Section 1

Ethics, Integrity, and AI in Higher Education: Navigating Challenges and Shaping Futures

Chapter 1

Navigating Academic Anxiety and Fostering Integrity in the Age of GPT Detectors

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Introduction

Academic integrity is a fundamental principle of education and serves as the bedrock upon which the integrity of knowledge and scholarship rests (Bretag, Harper, Burton, Ellis, Newton, Rozenberg, Saddiqui, & Van Haeringen 2019:1849). In today's digital age, where the boundless expanse of information is merely a click away and educational landscapes have gravitated towards online platforms, the challenges to maintaining academic integrity have metamorphosed (Eaton & Gysbers 2021:48). As asserted by Kumar (2020:133), students' encounters with academic anxiety have surged, complicating the educational landscape even further.

Against this backdrop, the emergence of GPT (generative pre-trained transformer) detectors beckons both promise and disquiet among major stakeholders in education, especially the academy. These advanced AI (artificial intelligence) tools have been meticulously designed to unearth and thwart plagiarism and cheating. They also have the potential to reconfigure the very fabric of academic integrity which has aroused questions regarding the place of critical thinking among students and the current generation. However, the debate on academic malfeasance seems to have no end in sight from the human perspective, as GPT detectors are also casting shadows of privacy infringement, fairness disparities, and the omnipresent question of technology's role in modern education (Jones & Lee 2023:15).

By way of definition, academic integrity embodies the pledge to honesty, originality, and ethical conduct in all facets of the learning journey (Bretag *et al*. 2019:1851). Safeguarding academic integrity upholds a culture of trust and respect within the academic community, ensuring that the rewards – grades and degrees – echo genuine understanding and competence. Nevertheless, the digital era has ushered in a new era for academic integrity, one riddled with pitfalls and challenges (Eaton & Gysbers 2021:47). In addition, the internet's vast sea of knowledge and information at the disposal of students presents them with the burgeoning temptation to plagiarise or engage in acts of dishonesty at every point in time. In response to these evolving circumstances, IHEs (institutions of higher education) have found themselves at a crossroads over the past few years. At the same time, this has compelled many IHEs to devise innovative strategies to preserve the sanctity of learning and assessments. According to Steele (2023:5), the internet is filled with falsehood, fake information, and no shortage of misinformation.

We concur that in a world where everything can be faked, it is practical to identify real truth. Important questions such as the following beg answers: 'Who did quality assurance on programmes or products?' and 'Who has done the quality assurance (checks and balances) of the content generated in the tech companies?' Moreover, several studies have reported the dangers of chatbots (Eaton & Gysbers 2012:57; Liang, Yuksekgonul, Mao, Wu, & Zou

2023:1 of 9). Unless prompted otherwise, GPT detectors can potentially threaten entire academic projects. Moreover, while the digital age has revolutionised how we access and disseminate information, it has engendered a pandemic of academic anxiety among students (Kumar 2020:139). Contemporary students find themselves caught in the crossfire of mounting academic pressure and elevated expectations for success. The relentless competition facilitated by digital platforms and the omnipresence of educational metrics magnify this pressure.

As students grapple with the looming spectre of failure or falling short of academic standards, stress and anxiety become their companions. Regrettably, some resort to unethical practices to stave off these anxieties and safeguard their academic standing. This dates back to the days when students would plagiarise large doses of materials into their projects or assignments without due recourse to the original owners of the work or the consequences when they were caught out engaging in such unethical behaviours. It is, however, worth noting that academic worries, when left unchecked, can exert a profound toll on students' mental wellbeing and their capacity to engage in critical thinking processes that define genuine learning experiences and authentic assessments.

In response to the multifaceted challenges presented by the digital age, a collaborative alliance between IHEs and technology companies has given birth to innovative solutions (Smith & Smith 2022:178). Among these solutions, GPT detectors, powered by the advanced capabilities of natural language processing and machine learning algorithms have been developed to address issues of academic misconduct. Their primary mission lies in the identification of instances of plagiarism, cheating, and other forms of academic dishonesty (Jones & Lee 2023:17). By meticulously scrutinising written assignments, essays, and academic works, they search for any signs of unoriginal content or improperly cited sources. Through the harnessing of AI, GPT detectors are believed to furnish a formidable defence against academic misconduct, serving as the vanguards of educational sanctity.

Considering the preceding, GPT detectors undertake a comprehensive examination by comparing the work of students with extensive databases of academic and non-academic content (Smith & Smith 2022:179). Their keen algorithms detect similarities and anomalies that may suggest plagiarism or unauthorised collaboration. Upon the discovery of such discrepancies, the detectors swiftly alert instructors or academic integrity committees, who in turn, are empowered to take the requisite measures (Jones & Lee 2023:19). By automating this process, GPT detectors unburden educators from the onerous task of policing academic dishonesty, thus granting academics the ability to channel their energies into the noble pursuit of teaching and nurturing critical thinking among their students.

Despite the promise they hold, GPT detectors introduce a trove of ethical and privacy concerns (Bretag *et al*. 2019:1843). The implementation of these technologies invariably necessitates the intrusive surveillance of students' academic work and online activities (Eaton & Gysbers 2021:59). There have been instances where GPTs have relayed detected plagiarism in students' work which proved otherwise upon further probe. The lack of understanding of the usage of such tools among educators also cultivates erroneous judgements on students' work at times. It is for such reasons that some critics argue that this heightened surveillance infringes upon students' privacy rights and has the potential to stifle open communication and free expression in educational settings (Kumar 2020:134). As a result, striking the delicate balance between preserving academic integrity and fostering an environment conducive to creativity and innovation poses an intricate challenge for IHEs.

Furthermore, the fairness of GPT detectors raises apprehensions (Smith & Smith 2022:188). These systems, although intelligent, may inadvertently penalise students whose writing styles bear resemblance to existing academic or online content, even when the students' work is genuinely original. The spectre of false positives and negatives looms large, potentially inflicting unjust academic penalties and jeopardising the academic journey of students with no ill intent (Jones & Lee 2023:21). Again, this brings to the fore the need for educators to

have in-depth knowledge of how these GPT detectors function and the skill to probe the systems in order not to unfairly penalise students for their hard work.

While genuine concerns exist regarding the use of GPT detectors, these tools also bear the potential to become catalysts for the development of critical thinking skills in students (Eaton & Gysbers 2021:56). By acting as deterrents against academic dishonesty, GPT detectors sculpt an environment where students are not merely encouraged but compelled to engage in critical and independent thinking. They understand that their work will be assessed on its intrinsic value rather than its originality, thereby ushering in a new era of authentic and enriched learning experiences (Kumar 2020:140). Thus, there is a need to comprehensively explore the broader implications of GPTs on critical thinking in the educational realms.

In the context of the foregoing, this chapter argues that academic anxiety, technostress, and integrity related to the use of GPTs exist and theorises plausible resolutions to remedy these situations among students. To achieve this, the ensuing sections provide an overview of GPT detectors, delves deeply into the concerns raised with academic integrity and anxiety, and charts the way out of this situation.

Overview of GPT Detectors

In the age of digital learning and the ubiquitous availability of information, the need to maintain academic integrity has never been more crucial. The evolution of technology and educational methods has paved the way for innovative tools designed to detect and prevent academic dishonesty. Among these, GPT detectors stand out as sophisticated AI solutions specifically engineered to identify and deter plagiarism, cheating, and other forms of academic misconduct (Smith & Smith 2022:176). Amongst the most well-known GPT detectors are GPTZero, ZeroGPT, GPT 2 output detector, CheckGPT, and Writefull. According to Steele (2023:3), these detectors can be used to enhance students' critical thinking, free up their intellectual passion and reading comprehension, and teach academic writing skills. Given the

preceding, there is a need to provide a comprehensive overview of GPT detectors, delving into their development, functionality, and their role in reshaping academic integrity in the modern educational landscape.

GPT detectors are products of the growing intersection between AI and education. They have evolved in response to the escalating challenges posed by the digital age, where vast repositories of information are easily accessible, and online learning platforms have become the norm (Jones & Lee 2023:23). These detectors are derivatives of the broader GPT family of language models, which include models such as GPT 3, GPT 4, and beyond. GPT language models are pre-trained on massive datasets that encompass a wide array of texts, ranging from books and academic articles to internet content. This pre-training equips them with an extraordinary grasp of natural language understanding and generation.

GPT detectors, however, are specialised variations of these models, fine-tuned to tackle specific issues including academic integrity and anxiety. The fine-tuning process involves training the model on a dataset of academic content, including essays, research papers, and various academic resources (Smith & Smith 2022:186). This specific training enables GPT detectors to distinguish between authentic academic work and content that may be plagiarised or in violation of academic integrity. GPT detectors aim to maintain and promote academic honesty. Bretag *et al*. (2019:1855) summarise the functionality of the chatbots performing the following sequential activities: Content analysis, data comparison, similarity assessment, citation, referencing analysis, alerting, and reporting. With the overview of GPT detectors provided, the critical issues of academic anxiety, technostress, and academic integrity are discussed below.

Analysing the Landscape of Academic Anxiety and Technostress

Academic anxiety is emotionally exhausting and involves feelings of worry, distress, and tension regarding the potential failure of an assignment or exam. A student's personal life and

academic performance could be affected as well. A correlation study by Shakir (2014:31) reports a negative correlation between academic anxiety and academic performance among secondary school students. Additionally, Das (2019:20) conducted a similar study with mathematics students and discovered that academic anxiety is significantly negatively related to students' academic performance. Thus, the concentration and motivation of students are disrupted by high levels of anxiety. Moreover, academic anxiety, fuelled by technostress, became a widely discussed topic during and after the COVID-19 (Coronavirus disease of 2019) pandemic and the hype surrounding generative AI tools like ChatGPT 3.5 (chat generative pre-trained transformer 3.5) (Amponsah, Van Wyk, & Kolugu 2022:7). Technostress itself is defined as the negative psychological (e.g., anxiety), physiological (e.g., fatigue), and behavioural (e.g., exhaustion) responses humans have to technology overload (Kumar 2024:1 of 16). If not properly managed by IHEs, academic anxiety induced by technostress can result in a cognitive avoidance of distress, uncertainty, and psychological discomfort.

It is imperative to add that the past four decades of research on academic anxiety has predominantly been characterised by cognitions and behavioural patterns of students which have remained consistent as dimensions of poor academic performance. Also, scholars have reported patterns of academic anxiety which are associated with fear of negative evaluations (Brown, White, Doan, & De Bruin 2011:331), poor study skills (Sanghvi 1995:71), poor test performance (Kivimäki 1995:51), perfectionism (Eum & Rice 2011:167), and recently, technostress (Amponsah, Van Wyk, & Kolugu 2022:9; Huo & Siau 2023:2). Furthermore, as there has been an increase in the development of Gen-AI (generative artificial intelligence) tools like ChatGPT 3.5 and 4.0, so has academic anxiety and technostress increased amongst students which have affected their concentration, left them with distracted attention, excessive anxiety, tension, fear of having delays and avoidance of assignments. This also affected their general academic achievement and wellbeing (Caporusso 2023:3 of 12).

Studies on Gen-AI, like ChatGPT 3.5 and Google Bard as LLMs (large language modules) have disrupted and significantly impacted education positively. More importantly, it has the potential to transform and increase accessibility and accelerate education exponentially. In the chase for academic success, there are downsides to using chatbots. All these Gen-AI tools are available and have created a hype among students as they view these tools as easy options to answer assessments and develop projects in pursuit of instant success. Based on the exposure to LLMs such as ChatGPT 3.5, research has reported concerns about using ChatGPT to plagiarise or cheat in their assignments (un) knowingly because of mounting academic pressure and elevated expectations for success (Cotton, Cotton, & Shipway 2023:236).

However, this prompt engineering phenomenon has some major drawbacks related to technostress, academic anxiety, and academic dishonesty (Ayyagari, Grover, & Purvis 2011; Huo & Siau 2023:2; Wach, Duong, Ejdys, Kazlauskaitė, Korzynski, Mazurek, Paliszkiewicz, & Ziemba 2023:19). Additionally, the overuse of Gen-AI could increase academic anxiety and harm a student's academic performance if not correctly and mildly used for academic purposes. Studies indicate that students have plagiarised their assignments by using Gen-AI tools to cheat in academic writing which is an academic violation and dishonesty (Azulay Chertok, Barnes, & Gilleland 2014:1324; Caporusso 2023:3 of 12) which often leads to an increase in academic anxiety. Academic anxiety is regarded as a psychological and emotional statement of the mind which leads to feelings of stress, tension, low concentration levels, and fear of failure in an academic task. These distractors affect an individual's self-esteem, motivation, and avoidance of submitting assignments timeously, which ultimately affects their academic performance.

Moreover, the literature reports technostress and techno-overload as downside effects of social media and ChatGPT. In 1984, the concept of *technostress* was first used by clinical psychologist, Craig Brod, as a major cause of the overuse of technology by people. According to Amponsah *et al.* (2022:3), excessive use or exposure to social media can lead to technostress, cognitive overload, reduced staff morale, low productivity, and 'academic

fatigue.' Additionally, studies have indicated that social media can lead to technostress and techno-overload (when users are compelled to use technologies faster and longer) (Leung & Zhang 2017:389). However, Gen-AI has recently brought significant changes and transformations to HE (higher education), but it has also led to academic dishonesty and technostress among students (Ragu-Nathan, Tarafdar, Ragu-Nathan, & Qiang 2008:423; Khanthavit & Khanthavit 2023:213). Gen-AI tools such as ChatGPT 3.5, LlAMA 2, and Bard are being used more by students for academic purposes, but excessive exposure could lead to increased technostress and techno-anxiety (Chatzopoulou, Filieri, & Dogruyol 2020:1272-1273).

In a critical analysis study, Wach *et al.* (2023:9) explored the 'dark side' of the overuse of prompt engineering like ChatGPT. The authors found that drawbacks such as threats and anxiety are major causes for concern relating to the use of ChatGPT and provided recommendations to prevent academic anxiety. This is in addition to findings that technostress is experienced by people who have excessive exposure to and overuse in reliance on technology (techno-overload) or ICTs (information and communication technologies) (Singh, Bala, Dey, & Filieri 2022:271).

Technostress results from excessive screentime and the overuse of technology either at school, work, or in private life. This has several negative consequences such as poor work performance, depression, job dissatisfaction, and reduced work commitment (Qi 2019:1338). For example, when students face academic pressure and expectations for success, the only way out for some of them is the excessive use of chatbots as a means to cheat academically. In addition, technostress is experienced by people who have excessive exposure to and overuse in reliance on technology (techno-overload) or prolonged ICT exposure in the workplace (Singh *et al.* 2022:271). The cause of excessive use of ChatGPT is academic anxiety which is the inability to cope with the academic pressure when chasing success. Moreover, recent studies reported the downside of prolonged exposure to and the use of chatbots (prompt engineering). In this case ChatGPT is a cause of technostress and fatigue among students and staff (Wach

et al. 2023:9). This view is supported by Caporusso (2023:9 of 12) with reference to creative displacement anxiety and technostress. Moreover, Caporusso argues that IHEs need to increase the awareness of the overuse of technology for the wellbeing of staff.

Concerns with Academic Integrity

Cheating, plagiarism, and other dishonest acts, which are violations of academic integrity, are an increasing concern for faculty, students, and the public who hold the trust in graduates to possess the knowledge needed to complete their studies (Azulay Chertok *et al*. 2014:1324). As already highlighted, common examples of academic dishonesty cited include cheating in examinations and plagiarising written assignments (Turner & Beemsterboer 2003:1122). Mostofa, Tabassum, and Ahmed (2021:257) document that academic plagiarism has been on the rise globally and is commonly widespread among university students. Since the introduction of LLMs such as ChatGPT and Google Bard, many scholars have raised ethical concerns regarding academic integrity. That is, with the transformative potential of the modern and pervasive technological revolution of AI chatbots, concerns about academic integrity have become more critical than ever before (Bin-Nashwan, Sadallah, & Bouteraa 2023:2 of 11).

The increased comfort with AI technologies makes it easier for students in online learning environments to engage in violations of academic integrity such as copy-pasting from online sources and the unauthorised use of electronic resources during exams (Azulay Chertok *et al*. 2014:1325). This exponential growth of unethical behaviour in HE poses crucial challenges to quality education as enshrined in SDG 4 (Sustainable Development Goal 4) and the tenets of academic integrity (Gottardello & Karabag 2022:527). As a result, universities are going through an unprecedented disruption and concerns relating to the breach of academic integrity in light of the social, economic, and technological changes in HE (Roe & Perkins 2022:1 of 10).

Furthermore, plagiarism detection software such as Turnitin and SafeAssign, as well as the GPT detectors already

indicated above are designed to combat outsourcing assessment and research tasks (Liu, Yao, Li, & Luo 2023:6 of 23; Perkins, Roe, Postma, McGaughran, & Hickerson 2023:4 of 21), although with new LLMs such as ChatGPT, it is difficult for inexperienced faculty members and researchers to detect GPT-generated texts (Liu *et al.* 2023:5 of 23). However, thanks to these tools, plagiarism is being discovered at a faster rate than in the past (Halupa & Bolliger 2013:298). Many IHEs, therefore, employ plagiarism detection tools to promote novelty in writing and detect novel or unexpected ways of cheating or plagiarising (Canzonetta 2021:1).

According to Belli, Raventós, and Guarda (2020:661), many students plagiarise because they lack confidence in their writing abilities, do not dedicate sufficient time to accomplish tasks, possess a positive attitude towards deception, or simply ignore how to properly quote a text. Ayton, Hillman, Hatzikiriakidis, Tsindos, Sadasivan, Maloney, Bragge, Diug, and Illic (2022:1925) have also found that a limited understanding of plagiarism and poor academic or language skills are among the reasons why students plagiarise. Belli *et al.* (2020:661) add that the cost of plagiarism is very expensive because it turns educators into police officers who have to dedicate much of their time and effort to something that does not yield any benefit to the learning environment. This invariably affects the performance of educators as they spend precious time and effort to police students' work at the expense of research and other fulfilling engagements.

Nonetheless, in many IHEs, both faculty and students do not understand the concept of plagiarism, especially self-plagiarism (Halupa & Bolliger 2013:303). Mostofa *et al.* (2021:258) assert that many students in different disciplines and academic levels have a poor awareness of plagiarism. For example, in a report published on *Unlocking the power of generative AI models and systems such as GPT 4 and ChatGPT for higher education*, some of the essential questions that students asked are, 'Am I allowed to use ChatGPT for a seminar or final paper, or is that cheating?; and 'How exactly do I use ChatGPT best?' (Gimpel, Hall, Decker, Eymann, Lämmermann, Mädche, Röglinger, Ruiner, Schoch, Schoop, Urbach, & Vandirk 2023:3).

According to Mostofa *et al.* (2021:265), not having clear ethical norms and standards about academic writing can cause an individual to fall foul of the guilt of plagiarism. While the media coverage about ChatGPT and recent LLMs has focused on 'cheating or plagiarism' (Gimpel *et al.* 2023), Perkins (2023:1 of 24) argues that the use of LLMs does not necessarily indicate plagiarism if students are transparent in how they have been used in any submission. There is also intentional and unintentional plagiarism (Ayton *et al.* 2022:1929), implying that it is possible for a student to unintentionally fall victim to academic misconduct or the breach of (institutional) plagiarism rules because of the nature (sensitivity) of plagiarism detection tools.

To conclude, Turner and Beemsterboer (2003:1123) acknowledge that academic dishonesty harms the dishonest individual because they do not acquire the basic learning, skills, or knowledge. Subsequently, the public who holds trust in the graduate's skill is deceived and the peer of the dishonest individual who competes in class suffers harm due to an unfair advantage. The faculty of the dishonest student is harmed by not being aware of the true grasp of the content. Hence, such faculty are unable to modify instruction when necessary. Finally, the reputation of the university or institution of the dishonest student is often badly damaged when the public perceives that it does not set and uphold higher standards among both faculty and students.

Given the preceding, it is necessary to identify that academic integrity demands a student to adopt the practice of engaging in meaningful research and completing academic work in a fair and coherent manner (Bin-Nashwan *et al.* 2023:4 of 11). Bin-Nashwan *et al.* emphasise that fostering academic integrity requires dedication, honesty, trust, responsibility, and respect. Similarly, the International Centre for Academic Integrity (2021) has conceptualised the fostering of academic integrity as a commitment to six basic principles including honesty, trust, fairness, respect, responsibility, and courage. Therefore, IHEs are required to develop student competencies and engage in joint action with all academic communities to preserve academic integrity (Gottardello & Karabag 2022:527-529).

Given the above, we argue that academic anxiety has negative consequences. Still, there is a need to foster integrity in the age of GPT detectors to address misinformation and the numerous falsehoods generated by Gen-AI tools. This leads to the question, 'Can Gen-AI plagiarism tools like GPT detectors be utilised to promote critical thinking instead of detecting dishonesty and cheating among students and academia?' To preserve the image and reputation of IHEs, it is essential to implement targeted measures against cheating. To protect academic integrity, it is argued that awareness and ethical considerations are crucial, along with possible revisions to policies related to integrity, copyright infringements, and academic practices. The latter provides a basis for IHEs to implement anti-cheating strategies.

The literature offers measures to prevent academic cheating by Gen-AI tools in education. For example, Oravec (2023:220-223) has conducted studies on cheating detection strategies and Gen-AI empowered skills to aid students in addressing academic dishonesty and plagiarism. One of their major recommendations was for educators to promote and raise awareness about the educational benefits of using Gen-AI, specifically GPT detectors, to enhance students' and educators' proficiencies in utilising Gen-AI tools for preventing dishonesty. Another measure to prevent cheating or academic dishonesty is using contextual case studies, providing original research and problem-based projects for students to present the results, writing, and reporting as a group. Other recommended approaches include group discussions, the development of purpose-driven objectives like specific case studies, problem-solving activities, project-based learning tasks, and empowering students with academic writing skills. We strongly believe that implementing these strategies will raise awareness and improve critical conversations about Gen-AI tools, safeguarding academic integrity and fostering students' sense of integrity.

Since the emergence of GPT detectors, universities have been compelled to address policy revisions, while advocating awareness initiatives among staff and students is of vital importance to prevent dishonesty. Universities need to create

an awareness of and view ethical considerations for using Gen-AI tools or GPT detectors as important considerations before adopting chatbots in practice. As a matter of urgency, academics must be cognisant of the speed of the emergence of new Gen-AI tools such as ChatGPT 3.5 and other LLMs. Studies concur that a major issue that needs to be addressed is the ethics of using Gen-AI and detector tools by students and academics (Hagendorff 2020:109). These studies express concerns of fear that breach ethical implications. Among similar views expressed related to the challenge of cheating, plagiarism, and copyright infringement all have ethical implications for the quality of education.

Furthermore, combating academic dishonesty requires a multifaceted approach which might include tutorials and other short educational interventions aimed at increasing the knowledge of faculty or students about academic integrity (Stoesz & Los 2019:3). Azulay Chertok *et al*. (2014:1325) enumerate several means to foster academic integrity among students including consistently meting out disciplinary action for the violation of academic integrity, educating students about academic dishonest behaviours and their consequences, providing clarity in policy and expectations about academic dishonesty, setting up measures to eliminate or reduce possibilities of cheating, developing new methods of evaluation which are in accordance with the advancement of technology, implementing an integrity agreement between both faculty and students, and also the implementation of honour codes (ethical principles governing an academic community such as an agreement not to lie or cheat). In consensus, Bultas, Schmuke, Davis, and Palmer (2017:58) also mention that the development and clear enforcement of integrity policies, the role modelling of professional behaviour, and integrity by faculty can influence student behaviour as the use of honour codes are solutions to improve the academic integrity among students.

McCabe and Pavela (2004:12-15) list ten core principles of academic integrity on how faculty should foster student honesty:

- Recognising and affirming academic integrity as a core institutional value;

- fostering a lifelong commitment to learning;
- affirming the role of the educator as a guide and mentor;
- helping students to understand the potential of the internet and how the potential can be lost if online resources are used for fraud, theft, and deception;
- encouraging student responsibility for academic integrity;
- clarifying expectations for students;
- developing fair and creative forms of assessment;
- reducing opportunities to engage in academic dishonesty;
- responding to academic dishonesty when it occurs; and
- helping to define and support campus-wide academic integrity standards.

It is also believed that a careful design of assessment tasks in the form of authentic assessments can deter students from engaging in academic misconduct and further promote ethical decision-making and behaviour regarding academic work (Sotiriadou, Logan, Daly, & Guest 2020).

Moreover, educators also need to be involved in the formulation and implementation of academic integrity policies because their understanding and beliefs about it are crucial for effective integration (Gottardello & Karabag 2022:527). Academic integrity is less likely to be violated when students perceive that there is a commitment to ethical standards from all sides (all-academic community) and information about it is adequately disseminated (Gottardello & Karabag 2022). Gottardello and Karabag (2022) add that involving academics and different stakeholders can contribute to forging a culture of academic integrity and identifying ways to appropriately respond to the expectations of their institutions. Also, the publication of academic integrity policies in places widely and readily accessible to students such as web pages and student manuals can facilitate its implementation. This can occur in tandem with discussion forums on academic integrity to increase awareness of the policies (Gottardello & Karabag 2022; Whitley & Keith-Spiegel 2001:332).

Lastly, institutions and educators can also utilise technologies such as Turnitin for identifying the use of APTs (automated paraphrasing tools) or LLMs for academic dishonesty

(Roe & Perkins 2022:5 of 10). Additionally, both faculty and students need to be trained on the proper use of APTs and LLMs to avoid academic misconduct (Roe & Perkins 2022:7 of 10). A national study of first-year computing programmes also reveals several strategies for maintaining academic integrity such as education about academic integrity; discouraging cheating through monitoring or observing student work; reducing the benefits of cheating through low-stakes assessment; making cheating difficult by invigilating assessment; and empowerment by supporting and building relationships among students (Sheard *et al.* 2017:246), fostering academic integrity matters because it signifies that honesty persists in all endeavours of an academic environment (Turner & Beemsterboer 2003:1122).

Synthesis of the Critical Issues

Academic integrity, being a foundational principle in education, faces unprecedented challenges in the contemporary digital era. The ubiquitous availability of information, the prevalence of online learning platforms, and the transformative role of GPT detectors demand further comprehensive exploration of the issues. This in-depth analysis thus navigates through the complexities of academic integrity, the surge in academic anxiety, the evolving landscape of GPT detectors, and critical strategies for fostering and preserving academic probity.

First, it is obvious that academic integrity has been compromised largely with the advent of the digital age. Academic integrity is regarded as the bedrock of education and it traditionally encapsulates a commitment to honesty, originality, and ethical conduct (Bretag *et al.* 2019:1849). However, the advent of the digital age has redefined the parameters of maintaining academic probity. With information accessible at the click of a button and educational landscapes shifting to online platforms, IHEs grapple with new challenges in upholding the sanctity of academic integrity (Eaton & Gysbers 2021:47).

Second, accompanying the digital revolution is a palpable rise in academic anxiety among students, a phenomenon that Kumar (2020:133) asserts, has surged significantly. The relentless

competition facilitated by digital platforms and the omnipresence of educational metrics amplify this anxiety. As students confront the looming spectre of failure or falling short of academic standards, stress becomes a prevalent companion, prompting some to resort to unethical practices as a coping mechanism (Singh *et al.* 2022:270).

Also, amidst these challenges, the emergence of GPT detectors, exemplified by models like GPTZero and CheckGPT, introduces both promise and disquiet. These advanced AI tools are meticulously designed to unearth and thwart plagiarism, cheating, and other forms of academic dishonesty, presenting a paradigm shift in how IHEs combat breaches of academic integrity (Hagendorff 2020:113). However, while GPT detectors offer a promising defense against academic misconduct, they simultaneously raise ethical and privacy concerns. The implementation of these technologies necessitates an intrusive surveillance of students' academic work and online activities, leading to debates about potential infringements of privacy rights and the impact on open communication in educational settings (Bretag *et al.* 2019:1855). It is vital to expose students to detector software to discourage cheating, which may prevent dishonesty among students. Awareness should be inculcated, as well as the adoption and design of authentic learning experiences to highlight the usefulness and educational value of GPT detector software. As a strategy, webinars should be created to promote critical conversations among students and staff as a means to increase awareness of GPT detector software. We are, therefore, advocating for the need to carefully strike the delicate balance between preserving academic integrity and fostering an environment conducive to creativity and innovation.

The intricate interplay between academic anxiety, technostress, and the utilisation of Gen-AI tools also forms a critical nexus in the modern educational landscape (Khanthavit & Khanthavit 2023:215). An excessive reliance on such tools can contribute to heightened academic anxiety, impacting students' concentration, motivation, and their overall academic performance. In line with the thoughts of Khanthavit and Khanthavit (2023:213), the study underscores the need for a

nuanced understanding of the intersection between technological advancements and student wellbeing.

Moreover, the evolution of academic integrity concerns dovetails with the introduction of LLMs such as ChatGPT. Plagiarism detection software and GPT detectors emerge as crucial instruments in identifying and curbing violations. However, challenges persist, especially in detecting content generated by GPTs. This study, thus, highlights the need for IHEs to adapt their strategies to effectively combat emerging forms of academic dishonesty facilitated by advanced AI (Perkins *et al*. 2023:3 of 21).

Lastly, the study revealed that strategies for fostering academic integrity in this digital epoch necessitate a multifaceted and strategic approach. The recommendations encompass a spectrum of interventions, including educational initiatives, disciplinary measures, policy clarity, technological solutions, and the active involvement of faculty in policy formulation (Azulay Chertok *et al*. 2014:1328; Roe & Perkins 2022:10 of 10).

Based on the above, we conclude this section on the note that the landscape of academic integrity and the challenges posed by academic anxiety are undergoing a profound transformation in the age of GPT detectors and technological advancements. This synthesis of scholarly insights underscores the intricate interplay between preserving the sanctity of education, addressing student anxiety, and incorporating advanced tools to successfully navigate this complex terrain.

Conclusion and Recommendations

First, academic integrity, which is foundational to the ethos of education, faces both unprecedented threats and promising solutions. The integration of GPT detectors, exemplified by models like GPTZero and CheckGPT, signifies a paradigm shift in combating plagiarism and academic misconduct. While these AI tools offer a robust defense mechanism, their implementation necessitates a delicate balance between surveillance and safeguarding students' privacy rights. IHEs are challenged to adapt policies and practices to ensure ethical deployment while fostering an environment conducive to creativity and innovation.

Second, the rise of academic anxiety among students poses a significant concern. The digital era, with its relentless competition and elevated expectations, contributes to heightened stress levels and regrettably, unethical practices. GPT detectors, while instrumental in curbing dishonest behaviours, should not be viewed in isolation. They must be part of a comprehensive approach that addresses the root causes of academic anxiety, promoting a culture of trust, support, and resilience.

Third, the multifaceted recommendations from scholarly articles provide a roadmap for IHEs that aim to navigate these challenges effectively. Beyond the technical aspects of implementing GPT detectors, there is a pressing need for educational interventions that enhance students' understanding of plagiarism, academic integrity policies, and the responsible use of technology. Faculty, as key stakeholder, plays a pivotal role in not only adopting these tools but also in fostering a supportive and understanding academic environment.

Moreover, the fairness and accuracy of GPT detectors in identifying instances of plagiarism are crucial for the credibility of academic assessments. Continuous refinement of detection algorithms, coupled with regular audits and feedback mechanisms, ensures that these tools serve their purpose without disproportionately penalising students. Institutions must be agile in adapting strategies to the evolving tactics employed by students, addressing not only the symptoms but also the underlying causes of academic dishonesty.

As education embraces technological advancements, the onus lies on faculty and IHEs to empower students to navigate this new landscape responsibly. Faculty training becomes indispensable, not just in the technical aspects of using tools like GPT detectors but also in understanding the broader implications for student wellbeing. The intersection of technology and education should be approached with foresight, emphasising the wholistic development of students and creating an environment that encourages critical thinking and genuine learning experiences.

In essence, the conclusion drawn from this exploration is a call for a wholistic and adaptive approach to academic integrity in the digital age. The integration of GPT detectors and technological tools should be complemented by a commitment to addressing the root causes of academic anxiety. By fostering a culture of trust, transparency, and resilience, IHEs can navigate these challenges successfully, ensuring that the pursuit of knowledge remains a transformative and enriching experience for students.

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