

# Academic integrity in the information age: insights from health sciences students at a South African University

Colette Melissa Kell, Yasmeen Thandar, Adelle Kemlall Bhundoo, Firoza Haffejee, Bongwiwe Mbhele and Jennifer Ducray  
*Department of Basic Medical Sciences, Durban University of Technology, Durban, South Africa*

## Abstract

**Purpose** – Academic integrity is vital to the success and sustainability of the academic project and particularly critical in the training of ethical and informed health professionals. Yet studies have found that cheating in online exams was commonplace during the COVID-19 pandemic. With the increased use of online and blended learning post-COVID-19, an understanding of student cheating dynamics is essential for developing effective strategies to combat academic dishonesty in the rapidly changing educational landscape.

**Design/methodology/approach** – This study explored academic integrity and reasons for dishonesty from the perspective of health sciences students at a South African University of Technology (UOT) via the Fraud Diamond. To gain an in-depth understanding of the topic, a qualitative method was employed, and data were collected via focus group discussions with nine student class representatives. These data were analysed thematically using the Clarke and Braun approach.

**Findings** – Cheating during online assessment was common and innovative, with students manipulating others and exploiting friendships to facilitate dishonest practices. Student motivations for dishonesty included a lack of consequences and pressure due to a lack of time management, engagement and preparation.

**Practical implications** – This study underscores the need for institutions to adopt an adaptable, multi-faceted approach that addresses student cheating opportunity, motivation and normalisation of dishonest practices whilst strengthening academic integrity policies and enforcement thereof.

**Originality/value** – The findings contribute valuable insights into the ongoing academic integrity crisis in higher education in the South African context.

**Keywords** Academic dishonesty, Academic integrity, Cheating, Online assessment, University students

**Paper type** Research paper

## Introduction

Whilst the discourse around the concern for academic integrity is well documented (McCabe *et al.*, 2001), the COVID-19 pandemic placed it under a spotlight in an unparalleled manner. As governments around the world imposed physical distancing measures, such as stay-at-home orders and the closure of places of learning, institutions were compelled to rapidly adapt to remote and online learning modalities (Eaton, 2020; Janke *et al.*, 2021). This temporary shift from face-to-face or blended learning to exclusively online delivery during a time of crisis, is termed emergency remote teaching (ERT) (Hodges *et al.*, 2020). Whilst the use of ERT offered a viable approach to both teaching and learning, it simultaneously raised significant



apprehensions concerning the evaluation of student performance (Council on Higher Education, 2021). This catalysed a discourse on the importance of safeguarding academic integrity in the rapidly evolving technological world (Gamage *et al.*, 2020; Noorbebhahani *et al.*, 2022).

In a systematic review of cheating in online exams during the COVID-19 pandemic, Newton and Essex (2023) found that more than half of the students surveyed, had self-reported cheating during this time. This raises significant concern for Health Sciences educators as registered health care professionals are expected to not only master vocational knowledge, but to also uphold ethical standards and values such as integrity and truthfulness (AHPSA, 2015; Health Professions Council of South Africa, 2021). Prior to the COVID-19 pandemic, numerous studies had reported on the unethical conduct of students during physical assessments (Dean, 2000; McCabe and Trevino, 1997). Whilst strategies to uphold the integrity of such assessments have historically centred around the physical presence of an invigilator to control the assessment environment and prevent dishonesty, such strategies are not easily replicated in an online environment. Wealthier, developed countries were able to utilise expensive, data-intensive proctoring technologies which acted as virtual invigilators, but these were not considered as viable options for most higher education institutions in developing countries (Alsabhan, 2023). As a result, online assessment largely occurred in an uncontrolled environment with increased opportunity for student dishonesty, potentially negatively influencing the quality of both education and graduates (Gamage *et al.*, 2020; Mutongoza and Olawale, 2022; Verhoef and Coetser, 2021).

Whilst the COVID-19 pandemic is widely regarded as resolved, there has been little respite from its consequences in the academic sector in many countries (Vellanki *et al.*, 2023). In the Health Sciences, professional competence and ethics are both crucial. With the increased use of online and blended learning post-COVID-19, an understanding of student cheating dynamics is essential for developing effective strategies to combat academic dishonesty in the rapidly changing educational landscape.

### *Academic integrity*

The International Center for Academic Integrity (2021) defines Academic Integrity as “a commitment, even in the face of adversity, to six fundamental values: honesty, trust, fairness, respect, responsibility and courage”. In contrast, academic dishonesty is a form of fraud with far-reaching consequences that impact various parties, including academics, students, academic institutions, scholarship providers, government financial aid programs and future employers (Burke and Sanney, 2018). Whilst the terms “academic dishonesty” and “cheating” are sometimes used interchangeably, it is essential to recognise their nuanced differences. Academic dishonesty has previously been defined as “any fraudulent actions or attempts by a student to use unauthorised or unacceptable means in any academic work” (Chala, 2021). It encompasses a broader spectrum of unethical behaviour, including plagiarism, collusion and contract cheating (Lancaster and Clarke, 2016). Academic cheating, a type of academic dishonesty, includes behaviours like exchanging information with others during an exam/test; cheating by using prohibited materials or information; and actions taken to evade the assessment process (Cizek, 2012).

### *The fraud diamond and higher education*

This study was guided by the Fraud Diamond, a variation of the Fraud Triangle, which has previously been employed to explore cheating in online assessment (Purwatomiasih *et al.*, 2021; Smith *et al.*, 2022). The Fraud Triangle is a well-established theoretical framework in criminology and fraud prevention. Originally proposed by Cressey (1953), the Fraud Triangle has been employed to understand fraudulent behaviour in various contexts, including

academic dishonesty (Burke and Sanney, 2018; Choo and Tan, 2008; Connolly *et al.*, 2006; Hamid *et al.*, 2017; Persulesy *et al.*, 2022). This framework draws on three components as the major drivers leading to student cheating: pressure/motivation; opportunity and rationalisation. When these elements converge, the likelihood of fraud increases significantly (Burke and Sanney, 2018). Wolfe and Hermanson (2004) expanded the Fraud Triangle to include a fourth component, capability, to form the Fraud Diamond.

When considering academic dishonesty via the Fraud Diamond, dishonesty will occur when students feel misconduct is necessary for their academic success, cheating is viewed as acceptable and students have the ability to find and exploit an opportunity to cheat (Burke and Sanney, 2018; Wolfe and Hermanson, 2004). Prior to the COVID-19 pandemic, Abdulghani *et al.* (2018) identified a lack of preparation and a desire to achieve a better grade as the main motivators for cheating by Health Sciences students. Additionally, in post-apartheid South Africa, many students are first generation students who face additional pressure in terms of obtaining a qualification, gaining employment and supporting their, often unemployed parents (Motsabi *et al.*, 2020). During ERT, the shift to online assessments provided students with increased opportunities to cheat, leading to a dramatic spike in academic dishonesty (Newton and Essex, 2023). Whilst some South African universities were able to reduce this opportunity via the use of a locally designed virtual invigilation programme, its use was met with resistance by students who found the programme to be distracting (Maboe and Tomas, 2023).

During ERT, student violations of academic integrity were so prevalent that student disciplinary structures at many South African tertiary institutions were overwhelmed (Council on Higher Education, 2021). Yet there is a lack of in-depth understanding of the reasons for this behaviour in the local context, which would assist institutions to address underlying motivations, develop strategies to counter rationalisations and design interventions to reduce cheating opportunities.

The aim of this study was to explore academic integrity in the aftermath of the COVID-19 pandemic, emphasising the voices and perspectives of students within the Faculty of Health Sciences (FHS). We also examined the reasons behind academic dishonesty, the methods employed and potential strategies to mitigate dishonest behaviour. Through this research, we add a holistic perspective to the ongoing discourse surrounding academic integrity, both on the African continent and in Health Science education and offer insights that can inform higher educational practice in a post-COVID-19 world.

## **Methodology**

### *Research design*

This study utilised an interpretivist qualitative approach. Matters related to academic integrity were explored through focus group discussions using broad research questions with a specific focus on online assessment.

### *Sampling and data generation*

The study population consisted of class representatives in the FHS at a University of Technology (UOT). This population was chosen due to their central role as mediators between academic staff and their fellow classmates. Purposive sampling was employed with invitations to participate being sent to 23 class representatives for all modules serviced by the department of Basic Medical Sciences. Representatives who expressed interest in participating, then contacted the lead investigator who provided them with a letter of information as well as an informed consent and confidentiality document. Once the students were satisfied with the information provided, documents were signed and returned to the lead

investigator. Students were excluded from participation if they were registered for postgraduate qualifications and programmes offered by other faculties at the institution.

Data was collected by means of two separate focus group discussions, a commonly adopted method for studies that involve social phenomena related issues (O.Nyumba *et al.*, 2018) which aim to assess and improve existing practices (Dilshad and Latif, 2013). Nine class representatives, representing approximately 300 of their classmates agreed to participate in the study. Each participant was given the choice of two focus group sessions, depending on participant availability. Each focus group discussion was held in the department staff room and facilitated by researchers CK and JD (researcher initials), using a semi-structured approach that utilised the same five key open-ended questions: (1) What is your understanding of the term “academic integrity”? (2) Why do you think students cheat? (3) Do students cheat more in online assessments? (4) What in your opinion would discourage cheating (online and otherwise)? (5) How do we best instil the value of integrity in our students? Open-ended probing questions were also used during the interview process to gather more detailed information.

Each focus group discussion was recorded and transcribed verbatim. Participants were assigned a participant code and all identifying information was removed to ensure anonymity. In keeping with the Clarke and Braun (2018) approach, the transcriptions were read by each member of the research team independently, and potential points of interest were identified and noted by each researcher involved in this initial step of analysis. The lead author created the first draft of the study themes, this was refined collaboratively by four other researchers.

In addition, departmental assessment data was collected for the period 2019–2023. This included measures such as the total number of modules serviced by the department, the total number of student registrations per module and the number of distinctions per module.

### *Data analysis*

NVivo Release 1.7.1 software was used for qualitative data analysis. Data relevant to the aims and objectives of this study were identified and codes were created accordingly. Data was then analysed whereby common themes, amongst the various generated codes, were identified. These themes were selected based on their relevance to the different categories of academic integrity, as highlighted during the focus group discussions. These initial themes were then edited and streamlined to create a list of specific study-related final themes, which were discussed based on the information they provided in terms of their applicability to the research questions, as well as the inter-thematic relationships.

### **Ethical considerations**

This study received ethical approval (IREC 038/22) from the Institutional Research Ethics Committee (IREC) at the university. Study participants were informed that their involvement was entirely voluntary, and they could withdraw from the study at any point without consequence. They were assured that the information provided would remain confidential and anonymous. Written informed consent was obtained prior to participation.

### **Findings**

Table 1 documents the performance of students registered for modules serviced by the Department of Basic Medical Sciences (BMS). It should be noted that the increased number of modules serviced in 2021 was due to restructuring with the phasing out of outdated modules.

As illustrated in Figure 1, there was a marked improvement in student performance during the period of ERT due to the COVID-19 pandemic. In 2020, students achieved an average of 18.5 distinctions per module. Also, more than half of the students registered per

module received a distinction in more than a third of all modules serviced. These results declined rapidly in 2021. This decline continued in 2022, when assessment was exclusively conducted on campus, where student performance was lower than it was pre-pandemic.

Seven female and two male student class representatives, from five different health sciences programmes were interviewed in two focus group discussions.

Three major themes emerged from analysis of the data: (1) academically dishonest actions; (2) reasons for academic dishonesty; and (3) academic integrity as part of a value system.

*Academically dishonest actions*

Participants identified a variety of ways in which students behaved dishonestly in assessments. These strategies were tailored to the type of assessment, with online assessment viewed as the easiest method of assessment in which to behave dishonestly. Participants described various strategies of collaborative test taking. These included the delegation of sections for study or the selection of a “sacrificial lamb” who would risk failure and take the online test first, create a copy of the assessment and share it with the rest of the group. The group could then determine the correct answers together and submit them before the test closed.

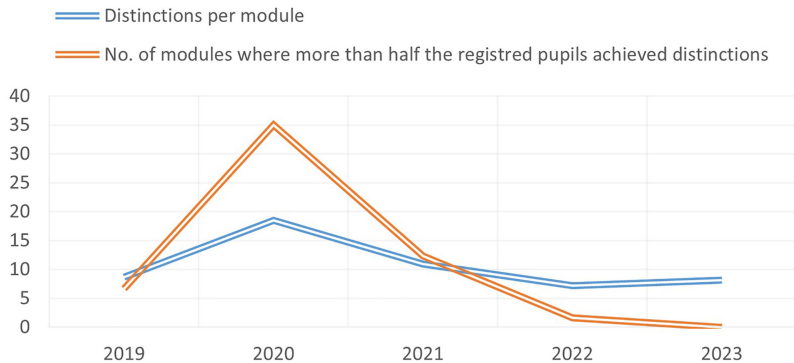
PA8: People would sit, I think at residence it happened a lot, but they would just meet up and just write the test together. Or some would study this, and some would study that.

In instances where the group was not physically in the same space, they found other means of communicating with each other.

**Table 1.**  
BMS student  
assessment data for the  
period 2019–2023

	2019	2020	2021	2022	2023
Total registrations	2,390	2,492	3,003	2,615	2,655
Total modules	60	60	73	64	64
Total distinctions	520	1,110	797	461	518
Modules with > 50% distinctions	4	21	9	1	0

**STUDENT PERFORMANCE PRE, DURING  
AND POST COVID PANDEMIC**



**Figure 1.**  
Student performance in  
modules serviced by  
BMS for the period  
2019–2023

Source(s): Authors own work

PA6: For instance, someone just screenshots the whole paper and then they send it to the group. Everyone writes the correct answers down, maybe someone starts the paper late or like when 10 min left.

On-campus assessment utilised established methods of dishonesty, such as the use of hidden notes and electronic devices, and novel methods like the use of head scarves to hide earphones during a test to avoid detection by invigilators.

PA4: I witnessed a girl; she had two phones. She was on the app, so one she was on the invigilator app and the other one she used it for cheating.

Participants also identified the use of dishonest actions when being assessed via the assignment method. This included plagiarism of a senior student's previously submitted assignment, or the insertion of the names of students who had not contributed to the group assignment being submitted.

PA1: Someone asked me about one of the assignments and she said, "I really don't understand how to write this research paper" and then I said "Yeah, I've got reasonably good marks. Have a look at this for the formula" and then they happen to take it upon themselves to then use my entire assignment.

### *Reasons for academic dishonesty*

The main reason given for academic dishonesty was a lack of preparedness due to poor time management and lack of engagement during online learning. Other reasons included the ease of online cheating and the positive reinforcement of successfully cheating. Online cheating, in particular, was seen as easy to accomplish and somewhat inevitable.

PA1: I don't think it matters what you do. People are good with computers nowadays. They're going to work around it.

PA8: because it is easy to cheat. If you think about it. You are sitting online; you can have all your textbooks. You can't have your whole textbook in a test, if you are sitting, you know what I mean. I mean, it's easy for them to cheat.

Poor time management was highlighted as a major challenge for students before, during and post pandemic and was a facilitator for academic dishonesty. Participants explained that students lacked motivation and discipline, choosing to engage in recreational activities rather than online lessons. Procrastination was also noted with students putting off their academic work until the last minute. As a result, overwhelmed and desperate students saw cheating as an attractive solution.

PA6: You like "I will do it tomorrow". Not realising tomorrow there is another lecture coming, content coming and then that's how it builds up and you know they're not, time management and then you end up getting stressed, stress management, can't deal with the stress like everything is getting so tight. And like "What am I going to do?"

In addition, participants stated that many students were unable to prepare for multiple assessments at the same time. As such, students were well prepared for the first assessment, but then poorly prepared for later assessments increasing the risk of dishonest behaviour.

PA7: The thing that also makes students cheat because sometimes writing exams or tests on the following day. For example, sometimes I may be writing Module 1 on the 3rd of November and then Module 2 on the 4th of November. So some students end up cheating for Test 2 because they focused more on Test 1.

Participants noted that lecturers in the faculty were generally accommodating of student requests to change test dates when needed. Whilst some participants felt that this helped to

alleviate the pressure on students and decrease dishonesty, others believed that it reduced the need for students to develop the ability to effectively manage their time, disadvantaging the students in the long run. The expectation that test dates would be changed, as required, also encouraged a sense of complacency when studying. When this expectation was not met, students were under-prepared, which in turn increased the likelihood of dishonesty.

Many students did not prioritise learning, nor engage with the lectures or content during the COVID-19 pandemic.

PA8: It would just be me and then three other people that you know, always attend and then the lecturers would have one-on-one meetings with those people who aren't attending. And then on my school on WhatsApp I see they are like at the beach.

This resulted in under-preparedness when it came to assessments. Whilst the participants acknowledged that at times students had personal issues that could have acted as a distraction, the lack of engagement was mostly attributed to student apathy.

PA8: There's a lot of things that play a role, but at the end of the day, you know, its laziness. I mean, I'm stressed before every test, I cry before every single test, but I still study for the test. I think you've signed up for this. You need to study and you need to do what it takes.

Dishonest actions were considered high reward with minimal risk and little to no consequences. In addition, participants explained that many students were not motivated by understanding content and meeting the learning outcomes. Instead, students were motivated by the marks that they attained. A high mark, even if attained via dishonest means, was seen as an achievement, which positively reinforced the dishonesty.

PA6: Yeah, well, some of them, they say "Cool, if I managed to cheat and get a 75%. Why don't I try again?" So that was how it actually worked.

#### *Academic integrity as part of a value system*

During the COVID-19 pandemic, online cheating was widely described as "casual" and not associated with shame. Despite this, measures were taken to avoid being caught. Students would take care to ensure that dishonestly obtained marks correlated with previous student performance. Cheating was described as a planned process with back up plans in case the first option went awry.

PA7: They are critical thinkers when it comes to cheating. They've had this option, or if this option has failed. We have this one.

Emotive stories were used to recruit students to behave dishonestly. If these were unsuccessful, friendship was sometimes weaponized and terminated as a result.

PA8: First it would start like they'll ask "how are you?" and then like "oh my sister's dog was run over", and you know like just, everything it's such sob stories, but a lot of guilt. I know one guy in my class, he's quite a soft person, caring and I think they think he would be easily manipulated and for the whole day of the test he would literally put his phone off.

Participants explained that the dishonest behaviours adopted for online assessment during the COVID-19 pandemic had normalised cheating, which had continued when students returned to campus for physical assessments.

PA8: People that I never even thought, you know, would never do that and now they're joking about it and it's not funny and I think there's no consequences, it's a joke, they joke about it.

PA2: Suddenly when they went back to campus, everyone failed. And then it's started again where everyone's passing because they have said "I can't stay behind, I'll start cheating".

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In terms of the promotion of academic integrity, participants viewed honesty and integrity as personal qualities that had developed as part of a person's character and upbringing. It was not something that could be instilled when one was at university. As such a voluntary honour code, where students commit to uphold core moral values, was rejected as a potential option to improve the academic integrity at the institution.

PA8: I think at this age if you don't know that [cheating is wrong], no one can put that in you. No one can teach you how to value something or how to feel proud of doing something by yourself.

## Discussion

Academic integrity is vital to the success and sustainability of the academic project and particularly critical in the training of ethical and informed health professionals. The current study set out to explore aspects of academic integrity in health sciences students during and after the ERT resulting from the COVID-19 pandemic. The participants of this study described widespread cheating in online assessments during ERT, which persisted, albeit to a lesser degree, with the return to post pandemic campus-based assessments. These reports are supported by the student performance data which indicated a marked enhancement in student performance during the period of ERT, a trend that was reversed with a return to campus-based assessments. These findings mirror those reported by other South African universities (Whitelaw *et al.*, 2023). Some of the methods employed incorporated the use of unauthorised study materials during assessments, unauthorised collaborative cheating and unauthorised technology-enabled cheating. Motivations for cheating were multifactorial but included academic pressure, fear of failure and the normalisation of dishonest behaviour, which were reinforced by a perceived lack of institutional consequences. Honesty and integrity were viewed as intrinsic qualities nurtured that were refined over time and not something that can be imparted through formal education at the university level.

The insights on the reasoning for cheating, highlighted all four aspects of the fraud diamond as being contributing factors in the academic dishonesty being reported (opportunity, incentive, rationalisation and capability). This discussion will now address each of these in turn.

The main reason given for the widespread cheating during ERT was the opportunity presented by online assessment. Participants viewed cheating during online assessments as somewhat inevitable, which was in part due to lack of utilisation of available preventive measures on the part of staff. Prior to the COVID-19 pandemic, teaching and assessment at this university was primarily face-to-face and campus-based. Thus, like most other South African universities, the institution was initially not fully prepared for the sudden change to online assessment (Durban University of Technology, 2021).

Opportunistic academic dishonesty rarely occurs without a perceived need or incentive to perform dishonest actions (Widianingsih, 2013). In this study, pressure resulting from poor time management and lack of engagement, was one of the key elements that drove students to cheat. Participants described online student engagement by their fellow classmates as very poor. They asserted that this lack of engagement was mostly due to poor self-discipline, where students chose recreational activities over participation in online lectures. This was compounded by poor time management where students did not allocate ample time to review course materials prior to testing, resulting in panicked students who believed themselves to be at risk of failure. The pressure to pass was, however, not the only motivation to behave dishonestly. Students also perceived lack of negative consequences as a contributing factor. As student disciplinary procedures are confidential, a lack of visible action led to the belief that there were little to no consequences for dishonest behaviours. As such, cheating was considered a low-risk activity by which students could obtain a high grade. This grade was



seen as an achievement despite the means through which it was obtained, positively reinforcing the behaviour. Research has demonstrated that student punishment is a useful means of combatting dishonesty, emphasising the importance of addressing all instances of academic dishonesty (Boehm *et al.*, 2009; Vandehey *et al.*, 2007). This requires the existence of a clear academic integrity policy. Such a policy needs to have a fair and transparent process for the investigation and adjudication of academic misconduct allegations, as well as a framework for the consistent application of appropriate sanctions for infringements (Scanlan, 2006). Yet, in a large scale survey of South African tertiary education institutions, the existence of such policies was found to be inadequate as a third of the lecturers surveyed stated that their universities did not have institutional guidance for ERT (Council on Higher Education, 2021).

Student rationalisation of cheating, which is the second aspect of the fraud diamond, is well established (Dias-Oliveira *et al.*, 2020). In this study, participants stressed the absence of any stigma associated with academic dishonesty. Whilst concerning, this could be compounded by the unprecedented circumstances of COVID-19 and ERT, with circumstances and pressures potentially causing changes in personal and interpersonal behaviour patterns. The virtual environment for online assessment imposed by the COVID-19 pandemic, potentially allowed students to detach themselves from the reality of cheating as a negative behaviour. Whilst Newton and Essex (2023) found that individual cheating was more common than group cheating during online assessments, participants in this study described extensive collaborative cheating. This required students to work together to overcome assessment security measures. Peer influence is generally a powerful factor in shaping student behaviour. Judgement by others can discourage negative behaviour (Andrews *et al.*, 2020), and yet the current study reported peer influence encouraging negative behaviour. COVID-19 pandemic restrictions limited social interactions and increased isolation. Verhoef and Coetser (2021) suggested that this could negatively impact the development of meaningful, trust-based relationships with fellow classmates and educators, thus potentially contributing to a decline in students' ethical commitment. It is worth noting that participants viewed ethical values as qualities that were shaped by lived experience and rooted in one's upbringing and personal values, rather than being influenced to any great degree by formal education. Ethics and values were not viewed as something that an institution could instil nor develop by promotion of an honour code. This aligns with current literature as although honour codes are often cited as a useful tool to maintain student integrity, evidence suggests that in practice, many students do not take them seriously (Corrigan-Gibbs *et al.*, 2015).

Acts of academic dishonesty are intentional behaviours, that require the intelligence or creativity to circumvent internal controls (Wolfe and Hermanson, 2004). As demonstrated by this study, and aligning to the third aspect of the fraud diamond, students are highly adaptable and capable of exploiting not only weaknesses in assessment security, but of also manipulating their friends and classmates, to obtain dishonest grades. Our findings also correspond with the fourth facet of the fraud diamond. Students had the incentive to cheat, as they secured high grades, notwithstanding that they were inadequately prepared for the assessment.

As such, educators and institutions need to turn to the element of the Fraud Diamond, to combat cheating. Whilst opportunities to behave dishonestly should be limited wherever possible, this should not reassign educators to the role of policing. Instead educators should carefully consider assessment design using pedagogical tools for both online and campus-based assessments (Verhoef and Coetser, 2021). However, as many educators have expressed uncertainty about how to best approach assessments in the online environment, this will require practical training and support and the development of strategies to address the challenges presented by artificial intelligence for student assignments (Council on Higher Education, 2021).

This should also mirror the guidance from other studies which highlight the importance of “fit-for-purpose” assessments with a sound pedagogical basis (Gamage *et al.*, 2020; Verhoef and Coetser, 2021). In addition, educators can adjust their practice to target age specific factors. For example, youth is associated with an increase in reward seeking behaviour (Galvan, 2010). This presents educators with an opportunity to creatively adjust their practice to acknowledge students based on their understanding of concepts and behaviour rather than focussing on grades. Student time management skills also need to be developed to prevent last minute panic and a perceived need to cheat. Not only is this soft skill important in terms of preventing dishonesty but it is a valuable attribute for future employers. Although discounted by the participants in this study, embedding ethics through the university experience and the development of an honour code may be a useful method of improving academic integrity (Verhoef *et al.*, 2022). Finally, it is imperative that dishonest actions face visible consequences, whilst maintaining student confidentiality. This could include notices highlighting the number of student disciplinary actions taken each month. With the rapid developments in technology, universities will need to ensure that their institutional policies on academic integrity are regularly updated and that swift and consistent action is taken on infringement thereof (Chala, 2021).

## Conclusion

Health sciences student grades increased dramatically during ERT. Our findings indicate that the improved results may not reflect improved knowledge but rather reflect elevated levels of academic dishonesty. The collaborative nature of online cheating with a lack of associated stigma is of particular concern, as a lack of academic integrity in health sciences students can potentially translate to unethical practice. To meaningfully uphold academic integrity in the evolving age of multimodal education, institutions must adopt an adaptable multi-faceted approach that addresses each aspect of the Fraud Diamond whilst strengthening academic integrity policies and enforcement thereof.

## Limitations

This is a qualitative study of health sciences students at one UoT and may not be representative of other faculties. In addition, there is potential sampling bias in that the class representatives that expressed an interest in participating may have strong views on academic integrity.

## References

- Abdulghani, H.M., Haque, S., Almusalam, Y.A., Alanezi, S.L., Alsulaiman, Y.A., Irshad, M., Shaik, S.A. and Khamis, N. (2018), “Self-reported cheating among medical students: an alarming finding in a cross-sectional study from Saudi Arabia”, *PLoS One*, Vol. 13 No. 3, e0194963, doi: [10.1371/journal.pone.0194963](https://doi.org/10.1371/journal.pone.0194963).
- AHPSA (2015), *Code of Ethics in Terms of Section 54(9) of Regulations No.R.127 of 12 February 2001 to the Allied Health Professions Act, Act 63 of 1982, s amended including guidelines for good practice and guidelines for making professional services known*.
- Alsabhan, W. (2023), “Student cheating detection in higher education by implementing machine learning and LSTM techniques”, *Sensors (Basel)*, Vol. 23 No. 8, p. 4149, doi: [10.3390/s23084149](https://doi.org/10.3390/s23084149).
- Andrews, J.L., Foulkes, L. and Blakemore, S.J. (2020), “Peer influence in adolescence: public-health implications for COVID-19”, *Trends in Cognitive Sciences*, Vol. 24 No. 8, pp. 585-587, doi: [10.1016/j.tics.2020.05.001](https://doi.org/10.1016/j.tics.2020.05.001).

- Boehm, P.J., Justice, M. and Weeks, S. (2009), "Promoting academic integrity in higher education", *The Community College Enterprise*, Vol. 14 No. 1, pp. 45-61.
- Burke, D.D. and Sanney, K.J. (2018), "Applying the fraud triangle to higher education: ethical implications", *Journal of Legal Studies Education*, Vol. 35 No. 1, pp. 5-43, doi: [10.1111/jlse.12068](https://doi.org/10.1111/jlse.12068).
- Chala, W.D. (2021), "Perceived seriousness of academic cheating behaviors among undergraduate students: an Ethiopian experience", *International Journal for Educational Integrity*, Vol. 17 No. 1, 2, doi: [10.1007/s40979-020-00069-z](https://doi.org/10.1007/s40979-020-00069-z).
- Choo, F. and Tan, K. (2008), "The effect of fraud triangle factors on students' cheating behaviors", in *Advances in Accounting Education*, Emerald Group Publishing, Vol. 9, pp. 205-220, doi: [10.1016/S1085-4622\(08\)09009-3](https://doi.org/10.1016/S1085-4622(08)09009-3).
- Cizek, G. (2012), "Ensuring the integrity of test scores: shared responsibilities", *Annual Meeting of the American Educational Research Association*, Vancouver, British Columbia.
- Clarke, V. and Braun, V. (2018), "Using thematic analysis in counselling and psychotherapy research: a critical reflection", *Counselling and Psychotherapy Research*, Vol. 18 No. 2, pp. 107-110, doi: [10.1002/capr.12165](https://doi.org/10.1002/capr.12165).
- Connolly, J., Lentz, P. and Morrison, J. (2006), "Using the business fraud triangle to predict academic dishonesty among business students", *Academy of Educational Leadership Journal*, Vol. 10 No. 1, p. 37.
- Corrigan-Gibbs, H., Gupta, N., Northcutt, C., Cutrell, E. and Thies, W. (2015), "Measuring and maximizing the effectiveness of honor codes in online courses", *Proceedings of the Second (2015) ACM Conference on Learning @ Scale*, doi: [10.1145/2724660.2728663](https://doi.org/10.1145/2724660.2728663).
- Council on Higher Education (2021), "CHE-USAF-UFS staff experience of and perspectives on teaching and learning and its future (SEP-TLF) survey", available at: [https://www.che.ac.za/sites/default/files/inline-files/SEP-TLF\\_Report.pdf](https://www.che.ac.za/sites/default/files/inline-files/SEP-TLF_Report.pdf)
- Cressey, D.R. (1953), *Other People's Money; A Study of the Social Psychology of Embezzlement*, Free Press.
- Dean, G.R. (2000), "Academic dishonesty and the community college", *ERIC Digest*, ED4478410, available at: <https://files.eric.ed.gov/fulltext/ED447840.pdf>
- Dias-Oliveira, E., Morais, C., Pasion, R. and Hodgson, J. (2020), "It is no big deal!": fraud diamond theory as an explanatory model for understanding students' academic fraudulent behaviour", *Journal of Auditing Finance and Forensic Accounting*, Vol. 11 No. 1, pp. 33-48.
- Dilshad, R.M. and Latif, M.I. (2013), "Focus group interview as a tool for qualitative research: an analysis", *Pakistan Journal of Social Sciences (PJSS)*, Vol. 33 No. 1, pp. 191-198.
- Durban University of Technology (2021), *2021 Annual Teaching and Learning Report*.
- Eaton, S.E. (2020), "Academic integrity during COVID-19: reflections from the university of calgary", *International Studies in Educational Administration*, Vol. 48 No. 1, pp. 80-85.
- Galvan, A. (2010), "Adolescent development of the reward system", *Frontiers in Human Neuroscience*, Vol. 4, p. 6, doi: [10.3389/neuro.09.006.2010](https://doi.org/10.3389/neuro.09.006.2010).
- Gamage, K.A.A., Silva, E. K.d. and Gunawardhana, N. (2020), "Online delivery and assessment during COVID-19: safeguarding academic integrity", *Education Sciences*, Vol. 10 No. 11, pp. 1, 24, doi: [10.3390/educsci10110301](https://doi.org/10.3390/educsci10110301).
- Hamid, N.A., Dangi, M.R.M., Sabli, N., Adnan, M.F. and Wahab, R.A. (2017), "Academic cheating and fraud triangle theory: undergraduate students' perspectives", *Advanced Science Letters*, Vol. 23 No. 11, pp. 10577-10581, doi: [10.1166/asl.2017.10106](https://doi.org/10.1166/asl.2017.10106).
- Health Professions Council of South Africa (2021), "Seeking patients' informed consent: the ethical considerations", *Guidelines for Good Practice in the Healthcare Professions*, available at: [https://www.hpcs.co.za/Uploads/professional\\_practice/ethics/Booklet\\_4\\_Informed\\_Consent\\_vDec\\_2021.pdf](https://www.hpcs.co.za/Uploads/professional_practice/ethics/Booklet_4_Informed_Consent_vDec_2021.pdf) (accessed 24 May 2024).

- Hodges, C., Moore, S., Lockee, B., Trust, T. and Bond, A. (2020), "The difference between emergency remote teaching and online learning", available at: <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- International Center for Academic Integrity (2021), "Fundamental values of academic integrity", available at: <https://academicintegrity.org/resources/fundamental-values>
- Janke, S., Rudert, S.C., Petersen, Ä., Fritz, T.M. and Daumiller, M. (2021), "Cheating in the wake of COVID-19: how dangerous is ad-hoc online testing for academic integrity?", *Computers and Education Open*, Vol. 2, 100055, doi: [10.1016/j.caeo.2021.100055](https://doi.org/10.1016/j.caeo.2021.100055).
- Lancaster, T. and Clarke, R. (2016), "Contract cheating: the outsourcing of assessed student work", *Handbook of Academic Integrity*, pp. 639-654, doi: [10.1007/978-981-287-098-8\\_17](https://doi.org/10.1007/978-981-287-098-8_17).
- Maboe, K.A. and Tomas, N. (2023), "Online assessments and COVID-19: a qualitative study of undergraduate nursing students in Southern Africa", *International Journal of Africa Nursing Sciences*, Vol. 19, 100590, doi: [10.1016/j.ijans.2023.100590](https://doi.org/10.1016/j.ijans.2023.100590).
- McCabe, D.L. and Trevino, L.K. (1997), "Individual and contextual influences on academic dishonesty: a multicampus investigation", *Research in Higher Education*, Vol. 38 No. 3, pp. 379-396, doi: [10.1023/a:1024954224675](https://doi.org/10.1023/a:1024954224675).
- McCabe, D.L., Treviño, L.K. and Butterfield, K.D. (2001), "Cheating in academic institutions: a decade of research", *Ethics and Behavior*, Vol. 11 No. 3, pp. 219-232, doi: [10.1207/s15327019eb1103\\_2](https://doi.org/10.1207/s15327019eb1103_2).
- Motsabi, S., Diale, B.M. and Van Zyl, A. (2020), "The role of social support in the persistence of first-year first-generation African students in a higher education institution in South Africa", *South African Journal of Higher Education*, Vol. 34 No. 4, pp. 189-210, doi: [10.20853/34-4-3486](https://doi.org/10.20853/34-4-3486).
- Mutongoza, B.H. and Olawale, B.E. (2022), "Safeguarding academic integrity in the face of emergency remote teaching and learning in developing countries", *Perspectives in Education*, Vol. 40 No. 1, pp. 234-249, 234-234-249, doi: [10.18820/2519593X/pie.v40.i1.14](https://doi.org/10.18820/2519593X/pie.v40.i1.14).
- Newton, P.M. and Essex, K. (2023), "How common is cheating in online exams and did it increase during the COVID-19 pandemic? A systematic review", *Journal of Academic Ethics*, Vol. 22 No. 2, pp. 323-343, doi: [10.1007/s10805-023-09485-5](https://doi.org/10.1007/s10805-023-09485-5).
- Noorbahani, F., Mohammadi, A. and Aminazadeh, M. (2022), "A systematic review of research on cheating in online exams from 2010 to 2021", *Education and Information Technologies (Dordr)*, Vol. 27 No. 6, pp. 8413-8460, doi: [10.1007/s10639-022-10927-7](https://doi.org/10.1007/s10639-022-10927-7).
- O.Nyumba, T., Wilson, K., Derrick, C.J., Mukherjee, N. and Geneletti, D. (2018), "The use of focus group discussion methodology: insights from two decades of application in conservation", *Methods in Ecology and Evolution*, Vol. 9 No. 1, pp. 20-32, doi: [10.1111/2041-210x.12860](https://doi.org/10.1111/2041-210x.12860).
- Persulesy, G., Mediaty, M. and Pontoh, G.T. (2022), "Triangle's fraud theory on academic fraud behavior when online learning", *International Journal of Professional Business Review*, Vol. 7 No. 6, p. 19, doi: [10.26668/businessreview/2022.v7i6.e768](https://doi.org/10.26668/businessreview/2022.v7i6.e768).
- Purwatmiasih, F., Sudrajat and Oktavia, R. (2021), "Academic fraud in online system during the COVID-19 pandemic: evidence from Lampung - Indonesia", *Asian Journal of Economics, Business and Accounting*, pp. 34-52, doi: [10.9734/ajeba/2021/v21i230349](https://doi.org/10.9734/ajeba/2021/v21i230349).
- Scanlan, C.L. (2006), "Strategies to promote a climate of academic integrity and minimize student cheating and plagiarism", *Journal of Health and Allied Sciences*, Vol. 35 No. 3, pp. 179-185, available at: <https://www.ncbi.nlm.nih.gov/pubmed/17036675>
- Smith, K., Emerson, D., Haight, T. and Wood, B. (2022), "An examination of online cheating among business students through the lens of the Dark Triad and Fraud Diamond", *Ethics and Behavior*, Vol. 33 No. 6, pp. 433-460, doi: [10.1080/10508422.2022.2104281](https://doi.org/10.1080/10508422.2022.2104281).
- Vandehey, M., Diekhoff, G. and LaBeff, E. (2007), "College cheating: a twenty-year follow-up and the addition of an honor code", *Journal of College Student Development*, Vol. 48 No. 4, pp. 468-480, doi: [10.1353/csd.2007.0043](https://doi.org/10.1353/csd.2007.0043).

- Vellanki, S.S., Mond, S. and Khan, Z.K. (2023), "Promoting academic integrity in remote/online assessment – EFL teachers' perspectives", *TESL-EJ*, Vol. 26 No. 4, pp. 1-20, doi: [10.55593/ej.26104a7](https://doi.org/10.55593/ej.26104a7), available at: <https://eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=EJ1383953>
- Verhoef, A.H. and Coetser, Y.M. (2021), "Academic integrity of university students during emergency remote online assessment: an exploration of student voices", *Transformation in Higher Education*, Vol. 6, doi: [10.4102/the.v6i0.132](https://doi.org/10.4102/the.v6i0.132).
- Verhoef, A.H., Fourie, M., Janse van Rensburg, Z., Louw, H. and Erasmus, M. (2022), "The enhancement of academic integrity through a community of practice at the North-West University, South Africa", *International Journal for Educational Integrity*, Vol. 18 No. 1, p. 18, doi: [10.1007/s40979-022-00115-y](https://doi.org/10.1007/s40979-022-00115-y).
- Whitelaw, E., Branson, N. and Leibbrandt, M. (2023), "Learning in lockdown: University students' academic performance during COVID-19 closures", Working Paper Series, Issue 289.
- Widianingsih, L.P. (2013), "Students cheating behaviors: the influence of fraud triangle", *Review of Integrative Business and Economics Research*, Vol. 2 No. 2, p. 252.
- Wolfe, D.T. and Hermanson, D.R. (2004), "The fraud diamond: considering the four elements of fraud", *CPA Journal*, Vol. 74 No. 12, pp. 38-42.

**Corresponding author**

Colette Melissa Kell can be contacted at: [colette.kell@gmail.com](mailto:colette.kell@gmail.com)