UNIVERSITY OF LONDON | CENTRE FOR ONLINE & DISTANCE EDUCATION

Project Report:

Managing Academic Integrity in Online assessment

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1. An outline of the document (not an index) but a diagram of the document that shows how the parts inter-relate and explains what can be found in each part

Executive summary

The purpose of this document is to provide a project report on the 'Managing Academic Integrity in Online assessment' CODE project. The project focused on enhancing academic integrity in higher education (HE), particularly in the context of online assessment. It explored practices that undermine academic integrity and investigated how assessment design can prevent such issues.

Objectives included identifying current management strategies, evaluating their effectiveness from project stakeholder perspectives, aligning them with sector-wide practices and promoting innovative assessment design. Research questions examined how assessment strategies are developed to support academic integrity, the role of commercial solutions in supporting this goal, and emerging best practices across the HE sector. The outcomes were an evidence-based understanding of effective approaches, a mapping of innovative practices, to support ongoing improvement in academic integrity management.

The following table provides an overview of the structure of the document

Background and objectives Context Scope and research questions
Methodology
Literature Review Academic misconduct and strategies to support academic integrity
Stakeholder insights Perspectives from academics, admins, and tech providers
Findings and Discussion Emerging themes, Al challenges, assessment redesign
Recommendations

Table : **Report structure**

SUMMARY OF RECOMMENDATIONS FOR PROMOTING ACADEMIC INTEGRITY

WORK IN PARTNERSHIP WITH STUDENTS

Involve students in integrity-related discussions and decision-making. Promote student-ied initiatives like integrity ambassadors and peer mentoring. Fester a coilaborative, trust-based culture of ethical academic practice.

PROTECT THE REPUTATION OF QUALIFICATIONS

Uphoid clear, consistent academic misconduct policies.
Ensure assessments reflect true student learning and achievement. Engage employers and prefessional badies to reinforce qualification value.

PROVIDE STUDENT SUPPORT

Address root causes of misconduct (e.g, stress, confusion) with strong support systems.
Offer resources such as writing centres, ethics workshops, and mental health services.

REVIEW AND REVISE ASSESSMENT POLICIES

Regularly update policies to address emerging issues like Al and online assessments.
Define clear, consistent penaalties for misconduct,
Integrate technological developments into policy frmeworks.

FOCUS ON ASSESSMENT REDESIGN

Implement: Authentic assessments (real-world applications)
Diversified methods (e.g., projects, oral exams, portfolios)
Formative assessments (ongoing feerlback)
Alighment with professional standards (ensurmg mdustry relevance)

CONDUCT FURTHER RESEARCH

Investigate evolving threats (e.g, contract cheating. Al misuse)
Evaluate policy effectiveness and emerging assessment models.
Invest in proactive research to adapt quickly to new challenges

CONTENTS

Background

The shift to online assignment in higher education (HE) has generated debates on the management of academic integrity (Farrell 2020). Academic Integrity is based on commitment, even in the face of adversity, to six fundamental values: honesty, trust, fairness, respect, responsibility, and courage (Fishman, 2014). . Academic misconduct refers to practices that are not in keeping with these values and this commitment. The longitudinal evaluation between 2020 and 2023 of online assessment in the University of London and its partner universities in global programmes have evidenced the importance of understanding and managing academic integrity from equal perspectives of security and assessment design. This project aimed to support these areas of concern and development.

Academic integrity is important in (1) addressing issues of unacceptable academic practice in students, such as plagiarism or collusion and deterring academic offences and (2) in re-evaluating how we design and use assessment to promote student learning and skills. There are two dominants threads in contemporary debates which are sometimes complementary and at other times in tension. The first provides technological and practical safeguards to protect academic integrity such as moderation of marking, text matching software, and the use of mechanisms e.g. vivas to verify student academic work. The second involves promoting creative design of authentic assessment and clear guidelines to students about expectations around academic integrity good practice e.g. referencing and plagiarism. In addition, building students' understanding of why ethical approaches to assessment seems to have a strong relationship to both threads.

The longitudinal evaluation from 2020 to 2024 of online assessment in the University of London and its partner universities in global programmes have evidenced the importance of understanding and managing academic integrity.

Aims and scope

This project aimed to support these areas of concern and development by investigating HE practices that support academic integrity, both from perspectives of security and assessment design.

The scope of the project was to investigate practices that are not in keeping with the values of and commitment to academic integrity: i.e., collusion, plagiarism, contract cheating, impersonation. The team explored existing evidence on management of academic integrity in online assessment and how institutions through learning, teaching and assessment design can develop assessment plans that are resistant to academic offences. The project mapped innovative practice in learning design that mitigates against assessment abuse.

Objectives

The objectives of the project were:

1. to establish what current approaches to the management of academic integrity in online assessment are being used;

2. to evaluate how strengths and weaknesses of approaches are perceived by key stakeholders;
3. to investigate how these approaches match to those used in the sector to develop assessments that are resistant to academic offences;
4. to support innovation in programme assessment design by producing a mapping of good practice and recommendations for the next period;
5. to provide expertise and training to support enhancement with target audience academic and professional colleagues in the University of London and federated institutions.

Research questions

We attempted to answer these research questions:

1. How do programme teams develop assessment strategies and implement assessment design to support academic integrity?
2. How contemporary commercial solutions support academic integrity and empower academics to redesign assessment?
3. What are the emergent paradigms of good practice in managing academic integrity in online assessment in the HE sector? In addition, what do these reveal about academic practice in this area?

Expected impact

The project aimed to provide an evidence based understanding of approaches to management of academic integrity in online assessment. In addition, to map innovative practice in learning design that mitigates against assessment abuse.

Methodology

Our methodological approach comprised :

1. a literature search on management of academic integrity
2. investigation of contemporary commercial solutions (2 interviews with technical providers)
3. 12 interviews with (1) academics in UK and international institutions that employ technologies and tools to support academic integrity, (2) senior managers and (3) staff with responsibilities in the area.
4. a thematic analysis methodology was employed to systematically identify and analyse key themes emerging from the interview data.

We acknowledge the use of AI tools to assist in triangulating findings from non-AI data analysis. AI was not used as the primary method of analysis but served to enhance validation of results. All interpretations and conclusions remain the responsibility of the research team.

An overview: what research says about academic integrity

In order to address the research questions, a systematic literature review was carried out. The protocol for the literature review was to collect, analyse and summarize, from different sources, the existing information regarding academic integrity published until May 2023, focusing on the information associated with academic misconduct, how to prevent it and how is currently being managed.

RQ1. What are the forms of academic misconduct and solutions offered that occur in online learning practices?
RQ2. Which factors are associated with the forms of academic misconduct in online learning practices?
RQ3. What are the efforts that have been and can be made to reduce students' academic offences?
RQ4. What are the directions for future research into academic integrity?

In order to address the aforementioned questions, a systematic literature review was carried out. The protocol for the literature review was to collect, analyse and summarise a range of peer reviewed sources, published until May 2023, using a comprehensive set of keywords.

The literature review highlighted the importance of academic integrity in online education and the need for comprehensive strategies to prevent and address academic misconduct. By understanding the factors contributing to misconduct and implementing evidence-based interventions, institutions can work to maintain the integrity of their academic programmes and maintain the credibility of their degrees.

Mitigating academic misconduct

Overall, a combination of educational initiatives, technological solutions, and regulatory measures can help mitigate the occurrence of academic misconduct in online learning practices. Solutions offered to address academic misconduct in online learning practices range from punitive regulatory frameworks that attempt to manage academic integrity issues to approaches that attempt to engage the students in dialogue about academic integrity to enhance understanding of related issues.

The former include:

1. Use of plagiarism detectors: Institutions can employ plagiarism detection software to identify instances of plagiarism in student work.
2. Implementation of online Proctoring Services: Online proctoring services can be used during examinations to monitor students and detect any instances of cheating or impersonation.
3. Development of academic integrity policy: Institutions can develop academic integrity charters that outline the values and expectations of HE and establish guidelines for addressing academic misconduct.

4. Regulations and penalties: Clear regulations can be established that define what constitutes academic misconduct and outline penalties for offences. These penalties may include warnings, resubmission of work, academic probation, or expulsion.

The latter focus on:

5. Mandatory academic integrity 'training': Institutions can require students to take courses on academic integrity to educate them about ethical standards and proper research and referencing skills.
6. Student engagement and awareness: institutions can engage students in discussions about academic integrity and promote a culture of honesty and accountability. Initiatives such as student union events and academic integrity ambassadors can help raise awareness among peers.

Academic conduct factors

Based on our literature review, there are several factors that contribute to the proliferation of academic misconduct:

Environmental factors

- Assessment methodologies: approaches, including format of exams and assignments, can influence the likelihood of academic misconduct. For example, the use of online assessments without proper invigilation may provide opportunities for academic misconduct.
- Timeframe given for assessments: timeframes given to students to complete assessments can affect the temptation to engage in academic misconduct. Both wider and more limited timeframes have been argued to influence the likelihood of misconduct.
- Implementation of assessment for learning: assessment for Learning, which prioritises promoting students' learning, can influence student engagement and reduce the temptation to cheat.

Individual factors

- Age and transition to HE: younger students, particularly those transitioning to HE, may experience a lack of confidence and pressure to succeed, which could increase the likelihood of engaging in academic misconduct.
- Nationality and language proficiency: international students, especially those with limited proficiency in the language of instruction, may face challenges in understanding academic expectations and policies, potentially leading to unintentional misconduct.
- Intellectual ability: variations in intellectual ability among students may influence their susceptibility to academic misconduct, with some students resorting to dishonest behaviours due to perceived inadequacy.
- Social pressure: pressure from peers or family members to succeed academically may contribute to students' decisions to engage in misconduct, such as cheating or plagiarism.

These factors interact to create a complex landscape in which academic misconduct occurs in online learning practices. Understanding these factors can inform the development of strategies and interventions to promote academic integrity and mitigate the occurrence of misconduct.

Addressing academic offences

Several efforts have been and can be made to reduce students' academic offences in online learning practices:

1. Institutional initiatives:

- Mandatory academic integrity courses: institutions can require students to complete courses on academic integrity, which aim to educate them about ethical principles, proper research and referencing skills, and the consequences of academic misconduct.
- Optional academic integrity courses: institutions can offer optional courses or workshops focusing on plagiarism, citation, and academic integrity to supplement mandatory courses.
- Institutional activities: conferences, seminars, and formal or informal meetings can provide opportunities for students and staff to discuss academic integrity issues and reinforce the importance of ethical behaviour in academia.
- Student union activities: student unions can organize activities and campaigns to raise awareness about academic integrity among peers and foster a culture of honesty and accountability.

2. Assessment design:

- Diverse assessment methods: using a variety of assessment formats, such as open-ended questions and project-based assignments can reduce the likelihood of academic misconduct by making it more difficult to cheat or plagiarise.
- Authentic assessment: designing assessments that reflect real-life problems and require students to apply their knowledge in practical contexts can promote learning and discourage cheating.
- Formative assessment: providing opportunities for formative assessment and feedback throughout the course can help students develop their understanding and skills over time, reducing the temptation to engage in misconduct.

3. Regulatory measures:

- Regulations: institutions can establish clear regulations outlining what constitutes academic misconduct and the consequences of offences. Penalties may range from warnings, resubmission of work, to academic probation, or expulsion.
- Academic integrity charters: developing academic integrity charters that articulate the values and expectations of HE and provide guidelines for

addressing academic misconduct can promote a culture of integrity within institutions.

4. Technological solutions:

- Plagiarism detection software: institutions can use plagiarism detection software to identify instances of plagiarism in student work and deter students from engaging in academic misconduct.
- Online proctoring services: online proctoring services can be employed during examinations to monitor students and detect any instances of cheating or impersonation.
- e-Services for academic integrity: developing e-services to detect and combat academic misconduct, such as tools to compare student work against AI-generated texts, can help institutions uphold academic standards.

By implementing these, institutions can work to reduce students' academic offences in online learning practices and promote a culture of academic integrity within HE.

Conclusion of the literature review

Academic integrity is a complex concept with multiple definitions across institutions and countries. While there is no single agreed-upon definition, honesty and ethical behaviour are common factors emphasised in most definitions.

Distance and online learning environments present unique challenges and vulnerabilities to academic integrity, including increased opportunities for plagiarism, cheating, collusion, and impersonation. The rise of contract cheating services and the use of generative AI tools further exacerbate these threats. Various environmental and individual factors contribute to academic misconduct. Environmental factors include assessment methodology, timeframes for assessments, and the implementation of assessment for learning. Individual factors include age, nationality, intellectual ability, and social pressure.

Institutions employ a range of strategies to prevent and address academic misconduct, including initiatives to inform and communicate institutional strategies and regulatory measures, assessment design and technological solutions. These efforts aim to promote a culture of academic integrity and deter students from engaging in dishonest behaviour.

There are several directions for future research into academic integrity, including evaluating the effectiveness of educational initiatives, exploring the impact of assessment design, examining cultural and contextual factors, understanding student perspectives, assessing policy frameworks, and addressing emerging challenges and technologies.

While progress has been made in addressing academic misconduct, ongoing challenges remain, particularly with the emergence of new technologies, mainly generative AI tools. In this climate of uncertainty about the impact of AI on assessment practice, continued research, collaboration, and innovation are essential to promote and uphold academic integrity in online learning environments.

This literature review has included research published up to May 2023. it is important to note subsequent developments may not be reflected in the review, considering the rapidly evolving nature of the field.

The complete text of this literature review (including references) is in Appendix 1.

Representative voices: insights from a selected sample

The decision not to present analytical write-ups for all 14 interviews was a conscious one. Instead, the team selected a representative sample, two technical providers, three academics, and two administrative staff—whose perspectives reflect broader themes and perceptions observed across the entire dataset. These interviews provide an insight into key trends in our data while keeping the discussion focused. The 'Findings' section of this report presents the findings based on data from all interviews.

Each interview write-up includes a summary of responses to the interview questions, highlighting key points identified, an overview of approaches to integrity (inc. AI), and selected characteristic quotes from the interviews. All data have been anonymised to ensure confidentiality.

Technical providers

'The pandemic really made things interesting because it forced everyone to digitise'.

Interviews were held with two senior managers of digital assessment platforms, to gather their understandings of major issues affecting online assessment, trends in academic integrity and misconduct, and the impact of AI on assessment design.

Both recognised that the pandemic starting in early 2020 had forced assessment online in sudden and unanticipated ways, with a wide range of outcomes in terms of and academic conduct and grade inflation, deriving from an equally wide range in competence in university staff in the field of assessment. Progressive management of change in assessment had allowed a wider range of media to be used such as videos and audio, and only digital assessment platforms could support them.

Both acknowledged that academic misconduct had increased in some programmes and in some institutions, but not in all. In some places assessment design had mitigated the risks from contract cheating in particular. 'Assessment design is at the core of this problem' is a core belief in one of the interviews, and had led it to develop expertise in assessment design as a service to university clients. The overall framework of ideas that should guide practice was proposed as: "The most important thing is to take a holistic view of academic misconduct and to look at it from an education perspective, a design perspective, a prevention perspective and to also have some detection measures".

Online proctoring of summative assessment events had been carried out in some places in very harsh ways that led to student discomfort. A live human presence in the proctoring system was found to be reassuring to students.

The threats and opportunities from generative AI systems such as ChatGPT were high on the agenda for both interviews. The issue of authorship when using generative AI both legitimately and illegitimately was best addressed through assessment design. However issues of academic staff workload and staff literacy in the field of assessment were major barriers to the necessary developments in practice.

In the first interview, the discussion revolved around the impact of the pandemic and AI on academic integrity and assessment practices. The interviewee, a company founder, emphasised the need for adapting assessment designs appropriately for online environments to mitigate academic misconduct risks. He stressed the insufficiency of traditional detection solutions (like Turnitin) in addressing complex issues like contract cheating, facilitated by generative AI. The interviewee advocated for proactive measures, including educating and supporting both students and staff.

The second interviewee whose company promoted an assessment platform, discussed strategies for maintaining academic integrity in online assessment. The interviewee discussed the challenges of detecting AI authorship and collusion in remote assessments, emphasising the importance of assessment redesign and less invasive proctoring methods. The platform approach involved supporting staff primarily, offering tools like a similarity detection checker and incorporating AI into their platform for originality detection and proctoring. They highlighted the significance of adapting to institutional needs and staying informed about AI trends to address the evolving landscape of academic integrity effectively.

While both interviews addressed similar themes of academic integrity and AI's impact on assessments, they offered different perspectives and strategies. The first interview emphasised the importance of proactive measures and customisation, while the second interview showcased the platform's approach focusing on supporting staff and incorporating AI to address emerging challenges in integrity.

Both interviews:

(a) addressed the impact of the pandemic and advancements in artificial intelligence (AI) on academic integrity and assessment practices. They acknowledged the challenges posed by the shift to online assessments and the rise of technologies like generative AI in facilitating academic misconduct.
(b) emphasised the importance of proactive measures in maintaining academic integrity, such as educating, preventing and supporting both students and staff.
(c) recognised the need for comprehensive solutions tailored to the specific needs of each institution.
(d) touched upon the role of technology, including plagiarism detection tools like Turnitin and originality detection solutions, integrated into assessment platforms to address academic misconduct.
(e) discussed the limitations and effectiveness of various technological approaches and the importance of staying informed about AI developments to adapt to the evolving landscape of integrity.

Overall, both interviews highlighted the importance of addressing academic integrity issues through a multifaceted approach that considers the complexities of online assessments and leverages technology to support prevention, detection, and education efforts.

In the interviews, several limitations of various technological approaches to addressing academic misconduct were highlighted:

- False positives and negatives: there are limitations of traditional plagiarism detection tools like Turnitin as they may produce false positives or false negatives. These tools may flag properly cited content as plagiarised or fail to detect instances of plagiarism, especially if the content is paraphrased or not in their database.
- Inability to detect sophisticated cheating methods: the interviews suggested that traditional detection solutions like Turnitin are insufficient for addressing complex issues like contract cheating facilitated by generative AI. This limitation implies that these tools may struggle to detect instances of academic misconduct involving advanced technological methods.
- Privacy concerns: the second interview indicated privacy concerns associated with proctoring solutions, particularly AI-based proctoring software that monitors students' behaviour through webcams and microphones. This limitation underscored the potential infringement on students' privacy rights and the resulting student discomfort or anxiety during assessments.
- Resource-intensive: the second interviewee also mentioned the resource-intensive nature of AI proctoring, which may require human intervention for reviewing flagged incidents. This limitation suggests that implementing and sustaining AI proctoring solutions may pose challenges for institutions in terms of resource allocation.
- Technical challenges and compatibility issues: technical challenges and compatibility issues could be seen as limitations of implementing technological solutions like proctoring software. These challenges may include compatibility issues with existing learning management systems or hardware requirements that students may not meet.

Overall, the interviews indirectly suggested several limitations of technological approaches to addressing academic misconduct, including issues related to effectiveness, privacy, resource requirements, and technical challenges. These limitations underscore the importance of considering the broader implications and practical considerations when implementing technological solutions in academic settings.

Effectiveness of approaches

Based on the interviews, the effectiveness of various technological approaches to addressing academic misconduct was discussed:

- Plagiarism detection tools: While traditional plagiarism detection tools like Turnitin are widely used in the sector, the interviews suggest their limitations in effectively addressing complex issues like contract cheating facilitated by generative AI. However, these tools still play a role in detecting more straightforward instances of plagiarism and promoting awareness of academic integrity.
- Proctoring solutions: The interviews highlighted the growing demand for proctoring solutions, including both human proctoring and AI-based proctoring. While AI proctoring may raise privacy concerns and require human intervention for reviewing flagged incidents, it is still considered a useful tool for deterring and detecting academic misconduct during remote assessments.
- Originality detection tools integrated into assessment platforms: the interviews mention the development of originality detection tools incorporated into assessment platforms (like Inspera). These tools aim to detect similarities in academic work across

various languages and identify AI authorship, suggesting their effectiveness in addressing emerging challenges related to academic integrity.

- Adaptation to institutions' needs: both interviews emphasised the importance of adapting technological solutions to institutions' specific needs and contexts. By listening to the needs of clients and staying informed about AI trends, companies aim to provide effective tools that align with institutions' goals and priorities in maintaining academic integrity.

In conclusion, while technological approaches have limitations, the interviews suggest that they still play an important role in addressing academic misconduct by promoting awareness, deterring cheating, and detecting instances of misconduct. Effectiveness may vary depending on the specific technology used, how well it aligns with institutions' needs, and the extent to which it addresses emerging challenges in academic integrity.

Academics

FA

Key points

The interview with FA covered various aspects of academic integrity and assessment practices, particularly in the context of online learning. The key points are presented below:

- Importance of academic integrity: FA emphasised the significance of maintaining academic integrity, acknowledging both the need for rigorous checks against cheating but equally the importance of trust in students.
- Student views and support: FA discussed student perspectives on academic integrity, noting their desire for clear communication, support, and measures to minimise cheating while preserving the reputation of their qualifications.
- Transition to online assessment: FA's institution is moving away from traditional exam halls, opting for online assessment methods. FA mentioned working with a technical provider for less invasive proctoring solutions.
- Adapting assessment practices: There was ongoing discussion about adjusting assessment methods, especially in disciplines like finance and accounting, to suit the online learning environment better.
- Trust in assessment: FA underscored the importance of building trust in assessment processes and suggested that more research is needed in this area.

Overall, the interview highlighted the evolving landscape of assessment practices in response to online learning and the ongoing efforts to maintain academic integrity while adapting to new modes.

FA emphasised the importance of trust in students, suggesting that it should be at the core of academic integrity. They noted that while there may be cases of cheating, most students are law-abiding and strive to be good citizens. FA suggested that the current approach to assessment often assumes that all students are potential cheats unless proven otherwise, and

they advocated for a shift towards fostering trust in students as the foundation of academic integrity.

FA recommended re-evaluating the approach to assessment to foster trust in students. They suggested treating students as law-abiding individuals by default and ensuring that communication around assessment is clear and supportive rather than accusatory. Additionally, they argued for implementing strict checks to detect and address cheating while also providing support and opportunities for students to demonstrate their abilities in an authentic manner.

FA saw the future of assessment in distance education moving away from traditional exam halls and towards more flexible, technology-enabled approaches. They mentioned working with a platform that offers light-touch proctoring solutions, indicating a shift towards online proctoring but with a less invasive approach. Additionally, he suggested considering alternative assessment methods, particularly in disciplines like finance and accounting, where accreditation requirements may necessitate more traditional exam formats. Overall, he emphasised the importance of evolving assessment practices to better suit the needs and circumstances of distance education students.

FA mentioned that his institution is working with Uniwise, a platform that offers light-touch proctoring solutions. He described this approach as less invasive, suggesting that it may be sufficient for most purposes. However, he also acknowledges the possibility of using electronic proctoring solutions in certain disciplines, such as finance and accounting, where accreditation requirements may demand stricter measures.
The platform offered light-touch proctoring solutions by providing less invasive methods for monitoring students during exams. This involves using software that allows for monitoring without requiring extensive oversight or intrusive measures, such as facial recognition or constant video monitoring. Instead, it may involve features like browser lockdowns, periodic check-ins, or AI-based monitoring to detect suspicious behaviour without overly invading students' privacy or making them feel uncomfortable.

These quotes capture some of the key points and perspectives FA shared during the interview.

"Students want to have a communication around assessment that isn't accusatory."

"How do we get to a position where we can say trust is at the core of academic integrity?

"We believe in some disciplines you should actually think about whether you wanna change your assessment completely and get rid of exams."

FA believes that AI will influence assessment practice, particularly in the realm of distance education. He sees AI as a revolutionary force that will fundamentally change the way assessments are conducted and evaluated. FA acknowledged that it is hard to imagine what life was like before AI and emphasised the importance of integrating AI into teaching to prepare students for the workplace. He views AI tools, such as Grammarly and DeepL, essential for future use and believes that banning them is not a viable option. Instead, he suggests focusing on helping students become critical users of AI.

ED

Main points

- Assessment changes: ED discussed the changes in assessment practice, particularly in response to the availability of AI tools like ChatGPT. He mentioned debates about incorporating questions that involve running code through AI and discussing the improvements it offers.
- Academic integrity: ED reflected on the use of tools like Grammarly and Turnitin, raising questions about whether they genuinely support students or enable them beyond their capabilities, potentially compromising academic integrity.
- Policy changes: ED touched on potential changes in assessment policy due to the rise of AI applications and the shift from in-person to remote exams, highlighting the need to balance academic standards with evolving technologies.
- Student views: ED provided insights into student views on assessment and academic integrity, noting low rates of academic misconduct and positive responses to study skills support, particularly among postgraduate students.
- Keeping up-to-date: ED mentioned being part of a university working group focused on AI tools, indicating a proactive approach to staying updated with current practices.

Overall, ED's responses emphasised the importance of adapting assessment practices to technological advancements while maintaining academic integrity and ensuring student support. He also highlighted the significance of ongoing dialogue and collaboration in addressing challenges.

According to ED, student views on assessment and academic integrity appear to be generally positive. He mentioned that:

- In postgraduate modules, less than 2% of students are flagged for potential plagiarism, and those who are generally respond well to academic support.
- Postgraduate students, especially those new to education or whose first language isn't English, respond positively to study skills support.
- Very few cases result in students committing further academic offenses after receiving study skills support.
- In undergraduate modules, probably no more than 3% of students are flagged for potential plagiarism, with around 1.5% offered study skills support.

Overall, ED suggested that while there may be some instances of academic misconduct, the majority of students respond well to support and guidance, and the number of cases is relatively low compared to the overall student population.

Here are some characteristic quotes from ED's responses in the interview:

On the use of AI tools in assessment:

"There's been a debate on whether we should include a question where the student runs a piece of code through AI and then discusses what improvement AI has offered, and then, you know, argue why that would be a better solution or how that may not be a better solution."

On adapting to technological changes:

"The challenges we've seen are more cases of academic misconduct, and that would be as a direct impact of the move from in-person examinations to the end-of-module assessment."

AI and assessment

ED believes that the impact of AI on assessment is not negligible and warrants careful consideration. He acknowledges the debate surrounding the use of AI tools in assessments, particularly in how they can enhance understanding and improve solutions. However, he also recognizes the potential challenges related to academic integrity that may arise from the use of AI in assessments. ED emphasised the importance of maintaining academic standards while exploring the possibilities that AI tools offer in the assessment process.

ED makes several points regarding AI in assessment in computing:

- Debate over AI tools: ED discussed the ongoing debate surrounding the use of AI tools in assessments, particularly in computing education. There is consideration about whether to include questions that require students to engage with AI tools to enhance their understanding of concepts.
- Potential benefits: He acknowledged that AI tools can potentially aid students in understanding questions better by allowing them to run code through AI and analyse the improvements suggested by the AI.
- Concerns about academic Integrity: ED highlighted the concern regarding maintaining academic integrity when utilizing AI tools in assessments. There's a recognition that students using AI tools should not exceed their capabilities and that the tools should be used as aids rather than enabling dishonest behaviour.
- Adapting to technological advances: ED suggested that as with any technological advancement in academia, the challenge is to rise to the occasion and find ways to integrate these tools into assessments while upholding academic standards.

Overall, ED acknowledges the potential of AI tools to enhance assessment processes in computing education but emphasizes the need for careful consideration and vigilance regarding their implementation to maintain academic integrity and standards.

DO

Main points

The main points from DO's interview were :

- Attendance at webinars and conferences: DO attended various webinars and conferences to stay updated with sector developments, particularly in academic integrity and assessment practices. She follows key researchers and institutions to keep abreast of relevant information.
- Institutional actions on academic integrity: DO discussed institutional efforts to address academic integrity issues, including the development of academic integrity materials for an online induction course aimed at new students. The goal is to raise awareness and set clear expectations regarding academic integrity.

- Gray areas in academic integrity: DO acknowledges the existence of grey areas in academic integrity, such as collusion, and emphasizes the importance of clarifying expectations for students. The focus is on educating students about what constitutes academic integrity and the potential implications of misconduct.
- Use of AI in Assignments: Although Domenica hasn't personally used ChatGPT for assignments, she acknowledges its potential utility. There's a mention of considering its use in the future, but concerns about potential outcomes are also acknowledged.

DO's views on impact of AI on assessment

Overall, DO's interview highlights the importance of proactive institutional measures to promote academic integrity, the need for clear communication with students regarding expectations, and ongoing efforts to stay informed about emerging issues in the field.

DO recognizes the potential impact of AI on assessment, particularly in detecting academic misconduct such as collusion. She mentions concerns about students using generative AI and other technologies to aid in assessments, but emphasizes that her institution's assessments, which are more practical and less focused on written elements, may be less susceptible to such issues. However, she acknowledges the importance of staying vigilant and ensuring that students understand what constitutes academic integrity, especially in the context of emerging technologies like AI.

DO acknowledges the potential risks associated with AI, particularly in the context of academic integrity and assessment. She expresses concerns about students potentially using generative AI and other technologies to facilitate academic misconduct, such as collusion. While she recognizes these risks, she also emphasizes the importance of staying informed and proactive in addressing these issues, such as by updating policies and educational materials to promote awareness and uphold academic integrity standards.

Some of the quotes that illustrate these views:

"I think for the wider college, when this sort of assessment bills has passed, I think there'll be lots of conversations and lots of lessons learned and lots of ideas of what might be done in preparation for the next year."

"So the reports that we've had are not necessarily related to generative AI, but the things that have come through just around collusion and we've identified across the college that students might be working on things together or taking an open book exam sat around their kitchen table or, you know, these types of things which fall into a collusion type area."

Administrative staff

CP

Main points

The main points from CP's interview were :

Throughout the interview, CP referred to academic integrity, particularly in the context of technological advancements like AI and the challenges the advancements pose:

- Increased challenges with online exams: CP highlighted the challenges posed by the transition to online exams, particularly in detecting and addressing academic misconduct. The shift has led to an increase in similarity among exam responses, often stemming from shared notes and resources among students.
- Student responses to allegations: CP discussed how students respond to allegations of academic misconduct, noting that many students argue they are using their own notes, which have been shared across cohorts. This has prompted the university to reconsider its response and communication strategies regarding academic misconduct.
- Challenges of technological advancements: CP acknowledged the difficulty of keeping pace with technological advancements like AI. They expressed concerns about the potential misuse of AI tools by students to cheat and the challenges institutions face in detecting such misconduct.
- Need for regulation: CP emphasised the need for governmental regulation to address the challenges posed by technological advancements and academic misconduct. They suggested that regulation could help mitigate the potential misuse of AI tools and maintain academic integrity.
- Reflections on future practices: CP reflected on the future of academic integrity practices, acknowledging the dynamic nature of the field and the importance of continually adapting to new challenges. They express hope for improved detection tools and strategies to address academic misconduct effectively.

Overall, CP's interview underscored the complexities and evolving nature of academic integrity in the face of technological advancements and the importance of proactive measures to maintain the integrity of academic qualifications.

CP expressed several views about the impact of AI on assessment practices:

- Increased complexity and challenges: CP acknowledges that AI introduces complexities and challenges to assessment practices. They note that the use of AI tools by students makes it difficult for institutions to detect academic misconduct effectively.
- Enhanced cheating opportunities: CP highlights the concern that AI makes it easier for students to cheat by using sophisticated tools to assist them in producing academic work. This presents a threat to the integrity of assessments and academic qualifications.
- Lack of definitive proof: CP mentions the challenge of obtaining definitive proof of academic misconduct involving AI tools. They note the difficulty in distinguishing between original student work and work generated with the assistance of AI, which complicates the investigation process.

- Need for response strategies: CP emphasised the importance of developing response strategies to address the challenges posed by AI in assessment practices. They mentioned the establishment of working groups and the need for proactive measures to mitigate the risks associated with AI-enabled academic misconduct.
- Call for regulation: CP advocates for governmental regulation to address the impact of AI on assessment practices. They suggest that regulation could help institutions better respond to the challenges posed by AI and maintain the integrity of academic qualifications.

Overall, CP's views reflect concerns about the disruptive influence of AI on assessment practices and the need for proactive measures and regulatory frameworks to safeguard academic integrity.

These quotes provide insights into CP's perspectives on various aspects of academic integrity and the impact of AI on assessment practices:

"I think that part of this discussion has concluded that we can't really take action without definitive proof."

"Certainly, the confidence in academic integrity has taken a hit somewhat over the last few years."

"We need to let students know that if what you are producing in an online exam is based on your notes, then is it really your own work if those notes have come from your teaching centre and have clearly been shared across the board across the cohort?"

JS

JS' responses cover several main points:

- Use of Generative AI: JS acknowledged that generative AI tools are being used by students, driven by curiosity and a perceived advantage. He emphasised the need for student responsible use and understanding of these technologies.
- Assessment policy and frameworks: JS discussed the need to revisit assessment policies and frameworks to accommodate the use of generative AI tools in academic work. This includes a shift towards more formative feedback and a re-evaluation of assessment methods.
- Confidence in academic credentials: despite technological advancements and challenges, JS expressed confidence in the stability and respect of university credentials. He believed that universities are adaptable and that the quality of education and the credential is more than just the final assessment.
- Student perspectives: JS shared insights from conversations with students, highlighting diverse viewpoints. Some students see generative AI as a leveller, helping them compete, while others express concerns about equity and access to technology.

AI

JS believes that AI, particularly generative AI, is a key factor in the academic landscape. He acknowledges its widespread use among students and recognises its potential to impact

various aspects of education, including assessment policies and frameworks. However, he emphasised the importance of responsible use and understanding of AI tools, advocating for a balanced approach that integrates these technologies into education while maintaining ethical and pedagogical standards. He also expressed confidence in the adaptability of universities to navigate the challenges posed by AI, highlighting the need for conceptual, ethical, and pedagogical adaptation rather than merely keeping up with technological advancements.

Quotes that illustrate JS' views:

"If we're going to move to a position at the university in which we expect our students to use generative intelligence to do their work, and we teach them to use it in some way, shape or form, that's appropriate to the discipline or the task."

"I don't think it's necessary for our students to use the most, the latest, most cutting edge generative AI in order to get a good education at the university."

"I want them to play with them. I want them to use some things which are appropriate to their learning and their coursework so that they can learn the more cutting edge things when they have an opportunity to do so."

"But the educational operation of the university will always lag. We can't keep up, nor do I think we should necessarily try to keep up."

Findings

a. Changing perceptions of integrity?

The perception of academic integrity has evolved, influenced by technological advancements and shifting educational practice. While some interviewees (7/14) noted a rise in academic misconduct, others suggested that the core principles of integrity remain unchanged. However, the emergence of generative AI technologies has heightened concerns, leading to discussions on fostering a culture of trust rather than focusing solely on detection and punishment.

b. Trends in academic offences

There has been a widespread rise in the number of academic offences and an increased level of concern since COVID-19. According to two interviewees the rise in offences has been mainly with undergraduates and specifically with first year students. Some interviewees attributed this to easy access of generative AI, while others pointed to stress and a lack of awareness in the student body (e.g. naïveté) regarding what academic integrity really means. However one interviewee asserted there had been no big changes. The concern is now reinforced by the recent ease of access to generative AI.

The consensus was that simply countering misconduct through detection technology is insufficient; instead, efforts should focus on building awareness and trust, and assessment redesign. In relation to this view, one interviewee suggested that “an arms race in beating technology for cheating is not the way forward”. Two interviewees emphasised the centrality of building a culture of trust with students.

Explanations for changes.

Explanations for changes in the level of academic offences included stress in people’s lives with COVID19, and naïveté on students’ part about integrity in academic practice. One interviewee suggested ‘an arms race in beating technology for cheating is not the way forward’, and stressed the need to build trust with students and develop practice in using AI. Finally there was widespread assertion that redesigning assessment is core to the support of academic integrity.

c. Support and prevention

Universities have implemented varied support mechanisms, including plagiarism quizzes, dedicated discussion on AI websites , compulsory academic integrity ‘training’ modules, and access to Turnitin for students and staff. Some institutions have also adopted policies of leniency for first offences. Despite these efforts, there was widespread agreement that additional support and educational efforts are needed to reinforce academic integrity standards.

Balancing detection with support

An interviewee pointed out that institutions should not rely solely on AI for detecting academic misconduct but should also focus on providing support and building a culture where students feel comfortable seeking help. They advocate for addressing the root causes of academic dishonesty rather than solely focusing on detection and punishment.

Student identity

In programmes with a small number of students, instructors know each student individually, and the risk of academic malpractice was perceived to be low. In such academic settings, where tutors have personal knowledge of their students, instances of misconduct may be mitigated through direct engagement and trust. However, in large-scale distance and online education, maintaining academic integrity presents challenges, requiring robust technological solutions and scalable assessment strategies.

In other contexts, government-issued ID was required, while one system relied on online proctoring from a commercial provider. Another system used a high level of continuous assessment, making it easier to detect discrepancies caused by academic malpractice in the final assessment.

d. Assessment redesign

Interviewees highlighted the need for assessment policies and practice to evolve to address challenges posed by generative AI. Some institutions are engaging academic communities in

discussions on authentic assessment, emphasising formative feedback, and exploring assessment methods and formats that make AI misuse less effective. Policy reviews are being conducted to align assessments with emerging technologies.

Identifying emerging trends

Staying abreast of emerging trends in assessment, including the use of AI and other technologies. By recognising these trends, universities can proactively explore how to integrate them into assessment design, while addressing associated challenges, such as maintaining academic integrity.

e. Identity assurance

Different approaches to identity verification were noted. In smaller programmes, where students are well-known to tutors, academic malpractice was perceived as a minor concern. In other institutions, identity verification involved government-issued IDs, online proctoring services, or continuous/periodic assessment strategies to track discrepancies in the students' work over time. However, there was some uncertainty regarding the full capabilities of generative AI in this context in a constantly changing landscape.

f. Text matching software and integrity

Reliance on text-matching software, such as Turnitin according to the interviewees, remains strong, but concerns were raised about its apparent limitations in detecting AI-generated content. Some institutions are reassessing their dependence on these tools and considering instead complementary strategies, such as restructured assessments and increased academic support.

g. AI

There was near universal understanding that generative AI applications such as ChatGPT were in the process of transfiguring many aspects of learning and teaching, including assessment.

1. Policy and regulatory challenges

Regulatory frameworks are struggling to keep pace with AI developments. The shift to online assessments has prompted an urgent need for policy updates, with calls for clearer guidelines on AI usage and its recommended role in student work. Interviewees stressed the importance of governmental regulation to prevent misuse and maintain academic integrity.

Policy changes

Interviewees reported that assessment policy has not been changed, and that it had not kept up with changes in the development of threats to academic integrity. It was reported by some that a process of change was now underway, and the academic community was being involved in support of policy development with initiatives for example promoting authentic assessment.

One interviewee referred to potential changes in assessment policy due to the rise of AI applications and the shift from in-person to remote exams, highlighting the need to balance academic standards with evolving technologies.

Student involvement

There was little evidence that students' perspectives on academic integrity had been gathered in recent times. Effective communication strategies were highlighted as a way to keep students informed about relevant issues. However, one interviewee noted that an upcoming Academic Conduct review would include student representatives.

2. Assessment Policies

There was a growing recognition that AI will be a fundamental part of education in the future, necessitating a balanced approach that includes both (a) detection mechanisms and (b) student education on AI's appropriate use. In response to these developments, Institutions are revisiting assessment policies to integrate AI tools responsibly.

Need for Institutional Protocols

The need to refine regulations and policies to address the use of AI and other nonhuman technologies in completing students' work has been highlighted in our findings.

The shift to online assessments has prompted a reassessment of existing regulations. However, existing regulations may not be sufficient in the face of AI-driven changes in assessment practices.

Our data highlighted the need to reassess assessment policies and frameworks to accommodate the use of AI tools in academic work. Regulation could help mitigate the potential misuse of AI tools while maintaining academic integrity. Interviewees stressed the importance of thoroughly understanding these tools before making institutional decisions.

Key considerations included:

- If using AI detection, agreeing on the AI detection score threshold that should prompt university action (always requiring careful investigation and interpretation). .
- Reevaluating assessment methods and shifting towards more formative feedback
- Amending regulations to explicitly reference AI tools.

3. Emerging trends and evaluation of AI tools

According to the interviewees, there was an emphasis on critically assessing AI-generated content and equipping students with the skills needed to evaluate and verify the output generated by AI tools. A related problem is how AI can be integrated into assessment design while maintaining academic integrity.

4. Reluctance in adopting AI detection tools

While AI detection tools are being explored, concerns persist regarding their reliability and scalability. Student anxiety about online assessments and the perceived value of their qualifications in an AI-driven landscape were also noted. Some institutions advocated for a balanced approach that does not rely solely on detection but also supports students in ethical AI use.

Keeping up to date with AI

Interviewees were cognisant of the importance of keeping up to date about academic integrity in assessment contexts, and AI in particular. There were a variety of means mentioned including conferences, websites (e.g. .JISC) and publications, and informal conversations with colleagues.

Confidence in reputation of qualifications

There was universal belief that the universities represented in the interviews had retained society's and student confidence in qualifications gained over the last 3 years. However it was said by some that attention would have to be paid in the next period to ensure this was maintained.

5. Impact on academic integrity

AI presents both challenges and opportunities for academic integrity. While concerns about increased cheating were expressed, proactive measures such as integrating AI into assessment design were seen as key to maintaining integrity. Interviewees recognised the necessity of incorporating AI literacy into curricula to ensure that students engage with these tools ethically. An interviewee highlighted the difficulty of addressing tools like Grammarly, which can assist students in improving their writing but also pose risks of misuse and cheating.

Inevitability of AI integration

8 interviewees claimed that AI is becoming increasingly integrated into assessment tools, with AI assistants and writing support features becoming standard in various educational platforms and software. This integration was likened by one interviewee to the "widespread use of spell checkers in web browsers and Microsoft Office applications".

Our findings indicate that while AI and other technological advancements pose new challenges to academic integrity, they also present opportunities for innovation in assessment and policy development. A proactive approach that includes assessment redesign, regulatory updates, and enhanced student support will be crucial in navigating this challenging landscape.

There is a strong belief that AI will have an impact on assessment, particularly in distance education. It is seen as a revolutionary force that will fundamentally change assessment practices, by integrating AI into teaching, both to prepare students for the workplace and to encourage the critical use of AI tools.

Discussion

The findings of this research highlight the complexities and evolving challenges of maintaining academic integrity in online assessment. The transition to digital assessment environments has introduced new risks for academic misconduct, necessitating a multifaceted approach to mitigating risks.

The study explored the emerging challenges and opportunities posed by generative AI tools. By considering AI as both a threat and an aid, the research proposed a framework for institutions to integrate AI responsibly.

Assessment design

A key theme emerging from the research is the role of assessment design in preventing misconduct. Institutions that have proactively redesigned their assessments, incorporating authentic and project-based assignments, have observed a reduction in contract cheating. This underscores the necessity of moving away from traditional examination models and towards more innovative and integrity-focused assessment strategies.

Technological solutions: a mixed blessing

Another theme was the effectiveness and limitations of technological solutions. While plagiarism detection software and online proctoring services play an essential role in maintaining academic integrity, their limitations, such as false positives, privacy concerns, and issues in detecting generative AI usage, indicate that reliance on technology alone is insufficient.

Comparison of stakeholder perspectives

The study contrasted the viewpoints of technical providers and university employees regarding academic integrity, revealing tensions between technological enforcement and pedagogical strategies. This dual perspective provided insights into how institutions can balance technology-driven and pedagogical approaches.

There was a difference in views between technical providers and university employees regarding academic integrity in online assessments. Technical providers we interviewed tended to emphasise the role of tools like plagiarism detection software, proctoring solutions, and AI-based originality checking software. However, they acknowledged the limitations of these tools, such as privacy concerns, false positives, and the challenge of detecting generative AI content. Their perspective was more solution-driven, focusing on improving technology to address academic integrity concerns.

In comparison, university employees we talked to, both academics and administrators, stressed the importance of assessment design, student engagement, and pedagogy in maintaining academic integrity standards. Many argued that over-reliance on detection technologies created a culture of surveillance rather than trust. They highlighted the need for

rethinking assessment strategies, such as moving towards authentic and project-based assessments, rather than solely focusing on technological enforcement.

Both groups recognised the challenges posed by AI and online assessment, focusing on technological enforcement and educational and structural reforms to promote integrity.

Table 1 presents a critical comparison of perspectives between technical providers and university employees on academic integrity issues. It highlights key areas of agreement, disagreement, and potential biases in each viewpoint.

Issue	**Technical providers' view**	**University employees' view**	**Critical analysis**
AI in assessment	Supports AI detection tools	Concerned about AI's fairness and ethical implications	Are AI tools being critically evaluated for reliability, or is there over-reliance?
Proctoring methods	Advocates remote proctoring	Views proctoring as intrusive and stressful for students	How can institutions balance integrity with student well-being?
Assessment design	Sees technology as solution	Advocates redesigning assessments to minimise misconduct	Is assessment redesign feasible at scale?

Table 1. Perspectives of technical providers and university employees

Students' role

The role of student support and engagement in fostering a culture of academic integrity is also crucial. Our findings indicate that students respond positively to clear communication regarding integrity expectations, formative feedback, and accessible academic integrity resources. However, gaps have been identified in engaging students in integrity discussions, suggesting that institutions should actively involve students in policy formulation and integrity initiatives.

AI disruption

The advent of generative AI has added another layer of complexity to academic integrity. While AI-powered tools present risks by enabling sophisticated forms of misconduct, they also offer opportunities to enhance learning and assessment methodologies. Institutions are now faced with the challenge of balancing the integration of AI in education while ensuring it does not undermine academic standards.

Institutional policies

Institutional policies and regulatory frameworks have not kept pace with technological advancements. Many institutions acknowledge the need for policy updates to explicitly address AI-related integrity issues, yet implementation remains inconsistent and slow. Future efforts should focus on refining regulations, increasing awareness among staff and students, and developing institution-wide strategies to uphold academic integrity in the face of emerging challenges.

Empirical insights from institutional practice

The study included interviews with key stakeholders (e.g., academic staff, administrative staff and technology providers), providing first-hand insights into the real-world implementation of academic integrity strategies. This qualitative approach added depth to the discussion, distinguishing it from more theoretical studies.

Policy and regulatory adaptation to AI

The research addressed the lag between institutional policies and technological advancements, proposing explicit regulatory updates for AI usage in assessments. This forward-looking aspect offers practical recommendations for academic institutions navigating the evolving landscape of online integrity.

Limitations

The study relied on interviews and qualitative analysis, which, may lack generalisability across different institutions and contexts. Our research primarily focused on institutional and technological viewpoints. Given that students are central to academic integrity, their perspectives on assessment fairness, AI usage, and support mechanisms could provide a more balanced understanding.

There is a risk of bias in the responses from technical providers and university employees, as each group may promote their preferred solutions (technology vs. pedagogy). However, we adopted a critical comparison of their motivations and potential conflicts of interest to add depth to the comparison.

Conclusion

Our study claims that that maintaining integrity requires a comprehensive set of strategies that includes assessment redesign, technological interventions, student engagement, and updated policy frameworks.

While technological tools such as plagiarism detection and proctoring services contribute to integrity enforcement, they are not infallible and must be complemented by pedagogical strategies that emphasize trust, transparency, and fairness. Assessment redesign emerges as a particularly effective measure, reducing opportunities for misconduct while promoting deeper learning.

The impact of generative AI on academic integrity introduces both difficulties and possibilities. Institutions must develop frameworks for responsible AI usage while equipping students with skills to critically engage with AI-generated content. The research suggests that policies should evolve to incorporate AI considerations explicitly.

Finally, institutional efforts must extend beyond enforcement to education and support. Creating a culture of academic integrity—where students, tutors and administrators collaborate to uphold ethical standards—will be key to sustaining integrity in the digital age. A balanced approach that integrates educational initiatives, staff training, and institutional policy development is required.

Further work

This study proposed solutions, such as assessment redesign and AI integration frameworks, but did not empirically test their effectiveness. Future research could pilot these approaches to measure their real-world impact on reducing misconduct.

Future work could also engage with ethical concerns, such as bias in AI detection tools, or student privacy in proctoring software. Academic integrity challenges vary by discipline area (e.g., STEM vs. humanities vs. social sciences), and future work should explore how different disciplines might require tailored integrity strategies.

Future research can evaluate the effectiveness of mandatory and optional academic integrity courses in promoting ethical behaviour among students. This research could assess the long-term impact of such initiatives on reducing academic misconduct and fostering a culture of integrity within institutions.

Further studies can explore the impact of diverse assessment methods, such as authentic assessments and formative assessments, on reducing the incidence of academic misconduct. Research could investigate how different assessment strategies influence student engagement, learning outcomes, and perceptions of academic integrity.

Finally, future research can explore the role of cultural and contextual factors in shaping attitudes and behaviours related to academic integrity. Comparative studies could investigate differences in academic misconduct rates, perceptions, and interventions across diverse cultural and institutional contexts.

Addressing these aspects in future work would further enhance robustness and impact.

Recommendations for strengthening academic integrity

Work in partnership with students

Maintaining academic integrity requires a collaborative approach between institutions and students. Universities should engage students in discussions about integrity policies, involve them in decision-making processes, and provide clear communication about expectations. Student-led initiatives, such as integrity ambassador roles and peer mentoring initiatives, can help promote a culture of trust and ethical academic practice.

Protect reputation of qualifications

To maintain the credibility of academic qualifications, institutions must implement measures that maintain assessment standards. Policies on academic misconduct that are clearly articulated and consistent are deterrents against cheating. Engagement with employers and regulatory professional bodies will help preserve the value of qualifications and ensure institutions have designed authentic assessments. Ensuring that graduates possess the skills and knowledge their qualifications represent is essential for maintaining institutional and sector-wide credibility.

Academic integrity institutional debates should involves multiple stakeholders, including students, staff, institutional leadership, and external bodies such as employers and accreditation agencies, all of whom play a crucial role in maintaining the credibility of qualifications.

Provide student support

Academic misconduct often stems from pressure, lack of understanding, or inadequate academic support. Universities should invest in student support services, including academic writing centres, plagiarism awareness workshops, and mental health resources. Clear guidance on referencing, research ethics, and time management can support students to succeed with integrity.

Review and revise institutional assessment policies

Assessment policies must evolve to address emerging challenges, including the use of AI and online assessment vulnerabilities. Institutions should periodically review their policies to ensure they align with developments, integrate technological advancements, and clearly define penalties for misconduct.

Focus on assessment redesign

Redesigning assessments is key to reducing opportunities for academic misconduct while enhancing student learning. Institutions should prioritise:

- Authentic assessment: Encouraging real-world applications of acquired knowledge.
- Diversified assessment methods: Incorporating formats such as project-based work, oral exams, and portfolio submissions to minimise cheating opportunities.
- Formative assessments: Providing continuous feedback to support learning and reduce the pressure that leads to misconduct.

- Alignment with professional standards: Ensuring that assessments meet the expectations of accrediting bodies and employers to maintain confidence in qualifications.

Conduct further research

Ongoing research into academic integrity is essential to keep pace with evolving challenges, including AI-assisted cheating and contract cheating services. Institutions should invest in evaluating the effectiveness of integrity policies, new assessment models, and responding fast to emerging threats to academic honesty.

Focus on professional development

Professional development programs should include training on:

- Assessment design strategies to minimise misconduct risks.
- Ethical use of AI in education.
- Technology tools for detecting academic misconduct
- Engaging students in academic integrity discussions.

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Appendix 1. Literature review on Academic Integrity (FULL TEXT)

The aim of this literature review aimed at answering the following questions:

RQ1. What are the forms of academic misconduct and solutions offered that occur in online learning practices?

RQ2. Which factors are associated with the forms of academic misconduct in online learning practices?

RQ3. What are the efforts that have been and can be made to reduce students' academic offences?

RQ4. What are the directions for future research into academic integrity?

In order to address the aforementioned questions, a systematic literature review was carried out. The protocol for the literature review was to collect, analyse and summarize a range of peer reviewed sources, published until May 2023, using a set of keywords.

Online learning and academic integrity.

The scope of our exploration was limited to online learning environments. Maddison et al (2017) refers to online learning as instruction that is delivered electronically through various multimedia and Internet platforms and applications[1]. In the context of e-learning, Huber et al (2022) refers to 'online assessment' to assessments (including non-graded ones) which are mediated or facilitated by digital technologies and delivered online[2]'.

There is no single agreed upon definition of academic integrity (hereinafter, "integrity"). The European Network for Academic Integrity defines integrity as compliance with ethical and professional principles, standards, practices, and consistent system of values, that serves as guidance for making decisions and taking actions in education, research and scholarship[3]. Across different Universities, there are different definitions. For example, University College London, defines integrity as all the principal behaviours and approaches relating to fairness and honesty within teaching, learning and assessment[4]. Quite often universities adhere to the definition of integrity provided by local reputable bodies, e.g. Australian Universities tend to adhere to the definition provided by the Tertiary Education Quality and Standards Agency, i.e. 'the expectation that teachers, students, researchers and all members of the academic

[1] T. Maddison, C. Doi, S. Lucky, M. Kumaran. (2017). Chapter 2 'Literature Review of Online Learning in Academic Libraries' in Editor(s): Tasha Maddison, Maha Kumaran. *Distributed Learning. Pedagogy and Technology in Online Information Literacy Instruction*. [Online] (Available at: https://www.sciencedirect.com/science/article/pii/B9780081005989000027). (Accessed: 1 May 2023)

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community act with: honesty, trust, fairness, respect and responsibility.'[5] Elsewhere, in Canada, the University of British Columbia, has a more holistic definition, referring both to students' and instructors' behaviour: 'Academic integrity is a commitment to upholding the values of respect, integrity, and accountability in academic work. For students, this means completing academic work honestly and for instructors this means supporting students to learn with integrity in their courses'[6].

On the other hand, some others have contributed to the definition of integrity have provided a broader definition of integrity. The International Centre for Academic Integrity defines integrity as 'a commitment to six fundamental values: honesty, trust, fairness, respect, responsibility, and courage'[7]. Others, e.g. the European Network for Academic Integrity offer broad definition is the one given by the, who defines Academic Integrity as compliance with ethical and professional principles, standards, practices, and consistent system of values, that serves as guidance for making decisions and taking actions in education, research, and scholarship[8]. For the purposes of this literature review we will adopt this definition of integrity. Despite the different definitions among experts, there are two common factors among most definitions, which are honesty and ethical behaviour.

Academic dishonesty as a threat to integrity

Academic dishonesty (or Academic Misconduct) can be defined as morally culpable behaviours perpetrated by individuals or institutions that transgress ethical standards held in common between other individuals and/or groups in institutions of education, research, or scholarship[9] (Jordan, 2016). Different forms of academic misconduct have been identified: plagiarism, falsification, cheating, collusion and impersonation.

Plagiarism

Plagiarism entails using the work, ideas or any kind of content that has been produced by somebody else without referring to its author. The European Network for Academic Integrity defines Plagiarism as 'the use of ideas, content, or structures without appropriately acknowledging the source in a setting where originality is expected, leading to unfair advantage'[10]. Plagiarism can be a consequence of poor academic practice, or it can be

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intended by the student to do so. When dealing with plagiarism, if the cause of it was poor academic practice, often the student is given a warning and access to frequently mandatory courses and tasks which will avoiding such practices in the future.

Falsification

Unlike plagiarism, falsification entails the statement of facts, data or any research or works that have not been produced by the student themselves. This is a more serious offence as the student commits it with knowledge of doing so (Adzima, 2020).

Cheating, collusion, and impersonation

Cheating is any unauthorized aid the student uses during examinations[11]. Forms of cheating involve collusion and impersonation. Collusion is committed by the student when a third party aids the student to fulfil an individual task. In Online assessment, this can lead to the use of unauthorized materials or assistance due and the perception that there is a lower risk of getting caught (Adzima, 2020).

Last but not least, contract cheating or impersonation is a form of academic misconduct that involves a person using an undeclared and/or unauthorized third party to assist them to produce work for academic credit or progression, whether payment or other favour is involved[12] or not Glendinning (2020) has defined contract cheating as the use of a third party by a student to complete some or all of an assignment or exam on their behalf which the student then submits as their own original work for academic advantage or credit[13].
Within contract cheating, there is an increase in the use of what are known as 'Paper mills,' which are enterprises that provide the service of aiding the student to fulfil any task, even examinations. The Financial Times (2021)[14], claimed that there are 2000 websites providing what is called 'contract cheating' services. During the Pandemic there was a rise in "homework help" webpages, and the increase of online assessment resulted in an increase in academic offences. However, it is worth mentioning that others, such as Ellis (2021), claimed that the Pandemic had a positive effect rather than negative, as it improved detection[15].

Researchers at Imperial College London (ICL) reviewed Chegg, a US-based homework support website, and found that students were using the site to ask for help with exam-style questions and receiving answers live, potentially within exam time limits, raising concerns about the credibility of online assessment[16]. Moreover, there has been proof that these sites not only reach students through social media, but also by promoting their services with other

[11] Tauginienė, L, *et al*.
[12] Tauginienė, L, *et al*
[13] Glendinning I. (2020). 'QAA: Strategic Approaches for Combatting Contract Cheating'. [PowerPoint presentation].
[14] "Essay mills undermine global academic standards". Financial Times, NOVEMBER 5th, 2021. By Chris Cook, Bethan Station, Max Harlow & Andres Schipani. available at: https://www.ft.com/content/ffc1c843-40c2-4fdf-b6f5-c118b363ad90
[15] Ross J. (2020) 'Crisis-driven online exam shift 'chance to boost academic integrity'' *Times Higher Education*. April 15. Available at: https://www.timeshighereducation.com/news/crisis-driven-online-exam-shift-chance-boost-academic-integrity
[16] Weale S. (2021). 'Cheating on the rise in UK universities during Covid, say researchers'. *The Guardian*. 10 February. Available at: https://www.theguardian.com/education/2021/feb/10/cheating-on-the-rise-in-uk-universities-during-covid-say-researchers

legitimate methods to access students. For example, a bank that offers loans to HE students offers a free of charge four-month access to a US-based homework support website[17].
Academic dishonesty harms both students and HE Institutions. Not only the individual reputation of each HE institution but also, the HE system itself as grades and even degrees could be questioned as students would not have knowledge required for the degree that the Institution grants.

Online learning is more vulnerable to academic offences, and most of the research done on this topic, is based on that assumption. Yet, there are some experts, that believe that this is not the case. Adzima[18], argues that online assessment provides the same opportunities to commit an academic offence as in face-to-face learning environment, that the main difference relies on whether the examination is being proctored or not. Regardless of the environment in which assessment in carried out, most experts on academic integrity agree that no assessment is cheating proof. Pundits argue, as it will be dealt in the following sections, that student behaviour is key to mitigate any form of academic misconduct. Adzima argues that students lack knowledge or misunderstanding of academic integrity policy.

Why do students commit academic offences?

The reason behind students committing academic offences has been one of the key questions researchers have attempted to answer. From the literature analysed for the present section, and withholding the same classification that Chiang, F.-K., Zhu, D., & Yu, W. (2022), factors that contribute to academic offences can be divided into: environmental factors (which include institutional communication of integrity regulation, assessment methodology, among others) and individual factors such as age, nationality, and intellectual ability[19].

Environmental Factors

There are aspects of the examination itself that could create an atmosphere more prone to academic misconduct, like the methodology of assessment or the timeframe given to resolve the assessment or homework. Another aspect to consider is the implementation of Assessment for Learning, which is described as any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning. It thus differs from Assessment of Learning, designed primarily to serve the purposes of accountability, or of ranking, or of certifying competence (Black, Harrison, Lee, Marshall, and Wiliam, 2004). Assessment for Learning encompasses the student involvement in the course by dealing with different kinds of assessments, whether graded or not). In contrast, Assessment of Learning involves the assessment of Students by the end of the course. The importance of Assessment for Learning lies in the confidence of the student of learning the course materials, and therefore, the chances of committing an academic offence will reduce (Bunbury, 2021).

[17] Derek N. (2021) 'Companies and Charities Are Whitewashing Cheating'. *Forbes Media LLC*. May 11. Available at: https://www.forbes.com/sites/dereknewton/2021/05/11/companies-and-charities-are-whitewashing-cheating/?sh=6bc36cfc7984 (Accessed: April 23rd, 2023).
[18] Adzima, K. (2020) 'Examining Online Cheating in Higher Education Using Traditional Classroom Cheating as a guide'. *The Electronic Journal of e-Learning*, 18(6), pp. 476-493. DOI: 10.34190/JEL.18.6.002.
[19] Chiang, F.-K., Zhu, D., & Yu, W. (2022). A systematic review of academic dishonesty in online learning environments. Journal of Computer Assisted Learning, 38(4), 907– 928. DOI: https://doi.org/10.1111/jcal.12656

On other environmental factors, in which there still is a divided opinion, regards the timeframe given for an assessment. It has been argued that a wider timeframe to produce the answer to the assessment could reduce the temptation of students to commit an academic offence (Adzima, K., 2020) whilst the opposite has been argued as well, a more limited time for the assessment could deter students to commit impersonation as it would be more expensive (Bunbury, 2021).

Another factor that is relevant regarding the likelihood of committing an academic offence, which is whether the degree will lead to professional status or not. Students that are on accredited courses or courses that lead to professional status are deterred to commit any academic offence due to the fact that any finding of cheating may be reported to the relevant professional body.

Individual Factors

Individual factors relate to the students intrinsic characteristic, such as gender, nationality, age, intellectual capacity, social pressure. Within this concept, some pundits link academic misconduct with international students due to the lack of sufficient knowledge of English language (Souza, 2022; Parnther, 2022). Others argue that the transition to HE can generate in the student the lack of confidence needed to sit for an examination in HE, and therefore, young students engaged in higher levels of academic dishonesty behaviour compared with older students (Surahman, 2022)[20], which sometimes can be accompanied by the parents pressure to succeed. International students may have cultural differences or academic unpreparedness and understanding of HE policies, which could enhance the likelihood of committing an academic offence (Parnther 2022).As far as online learning is concerned, students might feel unable to seek support from providers, which might lead students to commit academic offences.

Despite the above mentioned, not all features are directly linked to student behaviour. Most researchers agree that poor communication or lack of clarity about expectations on academic conduct and learning objectives, can promote academic dishonesty.

How is academic dishonesty being managed

The following section will discuss the current trends to manage academic dishonesty, how can HE institutions prevent it, in order the students have the sufficient knowledge not to engage in such activities, challenge it, and how it is being managed once an offence has been committed.

Preventing academic dishonesty.

Academic integrity Activities

Some pundits wonder whether students are aware of committing a violation of integrity (The Quality Assurance Agency for Higher Education, 2021). Therefore, it is argued that academic

[20] Surahman, E., & Wang, T.-H. (2022). Academic dishonesty and trustworthy assessment in online learning: A systematic literature review. Journal of Computer Assisted Learning, 38(6), 1535– 1553. https://doi.org/10.1111/jcal.12708

dishonesty can be prevented by educating students on integrity, in order to clarify relevant issues and promote the values of HE. Some institutions organise activities to promote a suitable environment for students to discuss Integrity matters. Table 1 summarises different methods HE Institutions use when dealing with academic misconduct.

Methodology	*Content*
Mandatory Courses.	The main objective of the courses is to teach values as well as research and referencing skills to students. Certain HE Institutions require that students take the course at the beginning of their degree, other before the first assessment, others require that students complete the course before final assessments, e.g. dissertations.
Optional Courses	These are frequently organised by the institution's library services, dealing mainly with plagiarism or with Academic Integrity as a whole.
Institutional Activities	These provide a framework for staff and students to share a common understanding of the values and expectations of HE. These activities involve conferences, formal or informal meetings.
Student Union Activities	These provide the opportunity to discuss integrity among students. Reaching to Students Unions in order to deal and to set a clear message among peers regarding unethical advantages in academia, help deter students commit any academic offence.
Student engagement	Setting the standard among students by engaging students to serve as academic integrity ambassadors.

Despite the different approaches, the main focus has been to teach students about academic integrity and therefore improve their learning process.

Assessment

Assessment is an essential tool for verifying the learning process of student. In order to mitigate academic misconduct, assessment design becomes a relevant tool. Some studies' outcomes (Souza, 2022, Quality Assurance Agency for Higher Education 2017) argue that assessment design will not prevent academic offences, it will potentially reduce it.

According to research conducted by Willey Online Library, on HE in Canada and the United States, in order to mitigate cheating, instructors had changed assessment by using more open-ended questions (36%), creating question pools (34%), giving more project-based assignment (28%), eliminated/reduced MCQ (17%) and assigned more essays (15%)[21]. It is also held in different conferences carried out with the sponsor of Quality Assurance Agency[22],

[21] Willey Online Library (2022) New Insights into Academic Integrity.

[22] Bunbury (2021) *Combatting academic fraud: Supporting students to maintain academic standards through considered assessment design*. 17 March (online) The Quality Assurance Agency for Higher Education.
Lancaster T (2020) *Combatting Contract Cheating: Training Staff in Your Institution.* 29 October (online) The Quality Assurance Agency for Higher Education.

that as far as academic assessment is concerned, though aware of its limitations, it is promoted that a more creative, non-standardised assessment is taken. Souza (2022) argues that authentic assessment design, can help to avoid academic misconduct, as students apply their knowledge on real life problems. Identifying assessment that makes it more difficult to rely on contract cheating such as 'authentic assessment,' which is more reflective of the ways in which students will apply the knowledge on real life problems, along with a mixture of assessment methods where possible[23], could also be considered to reduce opportunities to cheat. A mixture and a variety of assessment methods within the same course could even deter students to commit, but it should be noticed to avoid over-assessment (Glendinning, 20202).The incorporation of modules in other modules could both prevent and help detect Academic misconduct. Avoiding repetition of assessment questions is also important.

The assessment methods used in examinations are important, but equally crucial is the way teachers engage with students throughout the course. Formative assessment plays a key role by offering opportunities for feedback and encouraging active student involvement. A continuous and open interaction between teachers and students can either deter academic misconduct or make it easier to identify. This interaction can take various forms, such as assigning multiple essays to gauge students' thinking and writing processes, implementing projects that address real-life challenges, and conducting oral examinations (vivas) at the end of the course to allow students to defend their work.

Regulations

Another aspect to consider for preventing academic offences is that it is clearly stated that it is prohibited. An important tool to foster academic integrity is through internal regulations of HE institutions, such as codes of conducts or programme documents, should clearly determine what constitutes an academic offence. This regulation must be written in a clear language, in order to be accessible to every student, even those who do not share as mother tongue the language in which is drafted. Regulations must communicate what is academic integrity and what entails academic misconduct. Penalties and procedure in case of detecting academic misconduct must be plainly specified. Clarity in academic integrity regulation is vital.

Legislation

There are certain threats to academic that can be from outside the HE institution itself, like essay paper mills enterprises. The Skills and Post-16 Education Act 2022, Chapter 1, regulates cheating services provided for post-16 students at English institutions. The act defines as '*a criminal offence for a person to provide, or arrange for another person to provide, in commercial circumstances, a relevant service for a student in relation to a relevant*

Glendinning I. (2020) *QAA: Strategic Approaches for Combatting Contract Cheating*. 3 September (online) The Quality Assurance Agency for Higher Education.

[23] The Quality Assurance Agency for Higher Education (2017). *Contracting to Cheat in Higher Education - How to Address Essay Mills and Contract Cheating*. 3rd Edition. Southgate House, Southgate Street, Gloucester

assignment[24]*.'* Even though the enactment of this act is a step forward to mitigate the increasing development of Paper Mills, it is worth mentioning that this legislation specifically criminalises essay mills and does not address other forms of academic misconduct.
Moreover, the Skills and Post-16 Education Act only has jurisdiction in England, not among UK countries. It is worth noting that as most of these services are provided online, jurisdiction becomes a key element, which is usually threaten by the leeway that internet provides. In other countries, such as in Australia, making essay mills is simply illegal.

Penalties

As far as penalties are concerned, it is normally relied on a scale system approach, where the severity of the offence, the academic level of the student, the intention of the student in committing the offence and the number of previous offences are considered. A scale system approach can be based on a point-based approach or without one. The former will promote consistency in dealing with academic misconduct, the latter will provide more flexibility for the Panel or the Authority deciding to determine the penalty.

Penalties can vary from a warning, resubmitting or resitting work at a capped mark, a request to re-sit a module, or even the year, and the most serious penalty, expulsion. Educational support can also be applied for almost all other penalties.

Academic integrity charter

The Academic Integrity Charter, developed by the Quality Assurance Agency for Higher Education (QAA) in conjunction with the UK Academic Integrity Advisory Group, as a response to the growing threats Academic Integrity is suffering. It comprises guiding principles that seek to inform the development of institutional policies and practices related to academic misconduct. The main objective of the Charter, as described by the QAA, is to provide a baseline position upon which UK providers, as autonomous institutions, can build their own policies and practices to ensure that every student's qualification is genuine, verifiable, and respected. The Charter is signed by HE Institutions and is objective is to establish guidelines for universities to tackle academic misconduct. Over 170 institutions – from all four nations of the UK – have signed up to the Charter, representing their institutional commitment to preserving academic integrity[25].

Means of challenging and combating academic dishonesty

As previously discussed, the means for preventing academic offences are not cheating proof, as for example individual factors can still incentivise students to commit an academic offence. Yet, HE Institutions have different means to control and detect the commission of academic integrity offences.

[24] *Skills and Post-16 Education Act 2022.P.4. C.1*. Available at: https://www.legislation.gov.uk/ukpga/2022/21/part/4/chapter/1/enacted (accessed 12 January 2023)
[25] Darren de Souza on behalf of the London Higher (2022) "*Academic Integrity Report*"

The development of technologies to detect and commit academic offences is currently under development, therefore it is important for HE institutions to ensure that their staff are aware of said technologies, in order to combat these offences, as well as updating staff on regulation regarding academic integrity, whist reminding them that it is their responsibility to uphold academic standards and integrity[26].
There are a wide range of tools that exist to detect and combat academic misconduct. Some of them are as simple as using the student's previous work, to compare the student writing skills and style.

As far as online learning and assessment is concerned, there are different technologies, such as plagiarism detectors, or online proctoring services that help mitigate the spread of academic misconduct. Dawson *et al*[27]. define assessment security as area which focuses on hardening assessment against attempts to cheat, and on detecting any cheating that has occurred, and its aim is to guarantee that the student has met the required learning outcomes.

Detecting academic dishonesty through technology

In order to combat academic offences, there are different e-services offered to HE institutions. The importance of this e-services lays on the learning process of students as E-services provide a simple and fast solution for the Institutions to revise academic integrity offences and would help to verify the originality of the students work. Though the simplest tool offered are plagiarism detectors. It is worth mentioning that even e-services are widely used, their performance has included failures, e.g. the detection of foreign language sources[28].

Another e-service that is being offered online are proctoring services, which involves using online remote invigilators. That involves the students using webcams during examinations, for the invigilator to monitor the student movements in order to detect any violation of academic integrity, as well as to verify the student's identity. These services can be offered by one person monitoring a determined number of student or by AI monitoring students. There have been some complaints made by student regarding online proctoring, mainly about privacy issues. There are few studies (Young, 2022) that claim that students can feel more stressed by the fact that they are being monitored during their examination. Yet it is worth mentioning that the recordings produced by proctoring services are reviewed by the HE institution that contracts those services.

As far as AI is concerned, the main concern lays whether it is suitable for use as a proctoring tool. A study carried out (Bergmans, *et al*. 2021) in which within a group of thirty people, six where required to cheat, none of those students were flagged as suspicious of academic offence by AI. Also, there were other students that were flagged as possible offenders, yet,

[26] Lancaster T. (2020). '*Cheating: Training Staff in Your Institution*.' [PowerPoint presentation].
[27] Dawson, P., Sutherland-Smith, W. & Dullaghan, K. (2020). *CRADLE Suggests… Academic integrity, assessment security and digital assessment*. Centre for Research in Assessment and Digital Learning, Deakin University, Melbourne, Australia. DOI: 10.6084/m9.figshare.12585443
[28] The Quality Assurance Agency for Higher Education (2021) *Exploring QAA Members' approach to Academic Misconduct Cases and Use of Penalties*. Southgate House, Southgate Street, Gloucester.

by reviewing the video it was clear that they were simply not in a suitable environment for taking a test, as they suffered interruptions from family members. The same students were proctored by human agent as well, who flagged one out of six students[29].

Means of dealing with integrity offences.

Once an academic offence has been committed, HE institutions tend to deal with those offences in different ways, yet there are two approaches that are consistent among most Universities, that are mandatory courses and panels.

Academic integrity courses

There are various HE institutions that once a student commits an academic integrity violation, it will be mandatory for said student to complete an Academic Integrity course. Examples of this trend are the University of Kansas and the University of California at San Diego. The University of Kansas has an academic course called the "Development and Integrity Class housed in our College of Education" in order to teach students about the main types of academic misconduct as well as the idea of integrity. The course lasts eight weeks and is mandatory for students who have been found in contravention of the academic integrity code.

The Academic integrity Director at the University of California at San Diego points out that the correct approach to Academic integrity is to create a culture on campus and in classroom where honesty is valued and where students do not cheat - not out of fear of getting caught, but because they choose not to[30].

Panels

Some HE institutions deal with academic offences through panels. That can entail school-level panel or centralised university panels. Some Panels analyse the offence since its detection, others once the proof has been gathered against a student. Centralised panels are typically made up of senior staff and academic services roles who have experience of dealing with academic misconduct[31]. In other instances, a Panel can work as a Review Panel, in case of appeals or in case of discrepancy between the student and the instructor who reviewed the case at the first instance. A centralized Panel might provide better consistency re: its decisions.

Most Panels congregate once the evidence supporting the offence has been gathered, yet in some institutions evidence can be gathered during the Panel procedure. The Panel could bear in mind mitigating circumstances, such as ambiguities in a particular assessment, or certain exceptional circumstances, for example, the admission of the student that they commit the offence.

The main aim of the panel is to revise each academic offence and establish a penalty, with a clear justification of the penalty imposed. It could be discussed whether the process itself

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[29] Bergmans L, Bouali N, Luttikhuis M and Rensink A. (2021) *On the Efficacy of Online Proctoring using Proctorio.* In Proceedings of the 13th International Conference on Computer Supported Education (CSEDU 2021) - Science and Technology Publications, Lda. Volume 1, pages 279-290. Available at: https://ris.utwente.nl/ws/portalfiles/portal/275927505/3e2a9e5b2fad237a3d35f36fa2c5f44552f2.pdf

[30] Tugend A. (2018) 'Case Study University of California at San Diego- Building Academic Integrity. How One College Promotes Honesty in the Classroom.' The Chronicle of Higher Education, Inc

[31] The Quality Assurance Agency for Higher Education (2021). '*Academic Misconduct Penalties- Advice for providers*.'

before the panel has a deterrent effect on students, and helps emphasize the nature of wrongful act and the importance of integrity. Moreover, as the continuity of the student journey within the programme could be threatened, it is important to grant the student a process to defend themselves.

Panels allow students to be heard and to learn from their mistakes, or wrongdoing. It also allows panellists to sanction the student in accordance with the wrongful act committed bearing in mind the reasons for the student committing such offences.

AI: A major challenge to academic integrity

Within the concept of contract cheating, a relatively recent technological development related to artificial intelligence (AI) is the emergence of Generative AI technologies, of which the most prominent in terms of publicity and popularity seems to be ChatGPT

Since 2020, there was a growth of AI employing natural language processing (NLP), with a prominent tool, commercially know as ChatGPT (which is the language model created by the Open AI research laboratory) as means for committing academic integrity offences, from plagiarism to cheating. AI technology provides human-like answers, which includes aspects of logic, expressions of creativity, comparison of texts, creating codes, among other functions, and therefore, it can easily provide academic essay answers[32], which despite arising questions of copyright and authorship, can also create academic text that is broadly undetected by anti-plagiarism software. Even though such tools are in their infancy, they are massively distributed, and are easily accessible.

On the other hand, some scholars believe that Generative AI tools are a source of content and knowledge, and as such HE institutions should be aware of their existence and educators should be mindful of this and highlight their limitations as source of knowledge[33]. By the time this article review was completed, some e-services in HE Institutions were developing tools to compare students' works against AI generated texts in order to detect academic misconduct and Turnitin had developed its own 'plug-in' to detect the use of AI in academic texts.

Conclusion

Academic integrity is a multifaceted concept, with varying definitions across institutions and countries. Although there isn't a universally accepted definition, most agree on the importance of honesty and ethical behaviour.

[32] Dehouche N (2021) 'Plagiarism in the age of massive Generative Pre-trained Transformers (GPT-3)'. *Ethics Sci Environ Polit* 21:17-23. https://doi.org/10.3354/esep00195

[33] Connolly V. & Watson S. (2023) 'ChatGPT (We need to talk)' Interviewed by Kirk, Tom. University of Cambridge: Stories. Published 5 April. Available at: https://www.cam.ac.uk/stories/ChatGPT-and-education (Accessed: 30 April 2023)

Distance and online learning environments pose distinct challenges to academic integrity, such as increased risks of plagiarism, cheating, collusion, and impersonation. The proliferation of contract cheating services and generative AI tools has heightened these risks. Academic misconduct is influenced by both environmental factors, like assessment methods, assessment timeframes, and the application of assessment for learning, and individual factors, such as age, nationality, intellectual ability, and social pressure.

To combat academic misconduct, institutions use a variety of strategies, including educating students about institutional policies, employing assessment design techniques, and implementing technological solutions. These efforts aim to foster a culture of academic integrity and discourage dishonest behaviour.

Future research on academic integrity could focus on assessing the effectiveness of educational initiatives, examining the influence of assessment design, exploring cultural and contextual factors, understanding student perspectives, evaluating policy frameworks, and addressing new challenges and technologies.

Despite progress in tackling academic misconduct, challenges persist, particularly with the advent of new technologies like generative AI tools. In this uncertain landscape, continued research, collaboration, and innovation are crucial for promoting and maintaining academic integrity in online learning environments.

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Appendix 2. Interview questionnaires

Academic Integrity questions (University academic and administrative staff)

Trends in academic integrity

1. Has your understanding of what academic integrity is changed at all in the last 3 years?
2. What have been trends in your programme in last 3 years with regard to academic offences in assessment? (we are asking about trends in numbers, i.e. increase or decrease and trends in types of incidents i.e. has contract cheating or ghost writing etc. has been an issue)
3. What explanations do you have with regard to any changes?

Student support

4. How do you support students on the issues of academic integrity? Have you rethought this area at all in the last three years?
5. How is student identity assured for continuous and summative assessment for your programme?

Assessment design

6. What has your programme changed in the design of assessment in the light of trends in academic integrity in particular? Have you changed the balance between continuous and final assessment, and formative and summative assessment?

Tools

7. How do you use Turnitin? Have you changed how you use it? Can students use Turnitin on your programme?
8. Have you recently addressed generative AI such as ChatGPT and related software and if so what changes in assessment do you propose in light of the availability of AI applications?
9. Have you recently addressed academic writing scaffolding tools, such as Grammarly and DeepL Write?

Policy

10. What changes to assessment policy are you considering, if any?
11. What sources do you use to keep up to date with AI?

Impact

12. Are you confident about the robust academic standing of your qualification? Do you feel that academic integrity issues threaten it?
13. What have been student views about assessment and academic integrity over the last 3 years, and how have you responded?
14. Do you have any other comments on academic integrity present or future you would like to make?

Academic Integrity questions (technical providers)

Trends in academic integrity

15. Has your understanding of what academic integrity changed at all in the last 3 years?
16. What have been trends as far as you are aware in last 3 years with regard to academic offences in assessment? (we are asking about trends in numbers, i.e. increase or decrease and trends in types of incidents i.e. has contract cheating or ghost writing etc. has been an issue)
17. What explanations do you have with regard to any changes?

Student support

18. How does your platform support staff directly or indirectly on the issues of academic integrity? Have you rethought this area at all in the last three years?
19. How does your platform support students directly or indirectly on the issues of academic integrity? Have you rethought this area at all in the last three years?
20. How is student identity assured for continuous and summative assessment in your platform??

Assessment design

Does your platform support the design of assessment? Has your approach changed in the light of trends in academic integrity in particular? Has it had any impact on changing the balance between continuous and final assessment, and formative and summative assessment?

Tools

21. How do you integrate the use of Turnitin? Have you addressed the relationship of your platform/tool to Turnitin?
22. Has your platform addressed generative AI such as ChatGPT and related software and if so what changes in assessment do you propose in light of the availability of AI applications?
23. Has your platform addressed academic writing scaffolding tools, such as Grammarly and DeepL Write?

24. As a professional, what sources do you use to keep up to date with AI?

Impact

25. How do you feel about the robust academic standing of HE qualifications? Do you feel that academic integrity issues threaten it?
26. Do you have any other comments on academic integrity present or future you would like to make?