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THE EVOLUTION OF ACADEMIC DISHONESTY: A REVIEW OF THE LASTEST TRENDS AND SOLUTIONS TO STUDENT CHEATING PRACTICES IN ONLINE EDUCATION

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Abstract

In contrast to the slow uptake of online learning over the previous two decades, the arrival of the COVID-19 pandemic acted as a catalyst for a rushed transition to online learning on a mass-scale. One particular concern has been the apparent rise and morphing of academic dishonesty into a threat to the integrity of online courses. However, many institutions and faculty appear to be unsure on how to react effectively to these changes in the concept of academic cheating and its various subtypes. This study identified the latest changes in the characteristics, methods and solutions to academic dishonesty from the latest literature sources. This review discovered a variety of concerning new changes in the methods of contract cheating and collaborative cheating, shifts in the perception of what constitutes academic dishonesty between students and faculty, an alleged rise in the frequency and accessibility of cheating online, and a lack of institutional vigor to confront these problems. Nevertheless, as long as there is the willingness and resources to implement them, a range of innovative and longstanding solutions are available to help combat the threat of academic dishonesty.

Keywords: Academic Dishonesty, Online Learning, Contract Cheating, Collaborative Cheating, Plagiarism

Introduction

Online learning has steadily been growing for the past two decades, while the COVID-19 pandemic has induced a rushed conversion of face-to-face courses into an online format on a mass-scale. Approximately 1.6 billion (94%) of the student population were affected across 190 nations (Paudel, 2021). While online learning undoubtedly has a variety of benefits, this ad-hoc shift has brought a significant number of teething problems. One of the most serious challenges to online learning is the alleged severity, complexity and prevalence of academic dishonesty within online courses compared to physical classrooms. If these allegations are true, it may have serious ramifications for the reputation of many institutions, faculty job satisfaction, the validity of graduate certification, and even the social fabric of our societies (Norris, 2019;

Chirikov et al., 2019; Valizadeh, 2022). Therefore, this paper reviewed a variety of the latest literature exploring the recent changes to academic dishonesty, particularly following the COVID-19 pandemic. It is likely that there have been fundamental changes to the meaning of academic dishonesty, the methods used by students, and the scale of online cheating. Furthermore, this paper showcased a range of solutions being proposed by recent literature such as innovative digital tools, a rethinking of educational strategies, and the rebuilding of institutional cultures of integrity.

Background

One modern definition of academic dishonesty is “any behavior intended to falsely represent one’s academic work as original, and can take many forms, including deception, unauthorized resources, collusion and plagiarism” (Sendir & Maxwell, 2020, p.2). However, the definition of academic dishonesty, and its interchangeable components, may vary greatly between students, faculty, and institutions. Students have been reported to reinterpret the definition of cheating based on their previous course experiences and interactions with peers (Norris, 2019). This raised the possibility that online learning has redefined academic dishonesty, and made it unclear which specific actions constitute violations.

There are multiple theories proposed for why students may or may not participate in dishonest practices. First, ‘Theory of Planned Behaviour’ suggested it originates from a student’s personal values, surrounding normative beliefs (peers, society), and control factors (obstacles, punishments) (Dendir & Maxwell, 2020). Second, ‘Fraud Triangle Framework’ theorized that cheating behavior is controlled by three factors: incentive, opportunity, and rationalization (Dendir & Maxwell, 2020). Finally, ‘Deterrence Theory’ was defined as “the role of severity, certainty, and celerity of punishments in deterring individuals from violating rules or laws (Chirikov, 2019. p.3). Common causes mentioned by the literature are numerous, but are often divided into two categories; individual and situational factors (Adzima, 2020). These included demographics, physical environment, cultural values, and a country’s corruption and development level (Adzima, 2020; Krienert et al., 2021). Stress was also noted as a key factor (Krienert et al., 2021; Herdian et al., 2021), which is important because many students reported that adapting to online education during the pandemic lockdowns negatively affected their mental health (Chakraborty et al., 2021).

Methodology

The methodology utilized by this study was narrative literature review based on thematic analysis, in order to identify the latest trends or possible gaps in regard to academic dishonesty (Pautasso, 2019). This included recent literary discussions regarding changes in definition, methods, and solutions to academic dishonesty or its sub-groups such as cheating, plagiarism, and collusion. The sources examined were typically journal articles and textbooks from key databases such as Google Scholar, Jstor, ERIC, and EBSCOhost, with a primary focus on articles between 2019 and 2022. The rapid changes to online systems and the unprecedented circumstances of the COVID-19 era are likely to quickly render older literature outdated. However, many newer articles still depended on much older literature despite these changes,

possibly due to the specific issue of online cheating being considered as still in its infancy (Adzima, 2020). These sources were comprised of surveys and interviews with students and faculty staff, case studies of particular universities, as well as experiments with anti-cheating systems. Many studies have recognized the limitations of relying on surveys or smaller samples (Adzima, 2020; Chirikov et al., 2019; Erguvan, 2021; Krienert et al., 2021; Rodriguez et al., 2020), the potential dishonesty of some participant answers (Valizadeh, 2022), and the lack of generalizability if based within a singular country (Chirikov et al., 2019; Valizadeh, 2022). Nevertheless, all sources evaluated were important contributions to the topic of academic dishonesty and online learning.

New Trends in Online Cheating

Scale of online cheating

The first issue explored by the literature is whether online education increases the frequency of academic dishonesty, but it appeared comparing cheating rates between online and offline learning is more difficult and inconclusive than expected (Peterson, 2019). Studies found that students reported more frequent rates of cheating in online exams despite having more on-site exams on average (Janke et al., 2021; Valizadeh, 2022). On the other hand, the perception that online cheating is more frequent shows positive results (Herdian et al., 2021; Valizadeh, 2022; Paudel, 2021). In 2019, 60% of faculty assumed that online cheating was more common (Jaschik & Lederman, 2019). Paudel (2021) argued that 43% of online students agreed that cheating was a serious issue. Perceptions about the “dark side of remote learning” continue in the media with recent articles by CNBC and the Los Angeles Times (Subin, 2021; Gallagher, 2022; Bilen & Matros, 2021). This existing perception is an important problem because when students observe their peers cheating, it increases the likelihood that more will cheat in future (Norris, 2019; Krienert et al., 2021; Chirikov et al., 2019; Dyer et al., 2020; Valizadeh, 2022). In summary, this widespread perception appears to be leading to greater normalization of cheating online.

Structural flaws of online learning

One of the major concerns reflected in the literature is the loss of traditional safeguards to detect online cheating. Ghizlane and Reda (2019) argued that the lack of continuous and automatic monitoring systems, and a lack of proper authentication safeguards, is a serious problem for online proctors. Unlike in the traditional classroom, it is regarded as almost impossible without special tools to definitively prove that a student has been cheating (Bilen & Matros, 2021; Erguvan, 2021). Many studies have recorded an increased temptation to cheat due to the lack of direct observation, technical difficulties, lack of proctoring, and less commitment to the integrity of online classes (Burgason et al., 2019; Peterson, 2019; Valizadeh, 2022). There were additional incentives to cheat due to the proximity of the internet (Paultet, 2020). During the 2020 Advanced Placement Examinations in the USA, which were not proctored, the number of Google searches on keywords linked to exam topics increased exponentially (Bilen & Matros, 2021). Students were likewise rewarded for their efforts, as research has found that unproctored online exams typically lead to half a GPA

grade increase (Dendir & Maxwell, 2020; Herdian et al., 2021). These rewards have predictably led to the increased motivation and rationalization to commit academic dishonesty, as well as increased cynicism about the education system (Burgason et al., 2019). Bilen and Matros (2021) argued that according to the “simultaneous-move game”, many students are concluding that the gains of cheating online outweigh the risks (Dyer et al., 2020; Valizadeh, 2022). To conclude, the lack of accountability in online courses may lead to an increased risk of academic dishonesty.

Revival of contract and collaborative cheating

The outsourcing of work to a paid writer (whether stranger, friend, or family) has been revived by a relatively new but increasingly common form of contract cheating known as “Ghosting”, which is defined as the “unethical practice of having someone other than the student registered in the course take the student’s exams, [or] complete his or her assignments” (Ralston, 2021, p.251). Ghosting circumvents university anti-plagiarism scanners, while newer countermeasures such as forensic linguistics are too early in development (Erguvan, 2021; Harrison et al., 2020). There is growing demand for ghostwriters due to the pressure for good grades, lack of online safeguards, and work burnout (Hollis, 2018; Erguvan, 2021). The number of commercial cheating websites are growing and using more aggressive marketing tactics (Erguvan, 2021; Hollis, 2018; Norris, 2019). Therefore, contract cheating has reemerged as a major threat to online academic integrity. Recent literature has also indicated an evolution of collaborative cheating, which is defined as “unauthorized cooperation between students in obtaining answers in exams” (Herdian et al., 2021, p.64). It may include unauthorized sharing of course materials, and unpermitted collusion between multiple students. The traditional forms of collaborative cheating have evolved into the use of study-helper websites, sharing files, screenshots, and answers via digital communication apps such as WhatsApp or Zoom (Harrison et al., 2020; Chang et al., 2021; Herdian et al., 2021). Valizadeh (2022) discovered that the top methods of cheating at a Turkish university were copy-pasting online sources (82.2%), or talking with peers during an examination (75.5%). Similar to contract cheating, these new forms of collaborative cheating are difficult to manage, and pose a serious risk to academic integrity online.

Shifting perceptions of academic dishonesty

There is growing evidence of changes in what students perceive as academic dishonesty, and a growing gulf between their views and faculty members. Traditional assumptions of what constitutes academic dishonesty may no longer apply as students are now interpreting the definition of cheating differently (Norris, 2019; Harrison et al., 2020). Burgason et al. (2019) concluded that the “isolation of the online environment and perception of non-accountability...may be fostering an attitude that the online student can pursue educational goals independently and with...acceptable practices defined by the student rather than defined by the institution” (p.13). Furthermore, 71% of online students compared to 46% of face-to-face students considered using existing notes or PowerPoint files during a test as trivial, or not cheating (Burgason et al., 2019). The use of study helper websites, the uploading of unauthorized materials, or group-work are no longer being viewed as collaborative cheating (Harrison, 2020). This may also be due

to changing demographics, or lack of clarity from institutions. Younger students tend to view the internet as public information, and thus were less likely to use citations, or even felt that cheating was a good indicator of creativity (Peterson, 2019). Rodriguez et al. (2020) discovered that student misunderstandings regarding the definition of cheating are frequent, especially regarding plagiarism and how it affects the learning process. In conclusion, the evolving values of academic dishonesty is an issue that needs vigilance from educational institutions.

Faculty and institutional neglect

The recent literature indicated the lack of progressive steps taken by faculty or institutions to deal with academic dishonesty. In regards to faculty, it was discovered that less than 22% of teachers provide an academic integrity policy, while over 90% do not search websites for uploaded copies of their previous examinations (Paultett, 2020). Additionally, less than 10% proctored online exams, less than 22% used a lockdown browser, and 20% used the same exams every semester (Paultett, 2020). Multiple students have justified the lax attitudes of teachers as a reason for cheating (Valizadeh, 2022). The literature was similarly concerned about the failure of many institutions to implement online safeguards (Hollis 2018; Stephen et al., 2019; Dyer et al., 2020; Ralston, 2021). Failures to implement exam proctoring have been interpreted as permission to cheat by some students (Dyer et al., 2020). There have been criticisms about the lack of enforced honor codes, or lip-service to academic integrity (Stephens, 2019; Ralston, 2021; Chirikov et al., 2019). The lack of institutional support is mentioned by 20% of faculty staff (Erguvan, 2021). Some teachers feel reluctant to deal with cheating due to the perceived lack of institutional support (Chirikov et al., 2019). On the other hand, there is recognition that some universities are more serious about enforcing their academic integrity, or have the financial resources to afford it (Chirikov et al., 2019; Erguvan, 2021). Nevertheless, both faculty and institutions need an active and informed approach to dealing with academic dishonesty.

Solutions to Online Cheating

High Technological Solutions

Much of the recent literature explores the latest technological solutions to detect cheating in online examinations. One experimental study by Tiong and Lee (2021) proposed the use of an “e-cheating intelligence agent [that] consists of two main agents: the network IP detection agent and the behaviour detection agent” (p.3). The former monitors the IP addresses of students to detect any suspicious changes, while the latter utilizes deep learning systems to examine answer speeds, and provides a new set of random exam questions for any suspicious readings. Similarly, Kamalov et al. (2021) used an AI recurrent neural network to track the progress of a student over multiple assessments and searching for any deviating points to detect exam fraud. The program (albeit experimental) had only a 4% false positive rate, and found 100% of cheating cases (Kamalov et al., 2021). Other studies focused on the use of e-authentication and auto-proctoring to reduce faculty workload by utilizing convoluted neural networks that optimize the detection

rates and analysis speed of any video footage from exams (Jadi, 2021). It analyzed the student's facial expressions, body and facial movement, as well as objects on the computer desk for cheating behaviors. Another study by Rodriguez et al. (2021) used a biometric e-authentication program, which involves facial recognition, voice recognition, keystroke dynamics, and stylometry. One example of a secure online testing tool is WebAssessor, which uses proctors and webcams to compare students with their photo IDs and continuously monitors their face, gestures, as well as writing speed or pauses (Pauillet, 2020; Kamalov et al., 2021). Continuous monitoring was reported to be less easily subverted than single login checks (Ghizlane & Reda, 2019). Various similar studies have shown positive results in detecting and deterring dishonesty, as well as boosting student trust of online assessments (Rodriguez et al, 2021; Jadi, 2021). If successful, high-technology may automate the detection and prevention of academic dishonesty.

Lower Technological Solutions

There are more established technological solutions known to recent literature in the struggle against academic dishonesty. The first solution was the enforcing of manual webcam proctoring and verification methods (Hollis, 2018; Burgason et al., 2019). In addition to photo IDs, video signatures are used for all exams, which is compared with a short video from initial enrollment (Hollis, 2018). The use of 360-degree or front-back view webcams, checking of IP addresses, as well as expert teams to review video footage are also helpful (Jadi, 2021; Hollis, 2018). However, it may add significant workload to regularly inspect multiple students, or review large amounts of camera footage without automation (Jadi, 2021). Furthermore, financial costs, technical or compatibility difficulties, invasion of student privacy, and lack of student knowledge are significant obstacles (Erguvan, 2021; Jadi, 2021; Bilen & Matros, 2021; Chakraborty et al., 2021). The second solution was the use of existing proctoring software such as Atomic Jolt., ProctorU, and Canvas as well as scanning software such as PlagScan, NeoNeuro and Ouriginal, Turnitin, and SafeAssign (Chang et al., 2021). These solutions are relatively old and more time-consuming, but were found to still be helpful to detect or prevent cheating (Chang et al., 2021; Norris, 2019). The third potential solution was the use of lockdown browsers such as Respondus, which prevent the opening of additional tabs and programs, or conducting internet searches during online examinations (Jadi, 2021; Pauillet, 2020). However, the lone use of lockdown browsers can be quickly circumvented by additional electronic devices (Pauillet, 2020). Nevertheless, many authors, faculty, and even students agreed with the need to use lockdown browsers for multiple-choice questions, to prevent copy-pasting, or moving back and forward between questions (Burgason et al., 2019; Valizadeh, 2022; Erguvan, 2021). To sum up, these methods may be insufficient alone, but can make a contribution against academic dishonesty.

Cultures & Codes of Integrity

The literature showed support for cultivating an institutional culture of integrity, as well as the clear communication of rules throughout the semester and before key assignments (Burgason et al., 2019; Ghizlane & Reda, 2019). One positive suggestion by Stephens (2019) was to include an academic integrity course with every student's education; a full course with various modules to equip all students

with the concept meaning of academic integrity (according to university norms). Stronger academic integrity policies have also been proposed as a barrier against ghostwriting (Hollis, 2018), and a preventative measure when it is clear on the definition, how it will be monitored, and the punishments used (Nguyen et al., 2020). However, these honor codes need to be properly enforced, as stronger punitive actions were reported to reduce students' tolerance of academic dishonesty by approximately 12% (Chirikov et al., 2019). The cultivating of a culture of integrity, honor codes, as well as consistently and clearly stated rules are often considered more effective as they are preventative, cost-efficient, and self-reinforcing in the long term (Norris, 2019; Burgason et al., 2019). However, the success rates of this measure are likely to vary. One recent study found that despite almost 90% of students feeling informed about what constitutes cheating, only 55% felt working together on a task set as an individual assignment was not cheating (Rodriguez et al., 2021). Nevertheless, the lack of clear honor codes or rules of integrity may encourage cheating behavior (Dendir & Maxwell, 2020). In short, the use of firm, clear, and modern honor codes within a culture of integrity may help to re-establish the red lines of academic dishonesty, and standardize the definition of cheating across all groups.

Educational Strategies & Assessments

There were a range of recommendations provided by recent literature on how to adapt online courses to prevent the growth of academic dishonesty. The first measure was to move away from high-stakes examinations, and diversify assessments by adding written assignments, interactive discussions, and projects (Paultlett, 2020). The use of shorter, time-intensive, but more frequent and less grade-bearing exams were recommended (Burgason et al., 2019). This arguably helped students to retain information, improve feedback, and decrease the pressure to cheat (Nguyen et al., 2020; Chang et al., 2021). Secondly, the use of randomized question banks and simultaneous exam times were also a popular option (Norris, 2019; Nguyen et al., 2021; Valizadeh, 2022). The third measure was to use open book exams, essay exams or project-oriented assessments (Peterson, 2019; Janke et al., 2021; Valizadeh, 2022). The use of high-order thinking questions that promote critical thinking rather than memorization were similarly supported (Nguyen et al., 2020; Paultlett, 2020; Chang et al., 2021). The literature next suggested integrating online courses with enhanced collaboration between students and teachers. These included the use of more frequent group assignments involving video recordings, open-ended discussion boards or forums, and the submission of written work in developmental stages so that teachers have a “linguistic fingerprint” of all students (Burgason et al., 2019; Hollis, 2018; Erguvan, 2021, p.11). To discourage the use of external resources, an open-access folder for courses which students can share was encouraged (Janke et al., 2021). This may encourage students to apply their skills and develop a deeper knowledge of their subjects (Paultlett, 2020). In conclusion, adjustments to online courses could help to prevent academic dishonesty.

The Role of Faculty

The recent literature indicated that the role of the faculty in detecting and preventing academic dishonesty is essential. Firstly, teachers must conduct periodic searches to remove unauthorized content

that is uploaded to resource websites (Norris, 2019; Peterson, 2019; Krienert et al., 2021). Secondly, teachers could get to know each student so it is easier to identify sudden changes in the quality of their work or tell-tale signs of cheating. (Erguvan, 2021). The third measure was to keep renewing content to alleviate the effects of sharing materials online (Peterson, 2019). The fourth solution was for teachers to reconsider their attitude towards academic dishonesty as a developmental process by expecting mistakes by students, and helping them to improve their academic skills and ethics by enrolling them in top-up integrity classes (Stephens, 2019). This also means teachers have an important role in making the university's policies on cheating very clear to students (Krienert et al., 2021). Nevertheless, it is considered important for faculty to punish cheating infractions, and keep all methods of detection as confidential as possible in order to prevent students from adapting to avoid detection (Chirikov, 2018; Bilen & Matros, 2021; Jadi, 2021). If these measures do not work, supplementing regular faculty with anti-cheating experts to assist or train faculty members, enforce integrity policies, or keep institutions accountable, may be helpful (Hollis, 2018; Ralston, 2021). In summary, there are ways in which faculty can still contribute to the struggle against academic dishonesty.

Discussion and Conclusion

This study has highlighted a variety of emerging trends and solutions regarding academic dishonesty online, within recent literature based on surveys, interviews, case studies and experiments, with the results summarized in the table below.

Table 1 Summary of New Trends and Solutions

New Trends in Online Cheating	Potential Solutions
Scale of Online Cheating: Positive rise in perception of more frequent cheating online, risking further misbehavior, but actual measurements are inconclusive.	Higher Technology Solutions: Experimental testing of biometrics, smart authentication, and auto-proctoring yield improvements to online cheating detection.
Structural Flaws of Online Learning: Concerns about normalization of online cheating due to less direct proctoring and authentication of students and assessments.	Lower Technology Solutions: Recommendations to adopt webcam proctoring, lockdown browsers, proctoring software, and plagiarism scanners.
Contract & Collaborative Cheating: Concerns about growth of ghostwriting, supply helper websites, and unauthorized student communication using apps.	Cultures & Codes of Integrity: Cultivating cultures of integrity, and clearly communicating rules help to prevent academic dishonesty.

New Trends in Online Cheating	Potential Solutions
<p>Shifting Perceptions of Cheating: Students increasingly view collaboration, notes during assessments, and use of internet without citing as not cheating.</p>	<p>Educational Strategies & Assessments: Suggestions for open-book exams, higher-order questions, more frequent but less weighted exams, and open-access folders.</p>
<p>Faculty & Institutional Neglect: Criticisms of lax attitudes of faculty, lack of institutional support, lip-service to honor codes, and failure to implement safeguards.</p>	<p>The Role of Faculty: Faculty should learn about students, check for telltale signs, search websites for shared content, and firmly enforce honor codes.</p>

Academic dishonesty is a scourge on the education quality of schools and universities, and although it may never be fully eliminated, not keeping it under control could damage online education as a credible mode of learning. While some institutions are beginning to get a grip on the problem, online education has changed rapidly in recent years, and research about academic dishonesty online is still in a fledgling status. However, the limitation of this study is reviewing literature based on surveys and small samples. Thus, authors would recommend further research to measure actual online cheating events, into how students, faculty and even the concept of cheating have been affected, as well as continued research into technological solutions that better enable the detection and prevention of academic dishonesty in an online setting.

References

Adzima, K. (2021). Examining online cheating in higher education using traditional classroom cheating as a guide. *Electronic Journal of E-Learning*, 18(6), 476–493.

Bilen, E., & Matros, A. (2021). Online cheating amid COVID-19. *Journal of Economic Behavior & Organization*, 182, 196–211.

Burgason, K. A., Sefiha, O., & Briggs, L. (2019). Cheating is in the eye of the beholder: An evolving understanding of academic misconduct. *Innovative Higher Education*, 44(3), 203–218.

Chakraborty, P., Mittal, P., Gupta, M. S., Yadav, S., & Arora, A. (2020). Opinion of students on online education during the COVID-19 pandemic. *Human Behavior and Emerging Technologies*, 3, 357–365.

Chirikov, I., Shmeleva, E., & Loyalka, P. (2019). The role of faculty in reducing academic dishonesty among engineering students. *Studies in Higher Education*, 45(12), 2464–2480.

Dendir, S., & Maxwell, R. S. (2020). Cheating in online courses: Evidence from online proctoring. *Computers in Human Behavior Reports*, 2, 1–10.

Dyer, J., Pettyjohn, H., & Saladin, S. (2020). Academic Dishonesty and Testing: How Student Beliefs and Test Academic Dishonesty and Testing: How Student Beliefs and Test Settings Impact Decisions to Cheat Settings Impact Decisions to Cheat. *Journal of the National College Testing Association*, 4(1), 1–30.

Erguvan, I. D. (2021). The rise of contract cheating during the COVID-19 pandemic: a qualitative study through the eyes of academics in Kuwait. *Language Testing in Asia*, 11(34), 1–21.

Ghizlane, M., Reda, F., & Hicham, B. (2019). A New Model of Automatic and Continuous Online Exam Monitoring. *International Conference on Systems of Collaboration Big Data, Internet of Things & Security (SysCoBloTS)*, 1–5.

Harrison, D., Patch, A., McNally, D., & Harris, L. (2020). Student and Faculty Perceptions of Study Helper Websites: A New Practice in Collaborative Cheating. *Journal of Academic Ethics*, 19(4), 483–500.

Herdian, H., Mildaeni, I. N., & Wahidah, F. R. (2021). “There are always way to cheat” academic dishonesty strategies during online learning. *Journal of Learning Theory and Methodology*, 2(1), 60–67.

Hollis, L. P. (2018). Ghost-Students and the New Wave of Online Cheating for Community College Students. *New Directions for Community Colleges*, 183, 25–34.

Jadi, A. (2021). New Detection Cheating Method of Online-Exams during COVID-19 Pandemic. *IJCSNS International Journal of Computer Science and Network Security*, 21(4), 123–130.

Janke, S., Rudert, S. C., Petersen, Ä., Fritz, T. M., & Daumiller, M. (2021). Cheating in the wake of COVID-19: How dangerous is ad-hoc online testing for academic integrity? *Computers and Education Open*, 2, 1–9.

Jaschik, S., & Lederman, D. (2019). *Faculty attitudes on technology a study by inside higher Ed and Gallup* (pp. 1–60). Inside Higher Ed.

Kamalov, F., Sulieman, H., & Calonge, D. (2021). Machine learning based approach to exam cheating detection. *PLOS ONE*, 16(8), 1–15.

Krienert, J. L., Walsh, J. A., & Cannon, K. D. (2021). Changes in the Tradecraft of Cheating: Technological Advances in Academic Dishonesty. *College Teaching*, 1–10.

Nguyen, J. G., Keuseman, K. J., & Humston, J. J. (2020). Minimize Online Cheating for Online Assessments During COVID-19 Pandemic. *Journal of Chemical Education*, 97(9), 3429–3435.

Norris, M. (2019). University online cheating -how to mitigate the damage. *Research in Higher Education Journal*, 37, 1–20.

Paudel, P. (2020). Online Education: Benefits, Challenges and Strategies During and After COVID-19 in Higher Education. *International Journal on Studies in Education*, 3(2), 70–85.

Paullet, K. (2020). Student and faculty perceptions of academic dishonesty in online classes. *Issues in Information Systems*, 21(3), 327–333.

Pautasso, M. (2019). The Structure and Conduct of a Narrative Literature Review. *A Guide to the Scientific Career: Virtues, Communication, Research and Academic Writing*, 299–310.

Peterson, J. (2019). An Analysis of Academic Dishonesty in Online Classes. *Mid-Western Educational Researcher*, 31(1), 24–36.

Ralston, S. J. (2021). Ghosting Inside the Machine: Student Cheating, Online Education and the Omerta of Institutional Liars. In A. MacKenzie, J. Rose, & I. Bhatt (Eds.), *The Epistemology of Deceit in a Postdigital Era: Dupery by Design* (pp. 251–264). Springer.

Rodriguez, M. E., Guerrero-Roldan, A.-E., Baneres, D., & Noguera, I. (2021). Students' Perceptions of and Behaviors Toward Cheating in Online Education. *IEEE Revista Iberoamericana de Tecnologías Del Aprendizaje*, 16(2), 134–142.

Stephens, J. M. (2019). Natural and normal, but unethical and evitable: The epidemic of academic dishonesty and how we end it. *Change: The Magazine of Higher Learning*, 51(4), 8–17.

Tiong, L. C. O., & Lee, H. J. (2021). E-cheating Prevention Measures: Detection of Cheating at Online Examinations Using Deep Learning Approach -A Case Study. *Journal of Latex Class Files*, 1–9.

Valizadeh, M. (2022). Cheating in online learning programs: Learners' perceptions and solutions. *Turkish Online Journal of Distance Education*, 23(1), 195–209.