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SYSTEMATIC REVIEW

REVISED **Cheating and plagiarism in higher education institutions (HEIs): A literature review [version 2; peer review: 2 approved, 1 approved with reservations, 1 not approved]**

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Abstract

Cheating and plagiarism have become serious problems in higher education institutions (HEIs). It affects educational quality as well as the reputation of higher education. The purpose of this study is to identify the most prevalent types of cheating and plagiarism, as well as the elements that contribute to cheating and plagiarism, and to present solutions to this recurring problem.

This paper systematically reviews 45 articles published from 2018, to 2022, aligned with the PRISMA guidelines in the selection, filtering, and reporting of the papers.

This review shows that factors such as increased pressure on students, poor academic integrity awareness, lack of up-to-date academic honor codes, and the unethical application of AI tools are prime contributing factors to cheating and plagiarism in HEIs. In a broader sense, all these factors are classified as individual, social, cultural, institutional, and technological factors that are responsible for this problem.

This problem can be reduced by establishing ethical and moral development tutorials as well as formulating up-to-date honor codes considering AI tools. Furthermore, higher education institutions must develop anti-plagiarism detection software in order to detect plagiarism and aid students in improving academic writing and paraphrasing approaches.

The findings of this systematic literature review provide useful insights for educators and policymakers to solve the complicated

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Approval Status

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Any reports and responses or comments on the article can be found at the end of the article.

issue of cheating and plagiarism in higher education institutions.

Keywords

students, cheating, plagiarism, higher education institutions, academic integrity.

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REVISED Amendments from Version 1

In response to the reviewer's suggestions, we have made several improvements to this version of the manuscript. Notably, we included citations for previously uncited studies that popularized the PRISMA technique in academic integrity research prior to 2021, highlighting a shift in our methodological approach.

To enhance clarity, we have divided the section on technological factors into three subsections. First, we provide a comprehensive definition of technology and its significant impact on the prevalence of cheating and plagiarism in higher education. Next, we explore critical technological factors in four distinct subsections, each supported by relevant statistics and credible sources. Additionally, we have expanded the discussion on academic cheating by incorporating context regarding institutional and social factors, which contributes to a more comprehensive understanding of the topic.

We have also included potential limitations of this study for future research, emphasizing that the absence of significant findings can offer valuable insights by identifying gaps in the literature. These gaps can then serve as a guide for future research aimed at improving academic integrity.

Any further responses from the reviewers can be found at the end of the article

List of Abbreviations

HEIs: Higher education institutions

ICAT: International Center for Academic Integrity

ChatGPT: Chat Generative Pre-trained Transformer

AI: Artificial intelligence

SLR: Systematic Literature Review

PRISMA: Preferred Reporting Items for Systematic Reviews and Meta-Analyses

IC: Inclusion criteria

EC: Exclusion criteria

N: Number

RoB2: Risk of bias

D1: Bias arising from the randomization process

D2: Bias due to deviations from intended intervention

D3: Bias due to missing outcome data

D4: Bias in measurements of the outcome

D5: Bias in the selection of the reported

1. Introduction

Academic integrity is an essential element for higher education institutions (HEIs) all over the world (Vasylkevych & Lomak, 2020; Hölscher, 2021). Academic integrity is a commitment not only to uphold ethical values, but also to demonstrate behaviors that promote six fundamental principles “*honesty, trust, fairness, respect, responsibility, and courage*” in all aspects of education, research, and scholarly communication within the context of higher education (International Center for Academic Integrity [ICAI], (2021). In this sense, 97% of guardians in the United States of America believe that moral values such as honesty and integrity should be incorporated into the academic curriculum (Pavela, 1993; Shrivastava, 2017) and higher education institutions are responsible for promoting academic integrity (Mattar, 2022) and producing ethically and morally sound graduates (Alhamuddin et al., 2023).

However, higher education institutions around the world are struggling to maintain academic integrity due to the recurrent occurrence of cheating and plagiarism. Cheating and plagiarism are prevalent problems in HEIs that threaten the core principles of education and undermine the student’s ethical and moral values (Sozon et al., 2024). The availability of technology-driven artificial intelligence tool, for example, Chat Generative Pre-trained Transformer (ChatGPT) supports to violate academic integrity (Susnjak, 2022) and corrupts user judgment (Krügel et al., 2023), raises concern about ethics and professionalism (Currie, 2023), promotes high-tech plagiarism (Gefen & Arinze, 2023), students not considered as high-risk technology tool about cheat (Fergus et al., 2023), teachers find hard to detect the authenticity of students assignments and exams (Crawford et al., 2023), users may publish the paper as their own (Oravec, 2023), raises ethical and privacy issues (Shahriar & Hayawi, 2023) and sparks controversy among higher education community. In the future, AI is more likely to develop (Tomlinson et al., 2023) and produce more customized educational materials, which may disrupt students’ motivation for acquiring knowledge and higher education institutions’ learning environment. Moreover, it may also discourage students from developing new skills and abilities by putting in an effort and investing time to sharpen their expertise. AI tool (ChatGPT) is a potential threat to academic integrity in all levels of higher education (Williams & Fadda, 2023) because all types of cheating raise questions regarding the quality of an institution’s academic curriculum, the value of its degrees, and the skill of its graduates (Wideman, 2008).

This scope of this study covers various forms of academic integrity violations, from classic exam cheating to sophisticated cases of plagiarism made possible by digital technology. It is crucial to recognize that combating academic misconduct such as cheating, and plagiarism requires a variety of approaches. The authors intend to examine the strategies and interventions that universities can implement to combat cheating and plagiarism. Therefore, understanding the effectiveness of these measures is critical for institutions seeking to protect the integrity of their academic programs.

With this systematic literature review, the authors aim not only to comprehensively synthesize existing knowledge but also to identify gaps in the literature, thereby paving the way for future research efforts. The authors also consider the scope of different studies, the geographical location of the selected papers, research methods, their impact on citations, reasons for cheating and plagiarism, and ways to prevent cheating and plagiarism in higher education institutions and contribute to the ongoing discourse on academic integrity, providing educators, administrators, and researchers with valuable insights to inform evidence-based policies and practices.

The four research questions listed below served as the study's compass in meeting its objectives and identifying the untapped research fields:

1. What are the characteristics of research and publication on the prevalence of plagiarism and cheating in HEIs (volume of publications, pattern of papers, field of study, etc.) of the reviewed papers published from 2018 to 2022?
2. What are the top prevalent types of plagiarism and cheating in HEIs?
3. What factors contribute to the prevalence of cheating and plagiarism in Higher education institutions?
4. What strategies have been employed to reduce the prevalence of cheating and plagiarism in HEIs

This research will provide evidence-based guidance to educators and other responsible stakeholders for the formulation and modification of academic integrity policies and procedures within educational institutions to combat students' inappropriate academic behavior (cheating and plagiarism). This study will also explore the design and development of plagiarism detection software and innovation assessment systems that encourage critical thinking, originality, and ethical research practices. Thus, the purpose of this literature review is to explore the existing body of knowledge and summarize the results of various academic studies to reveal a comprehensive picture of the prevalence of cheating and plagiarism in higher education institutions.

2. Literature review

Cheating and plagiarism are prevalent issues in higher education institutions around the world. HEIs have become increasingly concerned about the prevalence of cheating and plagiarism in recent years. It has further increased due to the unethical application of artificial intelligence tools (AI) in manipulating the examination and writing assignments, reports, case studies, thesis, and research papers. The scholarly publication shows that students are easily able to cheat and plagiarize written assignments through inappropriate applications of technology and AI tools.

Cheating is defined as the use of data, resources, equipment, or methods for the completion of academic tasks in a dishonest manner (Salamah, 2022). The duplication and submission of the work of another student without their permission also come under the umbrella of cheating and it describes the exploitation of prohibited materials, work plagiarizing, or dishonest behavior such as telling lies of being ill or injured as leverage in tests (Hodgkinson et al., 2016). In short, cheating is often adopted to gain an unfair advantage over other students from the teachers.

Cheating is a growing concern in higher education institutions. In the past, many scholarly papers were published to identify and provide solutions to this problem. However, this problem by hgbvby cheating.

On the other hand, the term plagiarism stems from the root Latin term "plagiarism" which means "kidnapper/abductor". *Plagiarism is the* unauthorized use of a source in situations where there is a legitimate expectation of authorship. Plagiarism is using another individual's thoughts, words, phrases, sentences, or facts and taking them as one's own (Thomas, 2020). According to Sutton et al. (2014) plagiarism is considered as academic dishonesty or contribution to misleading while taking credit for work that is owned by someone else. In the same way, other authors (Farook et al., 2020; Mbutho & Hutchings, 2021) defined it as a type of academic dishonesty that is considered fraudulent behavior, undermining the intellectual property of the author and obtaining a reward for another's work. Viewed from a legal perspective, plagiarism is an act of theft of intellectual work ownership (Gullifer & Tyson, 2010,

p. 463). It is a violation of intellectual property rights that are protected through copyright laws. It appears that plagiarism has legal as well as ethical ramifications and is sometimes viewed as a violation of moral-ethical aspects as opposed to legal aspects owing to its nature of being outside of the copyright infringement rights boundaries (Mbutho & Hutchings (2021).

Plagiarism is the top frequently used method in academia which breaches the integrity of HEIs. According to the opinion of Butakov et al. (2012), this has become a huge concern in several fields, namely education, research, and industry and it is deemed to be a significant misbehavior breaching academic ethics and intellectual thought. Moreover (Gullifer & Tyson, 2010), described the issue as increasingly worsening among institutions, urging them to focus more on its resolution. The issue is being focused on due to the increasing prevalence of plagiarism in the technological era, aiding students in claiming someone else's work as their own. Information and communication technologies (ICT) development has led to the promotion of plagiarism among students at higher educational institutions (Rozar et al., 2020). Stealing another's work breaches the fundamental foundations of the academic community (Helgesson & Eriksson, 2015; Eret & Gokmenoglu, 2010) as it is dishonesty, and a normal and decent person possessing morals and values would never engage in plagiarism behavior.

Various sources are attributable to the rise of plagiarism, among which are the failure to cite sources properly, honest mistakes, and divergent views on what comprises suitable academic behavior/scholastic integrity in different cultures (Sarlauskiene & Stabingis, 2014). This stresses the consideration behind the phenomenon's motivation when addressing the issue and the fact that evidence-based reasoning may not be effective in clarifying the low levels of students who are penalized or expelled from educational institutions for plagiarizing. This era of internet technology has abetted fraudulent and corrupt behaviors among higher learning institution students, which has become a source of concern. Consequently, the increasing and extensive prevalence of plagiarism in several colleges of industrialized nations has focused on technology to prevent the behavior among students (Thompson & Ahluwalia, 2010). Regardless of such technological detection of plagiarism, institutions in developed nations are still not leveraging effective plagiarism detection software. Therefore, further study is essential to determine the contributing factors of student plagiarism and design a solution to solve this burning issue.

Cheating and plagiarism in universities have far-reaching consequences. It not only disrupts classroom decorum but also affects students' ethics and professionalism. Cheating and plagiarism can hurt educational institutions, teachers, and learners both domestically and internationally (Pettyjohn et al., 2020). Students who commit academic dishonesty in their educational institutions are likely to continue to engage in similar unethical activities in their professional lives (Ozcan et al., 2022). Moreover, violations of students' academic integrity harm not only students' learning outcomes but also the reputation of educational institutions. Furthermore, students' cheating and plagiarism may lead teachers, prospective students, and researchers to engage in similar inappropriate activities in their fields (Waigand, 2019). Therefore, every effort should be made to detect and prevent students' cheating and plagiarism that affect various stakeholders.

Higher education institutions must address cheating and plagiarism issues seriously. Institutions must put in place effective rules and processes to ensure academic standards and integrity (Darman, 2022). To address these challenges, institutions must deploy robust plagiarism detection tools, secure online exam platforms, and clear academic integrity policies, while also fostering a culture of ethical AI use and digital literacy among students (Jenkins et al., 2022). Striking a balance between the benefits and risks of AI in higher education requires a comprehensive and proactive approach to maintaining academic integrity and upholding the ethical standards of education. Failure to do so will destroy the inclusive learning environment designed for ethical practice. Higher education institutions are also required to initiate a combination of educational, technical, and supportive measures to reduce recurrent incidents (Abbasi et al., 2021). One potential solution to address this issue is to increase awareness about the negative consequences of cheating and plagiarism (Kier & Ives, 2022). Another solution is to implement stricter consequences for those who engage in these practices. Additionally, encouraging ethical behavior through education and mentorship can help prevent cheating and plagiarism (Mutongoza & Olawale, 2022). The solution aims to promote a culture of integrity, responsibility, and intellectual growth, and ensure the integrity of the educational experience for all involved. All stakeholders must work closely together to foster a culture of academic integrity in higher education institutions.

Overall, the literature review highlights the significance of sustaining educational ethics and taking action to prevent and address cheating and plagiarism in HEIs. Institutions and individuals must prioritize academic integrity to ensure that students receive a quality education and obtain legitimate qualifications. This research may help to address the challenges relating to students cheating and plagiarism behaviors in educational contexts by offering useful findings to education institutions, policymakers, and professionals. Furthermore, this study will reinforce the necessity to upgrade the existing plagiarism detection software and make it more diversified to detect AI and software-produced write-ups. In summary,

this study is critical given the present state of higher education, and it will significantly advance our knowledge of students' unethical behavior in the classroom and teach them to uphold the institution's code of ethics.

3. Methods

A systematic literature review (SLR) refers to a process involving analyses, condensing, and interpretation of research inferences according to sources, while complying with the established rules (Tawfik et al., 2019).

After conducting a comprehensive review of the existing literature, it is clear that the PRISM technique has become widely popular in the field of academic integrity. Zawacki-Richter's (2020) study, in particular, has been instrumental in bringing clarity, replicability, and a comprehensive synthesis of the literature to academic integrity research.

This study follows PRISMA framework (Page et al., 2021c; Sozon et al., 2024). The PRISMA framework presents a core foundation for the systematic articulation and visualization of the way the study results are acknowledged and reached during the process of review and meta-analysis (Surahman & Wang, 2022). SLR is justifying the conditions for information sources utilized, the procedures of collecting data, providing descriptions of data and reaching conclusions.

3.1 Data source and search techniques

This study considered articles published from 2018, to 2022, in the Scopus database. This database was chosen due to its availability and easy access to internationally recognized articles including peer-reviewed papers, and scientific literature published worldwide and in various disciplines. The search technique centred around key concepts linked to the subject of study topic (cheating, plagiarism, academic dishonesty, academic misconduct, academic integrity violation in Higher education institutions" OR "tertiary education institutions), and simple operators' Boolean operators (AND, OR) were used based on a research question.

The study was limited to peer-reviewed articles, which helped it become more reliable and comprehensive. As the search continues, additional parameters are used in the database to search based on the inclusion and exclusion criteria described in Section 3.2. To provide the broadest possible overview, no specific journals were selected during the search strategy stage. In the continuation of the search, additional parameters (document type: articles, review articles; language: English) to refine the search results were used in the database based on the inclusion and exclusion described in Section 3.2. To offer the widest possible view, particular journals were not chosen during the search strategy phase.

3.2 Inclusion and exclusion criteria

Clear inclusion and exclusion criteria were established to choose and incorporate only pertinent papers that were found in the database related to our study subject.

3.2.1 Inclusion criteria

IC1: Journal articles published in Scopus Database only.

IC2: Research papers published between 2018, and 2022.

IC3: The research paper is written in English Language only.

IC4: The research is related to the Social Sciences, Arts and Humanities, and Psychology field.

IC5: The study was carried out in an educational setting (higher education institutions, tertiary education).

IC6: Only available complete papers.

IC7: The research address (cheating, plagiarism, academic dishonesty, academic misconduct, academic integrity violation).

3.2.2 Exclusion criteria

EX1: Journal editorials, books, book chapters, conference article and other nonpeer-reviewed publications.

EX2: The journal paper is not written in English Language.

EX3: The journal paper is not peer-reviewed

EX4: The journal paper is listed in other databases.

EX5: The research is not conducted in an education environment (higher education institutions, Tertiary education).

EX6: The journal paper is not related to the Social Sciences, Arts and Humanities, and Psychology field.

EX7: The study does not address (cheating, plagiarism, academic dishonesty, academic misconduct, academic integrity violation).

EX8: Non-availability of complete peer-reviewed papers

EX9: The articles published beyond the selected time frame between 2018, and 2022.

EX10: Duplication of data: The search strings generated the same papers more than once.

3.3 Data collection and analysis

The systematic literature review was carried out in five phases by two researchers following the PRISMA guidelines. The first phase consisted of an initial search of the literature included in the Scopus Database (n=1376). In the second phase, a total of 163 studies were dropped because of duplication of data (**EX10**). A total of 729 papers were eliminated in the third phase based on the exclusion criteria (**EX2: 51; EX9: 678**). Subsequent stage, A total of 439 papers were dropped due to the above-written exclusion criteria (**EX3:125; EX5: 103; EX6:12; EX7:139; EX8:60**). In the fifth phase, consequently, 45 articles were selected based on the inclusion criteria. A list of selected papers is shown in PRISMA flow diagram (**Figure 1**). Moreover, all the selected 45 articles were publications in 34 well-known global index journals for the years 2018-2022, distributed as follows 7 in 2018 (16%), 2 in 2019 (4%), 7 in 2020 (16%), 10 in 2021 (22%), and finally, 19 in 2022 (42%). Besides, these papers also encompass an extensive array of academic subjects, from Social Sciences (84%) to Psychology (7%) and Humanities (9%).

The 45 papers that were included in the SLR are available in Extended data file 3. All 45 eligible articles were entered into Microsoft Excel and alphabetically arranged based on authors' names. Each article was then coded serving as a building block for the content analysis method.

3.4 Synthesis and data analysis

Research findings were thoroughly examined by going through the discussion section, after which thematic and sub-thematic data analysis approach was utilized. Thematic analysis is an analysis that determines new themes and sub-themes. This ensured a better and more organized presentation of results. After a manual analysis method through content analysis strategy, the direction of future studies was mapped out by reading the discussion and conclusion sections of the articles. In a qualitative data analysis, such as this study, the acquisition, compilation, and evaluation of data is conducted in a non-numerical and unstructured method using a grounded theory method. The articles were categorized based on the study question topic, namely, to reduce cheating and plagiarism in HEIs. Data was arranged based on the questions following the manual analysis method which constitutes qualitative data acquisition, data organization and connection to the research subject, data coding and analyzing insights, and drawing up the findings in the form of a report.

3.5 Risk bias assessment

To ensure the authenticity, reliability, and credibility of the research and included paper for this study, the authors conducted a risk bias assessment (see **Figure 2**) by applying the Cochrane 'Risk of bias' tool for randomized trials (RoB 2.0) (**McGuinness & Higgins, 2020**). A bias is a "systematic error, or deviation from the truth, in results or interferences". A study may be at risk of bias due to issues with the conceptualization, design, conduct, or interpretation of the study and this may lead to misleading estimates of effect.

In this process, the authors tried to address the five specific domains where the biases may occur: "*bias arising from the randomization process, bias due to deviation from intended intervention, bias due to missing outcome data, bias in the measurement of the outcome, and bias in the selection of the reported results*". Two authors (i and iv) independently applied this tool to each included study to provide supporting information and rationale for assessing the risk of bias in each area (low, high, and moderately concerning). Any conflicts in the decision that risked biasing or justifying the verdicts were resolved through discussion to reach an agreement. The authors created a risk of bias summary (low,

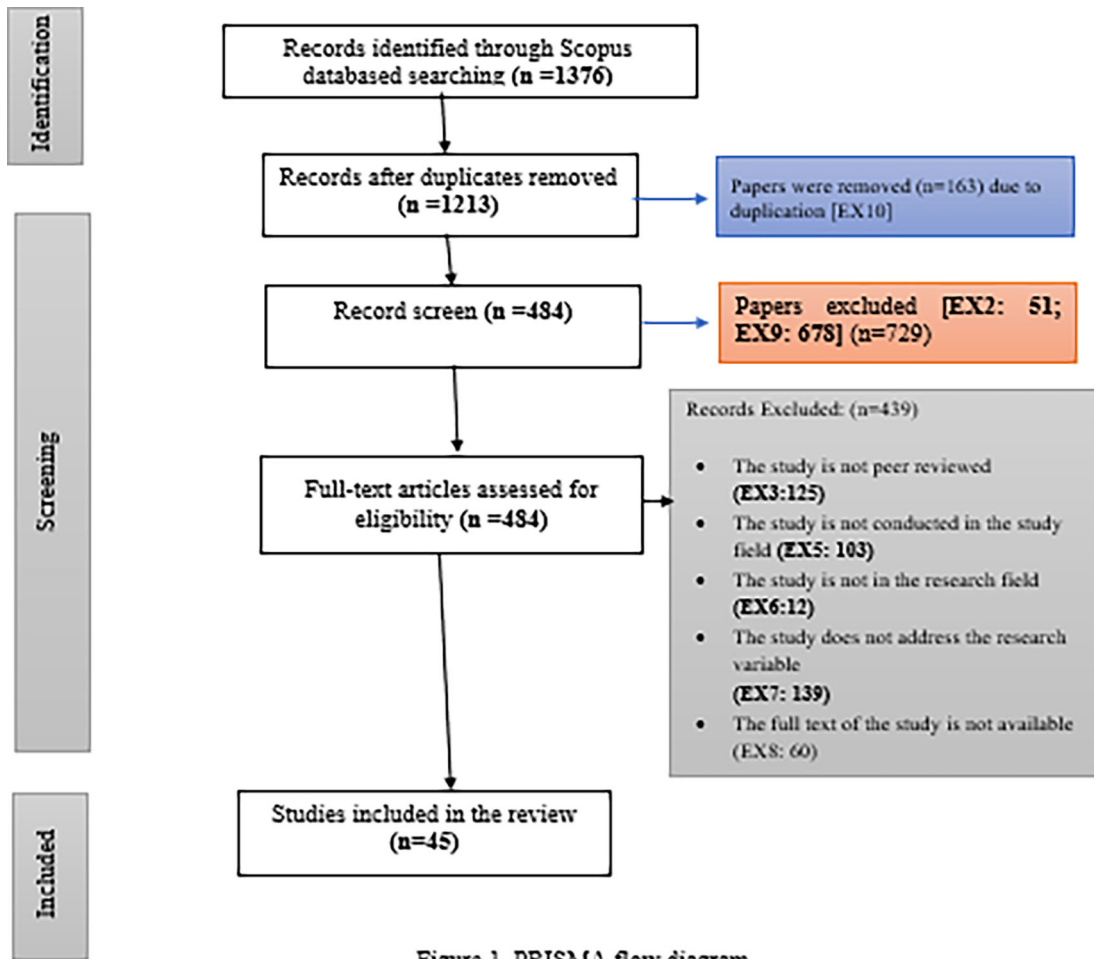


Figure 1. PRISMA flow diagram.

Source(s): Author's own work

Figure 1. PRISMA flow diagram.

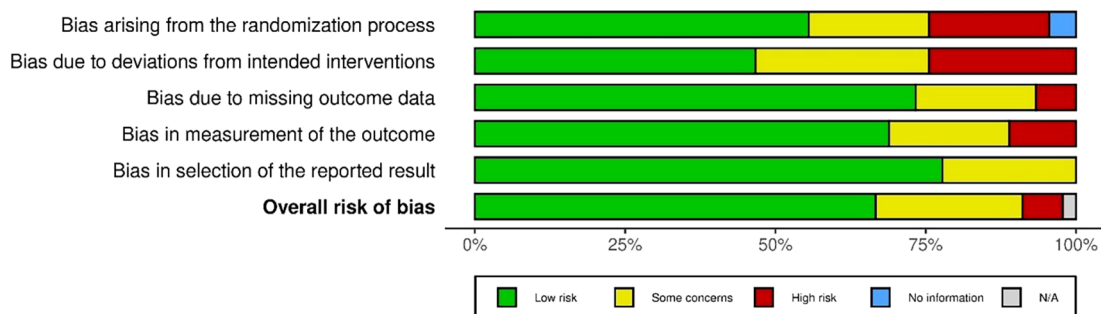


Figure 2. Summary of risk bias assessment (n=45) (McGuinness & Higgins, 2020).

moderately concerned, high) for each included article Finally, the authors used the Robvis software to summarize the risk assessment and create a risk chart for this systematic review, as shown in Extended data file 2.

This review is therefore fully transparent and able to provide free, fair, natural, and reliable research results to resolve issues related to violations of academic integrity in higher education institutions.

3.6 Reporting the review

The findings in the articles concerning cheating and plagiarism among HEIs were examined in a systematic literature review in compliance with the PRISMA paradigm, specifically ensuring that the inclusion and exclusion criteria were met Extended data file 1, along with data searching and selection, and the synthesis of the results. Based on the research questions, the result section provided a summarized version of each answer. The results have implications for educators and researchers as to the creation and implementation of effective practical solutions for minimizing the incidents of cheating and plagiarism among HEIs.

4. Results

The column graph (see Figure 3) shows the annual published papers selected for this review from 2018 to 2022.

The data represent the frequency of publication of cheating and plagiarism for the years 2018 through 2022. To compare the periods before and after the onset of the COVID-19 pandemic (which began in late 2019), we can split the data into two groups: pre-COVID (2018-2019) and post-COVID (2020-2022). It seems that the frequency of publications on cheating and plagiarism increased (80%) in the post-COVID period compared to the pre-COVID period (20%). This could be due to various factors, such as changes in educational settings, increased reliance on online learning, or other pandemic-related challenges.

In terms of methodological point of view, a variety of research approaches (Figure 4) were used by earlier scholars to study academic integrity violations. According to the findings, 49% of the studies were based on qualitative

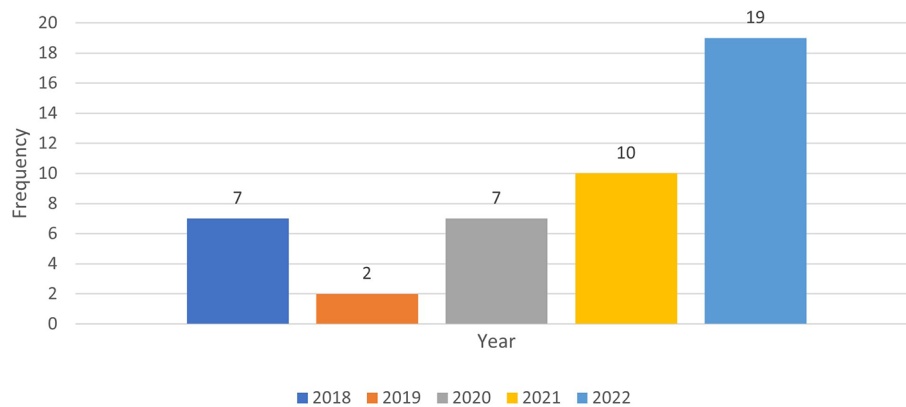


Figure 3. Frequency of publication each year (n=45).

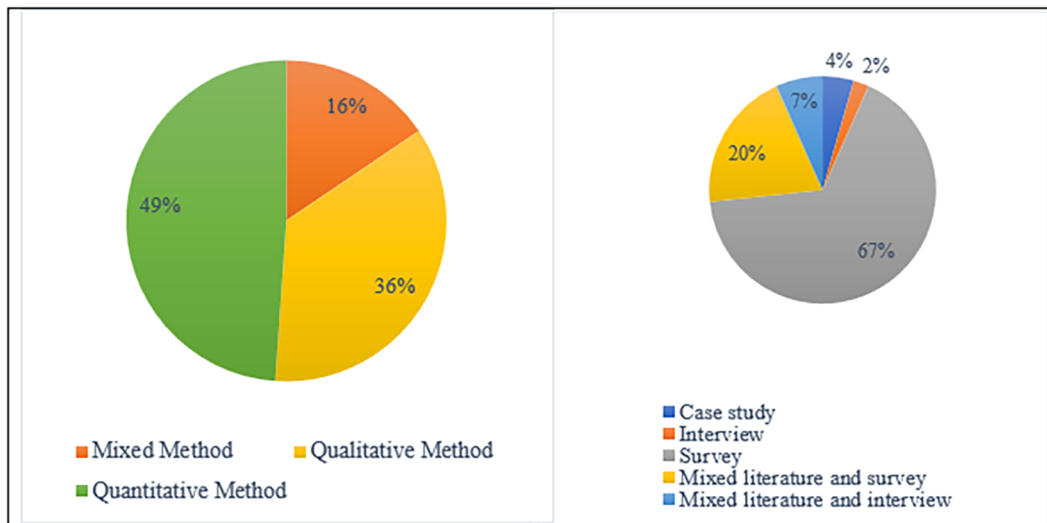


Figure 4. Frequency of publication research methods.

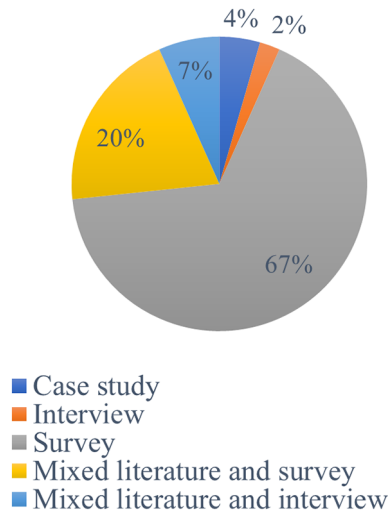


Figure 5. Data collection techniques (n=45).

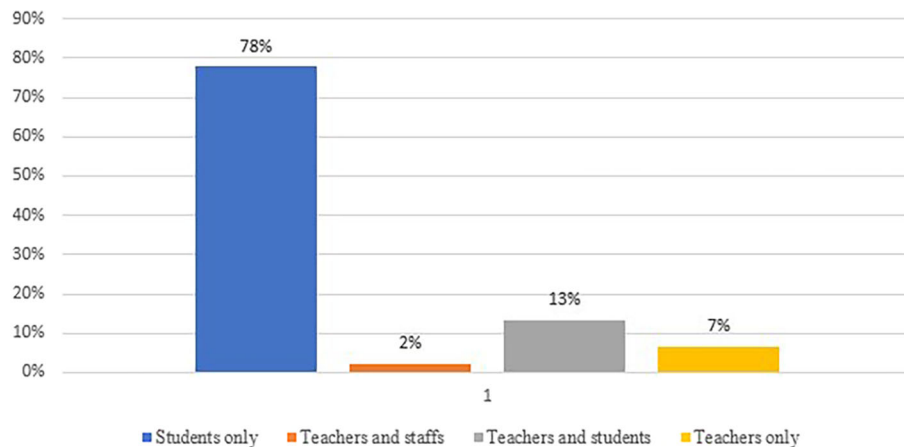


Figure 6. Frequency of publication each year focusing respondents (n=45).

research methods, while 36% of studies used quantitative research methods. Furthermore, mixed research approaches were used in 16% of the investigations. [Figure 5](#) displays the methods mostly utilized to obtain research data: Case study (4%), Survey (67%), Interview (2%), Mixed Literature and Interview (7%), and Mixed Literature and Survey (20%).

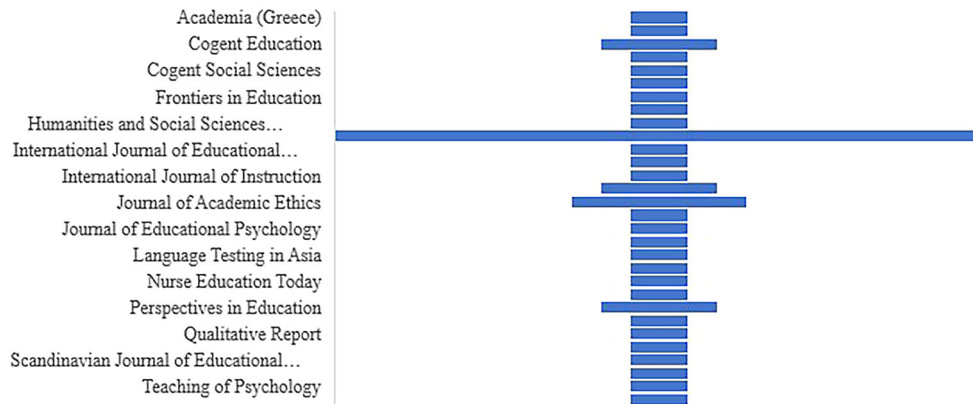
According to the study, researchers have previously investigated a variety of topics to identify the root causes of academic integrity violations. To pinpoint the cause of this problem, they conducted tests on students, teachers, and staff (see [Figure 6](#)). The majority of research is centered around students (78%), indicating a significant emphasis on understanding their experiences, motivations, and methods related to cheating and plagiarism. Teachers and staff collectively constitute a small percentage (2%) of the respondents. This suggests that, compared to students, there may be less emphasis on exploring the perspectives of educators and administrative staff in cheating and plagiarism research. The category of both teachers and students (13%) reflects an interest in investigating the relationships and interactions between these two groups. This may involve studying how educators perceive and address cheating among their students. The subset of teachers-only (7%) respondents indicate a targeted focus on understanding the role of educators in the context of cheating and plagiarism, potentially exploring their awareness, preventive measures, and reactions.

Trends in authorship analysis

The analysis focused on authorship patterns that represent breaches of academic integrity in higher education research. The authors read and evaluated the articles. As shown in [Table 1](#), analysis showed that 7% of the database's articles were

Table 1. Analysis of trends in authorship (n=45).

Authorship		Gender authorship		
Single-authored	Co-authored	Male	Female	Mixed
29%	71%	51%	7%	42%

**Figure 7. The distribution of articles by selected journals (n=45).**

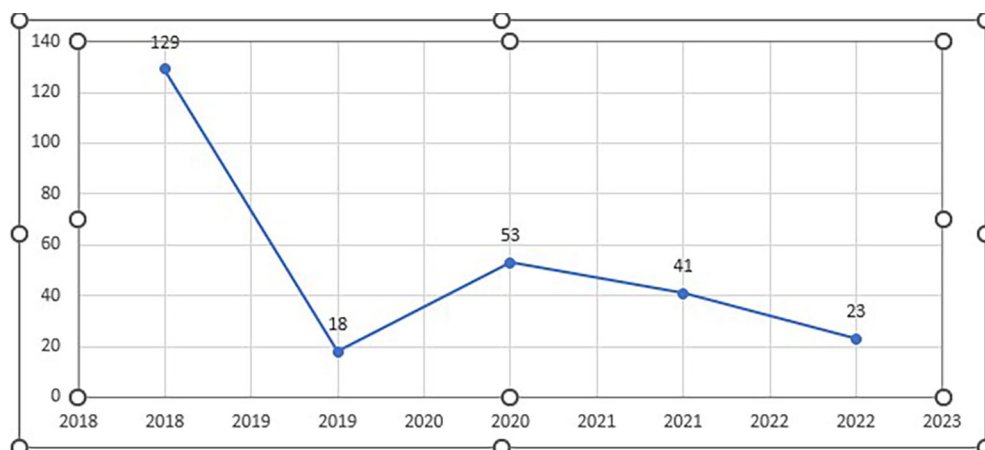
produced by female scholars, whereas 51% of the articles were published by males. 42% of the papers featured both male and female scholars. Additionally, the study revealed that 29% of the publications had a single author and 71% of the papers had two or more authors.

The distribution of articles by selected journals

Between 2018 and 2022, a sizable number of research papers were published in high-impact journals (see Figure 7). The researcher had expressed great interest in publishing articles on cheating and plagiarism.

Analysis of citation impact of the selected papers

The citation count exhibits some fluctuation from 2018 and 2022, suggesting that interest or effect levels were not constant over this time. Nonetheless, in comparison to the years that surround them, 2018, 2019, and 2021 stand out with comparatively larger citation counts. Perhaps throughout these years, there has been a rise in interest in the work or its increasing significance in the area (See Figure 8).

**Figure 8. Year-wise number of citations (n=45).**

The highest citation count was observed in 2018, suggesting a peak in the impact or interest in research during that year. There was a substantial drop in citations in 2019 followed by a gradual increase in 2020, and a subsequent slight decrease in 2021 and 2022. The fluctuating pattern in citation counts across the years could be influenced by various factors, including the novelty and significance of the research, changes in the academic landscape, or the emergence of competing works.

Publication of papers selected papers across countries

A map was produced to determine the source of publications in every nation, and it was categorized by the specific location of data collection. The map shows 45 papers were selected which originated from 28 different countries. More publications were from such as Turkey (n=3), USA (n=2), Indonesia (n=2) Canada (n=2), China (n=2), Saudi Arabia (n=2), South Africa (n=2). Other publications (n =30) were distributed across 21 countries i.e., “Kosovo, New Zealand, Australia, Ethiopia, Ghana, Greece, Honduras, Iran, Israel, Kuwait, Malaysia, Mexico, Oman, Qatar, Romania, United Kingdom, Norway, Rwanda, and Switzerland, United Arab Emirates” with one paper for each country (See [Figure 9](#)).

From the available statistics, it is clear that a varied range of nations appear to be represented, with each producing a distinct quantity of articles related to academic integrity violations. These review articles may certainly contribute to reaching an actionable solution for achieving this research objective.

What are the top prevalent types of plagiarism and cheating in HEIs?

In higher education institutions, academic dishonesty has grown in importance recently, especially when it comes to cheating and plagiarism. Research has indicated a rise in the frequency of cheating and plagiarism, particularly since the use of electronic assessments. This unethical behavior erodes the principles of academic honesty and jeopardizes the integrity of the educational system. The review of 45 articles following cheating and plagiarism forms in HEIs is tabulated in [Table 2](#).

What factors contribute to the prevalence of academic cheating and plagiarism in higher education institutions?

In higher education institutions, cheating and plagiarism have become prevalent issues. It's concerning because these immoral actions compromise the integrity of education and diminish the hard work of sincere learners. Academic cheating and plagiarism are common in higher education institutions for several reasons. [Table 3](#) summarizes the key factors contributing to cheating and plagiarism in higher education institutions.

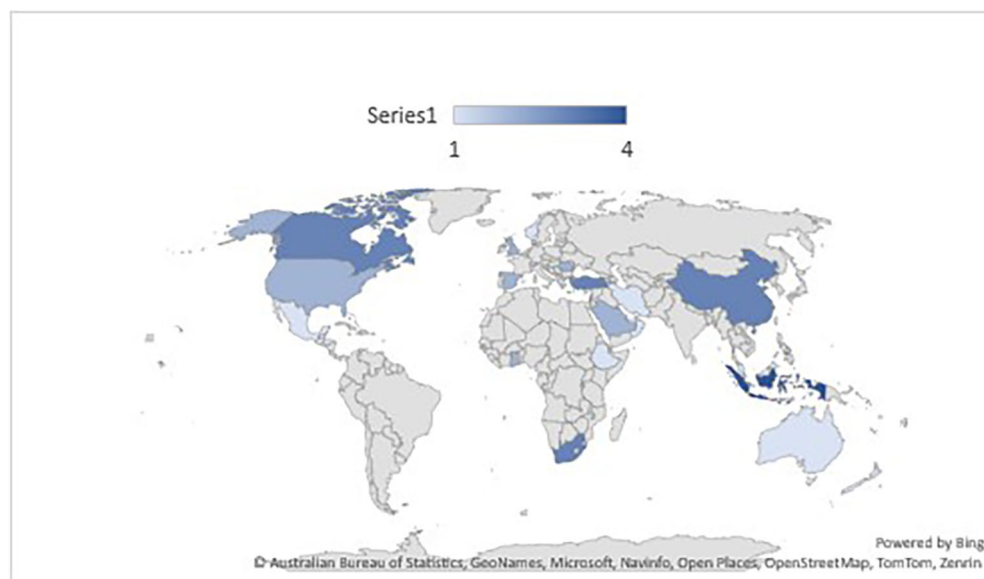


Figure 9. Frequency of publication according to the countries (n=45).

Table 2. Forms of Cheating and Plagiarism (n=45).

Form of cheating and plagiarism in HEIs	Number of review studies (percentage)	Study numbers based on the order of the table
Cheating	75.55%	E1, E3, E4, E6, E7, E9, E10, E11, E12, E13, E14, E15, E16, E17, E18, E19, E20, E22, E23, E24, E25, E26, E29, E32, E33, E35, E37, E39, E40, E41, E42, E43, E44, E45 (34)
Contract cheating	11.11%	E1, E5, E11, E21, E36 (5)
Collusion	13.33%	E5, E6, E11, E14, E21, E24 (6)
Copying	6.67%	E14, E19, E24 (3)
Academic misconduct	2.22%	E9 (1)
Falsification	2.22%	E7(1)
Fabrication	2.22%	E23(1)
Fraudulence	2.22%	E28(1)
Corruption	2.22%	E29(1)
Absenteeism	2.22%	E22 (1)
Plagiarism	42.22%	E2, E7, E8, E10, E11, E13, E14, E19, E21, E23, E27, E28, E29, E30, E31, E34, E35, E38, E43 (19)

Table 3. Factors lead to cheating and plagiarism (n=45).

Factors lead to cheating and plagiarism	Reference Articles
Individual Factors	E2, E3, E4, E5, E9, E10, E12, E17, E18, E24, E26, E35
Institutional Factors	E1, E2, E4, E10, E12, E18, E25, E33
Social Factors	E2, E27, E31, E32, E33, E41, E44
Cultural Factors	E12, E29, E33
Technological Factors	E2, E35

Table 4. Strategies to solve cheating and plagiarism (n=45).

Strategies to solve cheating and plagiarism	Reference Articles
Modification of academic integrity policy and honor code	E2, E3, E4, E5, E9, E10, E12, E17, E18, E24, E26, E35
Academic Integrity Awareness Program	E1, E2, E4, E10, E12, E18, E25, E33
Anti-plagiarism detection software	E2, E27, E31, E32, E33, E41, E44
Counselling and guidelines	E12, E29, E33

What strategies have been employed to mitigate academic cheating and plagiarism in higher educational institutions?

Reducing the prevalence of cheating and plagiarism in Higher Education Institutions (HEIs) involves implementing a combination of preventive measures, educational initiatives, and disciplinary actions. Here are some common strategies that have been employed. The article review concerning plagiarism and cheating in HEIs also indicated the way they can be mitigated (see [Table 4](#)).

5. Discussion

This systematic literature review was conducted to provide an overview and insight into the research literature on cheating and plagiarism in HEIs to improve the quality of education and help students to develop ethical and moral skills. In this study a total of 45 papers (*see Extended data file 3*) were analyzed to answer the set of objectives and proposed research

questions. The result indicates that from 2021 onwards, there was a significant wave of publications of papers about cheating and plagiarism.

The results of the literature review suggest that students have often broken the rules and regulations of the institutions they are enrolled in. Some students make it a habit to engage in dishonest behaviors like cheating and plagiarism (Amzalag et al., 2021). Besides, cheating and plagiarism, students are also involved in other forms of academic dishonesty such as contract cheating (Ali & Alhassan, 2021), collusion (Chen, 2022), falsification (Măță et al., 2020), fabrication (Khan, 2022), fraud, corruption, and unjustified absences. These are the top prevalent types of academic integrity violations in HEIs. Therefore, it has become challenging for higher educational institutions to maintain academic integrity and ensure quality education for all students.

There is a high contextual basis for the causes behind cheating and plagiarism and this differs, from one individual to another and from one nation to the next. Based on the study, there are several contributors to students' infractions of academic honesty and integrity and this includes peer pressure, internet availability, societal norms, and individual mindset (Abbasi et al., 2021). These factors are categorized as individual factors, institutional factors, social, cultural, and technological factors which are summarized in the following paragraphs.

Individual factors: individual factors may contribute to the student's choice to breach academic honesty. It is related to students' motivation. About this, motivation is an English word that stems from the word, "moveo", which means to arouse, urge someone to act, or annoy. In other words, the system can sometimes initiate, stimulate, and maintain a particular behavior among individuals (Landa-Blanco et al., 2020; Usher, 2018). Motivation is a tool that can urge someone to act in a certain way and academic motivation is thus the root behind the behaviors relating to the performance and function of academic behavior (Kuhlmann et al., 2023) like the low level of students' efforts, management of workload among students, their selected activities and their persistence in their academic development.

A range of studies have explored the relationship between student motivation and academic dishonesty such as cheating and plagiarism. According to Landa-Blanco et al. (2020), academic dishonesty is negatively associated with intrinsic motivation and self-efficacy, and positively linked with motivation and extrinsic goal orientation. There is a significant connection between academic dishonesty and both intrinsic and extrinsic motivation (Abbasi et al., 2021) further delved into the role of personality traits in academic dishonesty, finding that impulsivity and fight-flight-freeze behaviors were positively associated with engagement in dishonest academic behaviors. These studies collectively suggest that both intrinsic and extrinsic motivation, as well as certain personality traits, play a role in influencing cheating and plagiarism.

Institutional factors: This category of factors covers undermining practices to the academic integrity in the classroom, namely external assistance, collaboration, plagiarizing, and technology used for cheating. The environment in the classroom and the atmosphere within it reflects the students' personalities and through the usage of academic materials, such an environment becomes a specific setting for learning advancement and promotion of creativity (Thomas, 2020). Studies show that a positive classroom atmosphere supports the learning outcomes of the students in light of their success and content level (Chang et al., 2018). Various physical environments, contexts, and cultures within which students learn are referred to as the academic environment (and such a learning environment, directly impacts the drive of the students to study).

Social factors: A range of social factors have been identified as significant contributors to academic integrity violations such as competition, social rejection, and societal pressure while (Şercan & Voicu, 2022) highlighted the influence of performance goals and social norms. These studies collectively underscore the complex interplay of social influences on academic integrity, suggesting the need for targeted interventions and support mechanisms. Moreover, cultural differences were also found to play a role, with Roe (2022) and Nabee et al. (2020) both identifying the influence of perceived peer dishonesty and the acceptability of cheating, as well as the impact of cultural and psychological variables such as distress, perfectionism, and self-control. These findings underscore the complex interplay of social and individual factors in shaping academic dishonesty.

Cultural factors: The origin of cultural factors is the home, and the main source is parental pressure. Generally, parents pressure their children towards academic excellence notwithstanding the latter's abilities and capabilities. Hence, students may turn to academic integrity breaches to satisfy their parents (Won & Lee, 2023). Studies showed that some students feel that obtaining high academic standards is a must to meet their parents' expectations (Farahat, 2022). Added to this, parents force their children to obtain high marks despite their actual ability to do so and as such, parental expectations could make students compromise their academic integrity. A related study by Rozar et al. (2020) revealed that plagiarizing attempts among students usually occur when faced with tough tasks when obtaining a good score would

call for extra effort and time, and when there is pressure from family. Their belief in the impossibility of obtaining good scores in limited time drives students to engage in cheating after which this becomes a part of their culture. [Bretag & Mahmud \(2014\)](#), found that institutionalizing a culture in the academic policy and practice context can promote academic integrity among students. In other words, understanding the way academic culture influences the inclination of students to breach academic integrity is the key.

Technological Factors: Technology advancements have been dynamic over time and technology use among students has unfortunately taken a turn for the worst when it comes to cheating and stealing other's work. In other words, ICTs have made it possible for students to plagiarize and cheat in HEIs easily. These infractions may also be brought on by improper and illegal ICT usage. It is thus important for students to understand and respect the rights and obligations of using and sharing intellectual property by adhering to the copyright and fair use, citing resources, obtaining or providing permission for use, steering clear of plagiarism, and understanding and using creative commons ([Coldwell-Neilson, 2020](#)). [Morrison \(2018\)](#), stated that the California Model School Library Standards indicate the need for students to respect intellectual property its fair use, and public performance rights when it comes to media downloading and duplication.

Cheating and plagiarism through the misuse of technology can be further divided into three subsections such as the availability of computer and AI tools, limitations of existing tools in detecting cheating and plagiarism, internet and Internet and web-based unauthorized collaboration.

Availability of computer and AI tools: Computer and artificial intelligence tools have been shown to have a double-edged effect on higher education institutions. Recent research conducted by [Hasanein & Sobaih \(2023\)](#) has highlighted that students frequently misuse these tools, particularly ChatGPT, within the realm of higher education. Consequently, there has been a notable increase in instances of AI-driven cheating, plagiarism, contract cheating, and various forms of academic dishonesty, including falsification, collusion, and unauthorized collaboration. These challenges present significant obstacles to maintaining academic integrity ([Wang & Cornely, 2023](#)).

Limitations of existing tools in detecting cheating and plagiarism: The study conducted by [Do Ba et al. \(2017\)](#) reported that higher education institutions are applying software and technological tools, like Turnitin, to assess the similarity index of students' written assignments/reports. However, the study conducted by [Lines \(2016\)](#) highlighted that these tools are often incapable of detecting assignments and reports written by ghostwriters. Therefore, the students who engage in committing cheating and plagiarism often go undetected because of the limitations of the existing tools for detecting such behavior.

Internet and web-based unauthorized collaboration: The study conducted by [Wang & Cornely \(2023\)](#) reported that students frequently engage in unauthorized Internet and web-based collaboration while completing their reports, theses, and assignments. In this connection, [Tabsh et al. \(2019\)](#) emphasized that this type of unauthorized collaboration encourages cheating and plagiarism and diminishes the overall learning outcomes in higher education. Moreover, the unapproved and dishonest behaviors exhibited by students have raised concerns about data security and privacy. Therefore, it is necessary for higher education institutions to promptly take action to reduce these unethical student behaviors.

Cheating and plagiarism are a recurrent issue in higher education institutions. The reasons for cheating and plagiarism vary from person to person. A study by [Singh et al. \(2016\)](#) revealed a prevalent occurrence of cheating among undergraduates. Approximately 39% of participants admitted to cheating on tests, and a majority of 62% admitted to cheating on written assignments. Among graduate students, 17% admitted to cheating on tests, while 40% admitted to cheating on written assignments. Furthermore, according to [Curtis et al. \(2022\)](#), the percentage of Australian students who buy assignments from ghostwriting services is estimated to be 7.9%, which is considerably higher than previous self-reported numbers.

Previous research conducted by [Cuadrado et al. \(2019\)](#) has shown that these acts not only hinder students' learning outcomes but also damage the reputation of educational institutions. Moreover, students' cheating and plagiarism incidents undermine the institutional code of ethics and jeopardize the sustainability of ethical values and principles within these institutions.

The causes of cheating and plagiarism can vary from person to person. According to [Sozon et al. \(2024\)](#), individual causes include laziness, lack of motivation for learning, and insufficient time to study. In terms of institutional factors, [Solmon \(2018\)](#) revealed that a poor academic integrity policy, ineffective implementation of an honor code, and a lack of

technological tools for detecting cheating and plagiarism contribute to the issue. [Tanveer et al. \(2012\)](#). Additionally, [Sozon et al. \(2024\)](#) highlighted those social factors, such as peer influences, pressure to achieve higher grades, intense competition, cultural norms, and the perceived acceptance of cheating, also play significant roles in shaping student behavior.

Higher education institutions are required to take preventive measures to stop cheating and plagiarism as they hurt institutions' reputations, undermine the institutional code of ethics, and sideline the sustainability of the ethics and morality of higher education institutions. There is no one-stop solution for reducing the reasons for cheating and plagiarism in higher education institutions. Therefore, higher education institutions need to adopt a comprehensive strategy to safeguard against student cheating and plagiarism behavior.

The initial step is to reform and reinforce academic honor code and ethical guidelines which every student must follow. Students need to be informed and aware of the appropriate and inappropriate conduct in the classroom and based on past studies, the majority of the learning institutions do not stress the importance of academic integrity, which provides the impression that it is not a crucial issue. Through academic policies, the academic integrity level of HEI students may be enhanced. Moreover, this honor code needs to be regularly reviewed and updated to adapt to the evolving landscape of academic dishonesty. At the same time, higher education institutions must promote a culture of ethical behavior and educate both students and faculty on the importance of maintaining integrity by implementing academic integrity awareness programs. In this connection, [Parther \(2022\)](#) recommends increasing student engagement, providing more opportunities for part-time faculty to share and disseminate ideas, demonstrating student learning, and establishing a clear policy and shared mission to address the issue of academic misconduct, such as cheating and plagiarism, in higher education institutions.

New students can be the recipients of customized course to inculcate within them the basics when it comes to academic dishonesty and its consequences. Cooperation between teachers, writing center directors, library directors, and academic specialists to develop such a course for students could be the key ([Darmansyah & Darman, 2022](#)). New incoming students would be required to take the course to enhance their academic integrity in what could be a first-year requirement ([Stephens et al., 2021](#)). HEIs need to play a key role in inculcating the habit of honesty, fair dealing, and integrity into students considering one of their major aims is to generate highly qualified graduates who can uphold the highest standards of integrity and professional ethics to contribute to society. Besides, higher education institutions must strengthen policy and invest resources to develop anti-plagiarism detection software using algorithms to scan and analyze submitted work, identify cases of plagiarism, and promote originality. Although the existing plagiarism prevention software (Turnitin, Authenticate, and Plagiarism Checker) has proven to be effective in the fight against academic cheating and plagiarism however this need to be modified further to detect AI generated contents. Furthermore, higher education institutions must introduce counselling and advisory services in shaping students' understanding of ethical boundaries. This counselling service will provide opportunities to understand the consequences of their actions for cheating and plagiarism. Fundamentally, the synergy of policy improvements, awareness initiatives, technical solutions and supportive advice will not only prevent cheating and plagiarism, but also improve academic integrity within higher education institutions ([Farahat, 2022](#)). This creates a comprehensive framework that fosters genuine engagement in higher education institutions.

5.1 Implications of the study

Cheating and plagiarism are major issues in higher education institutions. The misuse of technology and artificial intelligence tools has made these problems even more challenging. Based on a comprehensive literature review, it is evident that higher education institutions must make it a priority to combat cheating and plagiarism. Additionally, it is essential to educate and raise awareness among students about the severe consequences that come with these actions.

6. Conclusions

Cheating and plagiarism are serious problems in higher education institutions around the world. This systematic literature review found that there are different forms of academic integrity violations in higher education institutions. Students cheating and plagiarism are the most common form of academic integrity violation.

Several factors contribute to this problem, including academic environment, cultural, social, and individual factors. The study also revealed that cheating and plagiarism are also caused by other variety of factors, including lack of student motivation to study, peer approval of cheating, laziness, strict submission deadline, course difficulty, lack of integrity awareness, and illegal use of cutting-edge technology, and increased pressure on students to improve their academic performance. The literature analysis also revealed that cheating and plagiarism increased further when higher education institutions moved to virtual assessments and evaluations during the Covid-19 pandemic. The introduction of electronic

assessments has been found to increase the prevalence of cheating and plagiarism. Therefore, there is an urgent necessity to address this problem by designing effective policies and interventions.

Solving the issues related to cheating and plagiarism requires a comprehensive approach among faculty, administrators, and students is paramount. Moreover, universities need to create environments where students are motivated to learn and enhance ethical and moral values to become positive contributors to society. In such a learning environment, students are more likely to act and work with integrity and demonstrate the highest level of integrity. Besides, to improve students' academic integrity, educational institutions should invest in educational initiatives that promote ethical behavior, critical thinking, and the development of strong research and writing skills. Additionally, there is an urgent need to implement advanced plagiarism detection tools to make students understand their current level of skills and offer them a solution to develop skills and produce a revised version of the copy with an accepted version of plagiarism in academic writing. Overall, the results of this systematic literature review highlight the urgent need for higher education institutions to prioritize efforts to combat cheating and plagiarism and increase student knowledge and awareness about the consequences of cheating and plagiarism.

6.1 Limitations of the study

This systematic literature review provided valuable insight into the prevalence of cheating and plagiarism in higher education institutions. However, there are certain limitations of this study. The main limitation is that relevant studies published in journals not indexed in Scopus are excluded. This can lead to biased literature selection and the loss of valuable articles from reliable journals that are not included in the Scopus database. Scopus primarily indexes English-language journals and may exclude valuable research published in other languages. This limitation can lead to an incomplete understanding of the global landscape of cheating and plagiarism in higher education, especially in regions where English is not the primary publication language.

Another limitation is the different research methods and definitions of cheating and plagiarism in studied studies. Different researchers have different approaches, which can make it difficult to accurately compare and generalize results. Differences in survey instruments, assessment methods, and cultural backgrounds can lead to inconsistencies in the reported prevalence, making it difficult to draw consistent conclusions. Despite these limitations, the Scopus framework provides a structured approach and allows access to a wide range of peer-reviewed literature. Furthermore, the absence of significant findings can provide valuable insights by revealing gaps in the literature. These gaps can then be used to guide future research and improve academic integrity. Future researchers should consider these limitations and take them into account when interpreting and generalizing the results of the review.

Ethics and consent

Ethical approval and consent were not required.

Data availability

Underlying data

No data are associated with this article.

Extended data

The Qualitative Data Repository: Extended data for 'Cheating and plagiarism in higher education institutions (HEIs): A literature review'. <https://www.doi.org/10.5064/F6NEGI7I> (Sozon et al., 2024c).

This project contains the following extended data:

1. A list of inclusion and exclusion criteria for the study.
2. Assessment of risk of bias for the included papers.
3. List of included papers for the study (n=45).

Reporting guidelines

The Qualitative Data Repository: PRISMA checklist for 'Cheating and plagiarism in higher education institutions (HEIs): A literature review'. <https://data.qdr.syr.edu/dataset.xhtml?persistentId=doi:10.5064/F6NEGI7I> (Sozon et al., 2024c).

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Open Peer Review

Current Peer Review Status:    

Version 2

Reviewer Report 09 November 2024

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Amanda McKenzie

University of Waterloo, Waterloo, Ontario, Canada

Literature reviews in niche fields such as academic integrity are invaluable and help identify strengths, weaknesses and trends in the current research and areas for future investigation.

In this systematic review, I questioned why the terms cheating and plagiarism were the main focus (i.e., why weren't other terms like academic misconduct more overtly included). I see that additional key terms (academic dishonesty, academic misconduct, academic integrity violation) were included in the database search but only cheating and plagiarism seem to be emphasized throughout the text. Just an observation.

Also, it's important not to conflate cheating and plagiarism as not all plagiarists are cheaters – unintentional plagiarism happens, and this does not equate to a lapse in morals. Moreover, cheating is an umbrella term that can result in overrepresentation in academic offence data. For example, plagiarism can be a subset of cheating. If an offence is labelled as both – the offence numbers will be higher than reality.

The research questions outlined in this article are appropriate and the methods and inclusion/exclusion criteria are sound.

The coding document only focused on bias domains. I would have liked access to their qualitative analysis files so I could see how they developed their themes and conclusions. In the results section, I liked the way they took pre and post COVID impacts into consideration on the frequency of publication.

The overall readability has some issues (see my minor comments below). A good proof-read would be useful as there are spots where the sentences do not make sense, and words or pluralizations are missing. Examples, in the **Introduction**, in the second paragraph read: “*students not considered as high-risk technology tool about cheat*”. I do not understand what this means. Also, “*teachers find [it] hard to detect the authenticity of students assignments and exams*” – this sentence is missing the word “it”.

There are also several instances of repetition or reiteration of the same points without introducing any new evidence. Specifically, the number of mentions of cheating and plagiarism throughout the text. The article would be more concise and have a stronger argument if some of these repeated statements and areas of duplicity were removed.

In sum, I have reservations with the data and outcomes in this article. I have waived between selecting "approved with reservations" and "not approved" given that I am the third person to do a review. However, it's imperative that we have faith in the data and findings, and I am not confident with the way it has been presented, particularly the data in **Figure 9**. In addition, using references (i.e., Waigand, 2019) to support unsubstantiated findings is very concerning. Hence, my recommendation is "not approved" without mandatory revisions.

The comments below are listed as they sequentially arise in the article. I have also denoted in each if they are major or minor comments.

Abstract

In the 1st paragraph, suggest rephrase to "Cheating and plagiarism **are** serious problems in HEIs" rather than **have** become serious problems. These offences have always been serious and are not new, however what is of concern is the rise in the number of incidents and ease at which these offences can be committed which has been exacerbated by technology, specifically the internet.

Minor

In the 3rd paragraph you refer to "*unethical application of AI tools*" - I found this too vague. Please define or spell out what you mean by AI as this acronym is widely used for both academic integrity **and** artificial intelligence - especially since either could possibly apply in this sentence. **Minor**

Also in 3rd paragraph, last sentence in the abstract - I think you meant: "In a broader sense, all these factors can be classified into individual, social, cultural, institutional, and technological factors that contribute to these offences". Consider revising this sentence. **Minor**

I would remove or revise reference to "*this*" problem in the 3rd and 4th paragraph because cheating and plagiarism are two separate things (or pluralize "*this*" to "*these*"). Alternately, together cheating and plagiarism are examples of academic misconduct and hence if referred to as academic misconduct then "*this*" problem is appropriate. **Minor**

In the 4th paragraph, you write "*higher education institutions must develop anti-plagiarism detection software in order to detect plagiarism*" - do you perhaps mean HEIs should use anti-plagiarism detection software (rather than develop their own?). There are many products on the market that are readily available and have a solid reputation and business foundation rather than building your own detection tool. As an aside, such tools are also more accurately called text-matching or similarity tools. They only point to issues of copying and unoriginality but are not absolute evidence of plagiarism. This can only be confirmed by human review. Please review this section and clarify why you have included this suggestion with evidence. **Major**

5th paragraph - suggest removing word "*so/ve*" and use "*address*". Cheating and plagiarism will never 100% be solved but we can take action to reduce it or dissuade such behaviour. **Minor**

Introduction

1st paragraph - how did you come up with the figure of "97%" and who are the "*guardians in the United States*" (perhaps this is a term relevant in your context but unfamiliar to me?). I have concerns about this claim given that there is not clear process or evidence as to how you arrived at this percentage. Please clarify how this was determined and define what you mean by a "guardian". **Major**

2nd paragraph - suggest change "*recurrent occurrence*" to "proliferation" or "recurrence" and "*supports to violate*" to "can" violate academic integrity (it's all in how you use the tool). **Minor**

3rd paragraph - you've mostly referred to HEIs however in this paragraph you specifically mention "*universities*". I suggest you remove that and use HEIs to be consistent and for broader applicability. **Minor**

Last paragraph - "*This study will also explore the design and development of plagiarism detection software and innovation assessment systems that encourage critical thinking, originality, and ethical research practices.*" This piece seems like a strange addition as developing software or assessment systems is not the focus of this paper nor was it an objective or research question. Moreover, there are several reputable products already on the market in this area (unless they are not available in the authors specific educational market) - it does not seem financially viable or logical to develop another product. I suggest that any reference to "*explore the design and development of plagiarism detection software and innovation assessment systems*" be removed. **Major**

Literature review

Paragraph 3 - last sentence has typos. "*However, this problem bv hgbv bv cheating.*" **Minor**

Paragraph 5 -

"*Plagiarism is the top frequently used method in academia which breaches the integrity of HEIs*".

Suggest rewrite to "Plagiarism is the most frequent breach of academic integrity in HEIs". **Minor**

Paragraph 5 - does "*Information and communication technologies (ICT) development*" mean the same as artificial intelligence or generative AI? If not, how do they differ? Perhaps add an example to illustrate so it's clear.

Also, in paragraph 5 - the sentence "*a normal and decent person possessing morals and values would never engage in plagiarism behavior*" **is a falsehood** as research shows sometimes plagiarism is unintentional and is a writing problem rather than a err in morals. Any reference to being immoral if you plagiarize should be removed. **Major**

6th paragraph - you mention "*colleges*" suggest replacing with HEIs to be consistent. **Minor**
Also, where is the evidence to support this claim? "*Regardless of such technological detection of plagiarism, institutions in developed nations are still not leveraging effective plagiarism detection software*". How did you come to this conclusion - it's not explicit. **Major**

Paragraph 7 remove "*universities*" replace with HEIs. **Minor**

I also suggest adding a reference (Guerrero-Dib et al., 2020) to Ozcan et al., 2022 regarding academic misconduct and later unethical issues in work. **Minor**

Also in 7th paragraph, the claim: *"Furthermore, students' cheating and plagiarism may lead teachers, prospective students, and researchers to engage in similar inappropriate activities in their fields (Waigand, 2019)."* Does not align with the reference provided. I reviewed this source and could not locate any indication or finding to support this statement. Hence, I believe this claim cannot be verified and should be revised with evidence or removed. **Major**

Last paragraph - *"Furthermore, this study will reinforce the necessity to upgrade the existing plagiarism detection software and make it more diversified to detect AI and software-produced write-ups."* This seems unwarranted and no evidence has been given to why this would be needed. The literature in this area suggests that AI detection tools are unreliable and that when students take GenAI created content and further manipulate it using other tools to make it sound more human or to contain a few errors – the GenAI detectors are rendered virtually useless. More reading in this area should be done before making the recommendation to include an AI detector. **Major**

3.2.2 Exclusion criteria

While I am not experienced in a SLR, I would have liked a wider range of disciplines to be captured in the search rather than this criterion: *"EX6: The journal paper is not related to the Social Sciences, Arts and Humanities, and Psychology field."* Given that the exploration of academic integrity occurs across many disciplines, and it is a relatively young and niche area of research – this criterion seems a bit limiting. We know that research has been published in other disciplines such as engineering and computer science. *Although*, I recognize that only 12 papers were eliminated for this exclusion. This comment is just for consideration – no revisions minor or major are required.

Results

Figure 9. The source of publications by nation seems to misrepresent the frequency of publications. If Indonesia has n=2 and Malaysia has n=1 - how can this area of the world have the darkest/highest score of publications at 4? (I only count 3). Also, Canada and the USA both have the same score (n=2) but they are different colours of blue (assuming my computer monitor is properly displaying the colours) - suggesting Canada has darker blue/more publications than the USA. Furthermore, Turkey (n=3), China (n=2) and Canada (n=2) are all the same colour ... which does not align with the data frequencies provided. Given the discrepancies above I selected only "partly" for both the "analysis/interpretations" and "conclusions" sections. These discrepancies are misrepresentations of the data and need to be resolved. **Major**

Table 3 in the results – evidences that individual factors are the most prevalent which is what I would expect compared to the other factors listed.

Just before **Table 4**, there is a typo: *"Here are some common strategies that have been employe[d]"*. Please correct. **Minor**

Discussion

Under **societal factors** there is a typo: *"Moreover, cultural differences were also found to play a role, wit[h] Roe (2022) and Nabee et al. (2020)"*. Please correct. **Minor**

In **Technological Factors**, does ICTs mean the same as AI (artificial intelligence)? For consideration. In the same section, this should be rewritten: *"internet and Internet and web-based unauthorized collaboration."* Suggest removing the first instance of "internet". **Minor**

Limitations of existing tools in detecting cheating and plagiarism: I would have expected to also see generative artificial intelligence listed here in addition to ghostwriters. For consideration.

For consideration, as currently written, how does the subsection of **availability** differ from the section on **Internet and web-based unauthorized collaboration**? I would have expected some mention of the ease of access and proliferation of available tools in availability whereas, the unauthorized collaboration is the misuse of these tools.

Cheating statistics are rarely measuring the same thing ... (e.g., what Singh is measuring is completely different than the stats on ghostwriting that Curtis mentions). I would recommend adding more current sources on the prevalence of cheating behaviours rather than just using Singh et al. (2016) as this is an old source and there are many other recent sources that could be noted. Also, be aware that these "cheating" statistics might include plagiarism. You might want to consider adding separate plagiarism figures here too.

Regarding this statement: *"Although the existing plagiarism prevention software (Turnitin, Authenticate, and Plagiarism Checker) has proven to be effective in the fight against academic cheating and plagiarism however this need to be modified further to detect AI generated contents."* I have already mentioned that AI detectors exist in some of these products and there is research that discusses the utility of such tools. I suggest reviewing this literature and reconsidering this suggestion.

Conclusions

For consideration, when you state that cheating (75.55%) and plagiarism (42.22%) as the most reported violations can you be sure that the cheating reporting in the articles is distinctly separate from plagiarism (i.e., that plagiarism wasn't included in the cheating figures)?

I do not understand what you mean with this: *"Additionally, there is an urgent need to implement advanced plagiarism detection tools to make students understand their current level of skills and offer them a solution to develop skills and produce a revised version of the copy with an accepted version of plagiarism in academic writing."* Do you mean GenAI detection when you state *"advanced plagiarism detection tools"*? Also, the number (a percentage) generated by the AI detection tool in Turnitin is not visible to the student – so I'm not sure how that would improve their skills. This would require instructors to somehow share the number with the students and engage in conversation about the number. In addition, what do you mean by *"accepted version of plagiarism in academic writing."* This does not make sense to me. Please review and revise. **Minor.**

Upon reading the entire paper, **I suggest removing reference to:**

"Furthermore, higher education institutions must develop anti-plagiarism detection software in order to detect plagiarism and aid students in improving academic writing and paraphrasing approaches." which appears in the **Abstract**. This suggests HEIs must build their own product which is not true. **Major**

Also, *"This study will also explore the design and development of plagiarism detection software and innovation assessment systems that encourage critical thinking, originality, and ethical research practices."* which appears in the **Introduction**. Neither design nor development of either product

is discussed in this article. **Major**

References

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Are the rationale for, and objectives of, the Systematic Review clearly stated?

Yes

Are sufficient details of the methods and analysis provided to allow replication by others?

Partly

Is the statistical analysis and its interpretation appropriate?

Partly

Are the conclusions drawn adequately supported by the results presented in the review?

Partly

If this is a Living Systematic Review, is the 'living' method appropriate and is the search schedule clearly defined and justified? ('Living Systematic Review' or a variation of this term should be included in the title.)

Not applicable

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Academic integrity, quality assurance, generative artificial intelligence and academic integrity.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Reviewer Report 04 November 2024

<https://doi.org/10.5256/f1000research.172032.r332653>

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Som Nath Ghimire 

Faculty of Social Sciences and Education,, Nepal Open University, Lalitpur, Nepal

Dear authors,

Congratulations on your contribution to the field under your scrutiny, which requires continued attention. I believe that your paper could be valuable for readers and future researchers to

conveniently grasp the existing debates on cheating and plagiarism in higher education as well as guide them for any future endeavors. However, I have a few suggestions detailed below, hoping that addressing these concerns would significantly benefit and enhance the specificity, comprehensibility, and rigor of your study.

Title

Consider removing "HEIs" from the title. Introduce this abbreviation within the text after defining the term in full.

Overall comments for Introduction, Literature Review, Results, and Discussion

Please clearly differentiate between cheating and plagiarism. Similarly, distinctions among their subcategories need to be fully articulated in the literature review. This would benefit from clarification on these distinctions even for Table 2 of your result section. Secondly, the study does not explore potential differences in the factors contributing to each type of academic dishonesty or the specific prevention strategies tailored for each. Reviewing the literature for these variations could add depth, especially in addressing any differences in factors and strategies for mitigating cheating and plagiarism in higher education. A more sophisticated analysis could further enhance the rigor of the study. Please consider a substantive revision of the introduction and literature review to strengthen argumentative depth.

Doing this would certainly justify the purpose of your research question 2—**"What are the top prevalent types of plagiarism and cheating in HEIs?"**

Indicating the vagueness and difficulties regarding this issue only in the limitation section would not fully justify the author's inability to draw the required distinctions for the purpose and scope of the study.

Table 2

The categories in Table 2 would benefit from additional context to clarify their distinctions. For example, defining the differences between "cheating" and "contract cheating," or "copying" and "collusion," along with others, would provide a clearer framework for readers. It appears the table lists terms used by the reviewed studies without classifying them into distinct subcategories. Defining cheating and plagiarism as separate forms of academic dishonesty and further dividing each into subcategories could make the table more coherent and informative.

Table 3

Consider providing clarity on specific individual, institutional, social, cultural, and technological factors identified in the reviewed literature. Expanding the mind map to include related subcategories would enhance readers' understanding and offer a more comprehensive view of the factors influencing cheating and plagiarism.

Table 4

Please clarify how academic integrity awareness programs, counseling, and guidelines are distinct from one another. For example, isn't it possible that the concept of guidelines overlaps with academic integrity policies or honor codes? Clearly defining each strategy and its subcategories would help readers understand the unique contributions of each approach to preventing cheating and plagiarism in higher education.

Revising your Table 3 and Table 4 would certainly strengthen the relevance of your research questions 3 and 4: **"What factors contribute to the prevalence of cheating and plagiarism in Higher education institutions? What strategies have been employed to reduce the prevalence of cheating and plagiarism in higher education?"**

Discussion

In its current form, there is a huge gap between your results and the discussion section since your findings do not clearly articulate the ideas discussed. In the discussion section, start with a concise

summary of the results and then explore each finding in greater depth, particularly concerning factors and prevention strategies for both cheating and plagiarism. To strengthen this analysis, consider incorporating recent studies on factors influencing cheating and plagiarism and effective prevention strategies, as well as any limitations and challenges these studies have identified. This approach could offer a more comprehensive view and enhance the relevance of your findings. I look forward to reading the revised version of this paper. Best wishes.

Are the rationale for, and objectives of, the Systematic Review clearly stated?

Partly

Are sufficient details of the methods and analysis provided to allow replication by others?

Partly

Is the statistical analysis and its interpretation appropriate?

Partly

Are the conclusions drawn adequately supported by the results presented in the review?

Partly

If this is a Living Systematic Review, is the 'living' method appropriate and is the search schedule clearly defined and justified? ('Living Systematic Review' or a variation of this term should be included in the title.)

Not applicable

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Higher education, academic integrity, technology in education, critical discourse studies, gender studies, media and surveillance, and rhetoric and communications.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 18 October 2024

<https://doi.org/10.5256/f1000research.172032.r327179>

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Ceceilia Parnter

Le Moyne College, Syracuse,, NY, USA

Thank you for your thoughtful attention to these revisions.

Are the rationale for, and objectives of, the Systematic Review clearly stated?

Not applicable

Are sufficient details of the methods and analysis provided to allow replication by others?

Not applicable

Is the statistical analysis and its interpretation appropriate?

Not applicable

Are the conclusions drawn adequately supported by the results presented in the review?

Not applicable

If this is a Living Systematic Review, is the 'living' method appropriate and is the search schedule clearly defined and justified? ('Living Systematic Review' or a variation of this term should be included in the title.)

Not applicable

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Academic integrity, student success, leadership

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 09 September 2024

<https://doi.org/10.5256/f1000research.161295.r308208>

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Ceceilia Parnter

Le Moyne College, Syracuse,, NY, USA

Thank you for your submission. Your global study is helpful and needed. The rationale and objectives are clear , the analysis section is very thorough and complete, and the four research questions are straightforward. Your methodological choices and descriptions are clear and maintain rigor. Your conclusions are logical and suggestions, while broad, align with the findings.

Several uncited studies popularized the PRISM technique in academic integrity research before 2021 . I suggest mentioning one or more given the shift in approach.

In terms of added clarity, defining subsections in the technological factors section would be helpful. In addition the cheating types discussion section would benefit from with additional context. It is surprising that only one study uses the term academic misconduct. Providing more context on the factor types, specifically institutional and social factors as described would provide a more comprehensive understanding of the topic. I suggest you consider the absence of findings a finding, and explaining what is will yield stronger future research and implications. Please consider connecting the findings to the research questions. I also recommend potential elaboration of prior literature specific to cheating. Thank you!

Are the rationale for, and objectives of, the Systematic Review clearly stated?

Yes

Are sufficient details of the methods and analysis provided to allow replication by others?

Partly

Is the statistical analysis and its interpretation appropriate?

Not applicable

Are the conclusions drawn adequately supported by the results presented in the review?

Partly

If this is a Living Systematic Review, is the 'living' method appropriate and is the search schedule clearly defined and justified? ('Living Systematic Review' or a variation of this term should be included in the title.)

Not applicable

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Academic integrity, student success, leadership

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 17 Sep 2024

Md Sozon

Dear esteemed reviewer,

Thank you so much for reviewing our paper. We appreciate your time and effort in providing constructive feedback and suggestions. Your input has greatly improved the paper. We are pleased to inform you that we have incorporated your suggestions into version II of the paper. Kindly, let us know if any further revisions are required.

Thank you once again for your valuable input.

Sincerely,

Md. Sozon [PhD Candidate] Faculty of Accountancy and Management, Universiti Tunku Abdul Rahman, Malaysia

Reviewer Comment 1: Several uncited studies popularized the PRISM technique in academic integrity research before 2021. I suggest mentioning one or more given the shift in approach.

Our reply: We have included one pertinent research paper in the study, as per your suggestion.

Revised text: After conducting a comprehensive review of the existing literature, it is clear that the PRISM technique has become widely popular in the field of academic integrity. Zawacki-Richter's (2020) study, in particular, has been instrumental in bringing clarity, replicability, and a comprehensive synthesis of the literature to academic integrity research.

1. Zawacki-Richter, O., Kerres, M., Bedenlier, S., Bond, M., & Buntins, K. (2020). Systematic reviews in educational research: Methodology, perspectives and application (p. 161). Springer Nature.

<https://library.oapen.org/handle/20.500.12657/23142>

Reviewer Comment 2: In terms of added clarity, defining subsections in the technological factors section would be helpful. In addition the cheating types discussion section would benefit from with additional context.

Our reply: We have revised this section to enhance its professional tone. Firstly, we offer a comprehensive definition of the technology and its significant impact on the prevalence of cheating and plagiarism in higher education. Following that, we delve into the critical technological factors in four distinct subsections. Lastly, we support each subsection by incorporating relevant statistics and citing credible sources.

Technology advancements have been dynamic over time and technology use among students has unfortunately taken a turn for the worst when it comes to cheating and stealing other's work. In other words, ICTs have made it possible for students to plagiarize and cheat in HEIs easily. These infractions may also be brought on by improper and illegal ICT usage. It is thus important for students to understand and respect the rights and obligations of using and sharing intellectual property by adhering to the copyright and fair use, citing resources, obtaining or providing permission for use, steering clear of plagiarism, and understanding and using creative commons (Coldwell-Neilson, 2020).

Morrison (2018), stated that the California Model School Library Standards indicate the need for students to respect intellectual property its fair use, and public performance rights when it comes to media downloading and duplication.

Cheating and plagiarism through the misuse of technology can be further divided into three subsections such as the availability of computer and AI tools, limitations of existing tools in detecting cheating and plagiarism, internet and Internet and web-based unauthorized collaboration

Availability of computer and AI tools: Computer and artificial intelligence tools have been shown to have a double-edged effect on higher education institutions. Recent research conducted by Hasanein & Sobaih (2023) has highlighted that students frequently misuse these tools, particularly ChatGPT, within the realm of higher education. Consequently, there has been a notable increase in instances of AI-driven cheating,

plagiarism, contract cheating, and various forms of academic dishonesty, including falsification, collusion, and unauthorized collaboration. These challenges present significant obstacles to maintaining academic integrity (Wang & Cornely, 2023).

Limitations of existing tools in detecting cheating and plagiarism: The study conducted by Do Ba (2017) reported that higher education institutions are applying software and technological tools, like Turnitin, to assess the similarity index of students' written assignments/reports. However, the study conducted by Lines (2016) highlighted that these tools are often incapable of detecting assignments and reports written by ghostwriters. Therefore, the students who engage in committing cheating and plagiarism often go undetected because of the limitations of the existing tools for detecting such behavior.

Internet and web-based unauthorized collaboration: The study conducted by Wang & Cornely (2023) reported that students frequently engage in unauthorized Internet and web-based collaboration while completing their reports, theses, and assignments. In this connection, Tabsh (2019) emphasized that this type of unauthorized collaboration encourages cheating and plagiarism and diminishes the overall learning outcomes in higher education. Moreover, the unapproved and dishonest behaviors exhibited by students have raised concerns about data security and privacy. Therefore, it is necessary for higher education institutions to promptly take action to reduce these unethical student behaviors.

Newly added references:

- Hasanein, A. M., & Sobaih, A. E. E. (2023). Drivers and consequences of ChatGPT use in higher education: Key stakeholder perspectives. *European journal of investigation in health, psychology and education*, 13(11), 2599-2614. . <https://doi.org/10.3390/ejihpe13110181>
- Wang, J., & Cornely, P. R. (2023, November). Addressing Academic Misconduct in the Age of ChatGPT: Strategies and Solutions. In *Proceedings of the 2023 7th International Conference on Education and E-Learning* (pp. 19-25). <https://doi.org/10.1145/3637989.3638014>
- Do Ba, K., Do Ba, K., Lam, Q. D., Le, D. T. B. A., Nguyen, P. L., Nguyen, P. Q., & Pham, Q. L. (2017). Student plagiarism in higher education in Vietnam: an empirical study. *Higher Education Research & Development*, 36(5), 934-946. <https://doi.org/10.1080/07294360.2016.1263829>
- Lines, L. (2016). Ghostwriters guaranteeing grades? The quality of online ghostwriting services available to tertiary students in Australia. *Teaching in Higher Education*, 21(8), 889-914. <https://doi.org/10.1080/13562517.2016.1198759>
- Tabsh, S. W., El Kadi, H. A., & Abdelfatah, A. S. (2019, April). Faculty perception of engineering student cheating and effective measures to curb it. In *2019 IEEE Global Engineering Education Conference (EDUCON)* (pp. 806-810). IEEE.

Reviewer Comment 3: **It is surprising that only one study uses the term academic misconduct. Providing more context on the factor types, specifically institutional and social factors as described would provide a more comprehensive understanding of the topic.**

Cheating and plagiarism continue to be persistent issues in higher education. A study by Singh et al (2016) revealed a prevalent occurrence of cheating among undergraduates. Approximately 39% of participants admitted to cheating on tests, and a majority of 62% admitted to cheating on written assignments. Among graduate students, 17% admitted to cheating on tests, while 40% admitted to cheating on written assignments. Furthermore, according to Curtis et al. (2021), the percentage of Australian students who buy assignments from ghostwriting services is estimated to be 7.9%, which is considerably

higher than previous self-reported numbers.

Previous research conducted by Cuadrado et al. (2019) has shown that these acts not only hinder students' learning outcomes but also damage the reputation of educational institutions. Moreover, students' cheating and plagiarism incidents undermine the institutional code of ethics and jeopardize the sustainability of ethical values and principles within these institutions.

The causes of cheating and plagiarism can vary from person to person. According to Sozon et al. (2024), individual causes include laziness, lack of motivation for learning, and insufficient time to study. In terms of institutional factors, Solmon (2018) revealed that a poor academic integrity policy, ineffective implementation of an honor code, and a lack of technological tools for detecting cheating and plagiarism contribute to the issue. Tanveer et al. (2012). Additionally, Sozon et al. (2024) highlighted those social factors, such as peer influences, pressure to achieve higher grades, intense competition, cultural norms, and the perceived acceptance of cheating, also play significant roles in shaping student behavior. There is no one-stop solution for reducing the reasons for cheating and plagiarism in higher education institutions. Therefore, higher education institutions need to adopt a comprehensive strategy to safeguard against student cheating and plagiarism behavior. Parnter (2022) recommends increasing student engagement, providing more opportunities for part-time faculty to share and disseminate ideas, demonstrating student learning, and establishing a clear policy and shared mission to address the issue of academic misconduct, such as cheating and plagiarism, in higher education institutions. The scope of this study covers various forms of academic integrity violations, from classic exam cheating to sophisticated cases of plagiarism made possible by digital technology. It is crucial to recognize that combating academic misconduct such as cheating, and plagiarism requires a variety of approaches. While investigating academic misconduct in higher education, Parnter (2020) conducted a study to identify the characteristics of students who engage in academically dishonest behaviors and suggested best practices and challenges in preventing academic misconduct and promoting academic integrity.

Newly added references:

Singh, P., Thambusamy, R. X., & Druckman, Z. A. (2016). Insidious, invasive, invisible: academic dishonesty and on-going assessments in higher education. *The European Journal of Social & Behavioural Sciences*. DOI: 10.15405/ejsbs.193

Curtis, G. J., McNeill, M., Slade, C., Tremayne, K., Harper, R., Rundle, K., & Greenaway, R. (2022). Moving beyond self-reports to estimate the prevalence of commercial contract cheating: An Australian study. *Studies in Higher Education*, 47(9), 1844-1856. DOI: 10.1080/03075079.2021.1972093

Cuadrado, D., Salgado, J. F., & Moscoso, S. (2019). Prevalence and correlates of academic dishonesty: Towards a sustainable university. *Sustainability*, 11(21), 6062.

<https://doi.org/10.3390/su11216062>

Sozon, M., Chuan, S. B., Fong, P. W., Alkharabsheh, O. H. M., & Rahman, M. A. (2024). Factors influencing academic dishonesty among undergraduate students in higher education institutions (HEIs) in Malaysia. *Journal of Management Info*, 11(2), 137-159. DOI:

<https://doi.org/10.31580/jmi.v11i2.3039>

Solmon, M. A. (2018). Promoting academic integrity in the context of 21st century technology. *Kinesiology Review*, 7(4), 314-320. DOI: <https://doi.org/10.1123/kr.2018-0042>

Tanveer, M. A., Gill, H., & Ahmed, I. (2012). Why business students cheat? A study from Pakistan. *American Journal of Scientific Research*, 78, 24-32.

Sozon, M., Sia, B.C., Pok, W.F. and Alkharabsheh, O.H.M. (2024), "Academic integrity violations in higher education: a systematic literature review from 2013–2023", *Journal of Applied Research in Higher Education*, Vol. ahead-of-print No. ahead-of-print.

<https://doi.org/10.1108/JARHE-12-2023-0559>

Parnter C. (2020). Academic Misconduct in Higher Education: A Comprehensive Review. *Johepal*. 1(1), 25-45. doi:10.29252/johepal.1.1.25 URL: <http://johepal.com/article-1-31-en.html>

Parnter, C. (2022). The Rise of Contract Cheating in Graduate Education. In: Eaton, S.E., Curtis, G.J., Stoesz, B.M., Clare, J., Rundle, K., Seeland, J. (eds) *Contract Cheating in Higher Education*. Palgrave Macmillan, Cham. https://doi.org/10.1007/978-3-031-12680-2_17

Reviewer Comment 4: I suggest you consider the absence of findings a finding, and explaining what is will yield stronger future research and implications.

Our Reply: The absence of significant findings can provide valuable insights by revealing gaps in the literature. These gaps can then be used to guide future research and improve academic integrity.

Reviewer comment 5: Please consider connecting the findings to the research questions. I also recommend potential elaboration.

Our reply: We have expanded on the findings pertaining to the research questions and additionally provided potential explanations.

Thank you

Competing Interests: No competing interests were disclosed.

Reviewer Report 20 August 2024

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The paper clearly stated the importance of the need for this wide literature review of Plagiarism and Cheating in Higher education institution.

The researchers did very wide literature scanning and convinced by the centric issue and its future influencing on the skills and the performances of the generation of students that uses the affordance of technology smart tools, they provide the high scale of the phenomena of cheating and Plagiarism at HEIs across the globe.

The spread of such phenomena is well expressed and well examined along with this paper.

The discussion section well detailed the phenomena as well as the urgent need to find some new directions so as to connect between the theoretical versus practical knowledge construction, so

that academic knowledge construct will be better realize as relevant and worth for upload the self effectiveness for the promotion of livelihood.

Are the rationale for, and objectives of, the Systematic Review clearly stated?

Yes

Are sufficient details of the methods and analysis provided to allow replication by others?

Yes

Is the statistical analysis and its interpretation appropriate?

Yes

Are the conclusions drawn adequately supported by the results presented in the review?

Yes

If this is a Living Systematic Review, is the 'living' method appropriate and is the search schedule clearly defined and justified? ('Living Systematic Review' or a variation of this term should be included in the title.)

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Integrity & creativity; Creativity in teachers' education; Online learning and teaching

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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