsApp for e-tutoring is that students can consult at odd times (Dankers et al., 2022). Additionally, WhatsApp is disadvantageous for e-tutoring because anyone that has the WhatsApp group link can join the group. Spam and unwelcome messages can disrupt WhatsApp group discussions. Tutoring using WhatsApp is suitable for consultations as well as for tutoring small groups of students. WhatsApp does not have the benefit of recording synchronous sessions, which is possibly the reason why it was least favoured by the survey participants as a primary e-tutoring tool. Furthermore Kheswa et al. (2022) reported that students greatly appreciate the option of replaying the recorded lectures in e-learning.

Unstable internet connectivity is one of the main challenges to e-tutoring that was reported by tutors in this study. The tutors reported that it made it difficult for them to adjust to e-tutoring as well as to carry-out successful online tutorials. This agrees with several studies such as Chogo (2020), Dankers et al. (2022), Mhlanga and Moloi (2020), Paudel (2021), and Phejane (2022).

The second major challenge of e-tutoring that was reported by the tutors was not being able to determine if students are engaged, listening, responding, and understanding the tutorial. In face-to-face tutorials students’ facial expressions as well as body language can be seen, which makes it easier to ascertain their level of engagement and understanding. The tutors also felt that students asked fewer questions in online tutorials compared to face-to-face tutorials. These findings are consistent with a study by Campbell et al., (2018) and a study by Turrentine and McDonald (2006). Campbell et al. (2018) reports that active participation from students during online tutorials was a major challenge. Turrentine and McDonald (2006) reported that not being able to determine students’ understanding during the tutorial is a challenge in e-tutoring and suggests that tutors should always check students’ level of understanding and go back if necessary.

On a positive note, the tutors indicated that more students were present for online tutorials compared to face-to-face. The third major challenge with e-tutoring as reported by the respondents is that tasks like marking and explaining concepts visually took more time to do virtually. This agrees with research by Sedaghatjou et al. (2021) who found that it is a challenge to instruct a STEM course like physics in the online environment.

The major challenge with face-to-face tutoring was managing noise and the tutors indicated that they needed assistance with managing noise in the face-to-face sessions. Managing noise in the online space is easier because students’ mics can easily be muted and students that are being consistently disruptive in an online session can be removed. A possible reason why tutors struggled with classroom management is because the tutors are peers to the students. The tutors that participated in this study are still students and are young. DeCoito and Estaieyeh (2022) states that younger instructors adapt easily to teaching with technology but struggle with face-to-face classroom management.

The second biggest challenge with face-to-face tutoring as reported by the tutors is that there was poor student attendance in face-to-face tutorials. A possible reason is that face-to-face tutorials forces the students to be responsive, attentive, and prepared for the tutorial. Another possible reason for this is that face-to-face tutorials forces students to travel to the venue, which makes attending face-to-face tutorials less convenient for students than attending online tutorials. One of the tutors in the survey indicated that online tutorials were convenient for tutors, since travelling to the tutorial venue was not required.

The survey respondents indicated that departments could support them by providing them with assistance with their tutoring. Some of the tutors are masters, PhD, and postdoc students and might have not touched on some of the concepts being taught in undergraduate physics in a long time. The tutors also felt that being given more time with students can improve online and face-to-face tutorials for the students. The tutors felt that being provided with digital pens was necessary to improve online tutorials for students. This finding supports Chakraborty et al. (2020), who found that students are more satisfied with a STEM online session when the tutor/instructor uses a digital pen during the session.

An interesting response from one of the tutors was that a sense of community was required between physics tutors. Tutors usually have a tutor room that they use for one-on-one consultations with students. Tutors also run into each other, whilst in the tutor room and form peer connections, hence they form a sense of community amongst themselves. During online learning and online tutorials, tutors did not have access to a tutor room and one-on-one consultations were online. This meant that tutors could not get acquainted with each other and form a sense of community. Many studies have reported on the lack of student peer interactions in online learning and its negative impact on student's overall satisfaction, mental health, and academic achievement (Horzum, 2015; Kheswa et al., 2022; Lai et al., 2019; Salmi, 2013). It is evident in this study that tutors were dissatisfied with the lack of tutor-to-tutor interaction in distance learning.

There was a divided reaction regarding the workload in e-tutoring and face-to-face tutoring. A third of the participants felt that the workload in online tutoring was greater than face-to-face, another third of the participants felt that the opposite was true and approximately a third of the participants felt that there was no change in the workload between online and face-to-face tutoring. One tutor reported that hybrid tutorials caused confusion amongst the students since some students would show up for a face-to-face tutorial when the tutorial was scheduled to be online, and vice versa.

All the tutors indicated that they could handle their tutoring workload and their own academic workload. Even the tutors who were assigned approximately 200 students each, seemed to have managed the tutoring workload. This is only the perspective of the tutors, the perspective of the physics students on this matter has not been investigated in this study. Although the tutors may feel that they were able to handle more than 50 students per tutor as well as their own academic workload, the students may have felt dissatisfied with the availability of their tutors. In a study by de Jong et al. (2010), students that were assigned to small tutorial groups with a tutor to student ratio of 1:15 were more satisfied with the course than the students that were in tutorial groups of 80 students per tutor. de Jong et al. (2010) also stated that students in small tutorial groups did not perform better academically than students in large tutorial groups. Findings by Foo et al. (2021) show that students participating in face-to-face tutoring perform better academically and have better overall satisfaction than students participating in e-tutoring. Therefore, it is worthwhile for departments to increase the budgets available for e-tutoring so that there are smaller tutorial groups in e-tutored sessions.

CONCLUSION

This paper highlights the challenges faced by tutors in online tutoring as well as face-to-face tutoring during the COVID-19 pandemic. The challenges in e-tutoring as reported by tutors are internet connectivity, unresponsive students during online sessions and difficulty explaining concepts in the virtual classroom. The challenges with face-to-face tutoring as reported by tutors is noisy and disruptive students as well as poor student attendance.

This research recommends providing tutors with digital pens to make explaining concepts in the virtual classroom easier. Digital pens make the online tutorials more interactive and can encourage active participation from the students. This research also recommends making face-to-face classroom management an integral part of tutor training.

The tutors in this study reported that they could manage tutorial groups of up to 200 students. It is possible that students felt dissatisfied with the size of their tutorial groups. To attain completeness in this study, it is recommended that the Physics students' satisfaction with their tutorials be investigated.

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