European Network for Academic Integrity

Integrity in Education for Future Happiness

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PAEB 2020 DUBAI

Mendel University in Brno

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Integrity in Education for Future Happiness

6th International Conference on
PLAGIARISM ACROSS EUROPE AND BEYOND 2020
April 17–19, 2020, Dubai, UAE

Dedicated to

prof. Tracey Ann Bretag
(19. 6. 1962 – 7. 10. 2020)

Tracey Bretag was the Director of the Office for Academic Integrity at the University of South Australia Business School. She became famous as an editor-in-chief of the International Journal for Educational Integrity and editor of the extensive Handbook of Academic Integrity (once the best seller of Springer Education). According to Times Higher Education, she was one of the 20 most influential people in world higher education in 2019.

Tracey inspired, influenced, and significantly contributed to the success of ENAI from the very beginning. She has been a keynote speaker at the ENAI conferences since 2013. She shared her experience and provide valuable advice to our network. For her dedication to academic integrity for the most of her life, Tracey was given Lifetime Achievement Award by ENAI in April 2020.

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Brno 2020
ISBN 978-80-7509-771-2 (print)
ISBN 978-80-7509-772-9 (on-line)

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Foreword: Integrity, happiness, and story of life

This book is a collection of selected papers presented at the conference Plagiarism Across Europe and Beyond in Dubai. The conference took place in April 2020, thus, right at the start of the first wave of the corona pandemic. The conference topic is nevertheless related to another pandemic, which has been affecting higher education for much longer: The pandemic of cheating. Quality education is a crucial concern for national governments, higher education institutions as well as individual teachers and students. Academic integrity is a vital pillar of quality, and also a response to the pandemic of cheating.

The coronavirus pandemic forced the conference organizers to change the conference format to fully online. This response allowed all participants to achieve their goals and maintain the intended quality. Of course, we would have been much happier if the conference could happen as intended – without the coronavirus pandemic.

Similarly, all stakeholders in higher education would be happier without the pandemic of cheating. Unfortunately, this is not the case, and the academic sector is looking for an appropriate response to ensure that all participants achieve their goals with the required quality. While quality education links to GDP, academic integrity links to happiness. While misconduct can create dissent, the feeling of achieving one's goals and acquiring knowledge provides motivation and increased wellbeing.

Swathi Venugopal's story provides a fascinating insight into the student experience and understanding of academic integrity values:

> "It does not stop at school, it carries deeper consequences into the workplace and beyond and I hope my story provides the insight to teachers and decision makers to realize the importance of making an active effort to introduce integrity to students at a young age."

So, what does this effort look like? University life starts with admission. Salma Sadia Rakhman and Zeenath Reza Khan investigate the very beginning of the university student journey. They look at students' equity in the admission process by comparing secondary data from high school curriculum valuation.

As soon as students enter university, they come face to face with their institution's policies. Shiva Sivasubramaniam and Zeenath Reza Khan, in their chapter, and Gabor Laszlo in his chapter focusing on integrity policies in Hungary, provide us with a comparative analysis of institutional procedures for dealing with student academic misconduct. Sonja Bjelobaba deals with those who most frequently transmit the values in academic integrity policies to students: namely teachers. Her holistic approach and concentration on positive values are inspirational for teacher training in academic integrity.

The book deals with a diversity of subject approaches: Shiva Sivasubramaniam and Zeenath Reza Khan examine biomedical students and clinical research and share their experience from an online workshop about ethical conduct using case studies. Caroline Burns provides us with an insight into business education and how to allow students to reflect on their values and develop ethical standards required for their future careers. Rahul Chandra Shaha, Sakhawat Hossain and Asaduzzaman Rahul

describe teaching and learning English from a Bangladeshi perspective. They suggest using digital content and provide recommendations on how to ensure integrity.

No discussion regarding academic integrity is ever exclusively positive. We have to deal with student misconduct, as well. Sanja Pekovic examines students‘ intention to plagiarize in Montenegro. Ajrina Hysaj and Abeer Elkhouly ask the same question, but in the United Arab Emirates.

The book also examines the process of controlling and monitoring cheating. Clare Johnson and Ross Davies look at plagiarism from a digital forensics perspective and explain how to detect contract cheating by examining document metadata and looking for forensic artifacts, which allows us to distinguish between copy-pasted and written text. Robin Crockett and Kirstie Best report on a stylometric investigation of student assignments, which has proved to outsource part of the portfolio. On the contrary, Daniel Dusza suggests integrating modern approaches in the academic writing process to de-emphasize plagiarism and raises some serious ethical questions behind collecting and using the collected metadata in profiling student's writing integrity. Julius Kravjar adds to the discussion by evaluating the Slovak centralized system for plagiarism detection support and the role of collected metadata for statistical analysis and detection of several types of academic integrity breaches.

Taking the debate one step further, the book provides guidance and discussion on what can and should happen after the formal processes of identification and management of cheating has taken place. Institutions should give students the opportunity to rehabilitate from academic misconduct and learn from their mistakes, which is exactly what Zeenath Reza Khan, Tina Ann Mark, and Vidhi Sharma discuss in their chapter.

The response of the conference organizers to the corona pandemic was easy to say: “Make the conference virtual!”, but hard to do. The same applies to the pandemic of cheating. “Stop cheating” or “Make students learn” are easy to say but hard to do. We hope that this book provides useful information for teachers and institutional policymakers and helps to make academia a happier place to teach and learn.

Tomáš Foltýnek, Christopher Hill, Zeenath Reza Khan

ACADEMIC INTEGRITY TEACHER TRAINING: PREVENTIVE PEDAGOGICAL PRACTICES ON THE COURSE LEVEL

Sonja Bjelobaba

Abstract: More often than not, academic integrity as a discipline is defined by stating what it is not. Instead of focusing on what we want our students to do, we tell them that they should not cheat, plagiarize, collude, falsify or fabricate data, or engage in contract cheating. When defined in this way, academic integrity focuses on corrections of students' behaviour, detection, and punishment, still generally managing to avoid explaining to students what we want them to do instead.

Academic integrity can – and should – be defined in other ways, as a set of positive values or an agreement with ethical and professional principles, standards and practices that involve the whole institution.

Such a change in the definition inevitably changes our teaching of academic integrity: instead of correcting students' behaviour, different methods of the preventive and pedagogical promotion of academic integrity can be explored. One of them is an integration of academic integrity across the curriculum thus permeating all higher education. In order to achieve that, educational measures should not only be aimed at students, but to their teachers as well. In this paper a structure of an academic integrity teacher training workshop is presented with a focus on the integration of academic integrity in curriculum through constructive alignment and the examples of different preventive pedagogical practices.

Introduction

It is a frequently heard lament amongst teachers that "students should know that!" but it is not clear that this frequently voiced expectation is warranted. Students are generally not psychic, and particularly at a time in which students from vastly varied types and levels of academic preparation are admitted, such assumptions cannot be made. When it is essential that students obtain subject matter mastery, we make the essential information part of our curriculum; we do not assume that they already know what we want them to know. We do not demand that they find the information themselves or refer them to a web page or policy and consider the matter done, yet in the case of academic integrity, a sheet of paper – a policy, an honour code, a reminder that cheating and plagiarism will be punished or that they are expected to cite and reference correctly – is often the only "instruction" students receive on this complex problem.

Although the presence of policy documents and honour codes can have a positive effect on academic integrity (Bretag et al., 2011; McCabe, 1993; McCabe & Treviño, 1993; McCabe et al., 2001), previous research has also shown that students rarely read policy documents and that their "understanding of plagiarism and how to avoid it requires much more than knowing what is in the policy documents" (Gullifer & Tyson, 2014). Therefore, having a policy document and/or an honour code might not be enough.

DOI: https://doi.org/10.11118/978-80-7509-772-9-0009

The enigma behind the sheet of paper pedagogics is the fact that academic integrity is a discipline that, much like apophatic theology (*via negativa*), is all too frequently defined by what it is not: it is not cheating on exams, it is not plagiarism, not colluding, not falsifying, not fabricating, not contract cheating. There is a correlation between the definition of academic integrity and the approaches to teaching and to dealing with it: when defined as what it is *not*, academic integrity focuses on prohibition and correction of students' behaviour. We focus on detection and punishment instead of teaching students what to do instead.

Academic integrity is not a divinity and thus can, and should, be defined in ways that focus on the positive approach of what it is. *Glossary for Academic Integrity* describes it as "Compliance with ethical and professional principles, standards and practices by individuals or institutions in education, research and scholarship" (Tauginienė et al., 2018: 7–8). International Center for Academic Integrity defines it in terms of six fundamental values: honesty, trust, fairness, respect, responsibility, and courage (International Centre for Academic Integrity, 2014).

Such a development of the definition with a focus on what academic integrity *is* and what values it consists of, leads to shifts in research, teaching and discussing academic integrity from methods that concentrate on the detection and punishment of misconduct toward focusing on the preventive and pedagogical promotion of academic integrity (Bertram Gallant, 2008; Bretag et al., 2014; Carroll & Zetterling, 2009; Ferguson et al., 2007; Morris, 2016), and, finally, to developing a culture of honesty with clear standards and a holistic and systematic approach where the whole institution is included in the process (Bertram Gallant, 2016; Collins & Amodeo, 2005; East, 2009; East & Donnelly, 2012; Macdonald & Carroll, 2006). Such a holistic approach contains a variety of methods and measures where policy and practice are aligned (Bretag et al., 2011) and where staff is highly engaged in the development of a shared understanding of academic integrity (Morris & Carroll, 2016). Another aspect of such an approach is having adequate pedagogical measures: we cannot assume that students already know everything about academic integrity, we have to educate them.

Teaching academic integrity

In those cases, where educational measures regarding academic integrity exists, they are often aiming at students, teaching them basics of academic integrity such as how to reference properly and how to avoid plagiarism in general. These instructions are often done as short introductory courses, lectures, or seminars in the beginning of the educational process and normally facilitated by some specialist in academic writing or academic integrity such as librarians, or academic officers. The educational measures are often multidisciplinary presented and the discipline specific views on the academic integrity and academic writing are normally not considered, although such specifics can present a problem for a student when they start to write academic texts (Currie, 1993).

As approaches to academic integrity are most effective when they are customized to specific learning contexts, hence a positive, proactive and holistic approach towards academic integrity should be an integrated part of the curriculum. That means that a

multidisciplinary course in academic integrity in the beginning of an education is not enough. In addition to such specialised introductory courses, the aim should also be to generate and practically implement the knowledge on academic integrity across the curriculum thus integrating academic integrity in all spheres of education and enabling a discipline specific approach. Such an implementation of knowledge in these fields requires a holistic approach including a professional development of teaching staff that encompasses different aspects of academic integrity and gives teachers tools to discuss these issues with their students.

Teacher training workshops

In this paper, I want to discuss the structure of the teacher training workshops I have been teaching at different higher education institutions in Sweden and abroad, as well as on various national and international conferences on campus or online. The aim of these teacher training workshops was to develop awareness and knowledge on how to integrate academic integrity as a part of courses and programmes by the usage of constructive alignment strategies (Biggs, 1996, 2003). In the hands on part of the workshop preventive pedagogical strategies were discussed in relation to particular disciplines and learning contexts.

The workshops were introduced with a discussion about what academic integrity is and how it could be defined, as well as a discussion on how teachers could foster academic integrity. The discussion also included the raising awareness of misconduct cases and equipping teaching staff to recognize and uncover the misconduct as well as the guidance on how to report it, how to use text-matching software, and on how to use policy documents and guidelines.

The workshops were given in two variants. In the first one, all the participants came from the same institution. In that case, the curriculum that was discussed were actual courses at the department and teaching groups had the opportunity to directly work with the actual course syllabuses, course content and assessment. In the second variant, the participants had a multidisciplinary background and were asked to work with a pre-arranged set of courses that they at a later stage could use as an inspiration for working on their own courses.

The pre-arranged set of courses was created in order to illustrate the progression during different stages of the learning process using Bloom's taxonomy (Anderson et al., 2001; Bloom et al., 1984) thus ensuring a systematic approach during different stages of higher education. The pre-arranged sets of courses that were discussed in groups included courses on different levels, in several disciplines and with various number of students such as:

- An introduction course in Computer Architecture, 30 students, 1st semester
- A course in Law, 120 students, 2nd semester
- A course in Biomedicine, Bachelor thesis writing, 21 students
- A PhD course in Russian linguistics, 5 students

Participants were divided into groups. Each group was asked to discuss one of the courses throughout the workshop, first within the group and later with all the other

participants. The discussion was preferably facilitated in an active learning classroom in order to enhance participants' learning experiences and foster discussion (Park & Choi, 2014) but in an online version facilitated in Zoom, combined with a pre-prepared Padlet was used as a discussion tool in order to enable active collaboration (Beitz, 2019; Garnham & Betts, 2018).

The main part of the workshop was a practical approach to integrate academic integrity on the course level by using the constructive alignment (Biggs, 1996, 2003). In constructive alignment, the learning outcomes we intend students to learn are aligned with teaching activities and assessment tasks. It is apparent that the knowledge on academic integrity is currently most often *not* integrated through constructive alignment: an assignment that contains plagiarism or flawed source usage will be failed, so good source use is something that is examined. However, this assessment is usually not aligned with appropriate learning outcomes or learning activities as it is often assumed that students already know how to cite and paraphrase correctly. Thus, we are assessing something that is *not* a learning objective of the course and without the usage of any learning activities.

Students often do not perceive that the pedagogical measures on academic integrity that were given were enough (Bjelobaba et al. 2020, forthcoming). A proposition to use constructive alignment in teaching the source use was previously proposed by Pecorari (2013), however, the same principle could be used to teach other aspects of academic integrity as well. In order to do that, teachers should be equipped to develop learning outcomes, activities and assessment appropriate for their courses.

Learning outcomes

In a holistic approach, academic integrity should be clearly expressed as learning outcomes of a course. The first question workshop participants were challenged to consider therefore was: How can learning outcomes on academic integrity be developed in various courses to ensure the knowledge of source use, develop good research practice, and foster academic integrity in general?

There are several questions to be asked before choosing appropriate learning outcomes for a specific course (adapted from Pecorari, 2013): What do students need to know about academic integrity? What skills do they need to know to be able to do the assessments and task in the course? What do they already know and what they need help with? When is it appropriate to introduce that knowledge?

Courses on different levels will require different learning outcomes. Learning outcomes on academic integrity could be thematically categorized:

a) Knowledge on academic integrity.
   After a course, a student should be able to:
   - Articulate an understanding of what different forms of misconduct are (falsification, fabrication, plagiarism, deviations from good research practice)
   - Be able to identify different forms of misconduct
   - Know where the information and policy documents can be found
   - Know the procedures used at the university for detecting and responding to misconduct

b) Knowledge on academic writing.
After a course, a student should be able to:
   - Identify bibliographical information in a text
   - Understand how sources have been used in texts which signal them transparently
   - Know what the function of referencing is
   - Know how to cite and paraphrase correctly
   - Be able to signal to the reader what is his/her own words and what is someone else's words

c) Knowledge on research integrity.
After a course, a student should be able to:
   - Articulate an understanding of norms of good scientific research and research ethics
   - Have the knowledge of and be able to apply the ethical standards in research
   - Have the knowledge on the obtaining of permits from the relevant authorities (ethical approval, etc.)
   - Have the knowledge of rules and regulations (Vancouver rules for co-authorship, etc.)

After presenting different types of learning outcomes, participants were asked to discuss and write learning outcomes that are appropriate for the course examined in their group and to take appropriate steps to ensure progression of these outcomes in accordance to Bloom's taxonomy (Anderson et al., 2001; Bloom et al., 1984). Afterwards, the learning outcomes in different courses were discussed with all workshop participants.

Learning activities

The second question workshop participants discussed was what tools and activities would be most adequate to align with the proposed learning outcomes. In order to help students build up knowledge of academic integrity, participants were asked to use appropriate learning activities. A range of such activities was presented.

Several examples of learning activities appropriate for developing academic integrity can be found on the Internet, in databases such as the website of European Network of Academic Integrity (http://www.academicintegrity.eu/wp/all-materials/) and workshop participants were encouraged to use those tools.

One important activity is fostering a discussion on academic integrity and the expectations on students: why do we ask our students to write in their own words, what do we mean when we ask them to produce an independent writing, and how do we view learning? Is learning something that occurs when a student is able to repeat a text word for word or do we see learning as a process that includes a student being able to process the knowledge and incorporate it with previous knowledge?

Learning outcomes that focus on the knowledge on academic integrity could require activities such as locating and discussing the policy documents and honour codes at the institution.

If the focus of learning outcomes on the course is on academic integrity that is related to academic writing and proper source use, several activities can be done in order to actively work with the discipline specific scientific texts asking questions such as: "Why did the author reference in this way?" Students can be asked to make summaries of a particular text or paragraph, different aspects of referencing can be discussed and examples of wrong source use can be given, and different subtleties of plagiarism such as paraphrasing rules, referencing to the same author in one paragraph, translating citations, second source usage etc. could be discussed (See also Breen & Maassen, 2005; Pecorari, 2013). Academic writing has different characteristics in different disciplines – showing examples of plagiarism and patchwriting (Howard, 1995) in a specific discipline is a form of enculturation that is necessary to fully master the academic literacy contract in that particular discipline.

Note taking skills that minimize risks of plagiarism such as using their own words as much as possible and using different colours for direct citation in order to avoid inadvertent plagiarism could be an appropriate learning activity.

Time management should be discussed in order to avoid what Bertram Gallant (2016: 987) calls the "3 am syndrome" that occurs when students cheat because they run out of time, are exhausted or feel too much pressure.

After presenting different types of learning activities, participants were asked to choose the activities that are most appropriate to secure that the learning outcomes in the course they discussed were obtained. The chosen activities were later discussed with all participants.

Assessment strategies

The last question discussed in the workshop was: How can different practices in assessment design and practices affect academic integrity and make it harder and undesirable to engage in misconduct? Several assessment strategies were presented.

If the learning outcomes are focused on the knowledge on academic integrity such as the knowledge of the rules and where to obtain the information, that knowledge should be assessed. For learning outcomes that focus on academic writing, students can be examined on plagiarism, reference techniques, etc. In order to gain most pedagogical advantages, it is important to give feedback on referencing and to give students the opportunity to revise.

Another aspect of assessment strategies concerns the instructions on the exam. The instructions should be clear and comment aspects of academic integrity: if collaboration is not allowed, it should be stated, and students should always be reminded of the importance of referencing correctly. In the instructions it could be recalled that everything that is quoted / referenced should be listed in the literature list (but not everything that students have read).

Although the efficiency of the text-matching software can be discussed (Foltýnek et al., 2020; Weber-Wulff, 2015, 2019), the usage not only can spot texts from the Internet, but also increases the number of texts in the databases hence making it harder to re-use other students' texts. The software can also be used pedagogically to give feedback to learn about proper source-use (Davis & Carroll, 2009).

Designing the assessments is an important strategy in reducing misconduct and teachers training should discuss designing assessments that makes it hard to cheat: asking an outdated or generic question that can be googled in five minutes ("Write 2000 words on French revolution") will probably result in several copy-pasted Wikipedia entries. Instead, some thoughts should be put in the designing of the assessment and the assessment questions as original assessments will require an original answer (Carroll & Appleton, 2001). Instead of finding an answer, the focus should be on making one by using individual experiences, contexts, or contemporary events or applying a specific theory on unusual set of cases. Other strategies include regularly changing old questions and exams, formative assessment that spreads assessment across the module, referring to contemporary events, making assessments relevant and stimulating (Bloxham & Boyd, 2007).

As contract cheating – a form of academic dishonesty in which students pay others to complete their coursework (Clarke & Lancaster, 2006) – is on the rise and present a serious threat to academic integrity (Bretag, 2019a; Newton, 2018), teacher training should discuss that problem. Previous research (Bretag et al., 2019b) has shown that there are no assessment types for which students reported a 0% likelihood of contract cheating, but that students did perceive four types of tasks that are least likely to prompt contract cheating: in-class tasks, personalised and unique tasks, vivas and reflections on practical placements. As there are no assessment types that are verified against contract cheating, an increased focus should be given the process by the usage of formative assessment thus making the process important by giving credits for it as well and not only for the end product (summative assessment). Meta-writing in form of a research diary or a logbook with descriptions of different stages of the project writing could also be used (such meta-writing can of course also can be purchased, but might make an additional cost that could deter some students from it).

An improvement of students' academic writing skills is highly connected to the improvement of academic integrity as inadvertent plagiarism can be reduced: the source of unintentional plagiarism and patchwriting is often based on the underdeveloped skills in academic writing (Sutherland-Smith, 2008). Hence, it is important that teachers take part in the writing process and ensure to not only get the last version but to give continuous feedback in order to develop students' writing skills (Court, 2014). Students should also show their activity during different process stages by using formative strategies including peer-assessment as research has shown that providing and receiving feedback from peers leads to improvements of writing performance (Huisman et al., 2018).

After discussing assessment strategies, workshop participants were asked to discuss what strategies could be useful in order to create an alignment with the learning outcomes and learning activities in the course they worked with.

Conclusion

In a holistic approach towards academic integrity, a proactive pedagogical approach is crucial. This pedagogical approach is not limited to education measures given in the scope of an introductory course, but should be integrated in all relevant courses within

the tertiary education. In order to achieve that, teaching staff should be equipped through professional development programs and workshops. In order to give students a discipline specific introduction to academic integrity, it is necessary to equip teachers with methods and strategies to explore different preventive pedagogical practices on course level. After a teacher training workshop, a teacher should have the knowledge of what academic integrity is, how to inform his/her students, how to discover misconduct and where to report it, how to write the instructions in an assignment and how to, by means of constructive alignment, integrate academic integrity into all relevant courses given in the tertiary education.

Literature

Anderson, L. W., Krathwohl, D. R., & Airasian, P. W. (2001). *A Taxonomy for Learning, Teaching, and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.

Beitz, J. M. (2019). Padlet. *Nurse Educator*, 44(3), 169. doi: 10.1097/NNE.0000000000000648.

Bertram Gallant, T. (2008). *Academic Integrity in the Twenty-first Century: A Teaching and Learning Imperative*. https://www.peterlang.com/view/9783631781593/xhtml/chapter10.xhtml

Bertram Gallant, T. (2016). Leveraging Institutional Integrity for the Betterment of Education. In Bretag, T. (eds.) *Handbook of Academic Integrity*. Springer, Singapore, 979–994.

Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education*, *32*(3), 347–364. https://doi.org/10.1007/BF00138871

Biggs, J. (2003). Aligning teaching and assessing to course objectives. *Teaching and Learning in Higher Education: New Trends and Innovations*, *2*, 13–17.

Bjelobaba, S., Mumtaz, S., & Fishman, T. (forthcoming 2020). The Challenge of Understanding Plagiarism: How do we know what we don't know?

Bloom, B. S., Krathwohl, D. R., & Masia, B. S. (1984). *Taxonomy of Educational Objectives. The Classification of Educational Goals: Cognitive Domain Handbook 1*. New York: Longman

Bloxham, S., & Boyd, P. (2007). *Developing Effective Assessment in Higher Education: A Practical Guide*. Maidenhead: McGraw-Hill International (UK) Ltd.

Breen, L., & Maassen, M. (2005). Reducing the incidence of plagiarism in an undergraduate course: the role of education. *Issues in Educational Research*, 15(1), 1–16.

Bretag, T. (2019a). Contract cheating will erode trust in science. *Nature*, 574(7780), 599. doi:10.1038/d41586-019-03265-1

Bretag T., Harper R., Burton M., Ellis C., Newton P., Haeringen K., Saddiqui S., & Rozenberg P. (2019b) Contract cheating and assessment design: exploring the relationship, *Assessment & Evaluation in Higher Education*, 44:5, 676–691, DOI: 10.1080/02602938.2018.1527892

Bretag, T., Mahmud, S., Wallace, M., Walker, R., James, C., Green, M., East, J., McGowan U., & Patridge, L. (2011). Core elements of exemplary academic integrity policy in Australian higher education. *International Journal for Educational Integrity*, *7*(2). https://doi.org/10.21913/IJEI.v7i2.759

Bretag, T., Mahmud S., Wallace M., Walker R., McGowan U., East J., Green M., Partridge K., & James C. (2014). Teach Us How to Do It Properly! An Australian Academic Integrity Student Survey. *Studies in Higher Education*, 39(7): 1150–1169. doi: 10.1080/03075079.2013.777406

Carroll, J., & Zetterling, C. M. (2009). *Hjälp studenterna att undvika plagiering: Guiding students away from plagiarism*. Stockholm: KTH Learning Lab.

Carroll, J., & Appleton J. (2001). *Plagiarism: A Good Practice Guide*. Accessed 25 May 2020. https://goo.gl/wUx2wG

Clarke, R., & Lancaster, T. (2006). Eliminating the successor to plagiarism: Identifying the usage of contract cheating sites, in *Paper Presented at the Second International Plagiarism Conference*. Gateshead.

Collins, M. E., & Amodeo, M. (2005). Responding to Plagiarism in Schools of Social Work: Considerations and Recommendations. *Journal of Social Work Education*, 41(3), 527–543. https://doi.org/10.5175/JSWE.2005.200303131

Court, K. (2014). Tutor feedback on draft essays: developing students' academic writing and subject knowledge. *Journal of Further and Higher Education* 38(3): 327–345.

Currie, P. (1993). Entering a disciplinary community: Conceptual activities required to write for one introductory university course, *Journal of Second Language Writing*, 2(2), 101–117, https://doi.org/10.1016/1060-3743(93)90012-R.

Davis, M., & Carroll, J. (2009). Formative feedback within plagiarism education: Is there a role for text-matching software? *International Journal for Educational Integrity*, 5(2), 58–70, DOI https://doi.org/10.21913/IJEI.v5i2.614

East, J. (2009). Aligning policy and practice: An approach to integrating academic integrity. *Journal of Academic Language and Learning*, 3(1), A38–A51.

East, J., & Donnelly, L. (2012). Taking Responsibility for Academic Integrity: A collaborative teaching and learning design. *Journal of University Teaching & Learning Practice*, 9(3). Retrieved from http://ro.uow.edu.au/jutlp/vol9/iss3/2

Ferguson, K., Masur, S., Olson, L., Ramirez, J., Robyn, E., & Schmaling, K. (2007). Enhancing the Culture of Research Ethics on University Campuses. *Journal of Academic Ethics*, 5(2–4), 189–198. https://doi.org/10.1007/s10805-007-9033-9

Foltýnek, T., Dlabolová, D., Anohina-Naumeca, A., Razi, S., Kravjar, J., Kamzola, L., Guerrero-Dib, J., Çelik, O., & Weber-Wulff, D. (2020). Testing of Support Tools for Plagiarism Detection. arXiv Publisher (Open Access): https://arxiv.org/pdf/2002.04279.pdf

Garnham, W., & Betts, T. (2018). The Padlet Project: Transforming student engagement in Foundation Year seminars. *Compass: Journal of Learning and Teaching*, 11(2). doi:https://doi.org/10.21100/compass.v11i2.714

Gullifer, J., & Tyson, G. (2014). Who has read the policy on plagiarism? Unpacking students' understanding of plagiarism. *Studies in Higher Education*, 39(7), 1202–1218.

Howard, R. M. (1995). Plagiarisms, Authorships, and the Academic Death Penalty. *College English*, 57(7), 788–806. doi:10.2307/378403

Huisman, B., Saab, N., van Driel, J., & van den Broek, P. (2018). Peer feedback on academic writing: undergraduate students' peer feedback role, peer feedback perceptions and essay performance. *Assessment & Evaluation in Higher Education* 43(6): 955–968.

International Centre for Academic Integrity. (2014). Fundamental Values Project. Retrieved 31 May 2018, from https://academicintegrity.org/wp-content/uploads/2017/12/Fundamental-Values-2014.pdf

Macdonald, R., & Carroll, J. (2006). Plagiarism – A complex issue requiring a holistic institutional approach. *Assessment & Evaluation in Higher Education*, 31(2), 233–245. https://doi.org/10.1080/02602930500262536

McCabe, D. L. (1993). Faculty responses to academic dishonesty: The influence of student honor codes. *Research in Higher Education*, 34, 647–658.

McCabe, D. L., & Treviño, L. K. (1993). Academic dishonesty: Honor codes and other contextual influence. *Journal of Higher Education*, 64, 522–538.

McCabe, D. L., Treviño, L. K., & Butterfield, K. D. (2001). Dishonesty in academic environments: The influence of peer reporting requirements. *Journal of Higher Education*, 72, 29–45

Morris, E. J., & Carroll, J. (2016). Developing a Sustainable Holistic Institutional Approach: Dealing with Realities "on the Ground" When Implementing an Academic Integrity Policy. In Bretag, T. (eds.) *Handbook of Academic Integrity*, 449–462. https://doi.org/10.1007/978-981-287-098-8_23

Morris, E. J. (2016) Academic Integrity: A Teaching and Learning Approach. In Bretag, T. (eds.) *Handbook of Academic Integrity*. Springer, Singapore, 409–412, https://doi-org.ezproxy.ub.gu.se/10.1007/978-981-287-098-8_11

Newton, P. (2018). How Common Is Commercial Contract Cheating in Higher Education and Is It Increasing? A Systematic Review. *Frontiers in Education*, 3, https://doi.org/10.3389/feduc.2018.00067

Park, E., & Choi, B. (2014). Transformation of classroom spaces: traditional versus active learning classroom in colleges. *Higher Education* (00181560), 68(5), 749–771. https://doi-org.ezproxy.its.uu.se/10.1007/s10734-014-9742-0

Pecorari, D. (2013). *Teaching to Avoid Plagiarism: How to Promote Good Source Use*. Maidenhead: Open University Press.

Sutherland-Smith, W. (2008). *Plagiarism, the Internet, and Student Learning: Improving Academic Integrity*. Routledge.

Tauginienė, L., Gaižauskaitė, I., Glendinning, I., Kravjar, J., Ojsteršek, M., Ribeiro, L., Odineca, T., Marino, F., Cosentino, M., & Sivasubramaniam, S. (2018, January 31). Glossary for Academic Integrity. Retrieved 20 May 2020, from http://www.academicintegrity.eu/wp/wp-content/uploads/2018/02/GLOSSARY_final.pdf

Weber-Wulff, D. (2015). Plagiarism Detection Software: Promises, Pitfalls, and Practices. In Bretag, T. (eds.) *Handbook of Academic Integrity*. Springer, Singapore, 625–638.

Weber-Wulff, D. (2019) Plagiarism detectors are a crutch, and a problem, *Nature*, 567, 435, doi: 10.1038/d41586-019-00893-5

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ACADEMIC INTEGRITY, AXIOLOGY AND BUSINESS ETHICS PEDAGOGY

Caroline Burns

Abstract: This purpose of this paper is to outline how values theory can be incorporated into a business ethics curriculum and how academic integrity can be recruited in doing so. The paper presents a pedagogical approach that allows students to reflect on their values, articulate their values stances, and learn how values influence both ethical and unethical behavior. The paper also demonstrates how academic dishonesty is an effective means by which to teach students the pathway from values, to attitudes, to behavior, while also teaching students the long-term ramifications of behaving unethically during their time spent in higher education.

Key words: Academic Integrity, Academic Dishonesty, Business Ethics Pedagogy, Values, Axiology

Introduction

Business ethics courses are integral to business education as they contribute to students' moral development and ultimately inform ethical behaviors post-graduation (Crossan et al., 2013). While these courses do not make students ethical, they are a starting point in endeavoring to make ethics more commonplace in students' decisions. In his widely referenced article on business ethics Goshal wrote, "When managers, including CEOs, justify their actions by pleading powerlessness in the face of external forces . . . When they claim that competition or capital markets are relentless in their demands and that individual companies and managers have no scope for choices, it is on the strength of the false premise of determinism that they free themselves from any sense of moral or ethical responsibility for their actions" (p. 79, 2005). This determinism is a barrier to being ethical in business, but more germane to this paper, it is a hurdle to teaching business ethics. Additionally, not only do many students believe that businesses cannot be both profitable and ethical, but their personal goals might discourage them from pursuing both ends. Giacalone and Promislo (2013) for example argue that many students in business ethics courses arrive at higher education with "baggage" in the form of a worldview not congruent with a business ethics course. They posit, "this baggage impedes the dissemination and acceptance of ethics concepts and renders students ethically broken when entering our classrooms" because of their biases toward materialism, power, and winning at any cost (p. 87). Taken together, these barriers place a tremendous burden on business ethics instructors to develop an effective curriculum and associated pedagogy.

This paper and the pedagogy it describes heeds the call from May et al. (2014), in their work on the interaction between business ethics courses moral efficacy, moral meaningfulness, and moral courage to develop instructional methods that allow students to link ethics to their values, and then to their careers. Kupperman (1996) notes that reflecting on values can influence behavior arguing, "Lived experience does

DOI: https://doi.org/10.11118/978-80-7509-772-9-0019

very often affect people's values. But so do thought experiments, imaginative creations of what it would be like to live through certain things" (1996, p. 124). Healso rightly acknowledges that it is not obvious how best to inspire students to contemplate values. To this end, this paper documents a pedagogical approach that allows students to engage in such contemplation that is designed to (a) develop students' knowledge of values theory, (b) teach students how to articulate their values stances, and (c) examine how their values influence attitudes and behaviors. Another important purpose of this paper is to demonstrate how academic dishonesty can be recruited to teach students the pathway from values, to attitudes, to behavior (both ethical and unethical), while concurrently unearthing the potential values and attitudes antecedents related to academic dishonesty and academic integrity based behaviors.

The paper first outlines why innovation around business ethics pedagogy is warranted. It then proceeds to detail why academic integrity used as a case study is salient to teaching business ethics. The content and pedagogy are then described, and anecdotal observations following on from the module are provided.

Supplemental Business Ethics Pedagogy

The common approach to teaching business ethics is to begin by teaching theories such as utilitarianism, deontology, and virtue ethics so that students can develop their moral reasoning skills. Instructors then build upon this by working with students to consider ethical dilemmas and/or case studies using these theories. While widely used, these pedagogical approaches have their critics. Traditional undergraduate students often have little to no work experience and therefore find it difficult to connect to business ethics cases or dilemmas. Moreover, Neesham and Gu (2015) argue that this approach does not engage the affective side of students' characters. Case studies, they write, do not teach business ethics effectively because students are not personally involved with the cases under analysis and consequently there is little to tie a case to a student's life or future. As Orms (2016) summarizes, evidence suggests that the pedagogy tools commonly used may be helpful but are insufficient in creating ethical decision-makers; they are better than nothing she argues, but nonetheless inadequate. This paper is not intended to add to this critique, but rather to highlight an approach that supplements, not supplants, the common approach while also drawing attention to the problem of academic dishonesty among students.

Why Values?

According to Sims and Brinkmann (2003), business ethics courses must focus on moral courage, moral issues, moral judgment, handling moral issues, and moral sensitivity but they should also help students develop self-knowledge about their values and their motivation to address such moral issues. Jagger and Volkman (2014) also argue that ethics courses must require that students be in touch with their values. Finally, Neesham and Gu (2015) argue that an effective way to bridge business ethics education and ethical behavior is to hone in on students' morality through a reflection on values. The pedagogy described below has been developed in light of the efficacy of values based pedagogy in teaching business ethics.

Business courses that ignore the affective aspect of decision-making run the risk of improving students' ability to reason decisions at the risk of subordinating emotions, personality, power disparities, values, and so forth. Ethics incorporating affect is more meaningful in influencing ethical behavior than ethics by reasoning (Cushman et al., 2006), thus increasing students' emotional attachment to the material would make the course more effective. Incorporating values into a business ethics course improves how students connect with the course content but finding additional means to strengthen the affective link between students and content is warranted. Academic misconduct as an example of unethical behavior is much more relevant to students' lives than business cases on subjects like corporate corruption or price gouging for instance and ties students personally to an ethics issue. As such, efforts must be made by instructors to find salient examples of unethical behavior with which to discuss ethics with students. In the case of the business ethics pedagogy discussed herein, academic misconduct was chosen.

Why Academic Integrity?

Given there are other unethical behaviors salient to students, why academic dishonesty? There is no disputing that some business students have little concern for academic integrity, though whether business students cheat more than other students is unclear, due to conflicting findings (see Klein et al., 2007; Lang, 2013; McCabe et al., 2006). The literature highlights a myriad of ways in which academic dishonesty segues to misconduct in other aspects of students' lives. For example, high school students who cheat are very likely to go on to lie to their spouses, their customers, and their employers. In addition, they are more likely to be dishonest than students who do not cheat on an expense report or when filing an insurance claim (Josephson Institute, 2009). Moreover, Lawson (2004) found that students who cheated at college were more tolerant of unethical behavior in business. Sims (1993) found that graduate business students who had behaved dishonestly in graduate school went on to behave dishonestly at work. Later, Nonis and Swift (2001) established a link between cheating behavior among both undergraduate and graduate business students and unethical behavior at work. Most alarming, Teixeira (2013) uncovered that those countries with high levels of cheating by economics and business students during college experience more corruption. She argued that unethical behavior by college students (in this case, cheating on tests) carries over into their professional lives in the years after they joined the workforce. Overall, students' unethical behavior is one of the most reliable predictors of future work-related unethical behavior, and there is a high degree of similarity in the justification for being unethical in both contexts (Carpenter, et al., 2010). It follows that diminishing academic misconduct by not allowing it to become the students' norm, might decrease students' likelihood of behaving unethically once they graduate. Indeed, reducing unethical behavior at college can lead to an improvement in ethics in organizations (Granitz & Loewy, 2007). The pedagogy presented was designed to support ends.

The Values Module

Outlined in the following section is a pedagogy that makes up a values module I use to teach values theory to undergraduate business ethics students and a related assessment. The values module (pedagogy) forms the basis for a term paper (assessment), written over the course of the semester. The paper incorporates a detailed articulation of students' values, the role their values play in preference toward one ethical framework over another, their attitude towards the role of business in society, their concern about particular ethical issues in their chosen career, and what they might do if faced with the ethical issues that most concern them. The discussion below describes the process before students write their paper. The module consists of two weeks of in-class work and homework and comprises the following elements:

A. Calculation of students' values using the Schwartz Value Survey.
B. Completion of a survey on academic integrity.
C. Lectures on values theory and the link between values, attitudes, and behavior.
D. Interpretation of students' values data.
E. Determining the relationship between each student's values and their attitudes toward academic integrity and academic misconduct.
F. Lecture and discussion on the links between college and professional behavior.

Element A

Before students learn about values, they complete the Schwartz Values Survey (SVS) (see Appendix A for the survey) so as not to increase their inclination towards socially desirable responses. The SVS is a widely used survey instrument in values research to collect data on the personal values of survey participants. The SVS consists of 57 values, incorporated into two inventories of values: List I and List II. Students rate these values as *guiding principles* in their lives using a 9-point Likert scale. The scale ranges from −1, *opposed to my values*, to 7, *of supreme importance*. From List I, students select the most important of the 30 values and the least important of the 30 values to anchor subsequent choices on List I. They then repeat this process with List II. Having done this, students insert their numbers into an excel spreadsheet that categorizes the ratings on the 57 individual values into 10 value types that rank from least to most important. Students are not required to share details with anyone. These numbers form the basis of the students' articulations of their values that come later.

Element B

The next step is for students to complete a short survey consisting of questions based on those used on the McCabe Academic Integrity Student Survey, though they are not identical. Students are not required to share their responses with anyone, but rather use the survey responses later in the module in conjunction with their values responses. I decided that if academic integrity was to be the method with which I were to teach students the link between values and behavior we needed a common,

strong vocabulary. Flushing students' thoughts on academic misconduct through an academic integrity survey is an effective way to develop such a vocabulary.

Element C

Values while a commonly spoken of construct are often ill defined and misinterpreted when used, therefore it is important to anchor the knowledge acquisition goals I have for this model to academically determined definitions and theory. What follows is a brief description of the what the students learn about during the module.

Schwartz and Bilsky explain that values are "concepts or beliefs, pertaining to desirable end states, which transcend specific situations, guide selection or evaluation of behavior and events, and are ordered by relative importance" (1987, p. 551.) People organize values in a hierarchy, which determines the value that prevails in any given situation (Rokeach, 1973). They are assessments of abstract concepts and they are used to evaluate others, the actions of others, attitudes, things, and the self (Maio et al., 1996). Drob (2016) correctly states that values are in many ways separate from morals, ethics, and virtues; rather, they are guiding principles in a person's life. In sum, values are sources of motivation in peoples' lives. So, for instance, one person might be more motivated by equality than wealth, whereas another might be more motivated by wealth than equality. From a values perspective, neither person is more or less ethical, or more or less moral. While values are important to understanding behavior (Alwin & Krosnick, 1985), the role of attitudes cannot be forgotten as attitudes act as the mediator in the value-behavior relationship (Homer & Kahle, 1988; McCarty & Shrum, 1994); attitudes are the antecedents to behavior, and values are the antecedents to attitudes. In as much as values reflect individuals "preferred states of being or feelings", behavior reflects their "preferred ways of behaving" (McGregor, 2000, p. 94). It is this relationship between preferred states of beings (motivations) and behavior that students must become familiar with to understand why people differ in their behavior and why some people behave unethically when others do not.

The Schwartz *Theory of Human Values* is the theory used in this module to teach students. The theory and the SVS are widely used for research on the values positions of groups around the world and in many contexts. Using the SVS, Schwartz (1992) identified 57 individual values present in societies across the globe (see Table 1). He also grouped these values into 10 value types based on their common motivational goal (See Table 2): Power, Achievement, Hedonism, Stimulation, Self-direction, Universalism, Benevolence, Conformity, Tradition, and Security (see Table 1). These 10 value types are mapped out on a circumplex (see Figure 1.) Each wedge of the circumplex represents one of the ten value types. The location of each wedge is meaningful, as it indicates the relationship between the values each wedge represents, which then influence subsequent behavior. This second aspect of Schwartz's work, the relationships between value types, speaks to the fact that multiple value types may motivate a person at the same time, especially when they share similar underlying motivational goals (see Table 3). Moreover, behavior consistent with one value type would conflict with that consistent with another value type because the two value types do not share a motivational goal (see Table 3). For example, the set of individual

values in the Power type (social power, authority, wealth, preserving my public image, social recognition) satisfies people's motivation concerning "social status and prestige, control, or dominance over people and resources" (Schwartz, 1994, p. 22). For instance, behavior based on Power does not conflict with behavior driven by Achievement, which consists of the individual values: successful, capable, ambitious, influential, intelligent. This is the case because Achievement relates to the need for "personal success through demonstrating competence according to social standards" (p. 22). The shared motivational goal between Power and Achievement is "Social superiority and esteem" (p. 24), thus the congruency in potentially related attitudes and behavior.[1] Once this theory has been introduced we discuss the role of values in behavior students might have undertaken already such as choosing a degree, social justice activity, selecting pastimes, consumption patterns, and so forth.

Element D

Having completed the SVS as well as attending the theory lectures, students begin the process of examining their values stance. They add their values ranks established at the start of the module to the circumplex to see how their ranks map out and then use the motivational definitions from Tables 1–3 to write their first draft of their values stances. They might start for example by describing themselves as being most motivated by Power and least motivated by Universalism and so forth. Once completed, I provide written feedback on their interpretations before we begin the discussion phase. During group discussions, student volunteers share their findings. (If there are not enough volunteers, we discuss my values ranks.) By doing so students hear about their peers' motivations (values hierarchies), which allows students to see how they differ from their peers and friends. They also reflect upon and describe how they feel about these differences. Without exception, every semester students describe how they are surprised at what the numbers reveal. For example, many students believe they are broadminded and are motivated by social justice, but comparing themselves to their peers and the literature, they might find others might be more so inclined. Students learn about the averages from one of the module's assigned readings. Alternatively, they might find they are more Power or Achievement oriented than the average. Those who considered themselves motivated by Self-Direction values might learn for example that Tradition and Conformity have a greater influence on them than they imagined. This always creates an energetic and fun discussion.

Element E

To learn how values affect behaviors we then begin by practicing with how students' values interact with their self-reported numbers on academic misconduct. Students first have to determine how their values influence their attitudes towards academic misconduct guided by their response to the survey taken at the start of the class and then the range of associated behaviors. Students share their insights with me individually and I provide some examples to the class for discussion to hide the

[1] For a detailed explanation, refer to Schwartz (1992; 1994).

identity of the students proposing a particular value, attitude, behavior link. Through this discussion, students learn that prioritising one value over another might deter cheating behavior, as it would give rise to a negative attitude towards cheating on a test for example, and thus deter the student from cheating (the attitude-behavior link.) Conversely, another value preference might lead to cheating behavior as it would give rise to a positive attitude towards cheating on a test, and thus encourage a student to cheat if the opportunity arises. It is during this discussion that an in-depth understanding of the value, attitude, and behavior relationship starts to emerge.

Element F

Once I am confident that students have a good grasp on how values work I present evidence from the literature regarding the correlation between unethical behavior in college (academic misconduct) and subsequent unethical behavior at work. At this point, we are ready to move on to discussing how their values, in general, might influence their professional behavior and the behavior of their future work colleagues.

Finally, as noted above one of the main assignments for this course is a semester-long project that requires students to write about their values and how they influence a range of constructs. Students are not required to include details about academic misconduct; rather, they reflect on how values affect other areas of their lives currently and potentially when they move on to the workplace having practiced this reflection using academic misconduct.

Anecdotal Observations

Even though students use the SVS to create their values profile and the SVS is commonly used in values research, I do not collect students' data for research purposes. This paper describes a pedagogy only. That said, there are anecdotal indicators from approximately 140 students concerning how students' values interact with their views on academic misconduct.

Chapman et al. (2004) found that students were inclined to engage in academic misconduct to help a friend. Therefore, it seemed intuitive that Benevolence (concern about the in-group) would correlate with helping a friend with an assignment or on a test. This did indeed appear to be the case during the discussions. Conversely, a student who ranked Universalism highest told her peers that she would not involve herself in any type of academic misconduct as doing so is unfair to everyone; Universalism's underlying motivation is "Understanding, appreciation, tolerance, and protection, for the welfare of all people and for nature" (Schwartz, 1994, p. 22). This link becomes clearer when one considers the individual values that make up Universalism: broad-minded, wisdom, social justice, equality, a world at peace, a world of beauty, unity with nature, protecting the environment. This is likely related to her motivations with respect to fairness for *everyone* or put another way; prioritization of the in-group among high Benevolence students versus no such distinction made by students high in Universalism (as they would not hold the in-group in higher esteem than the out-group.)

It emerged that students high in Conformity were influenced by what their peers think and do around the issue of academic dishonesty. This is unsurprising as the motivational goal for Conformity is "Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms" (Schwartz, 1994, p. 22). In addition, the literature indicates that this is no coincidence. Studies show that knowing others cheat increases a person's likelihood of cheating (Rettinger & Kramer, 2009). Therefore, if academic misconduct is normed within a group, then those students who are driven to adhere to norms might be more inclined to follow the lead of their friends who engage in academic misconduct.

Some students who reported that they were highly motivated by Achievement appeared to view academic misconduct as inevitable, given the pressure to obtain a high grade point average (GPA) to secure a job or a place at graduate school. This was foreseeable given that Achievement's motivational goal is "Personal success through demonstrating competence according to social standards" (Schwartz, 1994, p. 22). This too accords with the literature, such as the finding that students believe cheating gives them a competitive edge (Drye et al., 2018). Also, Stuber-McEwen et al. (2009) determined that students who worried about their grades are likely to participate in behaviors related to academic dishonesty, but they also found students worried about scholarships do so too. Relatedly, because Achievement and Power share a motivational goal, "social superiority and esteem."

A student also explained that his Power rank and his concern about his public image meant that he would not jeopardize his image by being unethical. Power's underlying motivation is "Social status and prestige, control or dominance over people and resources" (Schwartz, 1994, p. 22.).

One student, who ranked Stimulation high, disclosed that she is likely to see unethical activities at work and college and she could not guarantee she would refrain from engaging in these if doing so would do little harm but result in a lot of benefits. This reflects a pattern among students high on Openness to Change. Students high on Stimulation and Hedonism seemed less inclined to view academic misconduct negatively. Time pressures seemed to be a factor for the high Hedonism students and benefits outweighing the risks appeared to be a popular justification with students who ranked Stimulation values high. Schwartz (1992) suggests that people learn values through group interaction and individual experiences, which suggests that students who have grown up to be motivated by Self-Direction might be less likely to cheat when everyone else around them is cheating, but this did not seem to be the case in the details that emerged from this project.

Conclusion

During this values module, students learn that behaviors are not as random as they might think and that the potential for unethical behavior lies within every person. They also learn a little cheating here and there can lead to other forms of unethical behavior in their careers. The subordination of ethics to the win-at-all-costs perspective described above simultaneously challenges business ethics professors and educational institutions.

An important reason to incorporate academic integrity into the curriculum is the far-reaching impact of academic misconduct. Despite my discussing the honor code, deterrents, plagiarism checkers like Turnitin, and so forth at the beginning of every semester, this unfortunately does not deter everyone from cheating. As a result of adding academic dishonesty as the ethical issue to this module, my goal is that when students hear their class peers talk about the lack of fairness and the harm it can cause to other students, the institution, future employers, and coworkers it will raise students' respect for academic integrity.

It is worth mentioning the unintended consequence to rolling academic integrity into the curriculum is that it might teach students how to rationalize academic misconduct. A student will now know to claim that her need for security made her cheat! That would probably be more socially acceptable than claiming she had to do it because she is highly motivated by a high GPA.

By the time students leave higher education, there is a high chance that they will have cheated at least once (Drye et al., 2018). Additionally, the prevalence of unethical behavior persisting across time reinforces the danger of ignoring student cheating (Teixeira, 2013). Research shows that the best way to affect students' attitudes and behavior with respect to academic integrity is to take a semester-long approach (Shaftel & Shaftel, 2005), which is what this values module linked to the term paper does. Ultimately, connecting academic integrity to professional ethics increases the chances that students will adopt the ethical standards required of their professions (Atkinson, Nau, & Symons, 2016).

References

Alwin, D. F., & Krosnick, J. A. (1985). The measurement of values in surveys: A comparison of ratings and rankings. *Public Opinion Quarterly, 49*(4), 535–552.

Atkinson, D., Zaung Nau, S., & Symons, C. (2016). Ten years in the academic integrity trenches: Experiences and Issues. Journal of Information Systems Education, 27(3), 197–207.

Carpenter, D. D., Harding, T. S., & Finelli, C. J. (2010). Using research to identify academic dishonesty deterrents among engineering undergraduates. *International Journal of Engineering Education*, 26(5), 1156–1165.

Chapman, K. J., Davis, R., Toy, D., & Wright, L. (2004). Academic integrity in the business school environment: I'll get by with a little help from my friends. Journal of Marketing Education, 26(3), 236–249.

Crossan, M., Mazutis, D., Seijts, G., & Gandz, J. (2013). Developing leadership character in business programs. *Academy of Management Learning & Education, 12*(2), 285–305.

Cushman, F. Young, L., & Hauser, M. (2006). The role of conscious reasoning and intuition in moral judgment: Testing three principles of harm. *Psychological Science*, 17(12), 1082–1089.

Drob, S. L. (2016). An axiological model of the relationship between consciousness and values. *New Ideas in Psychology*, *43*, 57–63.

Drye, S. L., Lomo-David, E., Snyder, L. G. (2018). Is cheating normal deviance? At what level does deviance become normal if deviant? *Southern Journal of Business and Ethics*, 10, 71–84.

Giacalone R. A., & Promislo, M. D. (2013). Broken when entering: The stigmatization of goodness and business ethics education. *Academy of Management Learning & Education*, 12(1), 86–101.

Granitz, N., & Loewy, D. (2007). Applying ethical theories: Interpreting and responding to student plagiarism. *Journal of Business Ethics*, 72, 293–306.

Hartman, E. M. (2016). Can we teach character? An Aristotelian Answer. *Academy of Management Learning & Education*, 5(1), 68–81.

Homer, P. M., & Kahle, L. R. (1988). A structural equation test of the value-attitude-behavior hierarchy. *Journal of Personality and Social Psychology, 54*(4), 638–646.

Jagger, S., & Volkman, R. (2014). Helping students to see for themselves that ethics matters. *International Journal of Management Education*, 12(2), 177–185.

Josephson Institute of Ethics (2009). Josephson institute's report card on American youth: There's a hole in our moral ozone and it's getting bigger Youth. Retrieved from `http://www.josephsoninstitute.org/reportcard/index.html.`

Klein, H. A., Levenburg, N. M., McKendall, M., & Mothersell, W. (2007). Cheating during the college years: How do business school students compare? *Journal of Business Ethics*, 72(2), 197–206.

Kupperman, J. J. (1996). Axiological Realism. *Philosophy*, 71(276), 185–203.

Lang, J. M. (2013). *Cheating lessons: Learning from academic dishonesty*. Cambridge, Massachusetts: Harvard University Press.

Lawson, R. A. (2004). Is classroom cheating related to business school students' propensity to cheat in the "real world"? *Journal of Business Ethics*, 49(2), 189–199.

Maio, G. R., Roese, N. J., Seligman, C., & Katz, A. (1996). Ranking, ratings and the measurement of values: Evidence for the superior validity of ratings. *Basic and Applied Social Psychology, 18*(2), 171–181.

May, D. R., Luth, M. T., & Schwoerer, C. E. (2014). The influence of business ethics education on moral efficacy, moral meaningfulness, and moral courage: A quasi-experimental study. *Journal of Business Ethics*, 124(1), 67–80.

McCabe, D. L., Butterfield, K. D., & Trevino, L. K. (2006). Academic dishonesty in graduate business programs: Prevalence, causes, and proposed action. *Academy of Management Learning and Education*, 5(3), 294–305

McCarty, J. A., & Shrum, L. J. (1993). The role of personal values and demographics in predicting television viewing behavior: Implications for theory and application. *Journal of Advertising, 22*(4), 77–101.

McGregor, S. L. T. (2000). Using social and consumer values to predict marketplace behaviour: questions of congruency. *Journal of Consumer Studies & Home Economics,* 24(2), 94–103.

Neesham, C., & Gu, J. (2015). Strengthening moral judgment: A moral identity-based leverage strategy in business ethics education. *Journal of Business Ethics*, 131(3), 527–534.

Nonis, S., & Swift, C. (2001). An examination of the relation between academic dishonesty and workplace dishonesty: A multi-campus investigation. *Journal of Education for Business*, 77(2), 69–77.

Orms, C. M. (2016). Developing the personal ethics code: A key element of an effective business ethics course. *Business Education Innovation Journal*, 8(2), 51–58.

Rettinger, D., & Kramer, Y. (2009). Situational and Personal Causes of Student Cheating. *Research in Higher Education,* 50, 293–313.

Rokeach, M. (1973). *The nature of human values*. New York: Free Press.

Schwartz, S. H. (1994). Are there universal aspects in the structure and contents of human values. *Journal of Social Issues,* 50(4), 19–45.

Schwartz, S. H. (1992). *Universals in the content structure and content of values: theoretical advances and empirical tests in 20 countries.* In M. Zanna (Ed.), Advances in Experimental Social Psychology, 25, 1–65. Orlando, FL: Academic Press.

Schwartz, S. H., & Bilsky, W. (1987). Toward a universal psychological structure of human values. *Journal of Personality and Social Psychology*, 53(3), 550–562.

Sims, R. L. (1993). The relationship between academic dishonesty and unethical business practices. *Journal of Education for Business*, 68(12), 207–211.

Shaftel, J., & Shaftel, T. L. (2005). The influence of effective teaching in accounting on student attitudes, behavior, and performance. *Issues in Accounting Education*, 20(3), 231–246.

Stuber-McEwen, D., Wiseley, P., Hoggatt, S. (2009) Point, click, and cheat: Frequency and type of academic dishonesty in the virtual classroom. *Online Journal of Distance Learning Administration*, (12)3.

Tang, T. L. & Chen, Y. (2008). Intelligence vs. wisdom: The love of money, Machiavellianism, and unethical behavior across college major and gender. *Journal of Business Ethics,* 82(1), 1–26.

Teixeira, A. A. C. (2013). Sanding the wheels of growth: Cheating by economics and business students and 'real world' corruption. *Journal of Academic Ethics*, 11, 269–274.

Tables

Table 1
Schwartz's 57 Single Values

Value Type	**Single Values**
Universalism	broadminded, wisdom, social justice, equality, a world at peace, a world of beauty, unity with nature, protecting the environment
Self-direction	creativity, freedom, independent, curious, choosing own goals, self-respect
Stimulation	daring, a varied life, an exciting life
Hedonism	pleasure, enjoying life, self-indulgent
Power	social power, authority, wealth, preserving my public image, social recognition
Achievement	successful, capable, ambitious, influential, intelligent,
Security	family security, national security, social order, clean, reciprocation of favors, sense of belonging, healthy
Tradition	humble, accepting my portion in life, devout, respect for tradition, moderate
Conformity	politeness, obedient, self-discipline, honoring of parents and elders
Benevolence	helpful, honest, forgiving, loyal, responsible, true friendship, mature love

Source: Schwartz (1992, Table IV, p. 28).

Table 2
Schwartz's Value Types and Their Motivational Goals

Value Type	**Motivational Goal**
Power	Social status and prestige, control or dominance over people and resources
Achievement	Personal success through demonstrating competence according to social standards
Hedonism	Pleasure and sensuous gratification for oneself
Stimulation	Excitement, novelty, and challenge in life
Self-direction	Independent thought and action – choosing, creating, exploring
Universalism	Understanding, appreciation, tolerance, and protection, for the welfare of all people and for nature
Benevolence	Preservation and enhancement of the welfare of people with whom one is in frequent personal contact
Tradition	Respect, commitment, and acceptance of the customs and ideas that traditional culture and religion provide
Conformity	Restraint of actions, inclinations, and impulses likely to upset or harm others and violate social expectations or norms
Security	Safety, harmony, and stability of society, of relationships, and of self

Source: Adapted from Schwartz (1994, p. 22)

Table 3
Schwartz's Value Types and Their Shared Motivational Goals

Value Types	**Shared Motivational Goal**
Universalism & Benevolence	Enhancement of others and transcendence of selfish interests
Benevolence & Tradition	Devotion to one's in-group
Benevolence & Conformity	Normative behavior that promotes close relationships;
Conformity & Tradition	Subordination of self in favor of socially imposed expectations
Tradition & Security	Preserving existing social arrangements that give certainty to life
Conformity & Security	Protection of order and harmony in relations
Security & Power	Avoiding or overcoming threats by controlling relationships and resources
Power & Achievement	Social superiority and esteem
Achievement & Hedonism	Self-centered satisfaction;
Hedonism & Stimulation	A desire for affectively pleasant arousal
Stimulation & Self-direction	Intrinsic interest in novelty and mastery
Self-direction & Universalism	Reliance upon one's own judgement and comfort with the diversity of existence

Source: Adapted from Schwartz (1994, p. 24–25)

Figures

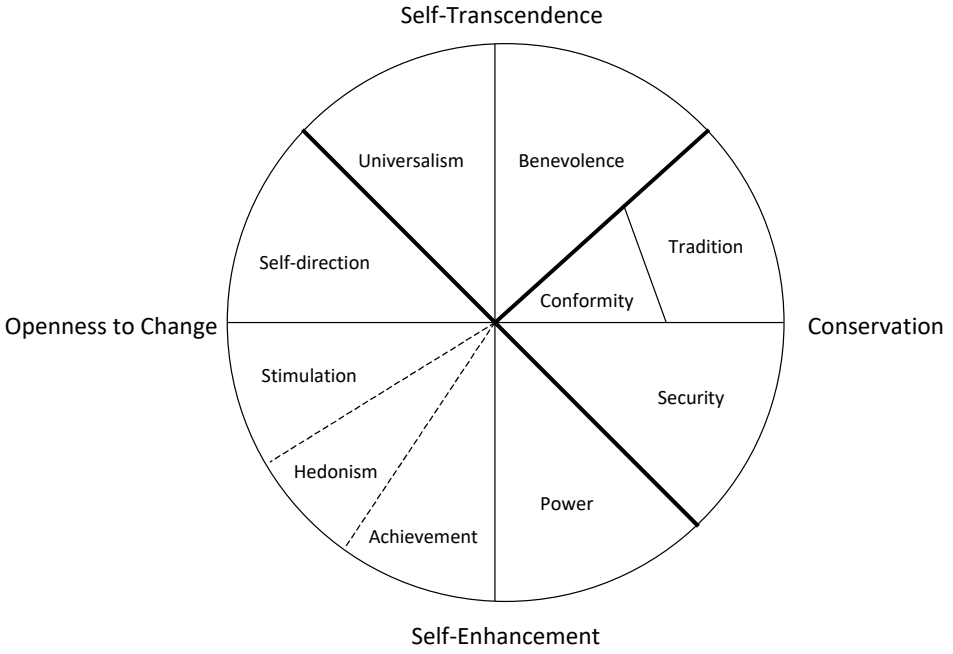

Figure 1. Conceptual framework of Schwartz value types from Schwartz (1994, p. 24)

Appendix A

Schwartz Value Survey (Schwartz, 1992)

In this questionnaire you are to ask yourself: "What values are important to ME as guiding principles in MY life, and what values are less important to me?" There are two lists of values on the following pages. These values come from different cultures. In the parentheses following each value is an explanation that may help you to understand its meaning.

Your task is to rate how important each value is for you as a guiding principle in your life. Use the rating scale below:

0 – means the value is not at all important, it is not relevant as a guiding principle for you.

3 – means the value is important.

6 – means the value is very important.

The higher the number (0, 1, 2, 3, 4, 5, 6), the more important the value is as a guiding principle in YOUR life.

−1 is for rating any values opposed to the principles that guide you.

7 is for rating a value of supreme importance as a guiding principle in your life.

In the space before each value, write the number (−1, 0, 1, 2, 3, 4, 5, 6, 7) that indicates the importance of that value for you, personally. Try to distinguish as much as possible between the values by using all the numbers. You will, of course, need to use numbers more than once.

Before you begin, read the values in items 1–30 of List I, choose the one that is most important to you and rate its importance. Next, choose the value that is most opposed to your values and rate it 1. If there is no such value, choose the value least important to you and rate it 0 or 1, according to its importance. Then rate the rest of the values in List I.

opposed to my values	not important			important			very important	of supreme importance
−1	0	1	2	3	4	5	6	7

1 _____ EQUALITY (equal opportunity for all)
2 _____ INNER HARMONY (at peace with myself)
3 _____ SOCIAL POWER (control over others, dominance)
4 _____ PLEASURE (gratification of desires)
5 _____ FREEDOM (freedom of action and thought)
6 _____ A SPIRITUAL LIFE (emphasis on spiritual not material matters)
7 _____ SENSE OF BELONGING (feeling that others care about me)
8 _____ SOCIAL ORDER (stability of society)
9 _____ AN EXCITING LIFE (stimulating experiences)
10 _____ MEANING IN LIFE (a purpose in life)
11 _____ POLITENESS (courtesy, good manners)
12 _____ WEALTH (material possessions, money)
13 _____ NATIONAL SECURITY (protection of my nation from enemies)
14 _____ SELF RESPECT (belief in one's own worth)
15 _____ RECIPROCATION OF FAVOURS (avoidance of indebtedness)
16 _____ CREATIVITY (uniqueness, imagination)
17 _____ A WORLD AT PEACE (free of war and conflict)
18 _____ RESPECT FOR TRADITION (preservation of timehonoured customs)
19 _____ MATURE LOVE (deep emotional & spiritual intimacy)
20 _____ SELFDISCIPLINE (selfrestraint, resistance to temptation)
21 _____ PRIVACY (the right to have a private sphere)
22 _____ FAMILY SECURITY (safety for loved ones)
23 _____ SOCIAL RECOGNITION (respect, approval by others)
24 _____ UNITY WITH NATURE (fitting into nature)
25 _____ A VARIED LIFE (filled with challenge, novelty and change)
26 _____ WISDOM (a mature understanding of life)

27 ____ AUTHORITY (the right to lead or command)
28 ____ TRUE FRIENDSHIP (close, supportive friends)
29 ____ A WORLD OF BEAUTY (beauty of nature and the arts)
30 ____ SOCIAL JUSTICE (correcting injustice, care for the weak)

VALUES LIST II

Now rate how important each of the following values in items 31–57 is for you as a guiding principle in YOUR life. These values are phrased as ways of acting that may be more or less important for you. Once again, try to distinguish as much as possible between the values by using all the numbers.

Before you begin, read the values in List II, choose the one that is most important to you and rate its importance. Next, choose the value that is most opposed to your values, or – if there is no such value – choose the value least important to you, and rate it −1, 0, or 1, according to its importance. Then rate the rest of the values.

AS A GUIDING PRINCIPLE IN MY LIFE, this value is:

opposed to my values	not important			important			very important	of supreme importance
−1	0	1	2	3	4	5	6	7

31 ____ INDEPENDENT (selfreliant, selfsufficient)
32 ____ MODERATE (avoiding extremes of feeling & action)
33 ____ LOYAL (faithful to my friends, group)
34 ____ AMBITIOUS (hardworking, aspiring)
35 ____ BROADMINDED (tolerant of different ideas and beliefs)
36 ____ HUMBLE (modest, selfeffacing)
37 ____ DARING (seeking adventure, risk)
38 ____ PROTECTING THE ENVIRONMENT (preserving nature)
39 ____ INFLUENTIAL (having an impact on people and events)
40 ____ HONOURING OF PARENTS AND ELDERS (showing respect)
41 ____ CHOOSING OWN GOALS (selecting own purposes)
42 ____ HEALTHY (not being sick physically or mentally)
43 ____ CAPABLE (competent, effective, efficient)
44 ____ ACCEPTING MY PORTION IN LIFE (submitting to life's circumstances)
45 ____ HONEST (genuine, sincere)
46 ____ PRESERVING MY PUBLIC IMAGE (protecting my "face")
47 ____ OBEDIENT (dutiful, meeting obligations)
48 ____ INTELLIGENT (logical, thinking)
49 ____ HELPFUL (working for the welfare of others)
50 ____ ENJOYING LIFE (enjoying food, sex, leisure, etc.)

51 ____ DEVOUT (holding to religious faith & belief)
52 ____ RESPONSIBLE (dependable, reliable)
53 ____ CURIOUS (interested in everything, exploring)
54 ____ FORGIVING (willing to pardon others)
55 ____ SUCCESSFUL (achieving goals)
56 ____ CLEAN (neat, tidy)
57 ____ SELF-INDULGENT (doing pleasant things)

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STYLOMETRIC COMPARISON OF PROFESSIONALLY GHOST-WRITTEN AND STUDENT-WRITTEN ASSIGNMENTS

Robin Crockett, Kirstie Best

Abstract: We report a stylometric investigation of a portfolio of 20 assignments submitted by an individual student over two consecutive academic years. This investigation followed a formal disciplinary investigation which had identified that eight of the assignments had been ghost-written, with seven of those showing explicit ghost-writer ID information and three of those showing ID information from the same commercial provider. The stylometric investigation involved a conventional word and bigram frequency analysis and a prototype word complexity analysis. The word and bigram analysis identified four consistent groups of assignments, which associate other assignments with the eight known to have been ghost-written, indicating that those were probably also ghost-written. One of those groups comprises the three assignments from the same provider, plus another assignment, implying that the provider has a 'house style' and that the other assignment also came from that provider. The prototype analysis clearly categorised the core members of two of those same groups, including the group from the identified provider, adding further weight those associations. More generally, this investigation shows that it is possible to categorise assignments according to aspects of writing style: we would have obtained the same groups even if we had not possessed the ghost-writer ID information. Where such consistent groups are identified it implies, on balance of probabilities, multiple authorship of assignments and that the student concerned cannot have written all the submitted assignments and that some were ghost-written.

Key words: Commissioning; Contract-Cheating; Essay-Mill; Ghost-Writer; Stylometry

Introduction

In September 2018 the University of Northampton was advised by the Police that a student (hereinafter 'Student') had made a succession of payments to an identified, well known and long established UK-based commercial provider of academic assignments (sometimes referred to colloquially as an 'essay-mill', see *e.g.* Cambridge English Dictionary online) during calendar year 2017, the period they were investigating for unrelated reasons. That period encompassed the latter part of the final year of Student's Bachelors (undergraduate) degree and first part of their Masters (postgraduate) degree. Also in September 2018, subject tutors were independently referring Student's Masters dissertation for suspected contract-cheating due to its anomalously high quality in terms of both the subject content and the written English. Those circumstances led to a detailed investigation of Student's submitted assignments over the final year of their Bachelor's degree and entire Master's degree. The outcome of that investigation and the associated formal hearings was that Student had committed extensive commissioning/contract-cheating over the two-academic-year period.

Following the conclusion of that formal investigation and all consequent University processes, the authors decided to investigate the portfolio of assignments in more

DOI: https://doi.org/10.11118/978-80-7509-772-9-0035

detail as that portfolio offered the opportunity to investigate differences between known 'professionally' ghost-written[1] work and (possible) student-written work, across a consistent range of subjects, in detail. The formal investigation had not required this depth of investigation owing to the sufficiency of 'headline' evidence and Student's inability to (a) provide a coherent statement of honest endeavour that explained the evidence or (b) offer any information regarding any of the author names revealed in the document properties metadata. The headline document properties are summarised in Table 1.

In Table 1 and associated text, Bachelors and Masters assignments are labelled 'L6' and 'L7' respectively, the two letters following the underscore indicate the core subject matter and the number refers to first, second or third assignment as appropriate. Where known or strongly suspected, a ghost-writer flag is suffixed to the assignment identifier. Three assignments showing different creating-authors associated with the identified provider are suffixed 'A1', 'A2', 'A3'; four assignments showing other ghost-writer identifiers are suffixed 'B' (two assignments), 'C' and 'D'. The Masters dissertation, identified by subject tutors as ghost-written, is suffixed 'X'. Two other assignments showing strong evidence are suffixed 'Y' (different page size and hacked core.xml document properties file) and 'Z' (different page size and basic presentation including the unusual, at least for assignments submitted at the University of Northampton, Canadian English language setting). In light of Student's inability to identify any of the author names in the files he submitted, it has been concluded that none of the names indicate a borrowed computer and all are associated with ghost-writers. It should be noted that until the Masters dissertation, Student had been careful to commission assignments at second-class honours and equivalent grades, consistent with their higher grades in previous years and thus not attracting tutors' suspicions at the time.

The aim of this investigation was to determine whether there are consistent stylometric differences between the use of English in professionally ghost-written and student-written assignments that could assist in evidence gathering in future contract-cheating investigations (Klaussner et al., 2015). The main objectives are to determine:

- whether any assignments of unknown authorship and provenance are grouped with known ghost-written assignments, raising the possibility that those assignments were also ghost-written;
- whether stylometric analysis identifies consistent differences between ghost-written and student-written assignments, possibly identifying similarities among ghost-writer styles.

[1]By 'professional', we mean mature writers with significant knowledge and expertise within the subject-areas in which they write, *i.e.* writers as might be retained by upmarket providers (essay-mills) that advertise, for example, that they offer support and mentoring to their writers.

Table 1
Key document properties from the formal investigation

Assignment Identifier	Ghost-Written	Ghost-Writer Suffix	Doc. Type	English Variant	Page Size
L6_EL1	Yes: provider ID	A3	docx	Australian	A4
L6_EL2	Yes: author name	B	docx	UK	A4
L6_ET1	Yes: provider name	A1	docx	UK	A4
L6_HR1	Unknown		docx	UK	A4
L6_HR2	Yes: author name	D	docx	US	A4
L6_HR3	Strong evidence: hacked core.xml file	Y	docx	UK	US Letter
L6_LL1	Yes: provider ID	A2	docx	US	A4
L6_SP1	Unknown		docx	US	A4
L6_SP2	Yes: author name	C	docx	UK	A4
L6_DI1, L6_DI2	Unknown		docx	UK	A4
L7_CS1	Unknown		docx	UK	A4
L7_DM1	Unknown		docx	UK	A4
L7_HR1	Unknown		docx	UK	A4
L7_NS1	Unknown		docx	UK	A4
L7_OC1	Yes: author name	B	odt	UK	A4
L7_OC2	Strong evidence: basic presentation	Z	docx	Canadian	US Letter
L7_DI1, L7_DI2	Unknown		docx	UK	A4
L7_DI3	Yes: tutor identified	X	docx	UK	A4

Context and Literature Review

Contract-cheating, commissioning and ghost-writing

Contract-cheating (Clarke & Lancaster, 2006), also known as commissioning, is the variant of plagiarism where a student commissions a third-party, *i.e.* a 'ghost-writer', to write all or part of an assignment for them and then submits that assignment as their own work for assessment. The ghost-writer might or might not receive a reward, financial or otherwise, for their endeavour: that is immaterial in the academic-integrity context and it is the student's submission of the commissioned assignment as their own work that is the act of academic misconduct, *i.e.* plagiarism.

An 'essay-mill' (sometimes 'paper-mill', 'assignment-mill' etc.) is a business that acts as an intermediary between students and ghost-writers who might be its employees but, more generally (as based on perusal of numerous websites), are freelance writers who register with it (Medway et al., 2018; Rogerson, 2014; Ellis et al., 2018). In the context of academic misconduct and plagiarism, ghost-writers can work as independent freelance writers, possibly advertising via social media, but often register with one or more essay-mills (Sivasubramaniam et al., 2016). According to their online advertisements, some (upmarket) essay-mills require writers to demonstrate their qualifications, expertise and experience, offer forms of support and mentoring to their writers, and provide quality control on the purchased assignments. However, other

essay-mills make no such claims and act solely as intermediaries providing no other services (Sutherland-Smith & Dullaghan, 2019; Newton, 2018).

Some essay-mills operate multiple 'shop-fronts', *i.e.* websites offering different combinations of subjects or assignment-types, to more clearly advertise the full range of the services they offer to (prospective) customers. Some essay-mills assert that they only provide exemplars for tutorial purposes, with disclaimers that students who purchase such assignments should not submit them, others do not. However, it appears that such disclaimers are of little, if any, use in deterring students who are intent on dishonestly submitting purchased assignments. Some essay-mills and ghost-writers offer 'plagiarism free' guarantees, others do not – and it must be observed that however successful such guarantees might be in attracting custom, all such guarantees become meaningless in the event that students submit the commissioned assignments as their own work.

With regard to the detection of contract-cheated (commissioned) ghost-written assignments, on occasion a student is careless and leaves a tell-tale in the assignment which is readily identifiable by the assessing tutor(s), *e.g.* an identifier of some sort in the filename or an 'insert official assignment code here' place-holder in the text. However, this is often not the case and, where it is not the case, considerable effort on the part of tutors and investigators can be required to assemble a consistent body of evidence (Clarke and Lancaster, 2007). Also, it can be necessary to investigate and compare a student's entire portfolio of submitted assignments in order to establish a body of evidence that indicates that, according to a probability threshold, *e.g.* 'balance of probabilities' (QAA, 2017), one or more assignments were not written by the student in question. In general, whatever the nature and extent of the investigation, initial identification is often dependent on the alertness and awareness of individual assessing tutors (Bretag & Mahmud, 2009; Dawson & Sutherland-Smith, 2017; Lancaster & Clarke, 2007; Rogerson, 2017).

Stylometric analysis

Stylometry can be defined as the statistical, or quantitative, analysis of writing style. A common use of stylometry is for attribution of authorship within a collection (corpus) of texts, as is the case here (Klaussner et al., 2015; Stamatos, 2008). Given a collection of texts comprising samples of known and unknown and/or disputed authorship, it can be possible to group texts according to, for example, most frequent words or phrases (*n*-grams), numbers of words per clause or sentence as defined by punctuation, use of spelling conventions (*e.g.* in English, UK/British and US/American spellings) and a variety of relationships between stop-words and content-words (Kulig et al., 2017).

To a great extent, stylometry has evolved for the analysis of relatively long texts, such as plays and novels, and where the writers are experienced with developed individual writing styles (see, *e.g.* Juola, 2013). This is not generally the case with student assignments: assignments are often short, *e.g.* up to a few thousand words in length, and written to assignment briefs which can dictate basic writing styles that should be used by the students (or, indeed, ghost-writers) such as (expository) essays or (technical) reports. Thus, the relative shortness of student assignments can limit the

manifestation of subtler aspects of individual writing style, which might anyway be inhibited by the style constraints of some assignment briefs (Brocardo et al., 2013). For an overview of stylometric approaches in the identification of contract-cheated work see, *e.g.* Juola (2017).

Under some such circumstances, *e.g.* experienced writers with their own preferred vocabularies, it can be useful to remove stop-words and focus on content-words: stop-words effectively being regarded as 'noise' and thus carrying no information. However, this is generally not the case with student assignments and observation of written work at a variety of levels indicates that students, who are learners, often write less concisely and efficiently than mature experienced writers with subject expertise. Thus, stop-word usage can be important in differentiating student-written work from that of professional ghost-writers. Similarly, although much word-frequency analysis is performed on corpora in which all upper-case letters have been converted to lower-case, observation of written work at a variety of levels indicates that experienced writers tend to use capitalised words and proper nouns more consistently and correctly than students and learners.

Lastly, and at risk of oversimplification, in the context of student assignments essays often favour more discursive writing styles with longer, more complex sentences whereas reports (and taught-course dissertations) often favour less discursive writing styles, with shorter less complex sentences and features such as (sub-) headings and bullet-points (as documented in many 'how-to' guides see, for example, McMillan & Weyers, 2011; Greetham, 2014). Over the duration of their studies, students can be required to write assignments encompassing a wide-range of formats, each of which can influence the immediate writing style, which reinforces the focus of a stylometric analysis on shorter features, *e.g.* words and phrases rather than complex clauses and sentences.

Methodology

Preparation of the corpora of assignments

The assignments were prepared by removing footnotes and reference lists from the submitted assignment files and redacting all personal information such as student name and ID and modules codes, and saving as Unix-format Unicode (UTF-8) plain-text files. All investigated assignments were between *ca*. 1,000–5,000 words in length except for the Masters dissertation (L7_DI3), at *ca*. 15,000 words.

Stylometric analysis

The stylometric analysis was performed using the R open-source statistical computing software using the Stylo, Sylcount and Cluster library packages. The prepared text files were imported and processed into a single-word case-preserved corpus from which bigram (*i.e.* 2-gram, word-pair, two-word phrase), trigram (*i.e.* 3-gram, word-triple, three-word phrase), and higher up to 10-gram corpora were derived, in both case-preserved and lower-case versions. Stop-words were not removed on the basis of previous observations which indicated that experienced writers tend to write more

concisely and accurately than student-writers. Similarly, both lower-case and case-preserved corpora were analysed on the basis of previous observations which indicated that experienced writers tend to capitalise words more consistently and correctly than students and learners.

Results and Discussion

Tutors' evidence

Paraphrasing the tutors' evidence [redacted], as collated for the referral of the Masters dissertation for suspected contract-cheating:

- '*... in terms of % similarity* [Turnitin], *there is very little in the text of the work other than common terms*';
- '*... the language/expression used is not that which I associate with the student*';
- '*... it has a fluency and maturity which is above that in* [Student's] *other work*';
- '*... the approach of not providing substantive introductions and conclusions to the chapters* [...] *runs counter to the approach that* [Student] *would have been advised to take throughout* [Student's] *studies (UG and PG).*';
- '*The final section* [...] *is quite unlike the approach that* [Student] *has taken with other work of* [Student's] *with which I am familiar, and not an approach that would be suggested.*';
- '*I confirm your suspicions/concerns about the authorship of this piece of work. The use of language, flow, connection of ideas is very good, as is the interwoven use of sources. This is not like previous work submitted by this student.*'.

The tutors' suspicions regarding the authorship of the Masters dissertation are clear, in particular the observations regarding the low Turnitin similarity score, as would align with an essay-mill or ghost-writer offering a 'plagiarism free' guarantee, and the different 'non-standard' approach and structure and use of language.

During the course of the formal contract-cheating investigation, subject tutors were contacted for comment with regard to other assignments. In particular, these (redacted) comments were received from a tutor who taught a Masters module that covered a similar subject to the Masters dissertation:

- With regard to L7_DI1 (initial Masters dissertation proposal): '*... some very minor issues as to structure and proof-reading but on the whole a clear, mature analysis. Well researched and showing similar qualities to the* [Masters] *dissertation i.e. neat and appropriate written presentation, appropriate research and referencing. The written 'voice' is similar to that for the* [Masters] *dissertation in terms of fluency and clarity of expression.*';
- With regard to L7_HR1: *'It covers a very different topic to* [Masters dissertation]. *It is of a different standard to* [Masters dissertation]*because the writer has not sufficiently followed the assignment brief and also misses the point as to the* [...] *issues raised by the problem analysed. Interestingly, reading the* [L7_HR1]*and* [L7_DI1]*assignments straight after each other, there are clear similarities in style.*

> [L7_HR1] *is well structured and clearly written and there is a turn-of-phrase which echoes that of the other work, and language which I wouldn't necessarily associate with this student. The skills reflection is also interesting as the writer comments on* [Student's] *involvement in class, which certainly does not correlate with my recollection of* [Student] *being pleasant but very quiet in classes.*'.

These comments are also revealing. In particular, the observation regarding the 'voice' of the Masters dissertation proposal which suggests that assignment might also have been ghost-written (possibly by the same ghost-writer as the Masters dissertation). Also, the observations regarding L7_HR1 in containing a discordant 'skills reflection' and missing the focus of the assignment brief, which could align with a (ghost-) writer adapting a previously written document, possibly in response to a 'contract' in which the commissioning student describes the assignment insufficiently precisely.

Stylometric evidence

The main stylometric analysis consists of multivariate analysis of word and bigram frequencies, and is presented as consensus-tree plots summarising the results of cluster analysis (Eder, 2012). Some analysis of trigram frequencies, and initial analysis of higher-order *n*-gram frequencies, was performed but it was observed that trigrams are the highest-order *n*-grams that revealed useful information and, for trigram and higher-order *n*-gram frequencies, increasingly (with order of *n*-gram) the assignment groupings were identified less clearly and consistently and showed more sensitivity to subject-specific phrasings. This accords to some extent with Lopez-Escobedo *et al*. (2013) who restricted their analysis to words, bigrams and trigrams, with the proviso that they analysed Spanish texts.

In addition, a prototype analysis of word complexity (length), as in the frequency distributions (histograms) of numbers of syllables per word, is reported. This analysis was instigated following preliminary analyses which suggested that professional writers use bigger vocabularies (and more complex words) even if 'dumbing-down' to mimic, say, an inexperienced student writing style. Number of syllables per word, with a range from single-syllable words (many stop-words, assumed low information) to multi-syllable words (generally content-words, assumed high information), was used as an intermediate between readability (Gillam, 2013) and more abstract measures of information content such as self-information and information entropy (Shannon, 1948; Guerrero, 2009).

Word and bigram frequencies

Figures 1, 2 and 3 show consensus-tree representations of the groupings of the assignments according to word and bigram frequencies. The consensus trees summarise the most consistent clustering (*cf*. correlation) among the text files 'averaged' over different samples of most-frequent words/bigrams to show the typical groupings. In essence, the further along the arms the group-members diverge, the more similar they are. Figures 1 and 2 are colour-coded according the groups in Figure 3 (see below).

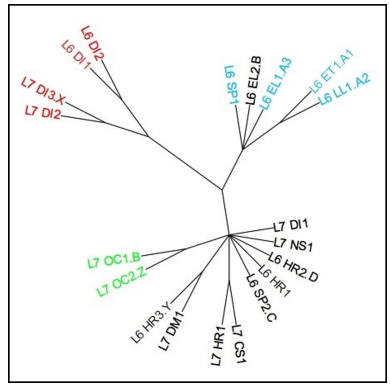

Figure 1. Assignment grouping according to lower-case single-word frequencies

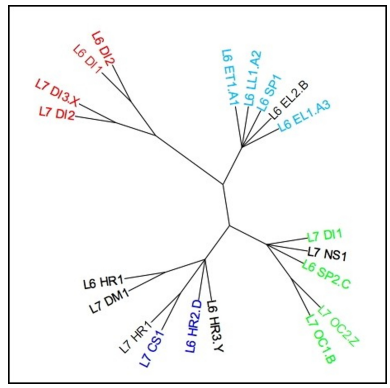

Figure 2. Assignment grouping according to case-preserved single-word frequencies

The importance of analysing both case-preserved and lower-case corpora, to reveal differences in the use of proper nouns etc., is revealed in Figures 1 and 2. Figure 1 shows the most typical grouping according to frequencies of lower-case single words, over 70–300 most-frequent words. Two distinct groups are revealed, coloured red and light blue, plus another proto-group coloured green. Figure 2 shows the most typical grouping according to frequencies of case-preserved single words, over 70–300 most-frequent words. The same two distinct groups as in Figure 1, coloured red and light blue, are revealed. However, the proto-group in Figure 1, coloured green, is more distinctly revealed as a group and a further proto-group, coloured blue, is revealed.

Many variants of these groups (as coloured red, light blue, green and blue in Figures 1 and 2) were observed as different numbers of most-frequent words and bigrams (and trigrams) were analysed but four core groupings were consistently observed, and these are shown in Figure 3.

Figure 3 specifically shows the most typical grouping for lower-case bigrams, over 155–300 most-frequent bigrams. The four typical groups are as follows:

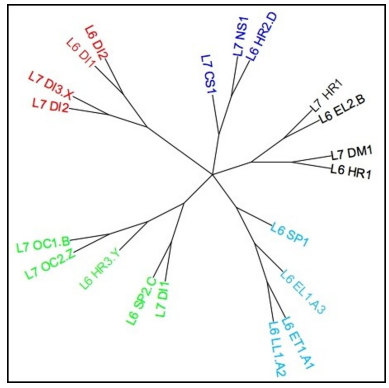

Figure 3. Typical assignment grouping (bigram frequencies)

i. L6_DI1, L6_DI2, L7_DI2 and L7_DI3.X, *i.e.* Bachelors and Masters dissertation draft and final versions (coloured red);

ii. L6_ET1.A1, L6_LL1.A2, L6_EL1.A3 and L6_SP1, *i.e.* the three assignments known to have been commissioned from the identified provider plus a further assignment (coloured light-blue);

iii. L6_HR2.D, L7_CS1 and L7_NS1, *i.e.* two Masters assignments with a ghost-written Bachelors assignment (coloured blue);

iv. L6_SP2.C, L6_HR3.Y, L7_DI1, L7_OC1.B and L7_OC2.Z, *i.e.* two ghost-written assignments, two suspected ghost-written assignments and the Masters dissertation proposal (coloured green);

v. As well as the four typical groups, four assignments, L6_HR1, L7_DM1, L7_HR1 and L6_EL2.B (noting its possible inclusion in group (ii), see Figures 1, 2) show little or no consistent grouping with other assignments, no grouping as consistent as groups (i)–(iv) and as such form a fifth (unassociated) group (uncoloured, black).

The first group is interesting because it is the most consistent group and shows a high degree of consistency of writing style across the Bachelors and Masters dissertations. It would be reasonable to expect that Bachelors draft and final versions would be similar, and also the Masters draft and final versions, but the grouping of the two pairs was unexpected due to the different subjects and qualities (unlike the Masters dissertation, the Bachelors dissertation did not stand out due to anomalously high quality). This implies that the Bachelors dissertation was also ghost-written, by a ghost-writer with a similar writing style to ghost-writer 'X', possibly by ghost-writer 'X' writing to two different standards but with underlying similarity of style.

The second group is interesting for two reasons. First, the similarity among the three assignments known to have been commissioned from the identified provider suggests a 'house-style' for writers who have had access to mentoring and guidance regarding style from that provider. Second, the inclusion of at least one other assignment, L6_SP1, strongly suggests that it, too, was written by a ghost-writer registered with the

identified provider. Also, there is the possibility that a second assignment, L6_EL2.B, grouped with the four other assignments, as shown in Figures 1 and 2, although much less consistently suggests that ghost-writer 'B' might be (or have been) registered with the identified provider (and see below).

The third group suggests that two Masters assignments might have been written by ghost-writer 'D'. However, it is possible that Student used the ghost-written Bachelors assignment, L6_HR2.D, as a starting point for the Masters assignments although only one of the two Masters assignments is in the same subject.

The fourth group is more complicated. First, other than some generic (sub-) headings and bullet-point-type sentences, there are no similarities between the two assignments that show ghost-writer 'B' as author. This suggests either that ghost-writer 'B' is, in fact, two writers using the same ID (whether by deliberate choice or because they used the same computer) or that the Bachelors assignment written by ghost-writer 'B' was used as a starting point for the later Masters assignment despite being on a different subject. Second, there are consistent similarities between assignments L7_OC1.B and L7_OC2.Z which are attributed to authorship. While similarity of subject matter cannot be completely discounted as a reason for similarities between these two assignments, analysis of trigrams and higher-order *n*-grams does not support that explanation. Third, the similarity between the two strongly suspected assignments, L6_HR3.Y and L7_OC2.Z, with at least one ghost-written assignment is further evidence supporting the document-properties evidence that these were commissioned. Overall, the inclusion of the Masters dissertation proposal, L7_DI1, in a group comprised of at least one ghost-written assignment plus two strongly suspected of having been ghost written, suggests that this assignment was also ghost-written.

Word-complexity analysis

The similarities among the word-length distributions were analysed using hierarchical cluster analysis: this is a more straightforward analysis than word (or *n*-gram) frequencies and produces a single clustering (noting that there are other clustering algorithms). Figure 4 shows the cluster dendrogram: in essence (a) the longer the vertical distance from where a cluster diverges from other clusters, the more distinct the cluster and (b) the shorter the vertical distances within a cluster from where individual members diverge, the more similar the cluster-members. Figure 4 is colour-coded according to Figure 3, revealing that this straightforward analysis shows some similar groupings to those revealed by the primary analysis, particularly the core elements of the two strongest clusters, *i.e.* the three identified-provider assignments (group (ii), suffixed 'A') and the two strongly-suspected assignments with a known ghost-written assignment (group (iv), suffixed 'B', 'Y' and 'Z').

Discussion

The word and bigram frequency analysis demonstrates that similarities and differences of writing style according to known authorship can be identified with high degrees of consistency. As well as similarities among individual assignments, three known to have been commissioned from the identified provider show similarities that might indicate

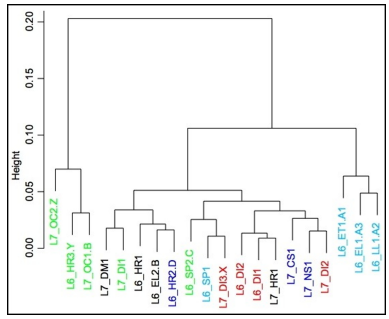

Figure 4. Similarities of word-lengths distribution

a 'house style'. In addition to the eight assignments known/identified as ghost-written as a result of the formal investigation (L6_ET1.A1, L6_LL1.A2, L6_EL1.A3, L6_EL2.B, L6_SP2.C, L6_HR2.D, L7_OC1.B and L7_DI3.X), a further seven have been identified as very probably ghost-written: *i.e.* dissertation assignments L6_DI1, L6_DI2 and L7_DI2 with L7_DI3.X; L6_SP1 as purchased from the identified provider; L6_HR3.Y and L7_OC2.Z with ghost-writer 'B'; and L7_DI1 with ghost-writer 'C'.

Under other circumstances, it might be necessary and appropriate to include trigrams or higher-order *n*-grams, depending on the portfolio of assignments under investigation. However, the reported investigation demonstrates that it is possible to use conventional word and *n*-gram frequency analysis on actual portfolios of student-submitted assignments to categorise assignments according to aspects of writing style.

The more straightforward and significantly less time-consuming analysis of word length (number of syllables per word) shows potential as an analysis for triaging a portfolio of assignments for similarity of writing style. This is a more abstract measure of information content than word or *n*-gram frequencies and is potentially less susceptible to variations in writing style associated with variations of assignment type than readability indices. A document's readability index is a measure of the complexity of its structure, syntax and vocabulary, and readability approaches have been considered for authorship attribution (Gillam, 2013). While such indices include measures of single-syllable and/or multi-syllable words, these also include measures of clauses and sentences, which can vary with assignment-dependent writing style rather than personal writing style. This suggests that such indices, which were not designed for authorship attribution purposes, might be less robust in this context than simpler measures such as word complexity or more abstract entropy-related measures (Shannon, 1948; Guerrero, 2009).

Generalising – the wider context

Under hypothetical circumstances where the University received the same advice from the Police but the seven ghost-written assignments did not contain the author ID information, then the same clusterings and groups would be observed. From there, it would be safe to deduce, on balance of probabilities, that if one group (as in

Subsection 3.2.1) comprised assignments written by Student then the other groups must comprise assignments not written by Student and, therefore, comprise ghost-written assignments. If it is allowed that the Masters dissertation would still be independently identified by tutors as having been ghost-written, then that would mark three other assignments as ghost-written, *i.e.* group (i) as in Subsection 3.2.1. The assignments with different page-sizes, language settings and document formats would raise further suspicions, implicating the assignments in group (iii) as in Subsection 3.2.1. Also, the tutors' observations (as in Section 3.1) would further implicate and associate other assignments although, in practice under circumstances such as these, the investigation would necessitate that additional subject tutors comprehensively re-examine Student's submitted assignments.

Also, it should be noted that the prototype analysis identified two groups of assignments (corresponding to cores of groups (ii) and (iv) as in Subsection 3.2.1), distinct from each other and distinct from the other assignments. That itself is sufficient to indicate that, on balance of probabilities, at least some of the assignments were probably written by someone other than Student.

This investigation demonstrates that by considering a portfolio of assignments submitted by a student, even without specific ghost-writer ID information, it is possible to use stylometric analysis to consistently categorise assignments into distinct groups. From an appropriately robust and consistent categorisation such as this, it is possible to deduce on balance of probabilities that not all of the assignments in the portfolio can have been written by the student in question and, therefore, conclude that some must have been ghost-written. In the reported investigation, correct and consistent capitalisation of proper nouns was a significant reader-observable stylistic feature that contributed to the categorisation. Under other circumstances it could be spelling convention, degree of formality of language or use of contracted/abbreviated forms etc. and, possibly, aspects of presentation and formatting (not considered by stylometric analysis) that provide sets of reader-observable distinguishing features that align with a stylometric analysis and provide a body of evidence.

Further Research and Recommendations

It is intended to pursue and develop this research. The main recommendation at this early stage is that research into stylometric techniques specifically for determining differences between the writing styles of students who, in assignments, are often encountering specific subject material and terminology for the first time, and the styles of more experienced writers for whom the specific subject matter and associated terminologies are familiar. Within this, there is a need to develop stylometric techniques specifically for short documents, such as student assignments. The prototype word-complexity analysis reported herein illustrates that information-theory based techniques show potential and should be investigated.

It is also recommended that, wherever possible and appropriate, basic stylometric analysis of a student's portfolio of submitted assignments is undertaken to assess whether any files of uncertain authorship can, on balance of probabilities, be either

differentiated from assignments known to have been written by the student in question or related to ghost-written assignments submitted by the student in question.

Conclusions

The immediate conclusion of this research is that in addition to the eight assignments known to have been contract-cheated, the stylometric analysis:

i. confirms the strong document-property evidence of ghost-writing initially identified in two assignments and, also,

ii. strongly implicates a further five assignments that did not show specific document-property evidence.

This is statistical evidence, *i.e.* evidence to be considered on 'balance of probabilities' along with other evidence, and is not proof 'beyond reasonable doubt'. However, it does serve to give a fuller picture of the likely scale of Student's commissioning/contract-cheating activity.

More generally, this (ongoing) research demonstrates that ghost-writer writing styles can be distinctly and detectably different to an individual student's writing style. Also, it demonstrates that, in some circumstances at least, ghost-writers can be linked according to provider house-styles. In summary, this research has revealed that professional ghost-writers tend to use English more correctly, consistently, concisely and precisely than the students who commission them, even if 'dumbing-down' to imitate relatively weak student presentational styles.

Ethical Statement

The module and assignment names and codes, and the names of Student, the identified provider and ghost-writers have been redacted in accordance with the ethical approval given by the University of Northampton Research Ethics Committee in September 2018.

Software

R. R Core Team. (2019). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL `https://www.R-project.org/.`

Stylo. Eder, M., Rybicki, J. & Kestemont, M. (2016). Stylometry with R: a package for computational text analysis. R Journal, 8(1): 107–121.

Sylcount. Schmidt, D. (2019). Syllable counting and readability measurements.

Cluster. Maechler, M., Rousseeuw, P., Struyf, A., Hubert, M., & Hornik, K. (2019). Cluster analysis basics and extensions.

References

Bretag, T., & Mahmud, S. (2009). A model for determining student plagiarism: Electronic detection and academic judgement. Paper presented at the *4th Asia Pacific Conference on Education Integrity (4APCEI)*, Wollongong 28–30 September 2009. *Journal of University Teaching and Learning Practice*, 6, 1, 49–60. `http://ro.uow.edu.au/jutlp`

Brocardo, M., Traore, I., Saad, S., & Woungang, I. (2013). Authorship Verification for Short Messages Using Stylometry, *Proc. IEEE Intl. Conference on Computer,Information and Telecommunication Systems* (CITS 2013), Athens, Greece, 7–8 May 2013.

Cambridge English Dictionary. (20/02/2020). *Cambridge University Press*, dictionary.cambridge.org/dictionary/english/essay-mill

Clarke, R., & Lancaster, T., (2006). Eliminating the successor to plagiarism? Identifying the use of contract cheating sites. Proc. *2nd International Plagiarism Conference*, Gateshead, UK, 19–21 June 2006. Learning Press.

Clarke, R., & Lancaster, T. (2007). Establishing a Systematic Six-Stage Process for Detecting Contract Cheating. Presented at the 2007 *2nd International Conference on Pervasive Computing and Applications*, Birmingham, UK. 26–27 July 2007.

Dawson, P., & Sutherland-Smith, W. (2017). Can markers detect contract cheating? Results from a pilot study. *Assessment & Evaluation in Higher Education*, 1–8. doi:10.1080/02602938.2017.1336746

Eder, M. (2012). Computational stylistics and biblical translation: how reliable can a dendrogram be? In Piotrowski, T. Grabowski, L. editors, *The Translator and the Computer*, 155–170. WSF Press, Wroclaw.

Ellis, C., Zucker, I., & Randall, D. (2018). The infernal business of contract cheating: understanding the business processes and models of academic custom writing sites. *International Journal for Educational Integrity*, 14(1), 1–21. Springer. doi:10.1007/s40979-017-0024-3.

Gillam, L. (2013). Readability for author profiling? Notebook for PAN at CLEF 2013. *Proc. Int. Conference and Labs of the Evaluation Forum (CLEF) Notebook PAN*. 23–26 September 2013, Valencia, Spain.

Greetham, B. (2014). *How to Write Your Undergraduate Dissertation*. 2nd edition. Palgrave McMillan, UK.

Guerrero, F. (2009). A new look at the classical entropy of written English. *arXiv* preprint arXiv:0911.2284, 2009. www.arxiv.org

Juola, P. (2013). How a Computer Program Helped Show J. K. Rowling wrote A Cuckoo's Calling. *Scientific American*, 20 August 2013, Springer Nature.

Juola, P. (2017). Detecting Contract Cheating via Stylometric Methods. *Proc. Plagiarism across Europe and Beyond*. Brno, Czech Republic. 24–26 May 2017. 187–198.

Kulig, A., Kwapien, J., Stanisz, T., & Drozdz, S. (2017). In narrative texts punctuation marks obey the same statistics as words. *Information Sciences*, 375, 98–113. Elsevier. doi:10.1016/j.ins.2016.09.051.

Lancaster, T., & Clarke, R. (2007). Assessing contract cheating through auction sites – a computing perspective. *Proc. 8th annual conference for information and computer sciences*, University of Southampton, 28–30 August 2007.

Lopez-Escobedo, F., Mendez-Cruz, C.-F., Sierra, G., & Solorzano-Soto, J. (2013). Analysis of Stylometric Variables in Long and Short Texts. *Procedia – Social and Behavioral Sciences*, 95, 604–611. Elsevier. doi:10.1016/j.sbspro.2013.10.688.

McMillan, K., & Weyers, J. (2011). *How to Write Essays & Assignments*. 2nd edition. Prentice-Hall, USA.

Newton, P. (2018). How Common Is Commercial Contract Cheating in Higher Education and Is It Increasing? A Systematic Review. *Frontiers in Education*, 3. doi:10.3389/feduc.2018.00067.

QAA. (2017). Contracting to Cheat in Higher Education. `www.qaa.ac.uk/about-us/what-we-do/academic-integrity/publications-and-guidance\#`

Rogerson, A. (2014). Detecting the work of essay mills and file swapping sites: some clues they leave behind. *Proc. 6th International Integrity & Plagiarism Conference*, 1–9. Newcastle-on-Tyne, UK. 16–18 June 2014.

Rogerson, A. (2017). Detecting contract cheating in essay and report submissions: process, patterns, clues and conversations. *International Journal for Educational Integrity*, 13:10. Springer. doi:10.1007/s40979-017-0021-6.

Shannon, C. (1948). A Mathematical Theory of Communication. *Bell System Technical Journal*. 27 (3): 379–423.

Sivasubramaniam, S., Kostelidou, K., & Ramachandran, S. (2016). A close encounter with ghost-writers: an initial exploration study on background, strategies and attitudes of independent essay providers. *International Journal for Educational Integrity*, 12(1) 1:14. Springer. doi:10.1007/s40979-016-0007-9.

Stamatatos, E. (2008). A Survey of Modern Authorship Attribution Method. *Journal of the American Society for Information Science and Technology*, 60(3) 538–556. doi:10.1002/asi.21001.

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DE-EMPHASIZING PLAGIARISM WITH BIG DATA: MODERN APPROACHES AND ETHICAL CONSIDERATIONS

Daniel Dusza

Abstract: This article introduces present trends in Big Data analytics and how they might be implemented to de-emphasize plagiarism. Regrettably, academic institutions have continued to rely on essay-based coursework and written reports as a basis of assessment. As a result of the COVID-19 pandemic, there has been a mass migration into online learning, and with it, a further increase in the reliance on textual content. With more writers now composing online in the absence of face-to-face accountability to peers and teachers, the risks to academic integrity through plagiarism and contract cheating should be expected to increase.

Three empirical research studies were used to investigate how the writing process might be automatically and covertly monitored to measure the dynamics of compositions. The areas of interest include the equipment, the method of data management, and the information that could be gleaned from the recorded data. Each study is progressively more complex, and presented in a manner to support the future formulation of a framework for implementation into education.

The results indicate that the equipment that is readily available to most students is capable much more than composing and transmitting a written manuscript. Currently, technology is capable of identifying writing problems and providing assistance to help writers navigate even the most difficult tasks in composition. The technological solutions suggested in this paper provides far more than plagiarism detection. The results in this paper indicate that future writing will be supported through process verification, semantic network authentications, and other certifications that will form part of the future requirements of assessment and academic integrity.

Key words: plagiarism, TPACK, Big Data, AI, academic-integrity

Introduction

The 'postmodern' understanding of plagiarism extends beyond the mere analysis of textual data. Until now, the written product has been the central issue in academic integrity, and in detecting transgressions and foul play. However, over the past few decades the focus has shifted more onto the writer, their methods of where they glean information, how and what information is synthesized, and the integrity of the knowledge they are offering.

Three empirical writing research methods are presented in this article, which focus primarily on the writer during the writing process. This significant paradigm-shift away from the more conventional approach of analysing the written product is where the battle for academic integrity needs to be attentive. This paradigm shift takes the power away from ghost writers and essay mills, because the focus is removed from the product onto the writer, their ability, their behaviour, and their skills of using technology appropriately to author a final manuscript.

The first technique discusses a pedagogical approach. In this action research study (Dusza, 2020), three years of classroom data was collected to investigate the causes of

DOI: https://doi.org/10.11118/978-80-7509-772-9-0050

plagiarism in the writing process. The study involved EFL Japanese college students and specifically identified areas where the risk of plagiarism was most prevalent. In subsequent classes, online tools were offered to students to help scaffold their writing and language skills. At strategic times in the writing process, plagiarism detection software use was introduced. In fact, the use of the software became part of the assessment criteria. Additionally, assessment evolved to conform with Lancaster and Clarke's (2017) concept of mixed modalities, which was interpreted as assessing the process, more than the product. The results from the three-year action research study indicated that the primary reason students did not improve in quantity, quality and originality was because they were absent from strategic lessons, in which case, a grade could only be awarded according to the qualification that these less skilled writers deserve (Lancaster & Clarke, 2017, p. 216).

The second technique involves a study (Vasilopoulos, 2018), which used a collection of mixed data to examine the use of third party information (i.e., writing from the internet) in university students' essays. The feature of interest in the Vasilopoulos study is the covert use of technology to collect students' searching, reading, and writing behaviour. The study used readily available 'spy ware' to monitor web-page browsing, text manipulation, google searches and translations, in fact, everything that the students did on their devices. This use of this Big Data is presented as the foundation of authenticity certification, and should permeate into academic writing. This paper proposes that, in the future, ethical writers will use verification devices (i.e. embedded monitoring programs in machines or based on the Internet) to approve the integrity of authored material, throughout the complete writing process. Therefore, the integration of pedagogy mentioned previously, will become a requisite skill.

The logical progression from monitoring individuals and their devices, is to look at their interaction with peers and other non-structured communications. This level of "surveillance" verification collects information on the locations and positions of communication. The process involves monitoring the interaction between individuals and their networks through emails, social media, paper-based, and telecommunications. This third technique uses data analyses techniques as natural language processing (NLP). In the study feature in this paper, NLP data was collected from both internal and web based network activity, and includes social media, emails, and online meeting devices. The research (Kramer & Russell, 2014) provides a useful starting point to understand specifically how to extract communication and dynamic information intelligence from Emails. Even though, this level of processing may seem contemporary, it is already outdated. Similar processing can now yield results from data collected from audio, video, semantic analysis of communications, and other even more abstract forms of data.

The questions addressed in this paper are as follows.

1. Can the importance of plagiarism be deemphasized?
2. Can plagiarism be reduced by replacing human error, with technical solutions?
3. Can the burden of writing be reduced with smart technology?

4. Is it possible to certify the process behind the completed manuscript, so then, and only then, the value of the words on the paper and the message they contain be included in the academic body of knowledge?

While it is impossible to answer these questions in a single paper, the following sections will provide enough evidence to support the belief that we can revolutionise the writing process while reinforcing academic integrity, and thereby, de-emphasizing the influence of plagiarism.

Featured Research Review

In the recent Plagiarism Across Europe and Beyond online conference, Bretag (2020) outlined three constituents to research integrity that I found essential: first, clearly identify the field of research; second, identify relevant literature to support the theoretical and conceptual framework of the study, and third, utilise a methodology that is credible, or at least justifiable. The following is an honest attempt to provide information that is not only reputable, but will be useful in the future maintenance of academic integrity.

Pedagogical Issues

It has been long known that any good writing task is designed to counter attempts at plagiarism. However, little is ever presented to teachers regarding approaches to tackle the issues surrounding plagiarism. More importantly, little research has been available to identify when and why plagiarism presents the greatest risk. In the least, we should be looking at information on how students construct essays to inform us on how to make adjustments in the future (Todd, 2010).

Method

A pedagogical solution was in fact developed and studied over a three-year period (Dusza, 2020). This action research collected classroom data to investigate the causes of plagiarism within the writing process. The first phase of the study was to specifically identify where in the writing process was the greatest risk of plagiarism, and where it was most prevalent. It is widely accepted that the literature review and synthesis of this knowledge is where even experienced writers have the greatest burden. This burden is usually where students require the greatest levels of assistance, and it is assistance that is extremely time-consuming. Therefore, teachers are ill equipped to provide the necessary assistance students need. The intentional forms of plagiarism most evident in this stage are pseudo writing and plagiarising (see Vasilopoulos in the next section).

In the following semester, these problems were alleviated by providing training in the use of online tools, to help scaffold students' writing and language skills. At strategic points in the writing process, plagiarism detection software use was introduced, and students were given training in how to use other tools to reduce the risk. In fact, the use of software became a part of the assessment criteria. Additionally, the focus of assessment evolved to conform with Lancaster and Clarke's (2017) concept of mixed modalities, which was interpreted as assessing the process, more than the product.

Result

The results indicated that even though substantial time was required to introduce students to using technology, the amount of writing, and the quality of the writing had improved remarkably, albeit less than statistically significant (Dusza, 2020). The reason that some participants did not improve in quantity, quality, or originality was because they were absent from these strategic lessons. The research concluded that integrating technology and skills to deal with writing problems during the writing process, and assessing these skills during the writing process had the greatest impact on de-emphasizing plagiarism. Unfortunately, the few who could not attend consistently missed a valuable learning experience; they could only be awarded a grade based on an inferior finished product and not on the qualification that these less-skilled writers deserve (Lancaster & Clarke, 2017, p. 216).

Conclusion

The conclusion for the present study is that by integrating technology and pedagogy and using formative assessment, writing tasks can be effective in reducing the requirements that make plagiarism an issue (Todd, 2010).

Covert data collection on user devices

The previous section identified two areas in the writing process that present the biggest challenges to second-language writers, and therefore, the greatest risk of plagiarism. Synthesis of information and paraphrasing present a considerable burden to second language learners, and is also the area where the risk of plagiarism is presented for most writers. Understandably, the skills of summarising/synthesising, and paraphrasing are skills that are only developed with significant amounts of practice, even in our first language.

A research paper presented at the 2018 Symposium for Second Language Writing, inspired the pursuit of covert data collection presented in this paper. The research by Gene Vasilopoulos (2018) illustrated the astounding potential that the collection of covert data could provide to monitoring the writing process, and reporting plagiarism, and potentially the automated responses to counter it.

Vasilopoulos (2018) studied the intersection between L2 writing, plagiarism, and the influence of technology in the writing process, and the areas at greatest risk. While the study in the previous section was looking at pedagogical/technological solutions, Vasilopoulos was concerned with the mechanics of avoiding plagiarism (i.e. quotation marks, copy and paste plagiarism, translation without referencing, poor or incorrect referencing, and poor paraphrasing and summarising). She was also interested in measuring intent.

Method

The metric for measuring plagiarism involved identifying the following:

- *pseudo-writing* – similar to traditional plagiarism, but is void of physical rewriting by copying and pasting internet based text to form 'original' content in an attempt to reduce the [cognitive] workload of writing (Skaar, 2015),
- *de-plagiarising* – using a thesaurus or other applications to replace words (Stapleton, 2010), or copy-and-paste text, then 'cleanse' it to avoid detection (Wrigley, 2019),
- *paraphrase tools* – online tools that automatically change the words to mask copying, also known as 'spin-writers' (Dusza, 2019; Rogerson & McCarthy, 2017),
- *translation software* – which is, on occasion, used on entire articles (Jones & Sheridan, 2017), but is also useful in the writing development process (Wrobel, 2019), and
- *facilitated plagiarism* – actively seeking to use some form of easily accessible Internet-based sources to prepare or supplement submission material for assessment by others (Stamatatos, 2011).

The task required students to write a 1000-word essay that was both demanding contextually and assessed the skills of *research* from valid sources, correct *referencing* including citation, and *proofreading* for grammar, vocabulary, and referencing. Although these tasks were adequately performed by technology, the cognitive process was important to 'push' the participants into making decisions to incorporate the items mentioned in the above measurement metrics.

Collection and processing of Big Data

The intriguing aspect of this research was the collection and processing of the volumes of unstructured and structured data. By definition, Big Data is not just size, but a dynamic. It includes structure and unstructured data, highly variable in volume, and in transmission rates (Vaitsis, Hervatis, & Zary, 2016). The analysis conducted in this Vasilopoulos study typifies the possible future of plagiarism detection. "Reiterative" data analysis included data collected from *interviews*, *documents analysis*, and *screen casts*. Unpublished-data of interest also included *eye-tracking*.

Iterative data analysis refers to a systematic, repetitive, and recursive process of analysing results through clustering. Clustering involves putting similar items of interests together into groups or classes (McNabb, 2015, p. 290). Iterative sampling, on the other hand, ensures that the information-rich participants are included appropriately in the study. Reiterative data analysis involves reviewing the data analysis, and sometimes revising its collection and use. This action is sometimes mistakenly criticized as "lacking rigor", a type of "cherry picking". However, the 're'-iterative approach actually results in providing improve sensitivity to Big Data, together with its richness and variability (Mills, Durepos, & Wiebe, 2009, p. 504).

The results of Big Data

The iterative data analysis of screen cast and eye-tracking data is of particular importance to monitoring ethical writing. The data from screen casts were transcribed by a team of research assistants and included time based records on:

- what actions were performed – opening web page, key logging, and mouse movements,
- what resources were accessed and what information was copied, transcribed, translated, re-worded, or rephrased, and
- the computational resources that were employed to perform the aforementioned tasks.

Big Data Discussion and Outcomes

It should be evident, albeit implicitly, that these data could be useful in providing essential information about the development of writing skills, indicating the quality of the sources of knowledge, and providing valuable information throughout the writing processes. Placing importance on assessing the writer based on the measurement of these variables would be effective in de-emphasizing the effect of plagiarism. The desire to finish and submit a paper produced outside of the assessment measurement network would therefore be removed, or at-least, significantly reduced.

The transcriptions could be used to determine language processing times, the effective and fluent use of technology assisted writing applications, the use of unethical writing assistance, the dependency on translation and its use and subsequent incorporation into the text. The interactive analysis was then compared with document data to measure plagiarism management skills. Unfortunately, for this teacher, the student used the eraser when confronted with the challenge of correction. However, as a source of formative feedback, these results indicate the requirements for further training an in what area of the writing process it should be administered.

Although not mentioned in the results, eye-tracking data revealed results that have yet to be studied with any rigor. The eye tracking equipment was simply the camera, which comes standard in any computer. The camera data were only trialed and used with a few participants. Eye positional information and eye movement, that is tracking were the data of interest. Through inferential data analysis of the eye-tracking data with iterative data analysis of screen-cast transcriptions, the researcher claimed that the intent to cheat could be inferred. If this is in fact reliable, it would provide yet another valuable weapon in the war on plagiarism. If this hypothesis is correct, the intention to cheat could be used to trigger scaffolding devices to assist students. The assistance could be in the form of automated messages, or pre-emptive corrective feedback, or provide the tools to reduce the burden presented at that stage in writing.

The qualitative data from interviews indicated that even though the students were aware that their computers were recording their every move, some thought they would not be caught, particularly if they used quotations. In fact, some students in this study thought quotations were the easiest way to avoid plagiarism (Vasilopoulos, 2018). Other students resorted to using a paper dictionary, to avoid detection, while others

used Google Scholar and other search engines to find citations in [what they thought was] "relevant literature". These acts of plagiarism are undetectable using present technology. Therefore, the adoption of these, and other, covert means of monitoring student learning serve as a further illustration of how iterative data analysis can be effective in winning the war on plagiarism, for the time being at least.

Conclusion

This use of Big Data should now be recognisable as effective in de-emphasizing plagiarism. This data could also be summarised and reduced to provide verification of originality with credibility beyond that offered by present-day originality reports.

Covert data collection on the web

This final technique brings us closer to the 'ideal world' that was discussed in Todd (2010). If students were convinced that everything they do would be seen and reported prior to submitting their work, then possibly what presently constitutes cheating and dishonesty would become impossible. This seems contradictory to the findings of Vasilopoulos, because some students still thought they would not get caught. However, if the quality of the sources, and the process were to play an important role in assessment, and if feedback were provided progressively, copying would become an indication of incomplete training, and not an act of dishonesty (Todd, 2010, p. 148), and the process then becomes the important factor in assessing the quality of a finished product (Barrie, 2008).

The only weakness in the techniques so far is that the technology is not sensitive to a counterpart doing the work on your device. This is where the ethics of Big Data use becomes confrontational. The solution presented in this section verges into the realm of invasion of privacy, and extends beyond the use of school computers, intranet, and library searches. The data of interest in this section looks at the communications between people, its severity, frequency, and context.

Introduction to AI and NLP

The logical progression from monitoring individuals and their devices is to look at their interactions, the content of their communications, and their reactions with peers through various forms of communications. One such study (Kramer & Russell, 2014) analysed the unstructured data from Emails with Natural Language Processing (NLP) and Dynamic Graph Analysis. Mentioned earlier, dynamic graph analysis includes the clustering of similar data of interest.

NLP has been used in language studies, particularly useful is using NLP to conduct pragmatic analysis of the study structures of sets of text in an effort to understand the actual meaning. For computers, NLP is the closest thing there is to enabling computers with verbal and listener qualities. Mostly, NLP research has centred around been on the semantic structures of language. However, pragmatics are proving to be one of the greatest areas of research interest. One reason is possibly that NLP suffers also from the problem of understanding "verbal behaviour" (c.f. Skinner, 1957, as cited in

Cherpas, 1992). The resultant confounds that pragmatics and verbal behaviour place on AI using NLP indicate the importance of programming the Artificial Intelligence with a 'frequent user'. This means, high frequency consistencies in user communication profiles are necessary to program the AI to learn.

Another weakness in the AI system is that NLP can be fooled using morph-syntax, semantics, pragmatics and world knowledge (Mahler, et al., 2017). In fact, the 'fooling' is a miss-programming of algorithm sentiment analysis systems. This affects the trustworthiness of the data, its validity and reliability. However, this is not all bad news. If writers are required to use dedicated machines and internet service providers (ISPs), the AI can in fact become sensitive to the actual author. Therefore, NLP would be able to detect a third party on the system and produce an authenticity report to verify the authenticity of authorship.

Method

Researchers (Kramer & Russell, 2014) provide an in-depth background into the effectiveness of NLP as a language learning analytical tool. However, for the purpose of this paper, the area of interest surrounds the data analysis of business correspondence via emails, exactly 343, 134 in fact. The language processing artefacts included messages, sentences, phrases, tokens, co-references and their chains. The data in fact is large. It constitutes Big Data analysis and therefore calls for advanced analytics, as mentioned previously.

Results

By studying the semantic connections of Email addresses, NLP can identify individuals that are most influential and able to disseminate information using a K-Core Decomposition Model (Kramer & Russell, 2014, slide-22). Word level analysis from within text is also possible. Kramer and Russel provided evidence of the time, place, and communicator of phrases with positive emotional content, and phrases that showed anxiety. From these two sets of different kinds of data, the addresses and types of emotions can be mapped over time to see the flow of emotions, through a network.

Discussion

With this level of analysis available, it seems irrational that we cannot source the flow of text-based information in a writers' research networks. This network includes not only the searches and communications with data bases and library resources, but also through emails, social media, and now, virtual "face-to-face" meetings online. The advantage of NLP is that it can be done synchronously, or forensically. In fact, Google AI uses semantic analysis to predict writing, and search patterns. The implications of this is that Google AI could influence the untrained researcher into areas where Google deems important. Considering the number of untrained researchers far outweighs the number of critical researchers, we also need to be wary of this influence on academic integrity in the future.

Conclusion

NLP has the capacity to track and report on the flow of information either synchronously or forensically. The knowledge of this affordance should strike fear into the hearts of those who prey on desperate students, and provide services that rob them of valuable writing experiences.

Trolls, tricksters, and threats

Concerns about contract cheating date-back to the early days of distance education via school of the air in remote areas of Australia in the early 1950s. The saving grace in those times was the remoteness and delivery method was credible, through the Royal Flying Doctor service. Later, lessons were conducted for about one hour per day via short wave radio. Therefore, the only 'contract cheating' would be from siblings or relatives. The other saving grace was the pedagogical approach, children would be given tasks, that were non-repetitive from year to year. The earliest reported cases of concerns about contract cheating date back to the early 1950s, where "contract cheating was observed on [a US] campus" (Lancaster & Clarke, 2016, as cited in Nair & Saiz-Álvarez, 2019, p. 12).

This section introduces the opposition in the battle on academic integrity, the tricksters who crouch near the door of those who are credible, often in an effort to take on their appearance. Lewis Hyde (1998) writes that tricksters hide around the doorways of credibility because it is "one of the places where deep-change accidents occur" (p. 124). One place where "deep change accidents occur are in writing centres" (Geller, Eodice, Condon, Carroll, & Boquet, 2007), and whether we are editors, reviewers, administrators, or writing teachers, we too are the gate-keepers, which is why we come into close proximity with these individuals, and services.

Tricksters, and the more sinister "Trolls" often use plagiarism detection, and originality devices to 'bait' students and writers into using their services. Normally, teachers and reviewers provide the necessary feedback to scaffold the writer into finding a solution to writing problems. This exploration is helpful in learning, making ethical decisions, and other writing skill development. The services that "Trolls" provide are usually of a standard beyond the writer's peers (Lines, 2016). However, in crossing the boundary from learning to merely completing (Hyde, 1998), the trolls are effectively robbing the learners from experiencing these crucial developmental stages in writing. As a result, the trolls reinforce a dependency and this in turn forms unhealthy habits, and the need to return for services in the future.

A study into essay mills (Clarke & Lancaster, 2006) investigated the repeated use of a service provided by RentACoder. The study of more than 200 users found that only 8% of clients requested work in a one-off contract. A significant proportion (64.8%) of the clients ($n = 153$) made requests from RentACoder at least twice and up to 10 times. One hypothesis for the single uses was that new users are entering all the time. However, the discussion presented in this paper indicates that there are developmental and pedagogical reasons why writers resort to copying, or cheating. My hypothesis is, that the 8% of one-off students comprise predominantly of individuals who were desperate at the time and did not want to jeopardise their grades. Later, these individuals possibly felt guilty or ashamed and made concerted efforts to later developed the necessary

skills and language to avoid the same transgression in the future; a type of negative reinforcement or motivation. The rationale behind this belief is that most students eventually want to peruse a life that is ethical and morally sound. So, having to justify dishonesty in the future would certainly disrupt their future aspirations.

Another problem is that education and the trolls have shifting boundaries on what defines plagiarism. An "aggregated" definition identifies plagiarism as an action that hurts. It can be identified as *the use of another person's work* (USQ, 2017) *and passing it off as your own* (uOttawa, 2019), *which may result in a false academic evaluation* (uOttawa, 2017). "The trolls, the contract cheating services and the essay mills prepare work for students, who in turn submit the work as their own. This endeavour in turn benefits" all of those involved [directly] in the process (Lancaster, 2016), but also leads to a false evaluation of honest students who have submitted less superior material. Above and beyond this false evaluation of innocent students, contract cheating represents a serious threat to academic integrity (Lancaster & Clarke, 2017) on the grounds of ethics, morals and justice.

The social transition that writers experience when they transgress jeopardises their legal privileges and places them at risk of academic penalties, withdrawal of published material, and expulsion. Many of these have been widely publicise, but not too many are familiar with the legal implications. One example case (A.V. v. iParadigms LLC, as cited in Todd, 2010, p. 143) was where students claimed that the archiving and use of archived information was in breach of copyright. The case was held up initially, but an appeal submitted by iParadigms, the produces Turnitin®, was honoured on grounds of "fair use".

However, the boundaries of "fair use" cannot be assumed equal (Todd, 2010). The trolls, essay-mills, ghost-writer and other contract cheating services use the data collected during plagiarism checking together with work from contracted writers to deceive and provide personal gain for their clients. This action effectively removes legal rights from the individual who crosses this boundary, because no venerable court, in the UK at least, would offer assistance to an individual whose cause of action was based upon an "immoral or illegal act" (Holman v. Johnson, 1775, as cited in Todd, 2010, pp. 143–144.

Conclusion

Employing the use of writing services hurts students because it robs the perpetrates of a valuable developmental experience, forces them to transgress and become vulnerable and dependent on further malpractice, and robs innocent individuals of fair assessment.

Summary and Discussions

For more than a few decades, we have been struggling with the increased insurgence of contract cheating (Clarke & Lancaster, 2006). Merely identifying writing that was written produced by a writing contractor, or some online spin-writer, and punishing the writer should be considered unethical. The focus should be on where the system

has let the student down. This paper has presented empirical evidence to support the belief that we can win the war on plagiarism.

It must be remembered that students and some professional writers are aware that reviewers and markers can only check as thoroughly as time and other resources allow. However, this article has provided sufficient evidence to show this belief should no longer be allowed to exist. If technology is integrated with the writing process, it is possible to measure learning gain, processing of information, fluency in writing, and a host of other authoring metrics.

In summary, the present study found that by integrating technology and pedagogy and using formative assessment, writing tasks can be effective in reducing the requirements that make plagiarism an issue (Todd, 2010). In the second study, Vasilopoulos found that even when students knew they were being monitored, they still believed they could avoid plagiarism, simply by using quotations. The technological outcome of the Vasilopoulos study indicated that academic integrity could be automated through the covert collection of data, and it was proposed that this could result in a certified verification of authenticity based on the writing process and where information was sourced and how it was processed.

In the third study, the covert analysis of communication data was used as an example to illustrate how data flow through networks can be measured to indicate research integrity. The system can be used during the writing process or as a forensic device to investigate the validity of the process of writing over time.

Now that we are aware of these technological and pedagogical techniques, it would send a mixed message to the businesses, government, and our students who we both support and depend on for our mutual benefit. In fact, knowing now, the possibilities that are set before us, continuing on the present course would be unethical, because it would be providing a service that we are aware of that is inferior, while we know how it can be improved.

The present paper may be instrumental in winning the battle for now, however, the successor to plagiarism and contract cheating will possibly be cloud based and include Big Data analytics and AI. Therefore, perusing the development of these areas and further research in applying these services is definitely a priority.

Conclusions

Until now there has been a technological cold-war between the academics and the services that entrap writers to submit plagiarised material. This paper presented four progressive areas that are instrumental to the war on academic integrity. Without a doubt, the most influential weapon at our disposal remains in pedagogy, the expectations we place on our students, how we teach them, and how we assess learning. This paper suggests that the process, and the openness of sharing knowledge construction is paramount, which therefore, means that explicit understanding of the importance of integrity and collaboration needs to take a more prominent role in education. Three truly innovative approaches were also featured that should become the standard for licensed writing.

Platforms for writers should include internet activity which is openly shared with the author and the reviewers; without it, we are left to trust good referencing which, until now can only be checked for availability. There is no verifiable method, other than those presented in this article, to ensure the author actually understands the field or the research they have reported. We are left with language analysis, honesty, referencing standards, and search engines to depend upon. These are merely technical augmentations of age-old approaches.

The resounding message throughout this paper surrounds our ethical duty to maintain academic integrity. Now that this paper has offered a glimpse into the future and how we might be able to win this battle, and all the while reinforce and maintain the integrity of academic knowledge and education, it would send a mixed message to the world (i.e. businesses, government, and our students) who both support and depend on us, if we refrained for a moment on taking necessary action.

References

Barrie, J. M. (2008). How original: Catching the cheats. *The Biochemist, 30*(6), 16–19. Retrieved from https://portlandpress.com/biochemist/article-pdf/30/6/16/3906/bio030060016.pdf

Bretag, T. (2020). Keynote Speech. *Presented at Plagiarism across Europe and Beyond, 6th International Conference*, April 17–19, University of Wollongong, Dubai.

Cherpas, C. (1992). Natural language processing, pragmatics, and verbal behavior. *The Analysis of verbal behavior, 10*(1), 135–147. doi:10.1007/BF03392880

Clarke, R., & Lancaster, T. (2006, June). Eliminating the successor to plagiarism? Identifying the usage of contract cheating sites. In *Proceedings of 2nd international plagiarism conference* (pp. 1–13). Northumbria Learning Press. Retrieved from https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.120.5440&rep=rep1&type=pdf

Dusza, D. G. (2019, October). Preventing Plagiarism – An Integrated Technology, Pedagogy, and Content Knowledge Approach [Presentation]. Presented at *The 27th Annual Korea TESOL International Conference*, Sookmyung Women's University, Seoul, Korea.

Dusza, D. G. (2020, January). Preventing Plagiarism with Integrated Technology, Pedagogy, and Content Knowledge. In *Proceedings of the 2020 11th International Conference on E-Education, E-Business, E-Management, and E-Learning* (pp. 116–120). doi:10.1145/3377571.3377576

Geller, A. E., Eodice, M., Condon, F., Carroll, M., & Boquet, E. (2007). *Everyday writing center: A community of practice*. University Press of Colorado.

Hyde, L. (1998). *Trickster Makes This World: Mischief, Myth and Art*. New York: Farrar, Straus and Giroux.

Jones, M., & Sheridan, L. (2017). Back translation: an emerging sophisticated cyber strategy to subvert advances in 'digital age' plagiarism detection and prevention. *Assessment & Evaluation in Higher Education, 40*(5), 712–724. doi:10.1080/02602938.2014.950553

Kramer, S., & Russell, M. (2014). Got Chaos – Extracting Business Intelligence from Email with Natural Language Processing and Dynamic Graph Analysis [Online]. Retrieved from https://www.slideshare.net/dreasoning/digital-reasoning-paragon-science-data-daytexas-2014finalsmall

Lancaster, T. (2016). Presentation slides: Contract cheating and the essay writing industry – where does the money go? *ICAI Inaugural Mediterranean Conference Integrity as a Way Forward.* Athens, Greece. September 2016. https://www.slideshare.net/ThomasLancaster/contract-cheating-and-the-essay-writing-industry-where-does-the-money-go-international-center-for-academic-integrity-inaugural-mediterannean-conference-athens-greece-8-september-2016

Lancaster, T., & Clarke, R. (2017). Rethinking assessment by examination in the age of contract cheating. Published in *Plagiarism across Europe and Beyond 2017 – Conference Proceedings*, pp. 215–228. Retrieved from http://academicintegrity.eu/conference/wp-content/uploads/2019/07/proceedings17.pdf

Lines, L. (2016). Ghostwriters guaranteeing grades? The quality of online ghostwriting services available to tertiary students in Australia. *Teaching in Higher Education, 21*(8), 889–914. doi:10.1080/13562517.2016.1198759

Mahler, T., Cheung, W., Elsner, M., King, D., de Marneffe, M. C., Shain, C., & White, M. (2017, September). Breaking nlp: Using morphosyntax, semantics, pragmatics and world knowledge to fool sentiment analysis systems. In *Proceedings of the First Workshop on Building Linguistically Generalizable NLP Systems* (pp. 33–39). retrieved from https://www.aclweb.org/anthology/W17-5405.pdf

McNabb, D. E. (2015). *Research methods for political science: Quantitative and qualitative methods*. Routledge. doi:10.4324/9781315701141

Mills, A. J., Durepos, G., & Wiebe, E. (Eds.). (2009). *Encyclopedia of case study research*. Sage Publications. doi:10.4135/9781412957397.n185

Nair, S. R., & Saiz-Álvarez, J. (2019). *Handbook of Research on Ethics, Entrepreneurship, and Governance in Higher Education*. IGI Global. http://doi:10.4018/978-1-5225-5837-8

Rogerson, A., & McCarthy, G. (2017). Using internet based paraphrasing tools: Original work, patchwriting or facilitated plagiarism? *International Journal of Educational Integrity, 13*(2), 1–15. doi:10.1007/s40979-016-0013-y

Skaar, H. (2015). Writing and pseudo-writing from Internet-based sources: implications for learning and assessment. *Literacy, 49*(2), 69. doi:10.1111/lit.12045

Stamatatos, E. (2011). Plagiarism detection using stopword ngrams. *Journal of the American Society for Information Science and Technology, 62*(12), 2512–2527. doi:10.1002/asi.21630

Stapleton, P. (2010). Writing in an electronic age: A case study of L2 composing processes. *Journal of English for Academic Purposes, 9*(4), 295–307. Retrieved from https://www.learntechlib.org/p/75621/

Todd, P. (2010). Plagiarism detection software: Legal and pedagogical issues. *The Law Teacher, 44*(2), 137–148. doi:10.1080/03069400.2010.486165

uOttawa. (2017). Academic Regulation 14 – Regulation on Academic Fraud: Definition [Online Article]. *Administration and Governance, University of Ottawa*. Retrieved from https://www.uottawa.ca/administration-and-governance/academic-regulation-14-other-important-information

uOttawa. (2019). Academic fraud [online article]. *Office of the Provost and Vice-President, Academic Affairs, University of Ottawa*. Retrieved form https://www.uottawa.ca/vice-president-academic/academic-regulations-explained/academic-fraud

USQ. (2017). Plagiarism [online article]. *University of Southern Queensland*. Retrieved from https://www.usq.edu.au/library/referencing/plagiarism

Vaitsis, C., Hervatis, V., & Zary, N. (2016). Introduction to big data in education and its contribution to the quality improvement processes. In Soto, S. V., Luna, J., & Cano, A. (Eds.), *Big Data on Real-World Applications*, pp. 41–63. doi:10.5772/63896

Vasilopoulos, E. G. (2018). Writing to Avoid Plagiarism: Computer-Mediated Source-Based Writing in a Pre-University EAP Program. Presented at the *Symposium of Second Language Writing*, held at Simon Fraser University Vancouver, Canada, August 2–4.

Wrigley, S. (2019). Avoiding 'de-plagiarism': Exploring the affordances of handwriting in the essay-writing process. *Active Learning in Higher Education, 20*(2), 167–179. doi:10.1177/1469787417735611

Wrobel, M. (2019). Ethical Issues Related to Machine Translation in the University Setting. In D. Dusza, A review of selected presentations from *The 11th Symposium on Writing Centers in Asia*, with implications for Kanda Institute of Foreign Languages [unpublished article].

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WHY DO STUDENTS PLAGIARIZE? THE CASE OF MULTICULTURAL STUDENTS IN AN AUSTRALIAN UNIVERSITY IN THE UNITED ARAB EMIRATES

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Abstract: The increase in plagiarism cases among university students is a great concern for educators and policy makers within the federal and private universities in the United Arab Emirates (UAE). Research suggests that students' attitudes toward academic integrity are characteristically more tolerant than the policies already in place in most universities. This assertion can hypothetically intensify the situation that most universities in the UAE are experiencing. Moreover, the presence of a very diverse student body leaves space for validation of the hypothesis, that concepts of plagiarism or academic integrity are seen differently in different cultures; nevertheless, very little research has been carried out to empirically validate such hypothesis. Moreover, current research in this area has usually been conducted in western universities, in western countries and has been focused in a comparison between international and domestic students or native and non-native speakers of English language. As yet, no studies have directly analysed culturally diverse students' attitudes toward plagiarism in their first year of study in a western university in the UAE. This study aimed to measure the students' level of understanding to what plagiarism is. One survey and one quiz were given to 67 students, the data from the surveys was tested against several hypothesis and some descriptive analysis was conducted. The results reveal that students understand the main concepts beyond plagiarism but confuse its application.

Key words: Plagiarism, Academic Integrity, Academic Writing Skills, Multicultural Students

1 Introduction

Academic dishonesty has been the focus of researchers, educators and curriculum designers for decades (Bowers, 1964; Wells 1993; Scanlon 2003; Zhang et al., 2014). The issue has become even more pressing with the extensive use of the Internet and technology, the prevalence of ghost-writing, and 'cut and paste' techniques (Sutherland-Smith, 2008). During this period, studies have progressed following the changes that have happened in societies, education systems, technology and the business world. Scholars were firstly intrigued to understand the reasons why students copy from one another and not study on their own; this later took a different direction with the introduction of online studies and online assessments.

The issue of academic dishonesty has become a worlwide concern due to globalisation of higher education (Terraschke and Wahid, 2011; Taylor, Ryan and Elphinstone, 2020; Duzhyk, 2020). Interestingly, Whitley (1998) in his review of literature established that some of the factors why students cheat were having modest expectations

DOI: https://doi.org/10.11118/978-80-7509-772-9-0064

of success, "having cheated in the past, studying under poor conditions, holding positive attitudes toward cheating, perceiving that social norms support cheating, and anticipating a large reward for success". (p. 235). Furthermore, according to UNESCO (UNESCO Institute for Statistics, 2020) the number of international students in 2017 jumped to 5.3 million from slightly over 2 million in 2000. The trend of studying abroad does not seem to be on the decrease; therefore, it becomes crucial to understand the attittudes and needs of international students so we can provide them with the adequate tools to study and lessen the need to cheat Van Damme, 2001; Verbik and Lasanowski, 2007; Hysaj and Hamam, 2020).

Issues related to plagiarism or academic misconduct require careful consideration, as they are pivotal in the credibility and reliability of institutions of higher education. In an Australian education context, the issue of understanding foreign students is of a particular concern due to an increased number of international students who study in Australian universities in onshore and offshore campuses, like in China, India, and Malaysia and in the UAE. The University of Wollongong in Dubai, an offshore campus of the Australian University of Wollongong, in the Middle East, which is home to a student body of over 100 nationalities, is highly interested in understanding reasons why students plagiarise.

Substantial studies have analysed the spread of plagiarism in the tertiary level in the UAE (Khan & Balasubramanian 2012; Khan 2010; Khan, al-Qaimari & Samuel 2007). The lack of academic integrity in the tertiary level was seen due to a variety factors, e.g. spread of technology, ghost writing, E-cheating to name a few. Nevertheless, the focus of these studies was not to analyse the effects of academic writing skills and the correlation that it has with the plagiarism instances in the region. Therefore, the authors of this study hold the opinion that it becomes important to analyse and understand the correlation between academic writing skills and cases of plagiarism.

Curtis and Vardanega (2016) analysed the attitudes of three similar groups of students at the same university on three occasions, each separated by a time interval of five years (2004, 2009, and 2014). The assessed traits were self-reported engagement in plagiarism, awareness of academic misconduct and attitudes towards plagiarism. Unpredictably the analysed data from this study revealed positive development with regards to reduction of numerous forms of plagiarism due to increase in understanding plagiarism (Curtis & Vardanega, 2016) and entitled the technological and educational initiatives for counteracting the potential risk of plagiarism from online sources.

Song-Turner (2008), after interviewing many foreign students, found that some of reasons why international students plagiarise include language challenges, lack of skill sets, and inability of producing a text similar to that of a native speaker. Our university as an offshore branch of an Australian university sees it constantly crucial to understand the web of perceptions of international students towards plagiarism. This becomes even more evident when valuing the importance given by the Australian government, to attract these students to the onshore and offshore Australian universities and can strengthen universities marketing efforts in attracting foreign students while emphasising high levels of academic integrity.

Conversely, Song-Turner (2008) recorded that lack of understanding of foreign students resulted in many cases of plagiarism in two major Australian universities in

the year 2005; University of Wollongong recorded 134 and the University of Technology, Sydney recorded 362 counts of plagiarism. Moreover, the same study found that almost 3500 students have been caught plagiarising or cheating across eight Australian universities since 2001. Nevertheless, it is worth mentioning that there was no evidence that overseas students were the only ones who tended to plagiarise but it does indicate that the students' influx has a fair share in the rise of plagiarism as a phenomenon.

It is worth mentioning that this trend is not only prevalent among undergraduate students but also among doctoral students from different countries(Moten, 2014; Yukhymenko-Lescroart, 2014). Consequently, the combination of cultural and language issues, increases the potential for plagiarism to take place (Pecorari & Petrić, 2014). Findings of Heckler and Forde (2015) indicate that creating awareness about plagiarism and more importantly facilitating the process of learning can potentially bring changes to values and beliefs supporting a long lasting learning culture. Therefore, the notion of plagiarism is open to a range of interpretations because of different stakeholders involved in teaching and learning in higher education; the policy makers, management, faculty and students. Understanding the university policies on plagiarism, understanding students' attitudes towards academic misconduct/academic integrity and matching the parameters of expectations of both parties can ensure a decrease in the reported cased of plagiarism.

Gullifer and Tyson (2014) reported in their study that out of the 3405 students who took part in their study, only half had read the institutional policy on plagiarism/academic integrity resulting in not being aware of what continues plagiarism in the first place. This clears the path for a systematic and progressive educative approach of creating awareness regarding plagiarism/academic integrity and implications of its infringement. A qualitative research by Devlin and Gray (2007) looked at principal factors behind students' inclination to plagiarise and concluded that students' lack of understanding plagiarism, poor academic skills, personality factors and external pressures were partly to be blamed. Therefore, better engagement with students is seen as an effective way toward minimising and marginalising instances of plagiarism.

The rationale behind reasons why students plagiarise, encompasses the ways students think and behave under certain circumstances that could be due to cultural, psychological or any other individual related factors (Park, 2003; Bamford & Sergiou 2005; Batane, 2010; Alghamdi, Hussain & Al-Hattami, 2018). Moreover, as Devlin and Gray (2007) rightly mentioned although, academic misconduct is present in most universities, a strategy of non-tolerance or a zero percentage plagiarism, is not applied because students are quite often viewed as customers. Therefore, the most efficient and productive way is to ensure that our students understand plagiarism, implications of its infringement and avoid opting for it by empowering themselves with the appropriate sets of language and writing skills (Curtis & Vardanega, 2016; Lea & Street, 1998).

The issues of inclusiveness should be taken into consideration when outlining curriculum material and assessment tasks (Lea & Street, 1998; Hysaj & Hamam, 2020). In other words, definitions of appropriate classroom material and assessment tasks should be based on the students' needs and be inclusive of their their cultural backgrounds as much as theinstitutional culture of the universities. For instance, Bretag et al. (2014) proposed the need to provide students with academic integrity training in the form of

'hands-on activities, engaging activities, repeated and reconfigured in various media and forums throughout the student programme' which potentially can provide an environment of a strong culture integrity in the institutions.

Furthermore, Etter et al. (2006) found that the attitude towards academic dishonesty did not differ between students who had idealistic behaviour and the ones who did not value the ethical principles as an essential trait of human personality. As a result, both groups considered it justifiable to utilise information technology as a tool to escape academic assignments and did not view it as unethical since it does not involve harming other people.

2 Literature Review

2.1 Cultural Factors

Previous studies conducted by Batane (2010), Petrić (2012), Ison (2018), and Foltýnek and Dlabolová (2020) have analysed issues related to plagiarism and academic integrity in certain countries or cultures. However, a study analysing the attitudes of culturally diverse students in an offshore western university in the UAE has yet to be conducted.

Ison (2018) analysed in a quantitative study; the ways academic integrity is dealt with in different cultures and its subsequent occurrence cases. His research focused on the possible differences among cultures and the ways in which cultures view plagiarism or academic misconduct. It is worth mentioning that he analysed doctoral and master's theses students; hence, his study is not considered as an empirical evidence of the same student's attitudes towards plagiarism; when they were in their undergraduate studies.

Interestingly, the findings of this study aligned with those of Rawwas et al. (2004) and Heckler and Forde (2015), which supported the considerable differences in the approaches towards plagiarism; demonstrated by the American and Chinese students in the study of Rawwas et al. (2004) and those of American students, mainly Caucasian descents in the study of Heckler and Forde (2015). Needless, to say that the three mentioned studies as well as the study by Ehrich et al. (2016) identified 'poor language and academic skills' as the main culprit for increased cases of plagiarism among cultures whose first language is not English; concluding that the tendency to plagiarise is due to the lack of English language proficiency.

Research on student motivation and student engagement has offered substantial evidence for the application of a continuous self-efficacy among students as a key to a successful and inclusive learning experience. Linnenbrink and Pintrich (2003) analyse the self-efficacy by focusing on its potential to facilitate behavioural, cognitive and motivational engagement in the classroom subsequently resulting in life-long learning experiences. Multicultural students are a hybrid of multiple of identities; the home and the educational environments named as the most substantial and distinctive ones. Culturally responsive educators are in the authority of helping international students nurture their individual cultural identities while assessing school curriculum, successively creating individuals who are able to navigate productively in multiple communities (Rueda et al., 2007).

Furthermore, students' perceptions of the dominant culture of the higher education institutions need to be understood so issues in regards to academic misconduct do not arise due to unawareness of institutional values and beliefs even if this requires negation of individual cultural values often used as justifications for plagiarizing (Heckler and Forde, 2015). A recent study by Ehrich et al. (2016), analysing Australian and Chinese students in their native countries, highlights that undergraduate students in both countries lack understanding of plagiarism and plagiaristic behaviours. The same study suggests the need for unambiguous instruction of the academic skills; facilitating development of critical and analytical understanding of undergraduate students so they can engage in the research process without improperly using others' ideas.

Academic dishonesty is a major challenge in the Arabian Gulf, similar to that of educational institutions worldwide (Thomas et al., 2014; Razek, 2014; McCabe et al., 2008). All the three above studies point out that the distinguished rationale for presence of academic dishonesty in the Middle East; which is strongly influenced by the norms of the collectivist society. As mentioned in the study by Singelis and Brown (1995) examination of the behaviour of individual needs to be correlated with the culture they belong to and, (Thomas et al., 2014) if possible a reasonable correlation needs to be found between the culture and the way students belonging to same culture expect to be assessed. The oral assessment provided as an alternative of a written assessment, in an experiment that took place in a university in the United Arab Emirates, provided enough evidence for a validation of the originality of student work, while assisting assessment in an approach that resonates with the region's own educational traditions and collectivist cultural norms (Thomas et al., 2014).

A study by Jian, Marion and Wang (2019) found that academic and cultural backgrounds of Chinese international students, substantially influenced by the Confucian philosophy, aim for prevalence of collectivism and social order even when studying abroad. These set of values create cultural differences when studying abroad and having to take individually self-reflected decisions concerning plagiarism or academic misconduct. Therefore, these students will need to navigate their way between high integrity expectations present the institutions in host countries and their individual cultural beliefs. This study is of a particular interest for the UAE private universities, which have seen a considerable increase in the number of Chinese students studying in the country.

The native population of the UAE is predominantly Muslim and so is the majority of foreign students studying in the private universities in the country. Therefore, it becomes valuable to analyse previous research conducted in other Muslim countries. A study by Moten (2014) asserts that from an Islamic perspective, academic dishonesty is a form of cheating and it is morally and ethically unacceptable and yet there is very little research done to analyse the issue of plagiarism in regards to students and faculty attitudes in relation to plagiarism in the Middle East and the wider Muslim world. According to Moten (2014) institutions in Malaysia consider plagiarism as immoral and against the law and focus on development of writing and research skills.

Furthermore, a study conducted to compare the Ukrainian and American educational systems found that the ethical systems implemented in schools have to do with

the approaches taken by faculty and students. Nevertheless, the attitude towards honesty, unilateral cheating, collective cheating, falsification, gaining favouritism, and performing extra work to receive better grades are more relevant to a cross-cultural study rather than an educational system' study (Yukhymenko-Lescroart, 2014, p. 29). Hence, the differences noticed in Ukrainian and American educational systems have to do with differences between both cultures much more than they have to do with differences between their respective education systems (Yukhymenko-Lescroart, 2014).

2.1.1 Development of English Writing Skills – More than a daunting task or a fun activity

Non-native speakers of English language must be applauded for taking up the challenge of learning English language skills, then progressing to master the Academic English language skills, which are challenging even for native speakers of English language. Moreover, they move forward to mastering the critical and analytical thinking in English language, gaining awareness of paraphrasing and summarizing in English language and finally producing a piece of writing which has all the qualities of a good one and yet more is marked against a marking criteria that has been designed for native speakers of English language

In the process of becoming near native speakers of English language, international students are challenged with extensive diversity issues related to considerable differences in linguistic, cultural, and academic background experiences (Markham & Gordon 2007). Very often undergraduate and post graduate students find themselves lacking the adequate academic writing skills and are confused about the concepts and usage of in-text citations, reference lists and furthermore the different referencing systems. This gets even more complicated when students need to use different referencing systems in academic study skills classes and a more discipline related one in their discipline related subjects. Hence, the writing tasks become even more daunting and students may lose interest all together. It is crucial that we as educators try to find different ways of helping students master their academic writing skills without compromising on quality, integrity or institutional culture.

A case study by Prescott (2016) suggests collaborative work as a possible approach towards better academic writing skills. The ongoing research on second language (L2) acquisition, as well as in its writing and applied linguistic perspectives goes back to the mid 1980's (Pecorari & Petrić, 2014). In the field of L2, a myriad of topics that has emerged through the decades; differences in concepts of understanding plagiarism between faculty and students, development of writing skills in L2 students, ways how disciplines differ in perceptions of plagiarism, and the roles of culture and electronic media (Pecorari & Petrić, 2014, p. 73) require further analysis to be understood. Liu (2005) holds the opinion that the lack of language and writing skills of L2 students provide a platform for unintentional plagiarism and development of those applied skills has the potential to reduce the occurrence of academic misconduct. Resorting to plagiarism seems to be more a case of desperation rather than that of a willingly taken decision. Exploring ways to facilitate the development of writing skills has direct pedagogical implications on students' learning (Liu, 2005).

Gallant (2008, p. 112) argues that new teaching and learning approaches are needed, aiming learning at avoidance of plagiarism rather than curbing cheating. She debates that this could be achieved through "fostering a learning-oriented environment, improving instruction, enhancing institutional support for teaching and learning and reducing institutional constraints to teaching and learning" (Gallant, 2008, p. 89). Facilitating the atmosphere for teaching and learning can be attained by improving instruction and fostering learning orientations (Gallant, 2017).

West (2012) emphasised that academic writing is not an innate skill and hence, it needs to be developed. Students across all disciplines seem to be resilient to the prerequisite of developing writing skills alongside their discipline related knowledge acquisition. A way of tackling such issue could be 'writing across the curriculum' (WAC) by addressing issues of adequately teaching academic writing skills while emphasising 'writing in the disciplines' (WID) (Buzzi et al., 2012).

McDonald, Moorhead and Colburn (2015) are of the same view as their study on counselling students emphasises the need of a multi-layered approach, focusing on the development of adequate academic writing skills while applying the WID approach in teaching. Another study by Smith and Humphreys (2017) noted that academic writing, research skills development along with awareness of academic dishonesty are very important for post-graduate students, despite effectively displaying a higher level of maturity in regards to their studies, compared to their undergraduate counterparts. Academic writing and application of referencing skills take time to master and sharpen, but the process could be made simpler by giving emphasis to the development of critical and analytical writing abilities (Hysaj et al., 2018; Hysaj et al., 2019) instead of addressing and tacking plagiarism as a phenomenon (Vardi, 2012). By doing so we encourage students to focus on their personal and academic growth rather than the opposite. As educators, we should emphasise the necessity to analyse ways and approaches to help our students develop academic writing skills. Approaches could be of a pedagogical nature, content wise and building of appropriate vocabulary and grammar skills to empower students with adequate tools that aid the avoidance of plagiarism.

3 Research Methodology

3.1 Research Aim and Analysis

This study was conducted to measure the students' level of understanding plagiarism after being lectured by different teachers. Participants were all international students from the age group of 18 to 22. The surveys were anonymous and students were informed that their confidentiality was of utmost importance. One worksheet of eight questions was given to the students; the questions had three options (yes, no or not sure). The questions were based on definition of plagiarism and application of avoidance of plagiarism in a written format. Students were asked about different situations if they constitute plagiarism. The other survey was in the form of a quiz; the quiz had 11 questions of true or false answers. The data collected from the worksheet was analysed using descriptive statistics to indicate proportion of students who were

able to understand the studied concept. The quiz data results was tested to verify the hypothesized values for the average number of students who were able to get the correct answer to quiz questions.

The sample consists of 67 students, 18–22 age group; male and female from different study disciplines and different study levels. Cronbach's Alpha was calculated for both surveys to check the reliability of students' answers. The percentages' of students who answered the worksheet correctly were calculated. Student sample proportions from the quiz were calculated and compared to the hypothesized value in order to decide whether to reject the null hypothesis. The analysis used is z-test for the proportion at level of significance 0.05, one tail test with critical value $Z = -1.645$. The sampling distribution of proportion to be approximately normal was checked [ref].

Cronbach's Alpha was calculated to check the reliability of students' answer; SPSS was used for the calculations.

4 Results and Discussion

Table 1 shows the results of the worksheet and the reliability test result.

Table 1
Results of the worksheet and the reliability test result

Response					
Measures	**No**	**Yes**	**Not sure**	**% Correct response**	**Cronbach's Alpha**
					0.935
Copying or sharing assignments	2	**63**	2	94.0	
Failing to cite a commonly known source	17	**39**	11	58.2	
Failing to cite a statistic	7	**53**	7	79.1	
Paraphrasing the work of others you find in books, magazines, websites without documentation	9	**51**	7	76.1	
Asking another student to write a paper for you	11	**53**	3	79.1	
Copying material from another source, citing the material in your bibliography, but leaving out an in-text citation	11	**42**	14	62.7	
Listing works in your bibliography that you have not used or read	29	**28**	10	41.8	
Mixing the words of an author with your own without documentation	11	**46**	10	68.7	

Correct response

The students' responses were consistent for the measures in table 1, Cronbach's Alpha (0.935). The results show 94 % of the students understand that Copying or sharing assignments is considered plagiarism, 79% of the students understand that failing to cite a statistic or asking another student to write a paper for them is plagiarism. 76% of them interpreted paraphrasing the work of others they find in books, magazines,

websites without documentation as plagiarism, number of students who found mixing the words of an author with your own without documentation is plagiarism 68% while 62% considered copying material from another source, citing the material in a bibliography, but leaving out an in-text citation is plagiarism. This low response from the student means they need to understand copying ideas or concepts in their own words still need citation also teachers need to explain to students with examples how to cite a resource in text and in their list of references. It is evident that the students do not know what is meant by common source as 58% only considered failing to cite it is plagiarism while 79 % for failing to cite a statistic. Students need to be aware by citing a resource not used gives more value to their work, which is considered plagiarism as 41% only consider it.

The following true or false quiz was designed to measure the depth of students' understanding to plagiarism:

1. You do not have to quote famous sayings or proverbs (example: Early to bed and early to rise makes a man healthy, wealthy, and wise) because they are common knowledge (Q1).
2. Copying and pasting from the Internet can be done without citing the Internet page, because everything on the Internet is common knowledge and can be used without a citation (Q2).
3. If you just borrow someone's idea and not their exact words, you do not have to quote or cite anything (Q3).
4. If a writer copies and pastes words and ideas from the internet, they do not have to quote or cite anything. After all, anyone can google information on the internet and find the same facts (Q4).
5. Giving incorrect information about the source of a quotation is considered (Q5).
6. Writers cite sources because it is the only way to use other people's work without plagiarizing (Q6).
7. As long as you have the author's name, you can leave out the page number title of the work in the citation. Only one part of the source needs to be revealed in a paper in order to give proper credit (Q7).
8. If a student copies another student's homework, this is not considered plagiarism. The students are not famous people and the homework was not published, so it is not considered plagiarizing (Q8).
9. Using a few phrases from an article and mixing them in with your own words is plagiarism (Q9).
10. If you quote your friend in an interview, you do not have to cite him or her or use quotation marks (Q10).
11. Changing a few words, but copying the same sentence structure and organization of a person's piece is considered plagiarism (Q11).

Table 2 shows the number of students in the sample who responded correctly to the quiz, the percentage of this response, the hypothesised student population proportion

Table 2
Correct responses to the quiz

Response						
Measures	**True**	**False**	**% Correct response (p)**	**% Hypothesized values (π)**	**Z-test**	**Cronbach's Alpha**
						0.97
Q1	**36**	31	53.7	43	1.77	
Q2	6	**61**	91.0	83	1.75	
Q3	**25**	42	37.3	28	1.70	
Q4	11	**56**	83.6	74	1.79	
Q5	**52**	15	77.6	68	1.69	
Q6	**50**	17	74.6	65	1.65	
Q7	8	**59**	88.1	80	1.65	
Q8	5	**62**	92.5	85	1.73	
Q9	**36**	31	53.7	43	1.77	
Q10	25	**42**	62.7	52	1.75	
Q11	**58**	9	86.6	78	1.69	

Correct response

who would respond correctly, the corresponding Z-test values and the reliability test value.

The null hypothesis is rejected at the hypothesized population proportion. The test statistic value were calculated using the formula:

$$\text{Z-test} = \frac{p - \pi}{\sqrt{\pi(1-\pi)/67}}$$

The hypothesised population proportions are the maximum proportions who can get the correct answers to the quiz.

85% of students knew that copying another student's work is plagiarism. 83% of the students knew that information from the internet should be cited while 74% understood that writers need to cite the accessed work from the internet & 65% of the students knew that writers need to cite any sources used by them. 80% of the student population knew what are the details needed to cite a journal paper, 78% of the students understand that paraphrased work should be cited, 68% of the population knew that they needed to give correct information about their sources, and 52% of students understood that they needed to cite friend interview. This low response indicated that students were unaware of the sources that are academically appropriate to be used and eventually to be cited. Only 43% of the population knew that they need to cite famous sayings and or passages taken from a journal article. This low response could again be explained as unawareness from the side of students. Moreover, 28% of the cohort knew that is was not necessarily to cite borrowed ideas. This very low response indicates that students did not understand the difference between

borrowing ideas and copying them. The high values of reliability show high consistency in students' response, which reflect that the concepts that understood by the students are common, and the misinterpreted ones. This can guide teachers to focus on points that will help students to avoid actions that lead to plagiarism. Furthermore, teachers should find ways of explaining concepts by practice rather than by using theory.

5 Recommendations and Conclusion

Lack of resourcefulness and imagination on educators' part, often leads to plagiarized work from students; therefore, educators should put in responsible efforts to formulate out-of-the-box projects that allow students to utilize their own cognitive skill set. Devising assignments or tasks that depend on original expression, rather than based on previous or current research topics could reduce the plagiarism activities. Universities across UAE should also build strategies that ensure students' understanding of institutions' plagiarism policies and are clear over various plagiarism related issues. The consequences of plagiarism could be delivered to the students through active discussions, written guidelines and practices in identifying proper and improper citation. The scope of future research could be to examine the ethical values been taught and maintained in high schools across UAE. Moreover, an investigation of how parental values and teachings at home affects students' mind-set towards classroom activities, would be helpful in understanding the issues that lead to plagiarism. Furthermore, a deeper insight into this area of concern; could further allow educators to discuss and improve students' attitude towards plagiarism. Finally, a statistical analysis across various other local and international universities within UAE pertaining to plagiarism could further complement the results presented within this paper.

In conclusion, though the research studies indicate that students tend to understand the meaning of plagiarism and its different forms, this study found that such reinforcement is constantly required. In addition, regardless of the diverse student body, location and local culture within the university, the students tend to utilize similar plagiarism techniques. Educators are required to employ a variety of strategies to prepare students with the right graduate attributes, shape the mind-set of students and equip them with the correct writing skills and practices.

References

Al Ghamdi, A. K. H., Hussain, I. Y., & Al-Hattami, A. A. (2018). Plagiarism in Saudi Arabian Public Higher Education: Reasons and Solutions, *Asian Journal of Arts, Humanities and Social Studies*, vol. *1*, no. 1, pp. 40–48.

Bamford, J., & Sergiou, K. (2005). International students and plagiarism: An analysis of the reasons for plagiarism among international foundation students, *Investigations in university teaching and learning*, vol. 2, no. 2, pp. 17–22.

Batane, T. (2010). Turning to Turnitin to fight plagiarism among university students, *Journal of Educational Technology & Society*, vol. *13*, no. 2, pp. 1–12.

Bretag, T., Mahmud, S., Wallace, M., Walker, R., McGowan, U., East, J., Green, M., Partridge, L., & James, C. (2014). Teach us how to do it properly! An Australian academic integrity student survey. *Studies in Higher Education*, vol. 39. no. 7, pp. 1150–1169.

Buzzi, O., Grimes, S., & Rolls, A. (2012), Writing for the discipline in the discipline?, *Teaching in Higher Education*, vol. 17, no. 4, 479–484.

Bowers, W. J. (1964). Student dishonesty and its control in college, Bureau of Applied Social Research, Columbia University.

Curtis, G. J., & Vardanega, L. (2016). Is plagiarism changing over time? A 10-year time-lag study with three points of measurement, *Higher Education Research & Development*, vol. 35, no. 6, pp. 1167–1179.

Devlin, M., & Gray, K. (2007). In their own words: A qualitative study of the reasons Australian university students plagiarize, *High Education Research & Development*, vol. 26, no. 2, pp. 181–198.

Duzhyk, N. (2020). Employing an ethical approach to writing in academic settings.

Etter, S., Cramer, J. J., & Finn, S. (2006). Origins of academic dishonesty: Ethical orientations and personality factors associated with attitudes about cheating with information technology. *Journal of Research on Technology in Education*, vol. 39, no. 2, pp. 133–155.

Ehrich, J., Howard, S. J., Mu, C., & Bokosmaty, S. (2016). A comparison of Chinese and Australian university students' attitudes towards plagiarism, *Studies in Higher Education*, vol. 4, no. 1, pp. 231–246.

Fenton-Smith, B., & Humphreys, P. (2017). Language specialists' views on the academic language and learning abilities of English as an additional language postgraduate coursework students: towards an adjunct tutorial model, *Higher Education Research & Development*, vol. 36, no. 2, pp. 280–296.

Foltýnek, T., & Dlabolová, D. (2020). Academic integrity in Eastern Europe: beyond corruption and plagiarism, In *A Research Agenda for Academic Integrity*. Edward Elgar Publishing.

Gallant, T. B. (2008). *Academic Integrity*, Jossey-Bass.

Gallant, T. B. (2017). *Academic integrity as a teaching & learning issue: From theory to practice*. Theory Into Practice, vol. 56, no. 2, pp. 88–94.

Gullifer, J. M., & Tyson, G. A. (2014). Who has read the policy on plagiarism? Unpacking students' understanding of plagiarism, Studies*in Higher Education*, vol. 39, no. 7, pp. 1202–1218.

Heckler, N. C. and Forde, D. R. (2015). The role of cultural values in plagiarism in higher education. Journal of Academic Ethics, vol. 13, no. 1, pp. 61–75.

Hysaj, A., Elkhouly, A., Qureshi, A. W., & Abdulaziz, N. (2018). December. Analysis of Engineering Students' Academic Satisfaction in a Culturally Diverse University, In 2018 IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE) (pp. 755–760). IEEE.

Hysaj, A, Elkhouly, A, Qureshi, A. W. and Abdulaziz, N. A. (2019). Study of the impact of tutor's support and undergraduate student's academic satisfaction. Am. J. Hum. Soc. Sci. Res, vol. 3, no. 12, pp. 70–77.

Hysaj, A., & Hamam, D. (2020). July. Does Delivery Method Matter for Multicultural Undergraduate Students? A Case Study of an Australian University in the United Arab Emirates. In International Conference on Human-Computer Interaction (pp. 538–548). Springer, Cham.

Ison, D. C. (2018). An empirical analysis of differences in plagiarism among world cultures. *Journal of Higher Education Policy and Management*, vol. 40, no. 4, pp. 291–304.

Jian, H., Marion, R., & Wang, W. (2019). Academic Integrity from China to the United States: The Acculturation Process for Chinese Graduate Students in the United States. Ethics & Behavior, vol. 29, no. 1, pp. 51–70.

Khan Z. R., & Balasubramanian, S. (2012). Students go click, flick and cheat… e-cheating, technologies and more, Journal of Academic and Business Ethics, vol. 6, p. 1.

Khan, Z. R. (2010). E-cheating in the UAE: a critical review of existing literature.

Khan, Z. R., Al-Qaimari, G., & Samuel, S. D. (2007). Professionalism and ethics: is education the bridge?, In Information Systems and Technology Education: From the University to the Workplace (pp. 214–241), IGI Global.

Lea, M. R., & Street, B. V. (1998). Student writing in higher education: An academic literacies approach, *Studies in higher education*, vol. 23, no. 2, pp. 157–172.

Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of self-efficacy beliefs in student engagement and learning in the classroom, *Reading & Writing Quarterly*, vol. 19, no. 2, pp. 119–137.

Liu, D. (2005). Plagiarism in ESOL students: Is cultural conditioning truly the major culprit?. *ELT journal*, vol. 59, no. 3, pp. 234–241.

Markham, P., & Gordon, K. (2007). Challenges and instructional approaches impacting the literacy performance of English Language Learners, *Multiple Voices for Ethnically Diverse Exceptional Learners*, vol. 10, no. 1, pp. 73–81.

McCabe, D. L., Feghali, T., & Abdallah, H. (2008). Academic dishonesty in the Middle East: Individual and contextual factors, *Research in Higher Education*, vol. 49, no. 5, pp. 451–467.

McDonald, K. E., Moorhead, H. J., & Neuer Colburn, A. A. (2015). Teaching Writing Skills to Counseling Students for Clinical Competence and Professional Advocacy, *Journal of Counselor Leadership and Advocacy*, vol. 2, no. 1, pp. 80–91.

Moten, A. R. (2014). Academic dishonesty and misconduct: Curbing plagiarism in the Muslim world, *Intellectual discourse*, vol. 22, no. 2, p. 167.

Park, C. (2003). In other (people's) words: Plagiarism by university students – literature and lessons. *Assessment & evaluation in higher education*, vol. *28*, no. 5, pp. 471–488.

Pecorari, D., & Petrić, B. (2014). Plagiarism in second-language writing, *Language Teaching*, vol. 47, no. 3, pp. 269–302.

Petrić, B. (2012). Legitimate textual borrowing: Direct quotation in L2 student writing. *Journal of Second Language Writing*, vol. 2, no. 2, pp. 102–117.

Prescott, L. (2016). Using collaboration to foster academic integrity, Open Learning: The Journal of Open, *Distance and e-Learning*, vol. 31, no. 2, pp. 152–162.

Rueda, R., Lim, H., & Velasco, A. (2007). Cultural accommodations in the classroom: An instructional perspective. *Multiple Voices for Ethnically Diverse Exceptional Learners*, vol. 10, no. 1–2, pp. 61–72.

Razek, N. (2014). Academic integrity: A Saudi student perspective, *Academy of Educational Leadership Journal,* vol. 18, no. 1.

Rawwas, M. Y., Al-Khatib, J. A., & Vitell, S. J. (2004). Academic dishonesty: A cross-cultural comparison of US and Chinese marketing students, *Journal of Marketing Education*, vol. 26, no. 1, pp. 89–100.

Scanlon, P. M. (2003). Student online plagiarism: how do we respond?, College Teaching, vol. 51, no. 4, pp. 161–165.

Song-Turner, H. (2008). Plagiarism: Academic dishonesty or 'blind spot' of multicultural education?, *Australian Universities' Review*, vol. 50, no. 2, p. 39.

Singelis, T. M., & Brown, W. J. (1995). Culture, self, and collectivist communication: Linking culture to individual behaviour, *Human communication research*, vol. 21, no. 3, pp. 354–389.

Sutherland-Smith, W. (2008). *Plagiarism, the Internet, and student learning: Improving academic integrity*, Routledge.

Taylor, S., Ryan, M., & Elphinstone, L. (2020). Employing culturally responsive pedagogy and technologies to re-frame diverse team work challenges as common and improvable: Multiculturality & Inclusion. *EDULEARN20 Proceedings*.

Terraschke, A., & Wahid, R. (2011). The impact of EAP study on the academic experiences of international postgraduate students in Australia. *Journal of English for Academic Purposes*, vol. *10*, no. 3, pp. 173–182.

Thomas, J., Raynor, M., & McKinnon, M. (2014). Academic integrity and oral examination: an Arabian Gulf perspective, *Innovations in Education and Teaching International*, vol. 51, no. 5, pp. 533–543.

Vardi, I. (2012). Developing students' referencing skills: a matter of plagiarism, punishment and morality or of learning to write critically?, *Higher Education Research & Development*, vol. 31, no. 6, pp. 921–930.

UNESCO Institute for Statistics. (2020). Data Center: Student mobility country of origin, 2020. Accessed at `http://stats.uis.unesco.org/unesco/TableViewer/document.aspx?ReportId=136` on August 5th, 2020

Van Damme, D. (2001). Quality issues in the internationalisation of higher education, *Higher education*, vol. *41*, no. 4, pp. 415–441.

Verbik, L., & Lasanowski, V. (2007). International student mobility: Patterns and trends, *World Education News and Reviews*, vol. *20*, no. 10, pp. 1–16.

Wells, D. (1993). An account of the complex causes of unintentional plagiarism in college writing. WPA: Writing Program Administration, vol. 16, no. 3, pp. 59–71.

West, A. (2012). Formative evaluation of the transition to postgraduate study for counselling and psychotherapy training: Students' perceptions of assignments and academic writing. *Counselling and psychotherapy research*, vol. 12, no. 2, pp. 128–135.

Whitley, B. E. (1998). Factors associated with cheating among college students: A review. *Research in higher education*, vol. 39, no. 3, pp. 235–274.

Yukhymenko-Lescroart, M. A. (2014). Ethical beliefs toward academic dishonesty: a cross-cultural comparison of undergraduate students in Ukraine and the United States, *Journal of Academic Ethics*, vol. 12, no. 1, pp. 29–41.

Zhang, F., Wu, D., Liu, P., & Zhu, S. (2014). November. Program logic based software plagiarism detection. In *2014 IEEE 25th International Symposium on Software Reliability Engineering* (pp. 66–77). IEEE.

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PLAGIARISM FROM A DIGITAL FORENSICS PERSPECTIVE

Clare S. Johnson, Ross Davies

Abstract: Plagiarism and contract cheating are serious academic issues that 'undermine the integrity of education' (Bretag, 2013). There are a number of tools that can help assessors detect plagiarism – particularly where text has been copied and pasted: Turnitin (`https://www.turnitin.com`), PlagScan (`https://www.plagscan.com`) and Urkund (`https://www.urkund.com`) are examples of such tools. The providers of these tools are also developing authorship tools that use stylometrics and linguistics to determine matches between authors (whether the submitting author, or a third party). It is also possible for an assessor to copy passages of text and paste them into a Google search (or similar) with quotes surrounding the passage to see if there are any immediate online matches. In a previous paper *Using digital forensic techniques to identify contract cheating: A case study* (Johnson & Davies, 2020), the authors began using digital forensic techniques to see if it was possible to detect contract cheating. In that paper, consideration was given to how forensic techniques allow review of document edits through examining the Open Office extensible markup language (OOXML) format of the document. This paper seeks to extend that research by further exploration of the OOXML format to establish whether forensic artefacts can be found to indicate that work has been copied and pasted from online sources. A number of sample documents were created by the authors and the xml analysed. Whilst there were some indicators to suggest work had been copied and pasted, more analysis is required to develop the techniques into a more reliable tool.

Key words: Cheating, Copying, Detection, Forensics, OOXML, Plagiarism

Literature Review

The ease of copying and pasting information from the Internet can be very tempting for students, particularly when they are struggling with an essay, or when deadlines are tight and they are under pressure. According to the website Plagiarism.org (plagiarism.org, 2017), plagiarism is an act of fraud, which involves 'both stealing someone else's work and lying about it afterwards' – in other words, submitting work as your own when it has actually been copied from another source. Extensive surveys by McCabe (2001) found that 36% of students admitted to "paraphrasing/copying a few sentences from Internet source without footnoting it" (plagiarism.org, 2017; McCabe 2001). Bretag's review (2014) of numerous surveys notes that the key findings have been that 'breaches of academic integrity are rife in colleges and universities around the world', and that little has changed since the early surveys of Bowers (1964) and McCabe. In 2016, an article written for the Times newspaper, based on Freedom of Information Requests, found that almost 50,000 students at British universities had been caught cheating in the previous three years, with only 362 students being withdrawn from their courses as a result (Mostrous & Kenber, 2016).

There are serious implications arising from plagiarism too. Foltynek, Meuschke & Gipp, (2019), explain that for the academic student, plagiarism is 'detrimental to

DOI: https://doi.org/10.11118/978-80-7509-772-9-0078

competence acquisition and assessment', which in turn could lead to professionals who appear to be qualified, but who in fact have achieved their qualifications based on someone else's work; whilst plagiarised research papers can 'impede the scientific process . . . by distorting the mechanisms for tracing and correcting results'. In addition, McCabe, Trevino and Butterfield (1996) discuss how strong ethics codes (or 'honor codes') in college students are shown to reduce the likelihood of self-reported unethical behaviour in the workplace, which could suggest that students who engage in unethical behavior during their studies may later bring this behaviour into their workplaces.

There is not a great deal of research that looks into the use of digital forensics to establish ownership of student submissions. Tools such as Turnitin (`https://www.turnitin.com`), PlagScan (`https://www.plagscan.com`) and Urkund (`https://www.urkund.com`) are very much text matching tools, which scan archives for passages of text that appear in student submissions. By changing one or two words, or switching phrases around, students can outwit the mechanisms used by these tools and achieve low scores, which then in turn fail to alert assessors that potential plagiarism has occurred. Developments are in place to improve these tools by adding in authorship tools and stylometrics, and these will certainly help in flagging potential plagiarism or outsourced work.

The authors of this paper both have experience of working in the cyber security teaching department of a Higher Education Institution, and have taught digital forensics and cyber security. As such, they wondered whether the techniques used to identify ownership of certain files involved in criminal investigations could potentially be applied to student submissions to establish ownership and originality of work.

Research into the application of digital forensics using the OOXML approach include the use of digital forensic techniques for identifying copyright issues (Fu, Sun, Liu & Li, 2011) and intellectual property (Jeong & Lee, 2017), though the latter requires access to the entire file system of the computer where the document was created, and Xiang, Sun, Liao & Wang (2016) who discuss the use of extensible markup language for transmission of secret information. (Jeong & Lee, 2017). As (Didriksen, 2014) notes: "it is desirable to connect the actions performed, e.g. editing the document, to a specific physical person or several people" when carrying out a digital forensics investigation, as this permits investigators to attribute certain actions to specific users. The authors of this paper wonder if similar forensic investigation techniques can be useful in establishing the originality of work submitted by a student.

Research aim and objectives

This object of this paper is to explore the use of OOXML to see if there are other flags or features that might raise suspicion that a piece of work has not been created in an authentic way and hence may be plagiarised. Specifically, the research aims to:

- Describe various stylistics features of OOXML;
- Analyse which features of OOXML may be useful in determining the authenticity of a document;

- Determine the extent to which forensic analysis of these features can help determine originality.

Methodology

Device and Document Specification

After an initial pilot study, comprising one plagiarised document (created by the authors) and one fully original document, a new batch of ten documents, referred to as 'sample files', were created. Three documents were created on Device A, one on Device B, four on Device C and two on Device D. The specifications for each device (operating system and software version) are detailed below [Table 1].

Table 1
Devices and documents

Operating System	Word Version	Documents created
Device A: MacOS High Sierra v 10.13.6	Microsoft Word for Mac v 16.34 (20020900)	• Human Computer Interface Library • Plagiarism Essay Wikipedia • Python Programming Essay Stack Overflow • Raspberry Pi Essay Github
Device B: Windows 10 Education v 1803	2019 MSO (16.10348.20020)	• Red Team Blue Team
Device C: Windows 10 Education v 1903	2016 (16.0.4954.1000)	• Securing the Internet of Things • Computer Programming Wikipedia • Social Engineering Authentic
Device D: Windows 10 Education v 1903	Microsoft Word for Office 365 (16.0.11727.20222)	• Blockchain • Online Discussion Fora

In each case, some original text was typed into the document and the document was saved. Information from another source was then obtained through Internet searches on various websites as indicated later in this study. This information was copied and pasted directly into each original document, formatted to match the original text and resaved. This is similar to the actions taken by students who copy and paste information from other sources – whether citing them correctly or otherwise. The method used for reformatting to match the original document varied from sample to sample, with some samples using the Format Painter (sometimes known as Paste Format) tool, and others using manual font adjustments. Copying and pasting text from multiple sources is sometimes known as 'patchworking', where students take passages of text from the Internet and build them into a submission, without giving adequate credit (Kumar, P. M., Priya, N. S., Musalaiah, S., & Nagasree, 2014). In the sample files created for this study, the source of the copied material is *not* included in the sample files, but is included as a subsection of the references for this article. One of the documents ('Social Engineering Authentic') uses original text, supplemented by a minimal amount of information sourced from the Internet that has been paraphrased or summarised, to replicate the typical actions of a non-plagiarising student.

Once each document was saved, it was then converted to a zip file using the process specified below, and the document.xml file reviewed in Notepad++ and Chrome to establish whether forensic artefacts relating to the process of copying and pasting could be found. If so, these could potentially be considered flags for plagiarised work.

OOXML format

As discussed in the previous paper by Johnson & Davies (2020), Microsoft Word uses 'Office Open XML Format' (OOXML), where a document is created from a combination of other underlying documents. Much like a film is made up of many scenes, with music, special effects and credits added, and finally packaged up into a single item, a Word document (docx) is made up of several other files, compressed into a single package.

The Open XML format has been around since Microsoft Office 2007 and was designed to bring several benefits to individuals, organisations and developers. These benefits include improved damage recovery because the various components of each document are stored separately, meaning that if one component is damaged it may still be possible to open the file; better privacy and control over personal information, because sensitive information can be more easily identified and thus removed if required, and more compact: it is this feature that we can take advantage of when carrying out a digital analysis of the file (Microsoft, 2019).

It is simple to review the document properties of a file when opened. This information can be found under the **File** menu by selecting **Properties** and then the **Statistics** tab (Fig. 1) (depending on Word version). This information can be useful, but is not always reliable. Instead, looking inside the packaged contents of this document can reveal much more interesting data about the file and the way it was created.

To look inside the compressed docx file (or package), it first needs to be decompressed by changing the extension of the file from.docx to .zip, and then choosing Extract, or Unzip (depending on your system). Opening the folder that is created then reveals a series of subfolders: rels; docProps; word and a single file [ContentTypes].xml.

The **[Content_Types].xml** at the root of the folder contains a list of the content types of the parts within the package. The **_rels** folder tells Word how the parts relate to each other and to resources outside of the package.

Within the **word** folder, we find the following content as a minimum: _rels, theme (folders); document.xml; settings.xml; styles.xml. The file containing most of the content is the **document.xml** file, and this is the file focused on for this paper. The **document.xml** file is the main xml file for the document and includes the document's content and run identifiers. These run identifiers (RsiD tags) indicate how the document was built by placing each and every edit inside a tag, or 'run'. In the previous paper by the authors, a detailed review of the run identifies was carried out.

The samples created for this research are detailed as follows:

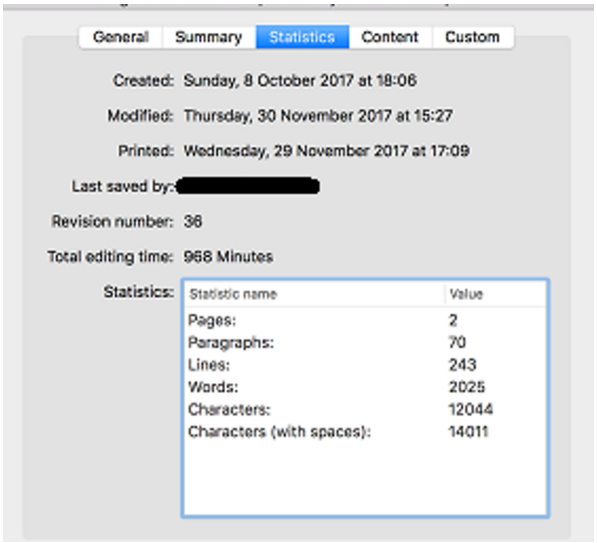

Figure 1. Document Properties panel

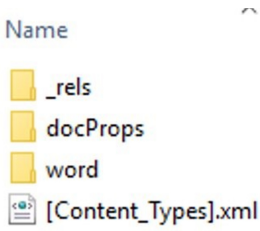

Figure 2. Decompressed docx file

Results and Discussion

Flags for plagiarised work

Inspection of the document.xml files for each sample file showed a number of forensic artefacts that were investigated further to determine whether they could be considered flags for copied and pasted text.

Code inside the document.xml file tells Word how to render the document when displaying it on screen. Styling is defined within a w: namespace, which is developed by adding a relevant element. For example w:document tells Word that it is looking at a Word document; whilst w:body indicates that what follows is the body text of the document. A genuinely created Word document yields a number of typical xml instructions, but in the samples some anomalies were detected. In the mainly authentic sample ('Social Engineering Authentic'), there is no appearance of the w:rFont element

Table 2
Documents created and device information

Document Name	Device	Source used	Notes
Human Computer Interface Library	Device A (Mac)	Library – online journal articles	Two sources used
Plagiarism Essay Wikipedia	Device A (Mac)	Wikipedia	
Python Programming Essay Stack Overflow	Device A (Mac)	Stack Overflow	
Raspberry Pi Essay Github	Device A (Mac)	Github	
Securing the Internet of Things (IoT)	Device B (Windows)	Online journal article and blog post	Two sources used
Social Engineering Authentic	Device B (Windows)		Text copied for reference only, heavily edited or paraphrased
Computer Programming Wikipedia	Device B (Windows)	Wikipedia	
Red Team Blue Team	Device C (Windows)	Wikipedia and two online blog posts	Three sources used
Blockchain	Device D (Windows)	Web pages resulting from Google search	Two sources used
Online Discussion Fora	Device D (Windows)	Website and online journal article	Two sources used

within the file. Even when the w:rFont element appears in other original examples tested by the researchers, it would be to specify a single font attribute, e.g. w:rFonts w:eastAsia="Times New Roman", unless the passage where it appears is part of a field entry (e.g. Table of Contents entry) or the font has been changed (i.e. not default).

However, the 'Python Programming' file includes multiple font attributes as shown:

```
<w:rFonts w:ascii="inherit" w:eastAsia="Times New Roman" w:hAnsi="inherit"
w:cs="Consolas"/>
```

This is similar for the 'Securing the Internet of Things (IoT)' file:

```
<w:rFonts w:asciiTheme="minorHAnsi" w:hAnsiTheme="minorHAnsi"
w:cstheme="minorHAnsi"/>
```

Why this occurs is not clear, but it is possible that accessing the text across several versions (i.e. initially in the original online version, then additionally through copying into the Word document) may result in a number of font specifications, each of which relates to a version of the text (HTML or CSS for the web, Microsoft Word for the Word version). To test this theory, a very simple document was created in Word called 'Test.docx' with one line of text typed directly into the document, and a second line of text copied directly from the Internet, with no formatting applied. This shows a specification of the font in the copied section, which is not required in the authentic typed-in text (as it simply uses the default font). The Discussion Fora also demonstrates a number of `<w:rFont>` elements. Referring to the Open Office XML glossary indicates

that the attributes applied in the rFont element are used to allow for the display of different subsets of Unicode characters (i.e. not those from the default set), such as Asian characters or Arabic text. It is important, therefore to consider that these attributes may appear through conversion from one language (perhaps the native language of the student) into English, and not because of academic misconduct.

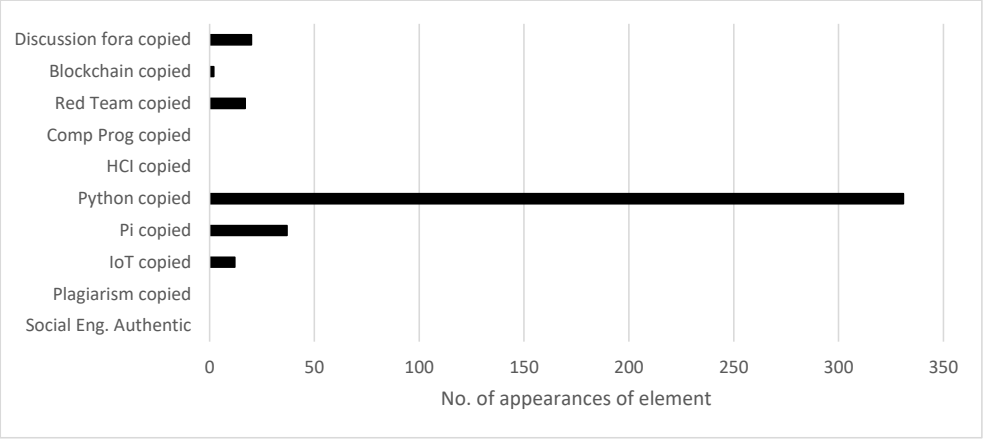

Figure 3. Frequency of `w:rFonts` element in sample files

Other formatting elements can also be seen across the samples created as shown below and are discussed later in the study:

```
<w:rPr>
      <w:rFonts w:ascii=”Verdana” w:hAnsi=”Verdana”/>
      <w:color w:val=”000000”/>
      <w:sz w:val=”23”/>
      <w:szCs w:val=”23”/>
      <w:shd w:val=”clear” w:color=”auto” w:fill=”FFFFFF”/>
</w:rPr>
```

When the copied text is formatted using the Format Painter tool and resaved, these formatting elements are typically removed. The ‘Programming Wikipedia’ file, which contains text copied from Wikipedia and reformatted to match the font of the original document does not include any rFonts specifications at all, most likely because of the use of this tool.

The `<w:rPr>` element defines the run properties for a particular run of edits, including attributes for font face, size and language. In the samples containing copied text there are some interesting features of this `<w:rPr>` element. In this example, taken from the ‘Red Team Blue Team’ file, we can see that several attributes are defined within the `<w:rPr>` element. However, this is not followed by any text to appear on screen (w:t), but is, in fact, followed by another `<w:rPr>` element, suggesting that the attributes are redundant and possibly a relic of previous formatting:

```
<w:rPr>
```

```
      <w:rFonts w:eastAsia="Times New Roman" w:cstheme="minorHAnsi"/>
      <w:sz w:val="24"/>
      <w:szCs w:val="24"/>
      <w:lang w:eastAsia="en-GB"/>
</w:rPr>
```

This feature is present in several of the sample files, including 'Securing the Internet of Things', 'Raspberry Pi' and 'Python Programming'. In fact, the 'Python Programming' file includes a huge number of rPr elements compared to the other documents, which may be because it contains code snippets.

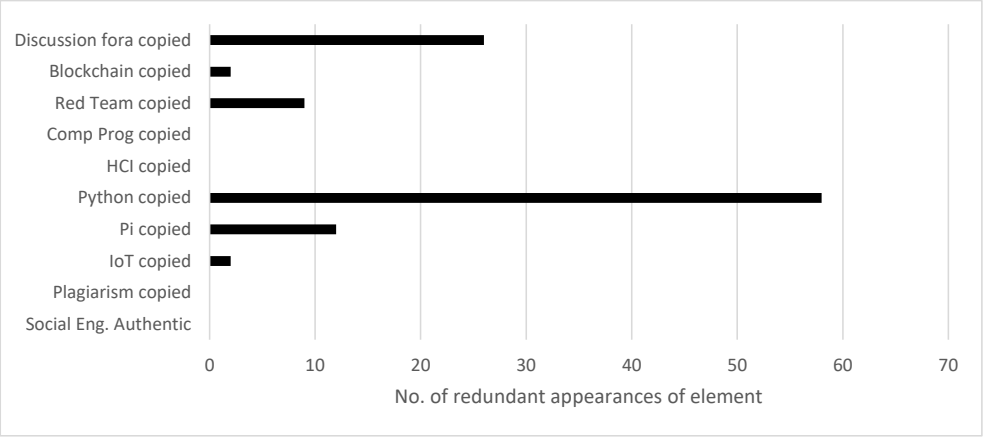

Figure 4. Frequency of redundant rPr elements

There were several elements that were expected to be found in the documents containing copied text from preliminary work, but these did not appear in significant numbers during the testing for this paper. For example, the font element `<w:sz>` (which relates to font size) did not appear in all the copied and pasted examples, but appeared significantly in four out of the seven plagiarised works:

The `<w:shd>` element denoting that a shadow (background) has been applied to the run and which the authors found this in the pilot phase of the study, only appeared in documents where reformatting had been done manually (by highlighting the passage, and applying the correct font using the Font tool) as in 'Securing the Internet of Things', 'Blockchain' and 'Discussion Fora'. This could correlate with copied and pasted text, as text created within Word itself would already have a white or null background shadow, and therefore the appearance of this command suggests that the text has come from elsewhere. This should have been considered a flag for copied work that had to be reformatted to remove unwanted attributes and was also seen in the 'Test.docs' file before the Format Painter was used to match the formatting of the original document. Text that is reformatted using the Format Painter does not bear this characteristic.

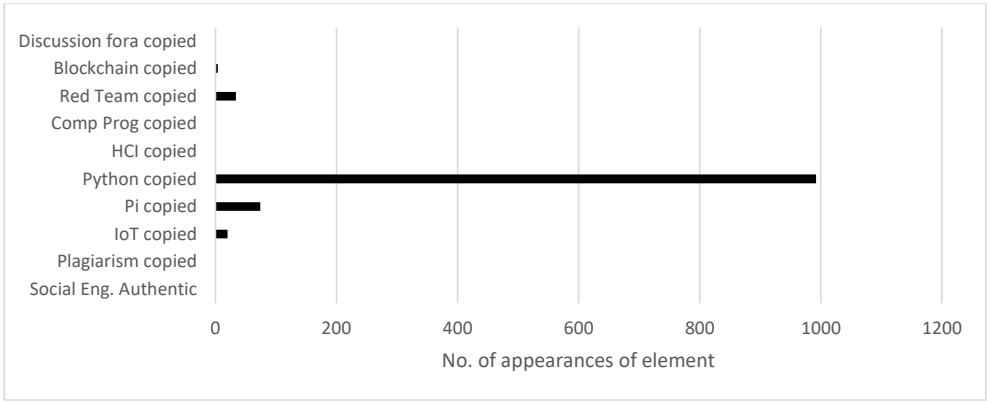

Figure 5. Frequency of w:sz element in sample files

Other interesting findings

Other tags and elements within the pilot study reviewed yielded interesting appearances of `<w:NormalWeb>` and `<w:webHidden>`, neither of which appeared in the original work during the pilot. However, the appearance of `<w:NormalWeb>` only appears in the 'Securing the Internet of Things' and 'Blockchain' files in the full study, and `<w:webHidden>` does not occur at all.

It is worth commenting on two of the samples analysed, namely 'Python' and 'Pi' as these clearly demonstrate higher incidents of most of the elements and attributes discussed above. Carrying out a count on the number of 'words' in the associated document.xml files (whether code or actual text) reveals that files that copy 'code' from the Internet demonstrate a much higher ratio of xml words to the number of text words in the original.docx file. Whilst most of the samples demonstrate between 4 and 11 times the number of xml words to original text words, the 'Python' and 'Pi' samples show 98 times and 219 times more words respectively. This may be because of the extended formatting required in these documents, but is more likely as a combined result of the extended formatting found on the Internet version of the file which need removing, plus the formatting within the document itself. The relevance of this word count would be interesting to review in further detail, particularly in subject areas which require the use of code, to establish whether the formatting required for code naturally results in higher xml word counts, or whether this is solely because of the reformatting requirements for code copied from the Internet.

Limitations

As with many digital forensics techniques, these flag can only act as indicators. There may be genuine reasons why a document includes such flags, and it is to be expected that some information will come from online sources as part of the proper literature review, though of course these sources should be paraphrased, summarised or extended and cited accurately. The methods described in this study are also dependent on the

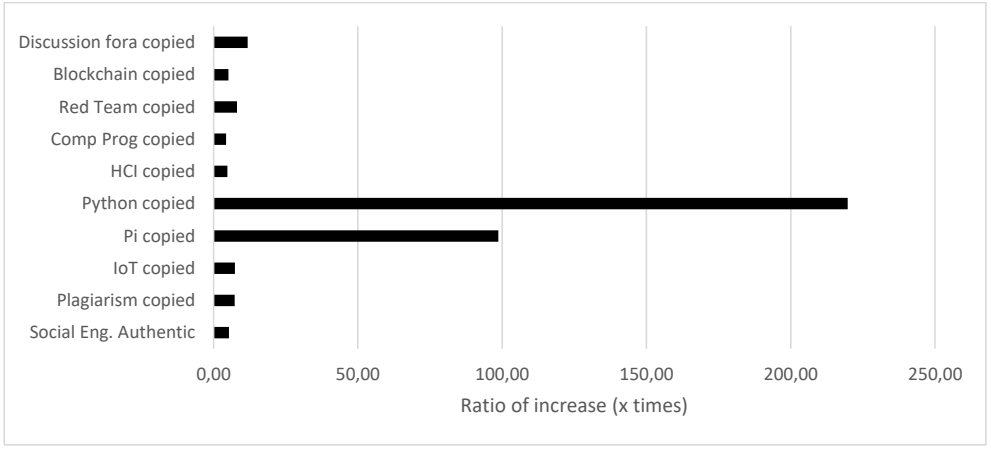

Figure 6. Number of xml words in relation to document word count

student submitting the assignment as a word.docx file, and not a PDF or other format, which have not yet been investigated.

Conclusions and Further Work

It is often possible to identify plagiarism through the use of text matching software, or by using search engines to find suspicious paragraph of text. However, by changing a single word, or by patchworking, students are able to outsmart tools like Turnitin and PlagScan, and this can render any online searches for similar passages by the assessor unsuccessful. Reviewing the xml of the submission does not enable an assessor to categorically state whether work is plagiarised, but it is another option in the toolkit for highlighting flags which may be indicators of plagiarised work. The authors believe that there is much more that can be done in this area, perhaps developing tools which review the xml format in greater detail, and also to clarify how these elements and attributes are applied during the copy and paste process in more detail. Furthermore, the elements need to be reviewed in a more holistic way, as singling out elements and attributes in isolation from the final, fully rendered document makes them less meaningful. It would also be useful to review documents created in Google Docs and Libre Office, and those in PDF format, to see if these highlight any forensic artefacts of interest. Finally, ethical approval for the analysis of real examples of student work should be gained, as these will provide the richest source of data.

References

Bowers, W. J. (1964). Student dishonesty and its control in college. New York: Bureau of Applied Social Research, Columbia University.

Bretag, T. et al. (2014) Teach us how to do it properly! An Australian academic integrity student survey, *Studies in Higher Education*, 39(7), pp. 1150–1169. doi: 10.1080/03075079.2013.777406.

Foltynek, T., Meuschke, N., & Gipp, B. (2019). Academic Plagiarism Detection: A Systematic Literature Review, *ACM Computer Surveys,* 12 doi: 10.1145/3345317, accessed 23/03/20

Fu, Z., Sun, X., Liu, Y., & Li, B. (2011). Forensic investigation of OOXML format documents. *Digital Investigation, 8*(1), 44–55. doi:10.1016/j.diin.2011.04.001

Jeong, D., & Lee, S. (2017). Study on the tracking revision history of MS Word files for forensic investigation. *Digital Investigation, 23*, 3–10. doi:10.1016/j.diin.2017.08.003

Johnson, C., Davies, R. (2020). Using Digital Forensic Techniques to Identify Contract Cheating: A Case Study. Journal of Academic Ethics. https://doi.org/10.1007/s10805-019-09358-w

McCabe, D., Trevino, L., & Butterfield, K., (1996). The Influence of Collegiate and Corporat Codes of Conduct on Ethics-Related Behavior in the Workplace. *Business Ethics Quarterly*, 6(4), pp. 461–476. https://doi.org/10.2307/3857499

Mccabe, D., Trevino, L., & Butterfield, K., (2001). Cheating in academic institutions: A decade of research. Ethics & Behavior, 11(3), pp. 219–232.

Microsoft. (2019). Open XML Formats and file name extension. Retrieved from: https://support.office.com/en-gb/article/open-xml-formats-and-file-name-extensions-5200d93c-3449-4380-8e11-31ef14555b18, accessed 30/11/19

Mostrous, A., & Kenber, B. (2016). Universities face student cheating crisis. *The Times*, available at: https://www.thetimes.co.uk/article/universities-face-student-cheating-crisis-9jt6ncd9vz7

Plagiarism.org (2017). What is Plagiarism. Available at: https://www.plagiarism.org/article/what-is-plagiarism, accessed 28/02/20

Xiang, L., Sun, C., Liao, N., & Wang, W. (2016). A Characteristic-Preserving Steganographic Method based on Revision Identifiers. *International Journal of Multimedia and Ubiquitous Engineering, 11*(9), 29–38.

References for sample essays

Plagiarism Essay

Wikipedia (2020). Plagiarism, Available at: https://en.wikipedia.org/wiki/Plagiarism, accessed 20/02/20

Python Essay

Stack Overflow (2020). Creating a traffic light using Python, Available at: https://stackoverflow.com/questions/24588406/creating-a-traffic-light-using-python, accessed 20/02/20

Raspberry Pi Essay

Github (2020). Pi-hole / setup.py, Available at: https://github.com/pi-hole/pi-hole/blob/master/setup.py, accessed 20/02/20

Human Computer Interface Essay

Y. Ma, Z. Mao, W. Jia, C. Li, J. Yang and M. Sun (2011). Magnetic Hand Tracking for Human-Computer Interface. In *IEEE Transactions on Magnetics*, vol. 47, no. 5, pp. 970–973

Barszap, A. G., Skavhaug, I., Joshi, S. S., (2016). Effects of muscle fatigue on the usability of a myoelectric human-computer interface, *Human Movement Science,* vol. 49, pp. 225–238, available at: https://10.1016/j.humov.2016.06.009, accessed 20/02/20.

IoT Essay

IEEE (2018). Internet of Things Security: Is Anything New? In *IEEE Security & Privacy*, vol. 16, no. 5, pp. 3–5, September/October 2018, available at: https://doi.org/10.1109/MSP.2018.3761715, accessed 19/02/2020.

Intellectsoft (2019). Top 10 Biggest IoT Security Issues, available at https://www.intellectsoft.net/blog/biggest-iot-security-issues/, accessed 19/02/2020

Red Team Blue Team Essay

Wikipedia (2020). Red Team, Available at: https://en.wikipedia.org/wiki/Red_team, accessed 28/02/20).

SecurityTrails (2018). Cybersecurity Red Team Versus Blue Team – Main Differences Explained, available at: https://securitytrails.com/blog/cybersecurity-red-blue-team, accessed 28/02/20

EC Council (n.d.). Red Team vs Blue Team, available at: https://blog.eccouncil.org/red-team-vs-blue-team/, accessed 28/02/20.

Social Engineering Essay

Norton (2020). What is social engineering? Tips to help avoid becoming a victim. Available at: https://us.norton.com/internetsecurity-emerging-threats-what-is-social-engineering.html, accessed 19/02/20.

Kaspersky (n.d.). Social engineering – Definition. Available at: https://www.kaspersky.co.uk/resource-center/definitions/what-is-social-engineering, accessed 19/02/20.

Blockchain Essay

The Internet Society www.internetsociety.org. (n.d.). Blockchain, available at: https://www.internetsociety.org/issues/blockchain, accessed 23/03/20.

Cointelegraph.com (n.d.). How Blockchain Technology Worlks. Guide for Beginners. Available at: https://cointelegraph.com/bitcoin-for-beginners/how-blockchain-technology-works-guide-for-beginners, accessed 23/03/20.

Online Discussion Fora Essay

Johnson, C. S. (2017). Collaborative technologies, higher order thinking and self-sufficient learning: A case study of adult learners. *Research in Learning Technology.* 25. Available at: https://doi.org/10.25304/rlt.v25.1981, accessed 20/03/20.

Salmon, G. (n.d.). E-tivities – Introduction. *Gilly Salmon*. Available at: https://www.gillysalmon.com/e-tivities.html, accessed 20/03/20.

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AI TRIAGE – HELPING FALTERING STUDENTS REHABILITATE FROM ACADEMIC MISCONDUCTS

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Key words: Academic Integrity, Misconduct, Cheating, Contract Cheating, Triage, Support Students

Introduction

Academics globally are constantly faced with situations where they have to confront students who may or may not have committed academic misconduct. Academic misconduct is any action that someone commits, thereby giving them an unfair advantage over others in an academic setting. Amidst various types of misconduct exist cheating, fraud, interference, collusion, fabrication and plagiarism (UOW, 2019).

Literature indicates that "academic dishonesty appears to be a precursor to workplace dishonesty" (Muola et. al, 2018). Students who have engaged in some form of academic dishonesty could possibly be involved in "dishonest activities in the workplace" (Muola et. al, 2018). In addition, these individuals could cause "irreversible damage to their colleagues" and hamper the reputation of the organization they work for (Muola et. al, 2018).

Hence, educational institutions upholding academic integrity have two purposes:

1. to help students accomplish the skills needed for their chosen career, and
2. to promote an ethical viewpoint which guides decision-making

(Guerrero-Dib et. al, 2020)

There are a number of measures that educational institutions take to curb academic misconducts. This paper explains how some universities detect these misconducts and enforce penalties in order to curb them. It is also essential to think about the impact of academic misconduct accusations and their subsequent consequences on students. Since research carried out regarding this is scarce, this paper proposes to take a look into this and how best to support students who are accused of misconduct at higher education.

Literature Review and Background

According to the International Center for Academic Integrity, "honesty, trust, fairness, respect, responsibility, and courage" are the core values of academic integrity (ICAI, 2020). These values of honesty, trust, fairness, respect and responsibility in addition to the courage that is required to act upon them lays the groundwork for academic committees to translate these principles into desired behaviors in classrooms and beyond (ICAI, 2020).

Academic professionals all over the world uphold these fundamental values of academic integrity because they understand that the "final goals of teaching, learning

DOI: https://doi.org/10.11118/978-80-7509-772-9-0090

and research can only be accomplished in environments in which ethical standards are upheld" (ICAI, 2020).

Academic Integrity – Importance in Higher Education Settings

According to Guerrero-Dib et. al (2020), teaching academic integrity at university level goes beyond teaching students to avoid deceitful acts such as "copying during exams, plagiarizing or contract cheating". Instilling academic integrity values entails teaching students the importance of using sincere effort and honest means to achieve the best they can. These values go a long way in helping individuals develop "an ethical perspective for principled decision making it applicable to any context" (ibid) thereby preparing them to make ethical decisions in their respective workplaces.

Literature indicates that an increasing number of university students are involved in some practices of cheating (Newstead 1996 in Brodowsky et. al, 2020). Students are diversifying in terms of how and why they indulge in dishonest practices at university. In order to help students, professors need to understand students' attitudes towards these dishonest practices and also gauge the reasons they indulge in cheating (Brodowsky et. al, 2020).

There are several reasons why students indulge in cheating. According to Whitney and Keith-Spiegel, the following are some of the factors that cause students to practice academic dishonesty:

- Peer pressure
- Performance Anxiety
- Inability to multitask / manage deadlines.
- Failing to comprehend terms such as plagiarism, paraphrasing, etc.
- Failing to understand the serious implications of being caught cheating.

(Whitney & Keith-Spiegel in NIU, 2019)

Comprehensive studies such as Khan (2014) also posited over 39 factors that might influence students' likelihood to e-cheat (electronic cheat).

Academics have tried to curb misconduct through various proactive and reactive measures such as:

- Instilling the fear of getting caught
- Talking more about academic dishonesty and the consequences
- Discussing personal consequences in the long run such as getting caught during a job interview
- Empowering honest students to influence their peers
- Introducing a class honor code for major courses, capstones and/or senior seminars in line with professional standards
- Changing assessment designs

(Weimer, M., 2018)

Role of Detection and Importance of Penalty

According to Shore (2020), in order for universities and other high educational institutions to promote academic integrity, it is essential for them to not only detect and curb misconducts, but also just as important to respond to these misconducts in an appropriate manner.

Responding to academic misconducts and imposing penalties is essential because by doing so, the academic faculty "sends an important message to other students about the consequences of cheating" (Shore, 2020). Failure in enforcing penalties may result in other students believing that these practices are the norm thereby turning them into cheaters too. However, subjecting students to penalties without assessing the reason behind their behaviors may result in those students continuing the practices of academic misconduct. Hence, academic professionals should emphasize on not only detecting and reporting these misconducts but also correcting the problems underneath these behaviors (Shore, 2020).

Regardless of the approach undertaken, there remain times when faculty members have to confront situations where students have faltered intentionally or unintentionally and committed misconduct, and "arrange for investigation and inquiry, as appropriate" (Flinders University, 2019).

"Society cannot afford to watch academic dishonesty keep on increasing . . . [as the] Widespread abuses of academic integrity may lead to endemic corruption" (Muola et. al, 2018). It is mandatory to have detection techniques in place to help reemphasize "the norms and core values of the institution and community" (Muola et. al, 2018), thereby, avoiding the chance of placing "independent thinking, intellectual property, the struggle of original thought, and academic freedom . . . at risk" (Muola et. al, 2018). Ways to detect and address academic dishonesty include:

- Whistle Blowing: Encouraging students through "maintaining standards, the perception that the perpetrator needed help, personal morality and upholding student honor codes" (Wood, 2010) would motivate them to report anyone known to practice academic fraud. There is definitely a need for proof before a decision is made and although, "Historically, whistle blowers have not been protected" (Wood, 2010), it is mandatory to reassure students against their "fear of retaliation by peers and the belief that it is not their responsibility" (Wood, 2010).
- Software Tools for Text Matching: "Academic institutions now have access to many online detection services that help detect and curtail student fraud" (Wood, 2010). Despite the fact that these services can provide "false positives" possibly due to "limited scope" and "technical restrictions", these services have proven to be successful especially when utilized in conjunction with the judgement of the assessor (Wood, 2010).
- Policy Implementation and Practice: Higher education institutions should have academic integrity policies that are regularly revisited through workshops, training programs and learning modules, thereby "[creating] awareness of the potential problems of academic fraud [while] continually [reminding] students about how unacceptable the practice is" (Singh, 2016). As a result, students cannot make

claims of ignorance such as "not [being] appropriately informed, that plagiarism would be regarded as academic misconduct" (Singh, 2016).

- Proctoring and Invigilation: This detection technique is largely useful when monitoring the integrity of a student's work as it ensures that the faculty is closely involved at various points of an assessment. For example, "a dissertation should be almost co-created by a student and his or her supervisor, with the student doing the work and the supervisor keeping a close eye on what is happening step-by-step" (Singh et. al, 2016), thus guaranteeing "relatively little opportunity for plagiarism to escape unnoticed" (Singh et. al, 2016).
- Personal Involvement: Ghostwriting is not new to the field of literature and is the act of "hiring a writer (or writers) to produce a piece of work that follows a predefined style, and none of the original writing credit is attributed to the ghostwriter. ... Although ghostwriting is not illegal, lying about the authorship of a piece of work is potentially fraudulent" (Singh et. al, 2016). Software detects plagiarism but has not been proven to be successful in the case of ghostwritten work. Hence, "lecturers having personal knowledge of the capabilities of their students" (Singh et. al, 2016) is the best form of detection of ghostwriting. A personal involvement equipped with "a greater number of oral examinations" (Singh et. al, 2016) would definitely help in detecting ghostwriting as the lecturer or supervisor would in due course be "personally acquainted with the student's level of subject knowledge and his or her natural writing style" (Singh et. al, 2016).

However, regardless of the detection technique adopted and prevailing attempts to curb misconduct, literature shows that "the vice continues to persist" (Muola et. al, 2018). It is mandatory to have the consequences strictly practiced in order to further stress on the importance of academic integrity and this may "range from requiring the student to resubmit the piece of work to suspending or even expelling him or her from the university" (Singh et. al, 2016). Suggested techniques include:

- Changing Assessment Strategies: The power of the Internet gives an "ease with which students can" cut and paste "content from online sources" (Wood, 2010) and lose their purpose of learning. Assessing a student should ideally be a continuous process as that gives a feeling of connectivity. Further, it defines a purpose that would make the student "become highly engaged with their subject material, and to express their creativity in such a way that it would be apparent who has succeeded in the learning process and who has not" (Singh et al, 2016). Thus, altering the assessment strategy "places the emphasis on the product rather than on the process of creating it" (Wood, 2010).
- Imposing Penalties: Wood (2010) has mentioned "the possibility of varying degrees of plagiarism", which implies that "differing offenses should be ranked and assigned appropriate consequences" (Wood, 2010). Also, the assessor should use their own judgement to detect possible human error and the level of penalty should definitely be in proportion to the severity of the crime. "For example, if 2 or 3 lines of text were plagiarized, the penalty might be only warning the student. For borrowing and copying a complete text, the penalty would be more severe, and for stealing

another's work, the penalty should be dismissal" (Wood, 2010). Thus, academic professionals should stress on the importance of academic integrity, have their students agree to not practice academic dishonesty, rank levels of misconduct and assign relative penalties, and ensure they gather sufficient evidence before imposing the penalty (Wood, 2010).

Research conducted by Koletsi-Kounari et. al (2011) about penalties for academic dishonesty in a Greek dental school environment proves that decisions are subject to individual opinions and influenced by the level of professionalism. There is no fixed standard or set of quantitative values against which penalties may be weighed, thereby requiring further research in the area.

Impact of detection and penalty

Research has posited ways by which confrontations, investigations and inquiry impact students. Some studies have highlighted the following:

- Social shame: When a student cheats or is caught cheating, word often spreads across the school or university. This "taints the student's reputation and cause people to question his or her work in the future" (Thompsun, n.d.).
- Denial of responsibility: Students deny taking any responsibility for their actions by insisting that "their cheating was accidental" and they didn't know they were cheating in the first place (Olafson et. al, 2013).
- Condemnation of the faculty involved: Upon being caught cheating, "students generally deflect blame externally, blaming the instructor for unfairness or poor teaching or unclear grading rubrics" (Olafson et. al, 2013).
- Psychological negativity: Students also experience guilt after being caught plagiarizing or cheating (Ballantine et. al, 2018).

In 2018, a school student accused of cheating in exams, committed suicide in Dhaka, Bangladesh (Rabbi, 2018). A series of mishandling of the situation including humiliation of parents at the hands of the top management led to the student ultimately committing suicide. In 2019, following a cheating scandal for the California Practice Standards and Jurisprudence Examination for Pharmacists (CPJE), thousands of students stated they had contemplated suicide (Gonzalez, 2019).

It thus becomes vital that institutions provide due support, given the consequences and impact of detection and penalty levied on students – to students when alleged accusations are brought on for misconduct. Although studies have focused on falsely accused students, very little is said about support provided or that should be provided for students who may have in fact committed misconduct.

Thus, the objective of this research includes the following:

- Curating a support system for students who have faced allegations, are currently involved in the process of investigation and for students who have completed the process.
- Recording the impact of said support system on students.

Methodology, Results, Analysis and Discussion

This paper tracks attempts by faculty who have adopted the concept of a "triage" to develop a support system for all students who face allegations. The first objective of the paper is to curate such a support system.

Developing a Support System

The word 'triage' stems from the French word trier, which means 'to sort'. According to Lasky, triage is the method that is used in clinics and hospitals to prioritize patients on the basis of how urgent their need for treatment is (Lasky, 2017). When medical staff have limited resources during medical emergencies or war, they use triage as a method of "quickly assessing patients' conditions and ensuring that those in the most serious condition receive treatment first" (Lasky, 2017).

Higher education institutes such as universities have also adopted the triage approach to offer support to students, thereby enabling them to make the most of their university experience. For instance, Ulster University uses triage staff who have been trained to "have an in-depth knowledge of [their] Student Support services" (Ulster University, N.D.). This ensures that "students are seen faster and receive relevant information to support them with their particular issue" (Ulster University, N.D.). In addition, "Triage assistants have also been trained to provide immediate care and support for students in distress" (Ulster University, N.D.). Thus, it may be generalized that triage systems offered by universities cover general health and wellbeing, sexual health, financial and budgeting advice, academic advice and counselling, mentoring networks and disability support (Maria, N.D.).

Curated support system

For a western university in a Middle Eastern country, the lead faculty trained two faculty members and developed an "Academic Misconduct Case Triage". This mimics the same process from an emergency room in a clinic or hospital to deal with students who have faltered in complying with academic integrity requirements at tertiary education levels.

The triage uses a simple model. As a pilot, the triage was rolled out in two first-year subjects across two semesters. At the beginning of the semester, the students were informed of the support system in place after the academic integrity policy was explained, along with a short over-view workshop on academic writing. During the semester, if a student received an email informing him/her of a possible allegation, then and after their meeting they were invited to contact the triage for support. A meeting would be set up where faculty could speak to the student. Alternatively, the student had the option to request for a virtual meeting through the learning management system's "link only" option that did not require any sign in. The conversation was always positive; never accusatory. Faculty engaged students, making them feel safe to discuss the case. If, at any point, the faculty felt further assistance was required, then the faculty guided the student to approach the counsellor. At the end of the hour of consultation, the faculty provided the student with tips on academic writing, particularly on how to rectify mistakes made in previous assignment(s). If the faculty felt the student may have

been accused wrongly, the faculty advised the student on the policy and to approach the faculty office to understand the appeal process. Figure 1 illustrates the triage model adopted for the research.

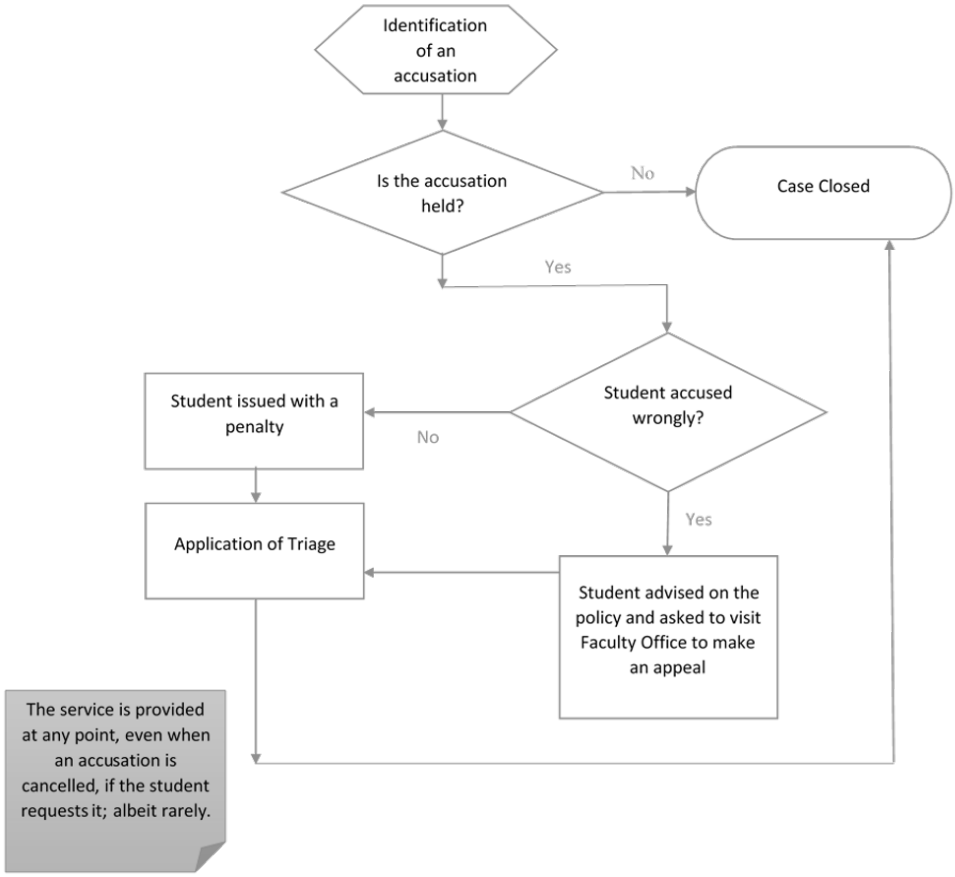

Figure 1. Model of Curated Support System

Recording the impact

The second research objective of this study is to record the impact of said support system on students. In order to track the impact of the support system implementation, the faculty involved acquired necessary approvals, designed flyers and circulated the offer of such a service to students on campus. Students who sought out the support system were asked to provide tacit consent to record their feedback anonymously using the university feedback form.

In the two semesters that the triage was introduced across the two subjects, three faculty members were approached by students, leading to a total of 79 cases that were

offered support. All cases were deemed legitimate. All 79 students used the time to speak to the faculty, and build a rapport.

Results and Discussions

The rate of response was clocked at 53 out of 79, which is 67%. According to Ohme et. al (2005), 66% response rate is suggested as acceptable while researchers such as Love and Smith (2003), and Liberatore et. al, (2001) suggested 30% as viable and satisfactory. Based on literature, the current rate of 67% was viable and acceptable for this study.

The feedback was captured on a 3-point scale with point 1 representing those who disagree to the system, point 2 being neutral and point 3 as those agreeing. Students provided feedback to queries such as "how did you feel after the session", "was the session helpful", "what was the most useful part of the session", "what was the least useful part of the session" and so on. Not all students who used the triage session gave feedback. The results are illustrated in *Figure 2 – Summary of Feedback on Curated Support System.*

The effectiveness of the curated support system was recorded through faculty interview and observations. This included feedback such as "students opened up when they felt comfortable", "some students asked for more time and came back to talk more about integrity in education", "students felt safe to cry", "students accepted they did not understand the mistake" and so on.

While majority agreed to the effectiveness of the system, with 96% stating that the "triage session was much needed", 11% were neutral about the session having "provided clear understanding of the issue" and 8% disagreed to the session being "comforting" and "support person was knowledgeable".

Around 83% responded that the triage session "provided clear understanding of the issue" while 8% were neutral about the session being "helpful" and 9% about the session having given "guidance that was supportive", and 6% disagreed to the session as having "provided clear understanding of the issue".

Approximately 87–91% of the respondents agreed that the "support person was knowledgeable", "session gave guidance that was supportive", "session was comforting" and "session was helpful", 2–4% were neutral about the session being "much needed" and "comforting", and "support person was knowledgeable", and 2–4% disagreed that the session was "much needed", "helpful" and "gave guidance that was supportive".

With reference to the above figures and graphical illustration, it is evident that at a standard deviation of 2.6 only 4.72% respondents disagreed to the effectiveness of the curated support system.

6.29% were neutral in their feedback about the system and observed a standard deviation of 3.71.

Hence, the majority of 88.99% agree that the triage system is highly effective and observe a standard deviation of only 4.37.

Qualitative analysis of student comments revealed that students felt the sessions were "great", "very useful", "needed", "saved me", "got to vent". Other comments included "the session helped me see how I went wrong and how I can correct the mistake", "I did not feel shame", "I think this session was a great idea because I felt like someone listened

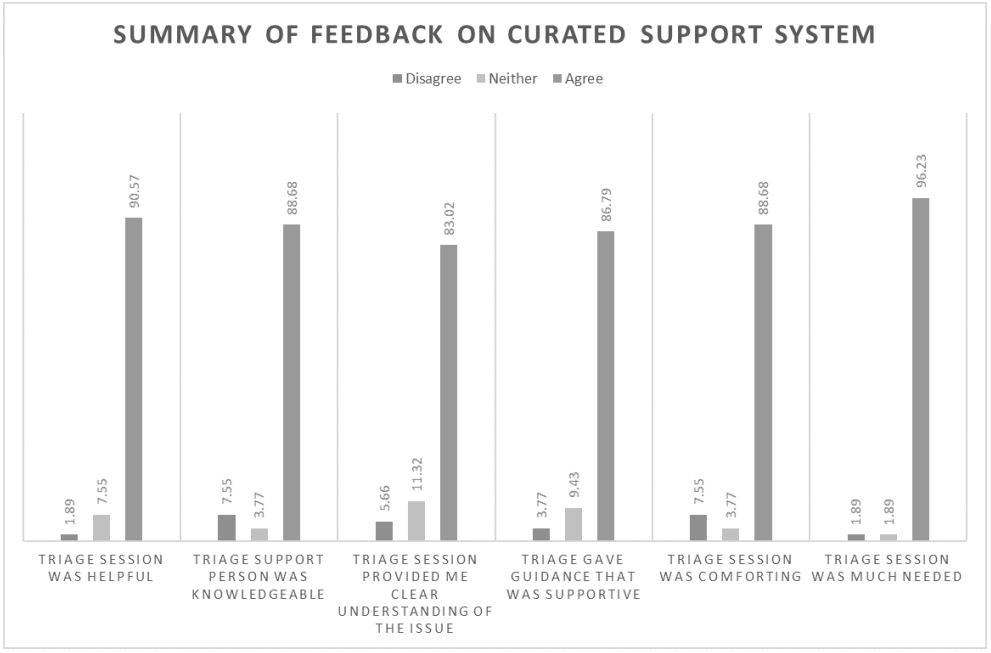

Figure 2. Summary of Feedback on Curated Support System

to me", "I did not feel judged" and so on. Although some felt that the "session was long", this may be treated as the least relevant of feedbacks. These results have been depicted in *Figure 3 – Triage: Student Feedback Word Cloud.*

Understanding the Triage word cloud

A word cloud is essentially "a visual representation of frequency of words. The more commonly the term appears within the text being analyzed, the larger the word appears in the image generated" (Atenstaedt, 2012). Word clouds are a particularly beneficial tool in analyzing qualitative data because they are impactful in structuring textual data, which in turn makes it visually appealing, easy to comprehend and simple to share (McKee, 2014).

Word clouds are often used by researchers to convert qualitative insights into computable analytics. In 2012, USA Today used a word cloud based on President Obama's State of Union Speech, which underlined the most powerful words that were used during his address to the nation (USA Today, 2012).

Hence, a picture is clearly worth a thousand words and the words in larger font within Figure 3 highlight those that were used most frequently in the student responses. This proves the effectiveness of the triage system and helps conclude that it is vital to have such a system in place for the management and resolution of academic misconduct cases.

Figure 3. Triage: Student Feedback Word Cloud

Conclusion

In summary, academic misconduct in schools and universities tend to create disturbances in a student's life, which is why it is so important for faculty to detect and levy penalty. However, literature shows that penalties and also just detection can sometimes have a negative effect on the student's emotional, social and psychological wellbeing (Thompsun, n.d.). Since there has been little focus on students who have indulged in academic misconduct and the support available for them as well as those who have been victims of false accusation or plagiarism, this study has focused on such cases.

The research resulted in the development of a support system named *Triage*, which after two rounds of implementation and receiving feedback from students has proven that triage for academic misconduct cases is not only a success, but much needed in higher education institutions. The results highlight some very strong and positive responses from the students who attended the triage sessions. They left feeling content that they were not being targeted, but rather walking away having taken ownership of their mistake and learning integrity in the process.

The faculty plan to carry out two more semesters that will have a different set of students to see if the results are consistent with this round. If so, future plans include rolling out the triage for other subjects.

References

Atenstaedt. (2012). Word Cloud Analysis of the BJGP, *British Journal of General Practice*, Vol. 62, (598), p 148, Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3289811/ [Accessed 23rd May 2020]

Ballantine, et al. (2018). Can Future Managers and Business Executives be Influenced to Behave more Ethically in the Workplace? The Impact of Approaches to Learning on Business Students' Cheating Behavior, *Journal of Business Ethics*, vol. 149, Issue 1, pp. 245–258

Brodowsky, et al. (2020). Tolerance for Cheating From the Classroom to the Boardroom: A Study of Underlying Personal and Cultural Drivers, *Journal of Marketing Education*, Available at: https://journals-sagepub-com.ezproxy.uow.edu.au/doi/10.1177/027347531987881o [Accessed 6th April 2020]

Flinders University. (2019). Student Academic Integrity Procedures, *Flinders University – Inspiring Achievement*, Available at: https://www.flinders.edu.au/content/dam/documents/staff/policies/academic-students/student-academic-integrity-procedures.pdf [Accessed 4th January 2020]

Gonzalez, L. (2019). Aspiring pharmacists speak out after cheating leads to invalidated test scores, *Fox26news*, Available at: https://kmph.com/news/local/pharmacy-students-speak-out-after-test-results-are-invalidated [Accessed 4th January 2020]

Guerrero-Dib et al. (2020). Impact of academic integrity on workplace ethical behaviour, *International Journal for Educational Integrity*, Vol. 16, Iss. 2, pp. 1–18, Available at: https://edintegrity.biomedcentral.com/articles/10.1007/s40979-020-0051-3 (Accesssed 6th April 2020)

Khan, Z. R. (2014). Developing a factor-model to understand the impact of factors on higher education students' likelihood to e-cheat, Doctor of Philosophy thesis, School of Information Systems and Technology, University of Wollongong, https://ro.uow.edu.au/theses/4545

ICAI. (2020). Fundamental Values of Academic Integrity, International Center for Academic Integrity, Available at: https://www.academicintegrity.org/fundamental-values/ [Accessed 7th April 2020]

Koletsi-Kounari, H., Polychronopoulou, A., Reppa, C., & Teplitsky, P. E. (2011). Penalties for Academic Dishonesty in a Greek Dental School Environment, *Journal of Dental Education* Oct 2011, 75 (10) 1383–1389, Available at http://www.jdentaled.org/content/75/10/1383/tab-article-info [Accessed 8th April 2020]

Lasky, J. (2017). Triage, Salem Press Encyclopedia of Health, p 7 [Accessed 4th January 2020]

Liberatore, M. J., Pollack-Johnson, B., & Smith, C. A. (2001). Project Management in Construction: software use and research directions, Journal of construction engineering and management 127(2), pp. 101–107

Lim, & See. (2001). Attitudes Toward, and Intentions to Report, Academic Cheating Among Students in Singapore, *Ethics & Behavior*, Vol. 3, Iss. 11, pp. 261–274 [Accessed 7th April 2020]

Love, P. E. D., & Smith, J. (2003). Benchmarking, Benchaction and Becnlearning: rework mitigation in projects, Journal of Management in Engineering, 19(4), pp. 147–159

Maria, N. D. (2020). Support from Universities and Colleges, Available at https://www.ucas.com/undergraduate/student-life/getting-student-support/support-universities-and-colleges [Accessed 8th April 2020]

McKee. (2014). Presenting Qualitative Survey Data with Word Clouds, *Surveygizmo*, Available at: https://www.surveygizmo.com/resources/blog/qualitative-data-word-cloud/ [Accessed 23rd May 2020]

Muola, J. M., & Amukowa, W. (2018). The Virtue Of Academic Integrity: Prevalence, Antecedents And Intervention Measures, *Proceeding of the 1st Annual International Conference held on 17th–19th April 2018, Machakos University, Kenya*, Available at http://ir.mksu.ac.ke/bitstream/handle/123456780/740/THE%20VIRTUE%20OF%20ACADEMIC%20INTEGRITY.pdf?sequence=1&isAllowed=y [Accessed 7th April 2020]

NIU. (2019). Causes of Academic Dishonesty, *Northern Illinois University – Academic Integrity Tutorials*, Available at: https://www.niu.edu/academic-integrity/students/causes/index.shtml [Accessed 4th January 2020]

Ohme, A. M., Isaacs, H. K., & Trusheim, D. W. (2005). Survey Participation: a study of student experiences and response tendencies, Office of Institutional Research and Planning. University of Delaware. San Diego. CA. USA. [Online] Available URL: www.udel.edu/IR/presentations/SurveyParticipation.ppt.

Olafson, L, Schraw, G., Nadelson, L., Nadelson, S., & Kehrwald, N. (2013). Exploring the Judgement-Action Gap: College Students and Academic Dishonesty, *Ethics & Behavior*, Mar2013, Vol. 23, Issue 2, pp. 148–162.

Rabbi, A. R. (2020). Humiliated by school, student commits suicide, Dhaka Tribune, Available at: https://www.dhakatribune.com/bangladesh/dhaka/2018/12/03/humiliated-by-school-student-commits-suicide [Accessed 4th January 2020]

Shore, K. (2002). Managing Cheating, *Education world – connecting educators to what works*, Available at: https://www.educationworld.com/a_curr/shore/shore023.shtml [Accessed 7th April 2020]

Singh, S., & Remenyi, D. (2016). Plagiarism and ghostwriting: The rise in academic misconduct, *South African Journal of Science*, 112(5/6), pp. 36–42. doi: 10.17159/sajs.2016/20150300.

Thompsun. (n.d.). Cheating in College, *Education – Seattle PI*, Available at: https://education.seattlepi.com/effects-students-caught-cheating-college-1219.html [Accessed 4th January 2020]

Ulster University, N. D. (2020). Triage, Available at https://www.ulster.ac.uk/wellbeing/triage [Accessed 8th April 2020]

UOW. (2019). What is academic misconduct, Available at: https://www.uow.edu.au/about/governance/academic-integrity/students/misconduct/ [Accessed 4th January 2020]

USA Today. (2012). What did Obama say? His State of the Union speeches in word clouds, USA Today, Available at: https://www.usatoday.com/picture-gallery/news/politics/2014/01/28/what-did-obama-say-his-state-of-the-union-speeches-in-word-clouds/4966671/ [Accessed 24th May 2020]

Weimer, M. (2018). *Cheating: Can We Be Doing More to Promote Academic Integrity?*, Available at: https://www.teachingprofessor.com/for-those-who-teach/cheating-can-we-be-doing-more-to-promote-academic-integrity/ [Accessed 4 January 2020]

Wood, B. D. (2010). Academic misconduct and detection, *Radiologic Technology*, 81(3), pp. 276–279. Available at: https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=rzh&AN=105296565&site=eds-live [Accessed: 7 April 2020]

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ADDED VALUE OF CENTRALISED PLAGIARISM DETECTION SYSTEM ON A NATIONAL LEVEL

Julius Kravjar

Key words: Academic Ethics, Academic Integrity, Higher Education, Metadata, Plagiarism Detection, Theses

Introduction

The use of plagiarism detection (strictly speaking text-matching or detection of text similarities) by means of information and communication technology has become a standard for originality checks. Plagiarism detection software[1] is a good assistant that serves as a support for human decision-making process in plagiarism matters. Software for detection of text similarities does not detect plagiarism, it identifies similarities within the checked document with other sources and these similarities may represent plagiarism. The outputs of text similarity detection do not confirm whether the checked document is original or not, the final decision is made by authorities.

Text similarity detection contributes partially to plagiarism reduction, but text similarity detection alone is an insufficient measure for plagiarism removal or reduction. It is necessary to adopt academic integrity measures, including the academic integrity management system.

According to M. Bek (2018) "The main prerequisite for successful defense against plagiarism has always been and will be the quality work of supervisors with students working on their theses". J. Brandejsová (2018) says: "The essential responsibility lies with the supervisor, who is an expert in the field and is well versed in the relevant literature." Evering and Moorman (2012) consider that the most effective way of dealing with plagiarism is actively addressing issues through instruction and not by means of rules or codes. And they added:

> "The current emphasis on testing and grades has made educators and students alike lose track of the more important goals of schooling, such as lifelong learning and national and global citizenship. Refocusing on higher-order goals can persuade students that plagiarism and other forms of academic dishonesty are not in their long-term best interests."

Upbringing and education towards values in childhood should also continue during school years. Comprehensive curricula at all levels of education with an emphasis on values can significantly contribute to the shaping of the character of pupils and students and also to the culture of academic integrity and, consequently, to plagiarism reduction.

[1]The term "plagiarism detection software" is widely used, but more exact term is "text-matching software" or "text similarities detection software".

DOI: https://doi.org/10.11118/978-80-7509-772-9-0103

> "We must work to ensure that we are putting truth – and integrity – at the forefront of our mission and operations. Academic and research integrity cannot be a side project or an afterthought. Integrity and ethics must be central to everything we do and every decision we make." (Bertram-Gallant, 2018)

Objectives

The objective is to point out the advantages of uniform metadata collection by a centralised text similarity detection system. In Slovakia, the Centralised Plagiarism Detection System is working closely with the Centralised Repository of Theses and Dissertations – both are in operation since April 2010. All Slovak higher education institutions (HEIs) are required to use this system according to Slovak law. The paper is focused on analytical possibilities of such a system based on uniform collection of theses and metadata.

Methodology

The cooperating systems, Centralised Repository of Theses and Dissertations and Centralised Plagiarism Detection System, are known under a single name SK ANTIPLAG. The Slovak Centre of Scientific and Technical Information (SCSTI) has operated both systems already for ten years. Five types of theses are collected. Today, a rich collection of theses (more than 0.6 million) and metadata are archived and they are used as a base for a wide spectrum of analytical insights useful for HEIs and the Ministry of Education. Several examples of simple and complex insights will be presented.

Uniform collection methodology of theses and metadata (UCM) ensures consistent metadata from all Slovak HEIs using the XML format, which is mandatory for exporting electronic versions of theses and metadata (batch mode) into the SK ANTIPLAG system.

Text similarity detection at higher education institutions

HEIs are free to decide which text similarity detection system will be used in their academic environment. This also applies to Slovak HEIs with one exception: one designated system is used on an obligatory basis according to the amendment to the Higher Education Act (2009). The implementation of SK ANTIPLAG is the first worldwide use of a centralised text similarity detection system, which cooperates with a centralised repository of theses and dissertations (both systems are developed in Slovakia). Before the launch of SK ANTIPLAG, only three HEIs used text similarity detection services. Within a year, all Slovak higher education institutions (public, private, state) started to use the SK ANTIPLAG system and it was a significant step forward. SCSTI is open to share its experience with the use of the SK ANTIPLAG system. The first delegation that wanted to know the Slovak experience with the system was a parliamentary and governmental delegation from Poland – they visited SCSTI already in 2011.

Since January 1st, 2019 Poland is the second country in the world that has implemented a centralised text similarity detection system named Jednolity System Antipla-

giatowy (JSA), cooperating with the central repository Ogólnopolskie Repozytorium Pisemnych Prac Dyplomowych (ORPPD) – both systems were developed in Poland (jsa.org.pl). In Poland, text similarities detection was widely used already before JSA's operation.

The Slovak system checks the originality of five types of theses: bachelor's, master's, rigorous, doctoral and habilitation theses and the access to the theses is open to the general public at www.crzp.sk (in Slovak language). The Polish system checks the originality of bachelor's, master's and doctoral theses, and the access to these theses is open for thesis supervisors, research promoters and for the teaching staff, but not for public. Metadata related to theses are collected.

In both countries, HEIs do not pay for using centralised text similarity detection, or for licences, implementation, technical support and updates. All collected theses and metadata are stored in one centralised repository. The use of centralised systems is obligatory in Slovakia and in Poland due to amendments to the Higher Education Act.

In Slovenia, all major HEIs use the same system and in the near future it is expected that all HEIs will use this system, which was developed in Slovenia (Ojsteršek, 2018). In Czechia, there is a system used by about 50% of all Czech HEIs; the system was developed in Czechia (www.theses.cz). In Slovenia and Czechia, HEIs use text similarity detection systems on a voluntary basis.

In the literature, there have been several declarations that all HEIs in country use a text similarity detection system. However, a deeper analysis showed that it was not true (Kravjar, 2015).

The role of metadata

Metadata is the key and gate to analyses. If the theses originality check is not accompanied by metadata collection, an opportunity for deeper insights is missed. To name a few types of metadata: author, type of thesis, study field, thesis title, thesis subtitle, unique thesis identifier, language, abstract, key words, number of pages, year, supervisor, opponents, department, faculty, HEI, thesis downloadability, date and time of thesis registration in the central repository, similarity percentage, originality protocol creation date and time, date of thesis publication at www.crzp.sk.

The spectrum of analytical insights will be partially demonstrated on data from the nationwide SK ANTIPLAG system, which is mandatory for all Slovak higher education institutions operating under the Slovak law since April 2010. Many different analytical views on theses and dissertation are available, for example by supervisor, by thesis type, by faculty, by higher education institution, by type of higher education institution, by study field, their combination, etc. There are some analytical views that show a violation of academic integrity by academic staff. One may say that SK ANTIPLAG is not only a detector of text similarities but to some extent a detector of academic misconduct.

The power of metadata

Uniform metadata collection allows a wide range of insights. The following examples demonstrate their variability. These examples are far from being exhaustive.

Naturally, Slovak language has the highest share among all languages (Table 1 and Table 2). The selected languages are the languages spoken by our nearest neighbours plus English, French and Russian languages. Language codes are described below the Table 1.

Table 1

Thesis type by language in absolute numbers for the period 2010–2019

	Language									
Thesis type	CZ	DE	EN	FR	HU	PL	RU	SK	UA	ZZ Other
Bc thesis	9 288	1 293	6 713	269	4 111	52	165	277 981	66	549
MSc thesis	6 802	1 213	9 869	294	3 091	59	201	259 392	50	317
PhD thesis	1 188	424	1 861	17	374	92	48	36 176	4	33

Legend:

CZ	Czech	FR	French	RU	Russian
DE	German	HU	Hungarian	SK	Slovak
EN	English	PL	Polish	UA	Ukrainian

Table 2

Thesis type by language (%) for the period 2010–2019

	Language									
Thesis type	CZ	DE	EN	FR	HU	PL	RU	SK	UA	ZZ Other
Bc thesis	3,09%	0,43%	2,23%	0,09%	1,37%	0,02%	0,05%	92,51%	0,02%	0,18%
MSc thesis	2,42%	0,43%	3,51%	0,10%	1,10%	0,02%	0,07%	92,22%	0,02%	0,11%
PhD thesis	2,95%	1,05%	4,63%	0,04%	0,93%	0,23%	0,12%	89,95%	0,01%	0,08%

Bachelor and master theses in Slovak language have approximately the same share (Table 3). In the similar situation are bachelor and master theses written in German, French and Polish languages.

Table 3

The share of thesis types in each language (%) for the period 2010–2019

	Language									
Thesis type	CZ	DE	EN	FR	HU	PL	RU	SK	UA	ZZ Other
Bc thesis	53,76%	44,13%	36,40%	46,38%	54,26%	25,62%	39,86%	48,47%	55,00%	61,07%
MSc thesis	39,37%	41,40%	53,51%	50,69%	40,80%	29,06%	48,55%	45,23%	41,67%	35,26%
PhD thesis	6,88%	14,47%	10,09%	2,93%	4,94%	45,32%	11,59%	6,31%	3,33%	3,67%

Except for the years 2010 and 2011, the difference in the share of Slovak bachelor and master theses is really small and the share of master theses starts to surpass bachelor ones (Table 4).

Table 4

The share of thesis types in Slovak language per year (%)

	Language / Year									
	SK									
Thesis	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bc thesis	57,81%	50,67%	48,97%	47,78%	48,01%	45,65%	46,00%	45,36%	49,52%	45,19%
MSc thesis	36,90%	44,39%	45,20%	45,75%	45,27%	47,96%	46,22%	47,89%	44,20%	47,65%
PhD thesis	5,29%	4,94%	5,83%	6,48%	6,72%	6,39%	7,78%	6,76%	6,29%	7,16%

There is a mild growth in theses written in languages other than Slovak (Table 5). Between 2010 and 2019, the share of bachelor and master theses written in the other than Slovak language doubled. For PhD theses, the growth was about 50%.

Table 5

The share of Slovak language and other languages group per thesis type and per year (%)

		Year									
Thesis	Language ..	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bc thesis	not SK	4,59%	5,45%	7,10%	7,51%	8,81%	8,35%	7,63%	8,43%	9,59%	9,19%
	SK	95,41%	94,55%	92,90%	92,49%	91,19%	91,65%	92,37%	91,57%	90,41%	90,81%
MSc thesis	not SK	4,33%	5,19%	5,99%	7,24%	8,46%	8,31%	10,17%	9,83%	9,71%	9,58%
	SK	95,67%	94,81%	94,01%	92,76%	91,54%	91,69%	89,83%	90,17%	90,29%	90,42%
PhD thesis	not SK	8,67%	6,96%	8,73%	8,50%	9,18%	10,54%	10,81%	13,37%	13,60%	12,10%
	SK	91,33%	93,04%	91,27%	91,50%	90,82%	89,46%	89,19%	86,63%	86,40%	87,90%

In Table 6 the symbol 40+ means the share of theses with similarity greater than 40% and the symbol 40 – means the share of theses with similarity less than 40%. SK ANTIPLAG has a rich comparative corpus of Slovak documents, which is not the case for other languages. Therefore, the share of 40+ theses in Slovak language is the highest.

Table 6

Language by thesis types and similarity group (%)

		Language									
Thesis	Similarity Group ..	CZ	DE	EN	FR	HU	PL	RU	SK	UA	ZZ Other
Bc thesis	40-	99,53%	99,07%	98,88%	99,63%	99,66%	100,00%	99,39%	96,46%	100,00%	98,91%
	40+	0,47%	0,93%	1,12%	0,37%	0,34%		0,61%	3,54%		1,09%
MSc thesis	40-	99,63%	99,34%	99,37%	99,66%	99,16%	100,00%	99,50%	97,15%	100,00%	99,05%
	40+	0,37%	0,66%	0,63%	0,34%	0,84%		0,50%	2,85%		0,95%
PhD thesis	40-	98,73%	99,76%	99,09%	100,00%	98,66%	98,91%	100,00%	95,23%	100,00%	100,00%
	40+	1,27%	0,24%	0,91%		1,34%	1,09%		4,77%		

The decrease in the number of thesis types is most likely caused by two main factors: the demographic development and the growing number of students studying abroad (Table 7). The centralised system started to work at the end of April 2010 and that is the reason why the numbers for 2010 are lower.

Table 7

Number of thesis types per year

	Year									
Thesis	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bc thesis	28 714	38 987	37 408	34 879	35 871	35 441	28 653	21 326	20 373	18 835
MSc thesis	18 282	34 060	34 115	33 298	33 690	37 219	29 599	22 865	18 210	19 950
PhD thesis	2 744	3 866	4 535	4 778	5 041	5 084	5 021	3 359	2 706	3 083
Grand Total	49 740	76 913	76 058	72 955	74 602	77 744	63 273	47 550	41 289	41 868

Metadata are able to detect an academic integrity breach in some cases. Repeating theses titles, high number of theses per supervisor, theses with higher similarity percentage are indicators of a potential integrity breach.

Repeating or similar titles of theses may imply academic misconduct or plagiarism among students. Such titles of theses could mean a failure of the HEIs, because the

titles of theses from all Slovak HEIs are very simple accessible at the www.crzp.sk portal. There are different ways of repeating theses insights. All further examples are in the structural form because of sensitive data.

Number of theses with the same title (Table 8) can be seen from the level of faculty, HEI, HEI group, all HEIs, study field, group of study fields, scientific area, thesis type, supervisors, similarity percentage and combinations of them. However, it should be taken into account that the same thesis title does not always mean the same assignment.

Table 8

Number of theses with the same title

Thesis Title	Number of theses with the same title										Total
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Thesis Title 1											
Thesis Title 2											
Thesis Title 3											
...											

Table 9 gives us deeper insight how the selected repeated thesis title is distributed among HEI groups and HEIs.

Table 9

Number of selected repeating thesis title according to HEI groups and HEIs

HEI Group / HEI	Number of theses with the selected title "Thesis Title 2"										Total
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Private HEIs											
HEI 1											
...											
Public HEIs											
HEI 2											
...											
State HEIS											
HEI 3											
...											

Table 10 shows the selected repeated thesis title distribution by HEIs and supervisors.

Table 10

Ranking of supervisors according to the total number of selected repeating thesis title

Supervisor	HEI	Number of theses with the selected title "Thesis Title 2"										Total
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Supervisor 1	HEI A											
Supervisor 2	HEI B											
Supervisor 3	HEI C											
...	...											

The number of theses per supervisor should not be excessively high. High numbers of theses per supervisor decrease the time during which supervisor can devote himself to a student and to his/her thesis. And that represents academic misconduct by the supervisor and the HEI, too. The insight like Table 11 was used by MinEdu to prepare measures to reduce the number of thesis per some supervisors. Many other variants of this table are possible.

Table 11

Number of thesis per supervisor

Number of theses per supervisor											
Supervisor	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Total
Supervisor 1											
Supervisor 2											
...											

Higher similarity percentage of a thesis can be an indicator that there was a failure in the supervisor-student relationship. Table 12 offers a ranking of supervisors that have higher share of theses with similarity greater than 40%.

Table 12

Ranking of supervisors with a higher share of theses with similarity 40%

Supervisor	HEI	Share ot theses with the similarity >40%									Total
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
Supervisor 1	HEI A											
Supervisor 2	HEI B											
Supervisor 3	HEI C											
...	...											

The share of theses with similarity greater than 40% by scientific areas is displayed in Table 13.

Table 13

Share of theses by scientific areas and HEIs with similarity 40%

Scientific area	Share of theses with the similarity >40%
Humanities	
HEI 1	
...	
Social Sciences	
HEI 2	
...	
Natural Sciences	
HEI 3	
...	

A ranking of HEIs by a share of theses with similarity greater than 40% is given in Table 14.

Table 14

Share of HEI theses with similarity 40%

HEI	Share ot theses with the similarity >40%
HEI 1	
HEI 2	
HEI 3	
...	

Tables 15, 16, 17, 18 offer insights for the number of theses in five similarity intervals across HEI groups, thesis types and scientific areas. Similarity intervals can be defined by the user.

Table 15

Number of theses in the selected similarity intervals by HEI group

	Number of theses in the similarity intervals				
HEI Group	(0;20>	(20;40>	(40;60>	(60;80>	(80;100>
Private HEIs					
Public HEIs					
State HEIs					

Table 16

Number of theses in the selected similarity intervals by thesis type

	Number of theses in the similarity intervals				
Thesis type	(0;20>	(20;40>	(40;60>	(60;80>	(80;100>
Bc					
MSc					
PhD					

Table 17
Number of theses in the selected similarity intervals by scientific area

Number of theses in the similarity intervals					
Scientific area	(0;20>	(20;40>	(40;60>	(60;80>	(80;100>
Humanities					
Social sciences					
Natural sciences					
...					

Table 18
Number of theses in the selected similarity intervals by thesis type and scientific area

Thesis type	Number of theses in the similarity intervals				
Scientific area	(0;20>	(20;40>	(40;60>	(60;80>	(80;100>
Bc					
Humanities					
Social sciences					
Natural sciences					
...					
MSc					
Humanities					
Social sciences					
Natural sciences					
...					
PhD					
Humanities					
Social sciences					
Natural sciences					
...					

Conclusion

If text similarity detection systems collect metadata in a uniform way, then their indisputable advantage are analytical insights. The absence of metadata collection means the absence of analytical insights. Metadata collection means more work that is rewarded by a range of analytical possibilities. More work means automated collection of metadata from academic information systems.

Centralised systems are relatively new and their comparative corpora are not as rich as those of the systems existing for twenty or more years. SK ANTIPLAG's ability to detect text similarities is very good in the local language thanks to rich comparative corpus of Slovak documents, but is weaker in other languages.

SK ANTIPLAG collects theses and metadata according to a uniform collection methodology and provides analytical insights that have common and comparable data base. This feature is out of reach for an academic environment where text similarity detection systems collect theses only.

The systems for the detection of text similarities are not a panacea, they have inherent limitations. One of them is the comparative corpus, which is the base for the comparison. No comparative corpus is all-embracing. These systems are only an element of the whole mosaic that helps to reduce plagiarism and to increase the level of academic integrity.

Acknowledgement

I would like to thank Mr. Matúš Benkovič (certified translator) for his help with the proofreading.

References

Bek, M. (2018). In: Masarykova univerzita řeší, jak zdokonalit boj s plagiáty, Zprávy z MUNI, https://www.em.muni.cz/udalosti/10816-masarykova-univerzita-resi-jak-zdokonalit-boj-s-plagiaty, Accessed: Nov 5, 2019

Bertram Gallant, T. (2018). Fake News, Truth & the Higher Education Imperative, Accessed: Apr 7, 2020

Brandejsová, J. (2018). In: Masarykova univerzita řeší, jak zdokonalit boj s plagiáty, Zprávy z MUNI, https://www.em.muni.cz/udalosti/10816-masarykova-univerzita-resi-jak-zdokonalit-boj-s-plagiaty, Accessed: Nov 5, 2019

Evering, L. C., & Moorman, G. (2012). Rethinking Plagiarism in the Digital Age. Journal of Adolescent & Adult Literacy, pp. 35–44

Higher Education Act Amendment, (2009).

Koz□owski M. (2019). Personal communication

Kravjar, J. (2015). SK ANTIPLAG is bearing fruit, Plagiarism across Europe and Beyond 2015, pp. 147–163, https://plagiarism.pefka.mendelu.cz/files/proceedings_15.pdf

Kravjar, J. (2018). Integrity is not component of ethics, integrity is much more, Apr 7, 2020
M. Ojsteršek, personal communication

Unknown (2019). Centrálny register záverečných a kvalifikačných prác, www.crzp.sk, Acessed Nov 7, 2019

Unknown (2019). Jednolity System Antiplagiatowy, https://jsa.opi.org.pl, Accessed: Nov 19, 2019

Unknown (2019). Theses.cz – Vysokoškolské kvalifikační práce, www.theses.cz, Accessed: Nov 11, 2019

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TOWARDS UNDERSTANDING ACADEMIC INTEGRITY POLICY AMONGST HUNGARIAN HIGHER EDUCATION INSTITUTIONS

Gabor Laszlo

Abstract: This study is the first undertaking of its kind in Hungary, a statistical overview of the practices of Hungarian higher education institutions regarding academic integrity. The study was conducted at the leadership level of these institutions. The survey has multiple simultaneous goals. It was conceived to fill a gap in the information on academic integrity at the national level of Hungarian higher education, paying attention to the currently implemented anti-plagiarism practices and software, as well as to the operation of their repositories. The results and correlations show by this study indicate that there is much to be done in this field, but it is clear that Hungarian higher education institutions are on board with working together and moving forward.

Key words: Academic Integrity in Hungary, Survey Preliminary Results, Plagiarism Policies

Introduction

Hungary did not escape the plagiarism crisis that involved the politicians of many countries at the start of the 2010s, however, this at least moved the issue into the public eye. The response to the phenomena [plagiarism] by universities was fulfilled by the creation of ethical rules and utilization of multiple forms of plagiarism-detecting software, and Hungarian higher education believed the issue to be solved. The university in question, mainly due to cost issues, would have liked to extend this solution to plagiarism to the national level. This came to be in 2017, when the Hungarian Rectors' Conference (HRC) created a working group to coordinate tasks regarding plagiarism.

Literature Review

Plagiarism and academic dishonesty are only a part of academic integrity. There is actually no word-for-word equivalent of the phrase "academic integrity" in Hungarian, it can only be described with related words. This paper uses the definition as put forward by ENAI for academic integrity "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."

The Impact of Policies for Plagiarism in Higher Education Across Europe (IPPHEAE, 2013) conducted from 2010–2013 was a European-level study, however, it did not produce significant results for Hungary. There is a very limited amount of prior Hungarian studies and publications that deal with this topic from the past decade. The available studies investigated academic dishonesty in specific disciplines from a

DOI: https://doi.org/10.11118/978-80-7509-772-9-0112

teacher/student perspective, within specific topics, institutions, or the researcher's own team, mostly in Hungarian.

The Hungarian Academy of Sciences organized a conference on October 24th of 2013 with the name "Academic Ethics in Europe and Hungary", where László Fésüs, the Academy's academic integrity commission's president gave a presentation with the title "Academic integrity challenges and responses in Hungary and in Europe". He pointed out that "disregarding the Academy's Academic Integrity Code of Ethics, Hungarian academic integrity rules are accidental, there is no unified system, and ethics teaching is missing from universities and PhD programs." Barna Mezey, the then president of the Hungarian Rector's Conference, analysed various questions regarding Hungarian higher education's responsibility towards academic integrity. As he highlighted, the Act on National Higher Education only deals with academic integrity with a few points, it does not provide concrete rules. "The law does not provide any sanctions; thus it tasks institutions with solving the problem". The presentations' edited versions were published in Journal of Hungarian Science. (Fésüs, 2014, p. 647; Mezey, 2014, p. 660)

The Future of Higher Education Research Centre at the Budapest Business School had a project about "Analysing perceptions about student cheating". Their topic focused on "the exploration of the phenomenon, causes and effects of student cheating in the two affected groups, those of teachers and students." Most recent publications can be found on the Research Centre webpage in Hungarian and English. (Future of Higher Education Research Centre (FHERC) at Budapest Business School (BBS), n.d.)

The author has studied plagiarism since 2010, and academic integrity more broadly at the University of Óbuda, where he was the first in the country to coordinate the implementation of a university-wide complex text-matching (called plagiarism-finding at the time) system, that was integrated with the university's digital repository of academic papers. His work in this field led to his membership in the Hungarian Rectors' Conference (HRC) working group, which is in charge of coordinating tasks regarding plagiarism. Thus, an opportunity arose to create a national-level survey of the competencies and attitudes of Hungarian higher education institutions, with the support of the HRC.

Research aims and objectives

This empirical research has multiple simultaneous goals. It was conceived to fill a gap in the information on academic integrity at the national level of Hungarian higher education, paying attention to the operation of institutions' repositories, as well as to the currently implemented anti-plagiarism practices and software. The survey also has the goal of serving as an assessment of the implementation of a possible national level system in the future, as demonstrated by good examples from Slovakia and Slovenia. (Kravjar, & Noge, 2013; Ojsteršek et al., 2014)

Methodology

The survey comprised elements from the following international surveys: AIRS (The Academic Integrity Rating System), IPPHAEA, SEPPHAI. The document titled Electronic Detection of Plagiarism in Finnish Higher Education Institutions, 2013 provided

a starting point for questions regarding a given country's centralized national system. Through a series of e-mails with the author of the IPPHEAE report – Plagiarism Policies in Hungary, its Hungarian and English questions were obtained, and it provided a starting point for the current survey. (Irene Glendinning personal communication, March 20. 2018, Re: Questionnaires) Furthermore, valuable information from the "Surveying academic integrity: Methodological issues and lessons learned" workshop at the 2019 ENAI conference in Vilnius further aided the development of the survey, largely in the areas of survey design and risk assessment/mitigation.

The first step of the survey was to find and contact the institutions with an online survey form. Throughout the summer of 2019, HRC sent a letter to the rectors of higher education institutions which contained the objectives of the survey, its structure, highlighted the importance of informed consent, and asked them to designate someone to fill out the survey for their institution. The designated person received the survey at the beginning of September 2019 as a link. Due to the length and complexity of the survey, the survey email included a unique identifier (token), that ensured that the respondent could stop and save their progress, and it provided the opportunity to finish the survey at a later date.

Informed consent was extremely important throughout the survey process, since the respondents' fear of damage to their reputation had to be minimized. The survey was not done anonymously. This was reasoned to be appropriate as the committee is interested in personally visiting the institutions in the future to conduct more precise research, thus the study asked for a personal contact, who tended to be the one filling out the survey. After the closure of the survey, data was pseudo-anonymized, and stored in this form. The results are published in aggregated form.

The online survey was sent in a form that could be saved and continued through the survey platform used by the University. This provides sufficient privacy and security for the data. This was necessary due to the complexity and length of the survey. In the interest of more precise data, we asked respondents to contact those colleagues (leader, librarian, etc.) if they believe that someone is more informed or better able to answer a question regarding the institution, in the same way as AIRS.

Structure of the Survey

The survey encompassed three broad categories. The first was academic ethics, more specifically the institutional rules, procedures, and sanctions regarding plagiarism. The second was institutional repositories, where questions were asked about the storage of students' theses. The third section contained questions regarding anti-plagiarism systems, with emphasis on the need for such systems. In the case that certain institutions already used such software, they were asked about experience with the system, and whether it met their needs.

Results and Discussion

Reponses to the survey took much longer than expected, and involved multiple reminders sent to the respondents. The initial plan had the deadline as October 1st, 2019; however, this was extended as multiple responses arrived citing a high workload

at the start of the semester, making it difficult to finish on time. There were also technical problems throughout the process. The goal became obtaining the highest possible response rate, thus, after multiple extensions, the data collection was closed at mid of March 2020, just as the pandemic situation arose.

The 1st attachment of the Act CCIV of 2011 on National Higher Education, contains a list of the recognised higher education institutions in Hungary, the number of which is 65, divided into 6 sub-categories as follows: State (public) universities, Private universities, State universities of applied sciences, Private universities of applied sciences, State colleges of education, Private colleges of education. This list does not include non-Hungarian higher education institutions having a branch campus in Hungary. The different categories are shown in Tables 1 and 2.

After multiple contacts, eventually 53 institutions delegated a survey respondent, out of which 51 institutions completed the survey. We received a total of 53 responses, as 1 institution sent two responses from geographically separated departments, while in another case the library answered specific questions. In both cases the data was able to be merged, leading to the total of 51 institutional responses.

Table 1

Recognised higher education institutions in Hungary by categories

Categories	**Completed Survey/ Total Number of Institutions**	**Statistical number of students**	**Number of students at respondent institutions**	**% Number of students**
State (public) universities	21/21 (100%)	202 064	202 064	100%
Private universities	6/ 8 (75%)	30 128	29 809	99%
State universities of applied sciences	5/ 5 (100%)	32 672	32 672	100%
Private universities of applied sciences	4/ 4 (100%)	10 429	10 429	100%
State colleges of education	1/ 1 (100%)	407	407	100%
Private colleges of education	14/26 (53,78%)	9 410	5 420	58%
Total	51/65 (78,46%)	285 110	280 801	98,49%

Source: Educational Authority. Statistical number of students as of 15 October 2019, Survey results

Table 2

Recognised higher education institutions in Hungary by Managing Authority

Managing Authority	**Completed Survey/ Total Number of Institutions**	**Statistical number of students**	**Number of students at respondent institutions**	**% Number of students**
State	27/27	235 143	235 143	100%
Private (non-religious)	10/14	26 807	25 122	93,7%
Private (religious)	14/24	23 160	20 536	88,7%
Total	51/65	285 110	280 801	98,49%

Sources: Educational Authority. Statistical number of students as of 15 October 2019, Survey results

"Higher education programmes in Hungary are offered by universities and colleges. In accordance with the common European higher education principles, Hungary introduced the three-cycle degree structure in 2006 (BA/BSc, MA/MSc, and PhD/DLA)." (Hungarian Rectors Conference, 2015)

The overall completion rate out of Hungarian higher education is 78.5% (51 of 65).

Since there are large variations in the number of students at different institutions, the number of students at the institutions that completed the survey is showed as a base-value. The data on student enrolment is from the official statistics on Hungarian higher education provided by the Department for Training in Higher Education, Ministry for Innovation and Technology.

The students attending institutions that responded to the survey comprise 98.49% of Hungarian students in higher education. With one exception, all institutions with more than 1000 students completed the survey. Based on the Educational Authority information, the statistical number of students includes the active, primary number of students in current programs as of the statistical deadline. If a student is part of multiple programs at an institution, they only appear once in the data. In the case that a student is in multiple programs at multiple institutions, then each institution is counted once. Thus, the data does not correspond exactly with the physical number of students in the country. (According to the ISCED 2011 numbered classifications for higher education; 5: Post-Secondary Professional Programs; 6: College Programs, Bachelor's Degrees (BA/BSc) and related professional certifications; 7: University Programs, Master's Degrees (MA/MSc), Unified Programs and related professional certifications; 8: Doctoral Degrees (PhD/DLA))

Institutional rules, procedures

The first part of the survey included questions on institutional rules and procedures regarding academic integrity and plagiarism.

In the conference mentioned above in the literature review, the then-president of the HRC (in 2013) presented the results of a study conducted in 26 universities: 10 universities had a code of ethics, 2 universities were about to adopt one or planned to in the future, 14 universities had no code of ethics. Out of these, 3 universities had multiple rules regulating the issue, while in a few situations ethical boards or rules were organized on a departmental level "On the question of plagiarism, they wished to adopt stricter principles." (Mezey, 2014, p. 658)

According to the new survey, regarding universities (n=38), 34 responded that they have a code of ethics, and with one exception they all provided links to them on their respective institutional websites. Two universities responded that it does not know. A further 3 universities responded with a simple no. (Due to institutional changes the number of universities has significantly increased since 2013, this is the cause of the increased number of universities in this study.)

Table 3
Does the institution have a code of ethics?

Possible answers	Frequency	Percent
Yes	37	72,5
No	12	23,5
I do not know	2	3,9
Total	51	100,0

Table 4
When was the code of ethics implemented at the institution

Possible answers	Frequency	Percent
Less than 1 year ago	2	5
1–2 years ago	3	8
3–4 years ago	9	24
5+ years ago	23	62
Total	37	100

The above tables (Table 3, Table 4) show that those institutions that responded in 2013 that they would implement a code of ethics since have done so.

Table 5
Institution has rules and procedures regarding the handling of plagiarism

Possible answers	Frequency	Percent
Yes, as part of other rules	33	64,7
Yes, with separate rules	7	13,7
No	9	17,6
I do not know	2	3,9
Total	51	100,0

Regarding the universities, 4 do not have rules regarding plagiarism, however, they do have a code of ethics (Table 5 vs Table 3). Of the total sample of 40, 9 institutions have rules on plagiarism, but no code of ethics.

Looking at the dates of implementation of the code of ethics (Table 6), it can be determined that the rules on plagiarism were implemented before the code of ethics.

Table 6
When were the rules on plagiarism implemented at the institution?

Possible answers	Frequency	Percent
Less than 1 year ago	1	3
1–2 years ago	3	8
3–4 years ago	6	15
5+ years ago	29	74
Total	39	100

Table 7
The institution has taken concrete steps against plagiarism by students

Possible answers	Frequency	Percent
Yes	32	62,7
No	8	15,7
I do not know	11	21,6
Total	51	100,0

The respondents that answered "No" to the question "The institution has taken concrete steps against plagiarism by students" (Table 7) were asked to express their opinion on what steps must be taken and in what direction. Many of the respondents emphasized a need for the following: the creation of a unified set of rules, better dissemination of information, preparation, effective help with software, and the "automation" of checking.

Table 8
Change in the number of plagiarism-related cases at the institutional level in the past years

Possible answers	Frequency	Percent
Significantly decrease	3	5,9
Slight decrease	14	27,5
No change	13	25,5
Slight increase	2	3,9
I do not know/Do not wish to judge	19	37,3
Total	51	100,0

Table 8 shows that no respondent chose the "significant increase" option to the question regarding to "Change in the number of plagiarism-related cases at the institutional level in the past years". Out of those that considered their institution to be taking determined steps to combat plagiarism, 3 indicated a significant decrease, while 9 did not know/refused to provide a judgement. We further asked how much the respondents relied on internal quantitative data from their institution, and whether such data on instances of plagiarism and its consequences is registered by their institution. (Table 9.)

Table 9
Institutional registry of instances of plagiarism and consequences

Possible answers	Frequency	Percent
Exists	8	15,7
Does not exist	33	64,7
I do not know	10	19,6
Total	51	100,0

With the following questions, the goal was to find out whether, according to the respondent's opinion, their institution provides training for teachers, researchers, and students. The results are shown in the following tables (Table 10–13).

Table 10

The institution provides training on academic ethics for the administrative workers, teachers, researchers, and assistants

Possible answers	Frequency	Percent
Yes	12	23,5
No	33	64,7
I do not know	6	11,8
Total	51	100,0

Table 11

In your opinion, is more training necessary for teachers/researchers and other staff regarding academic integrity?

Possible answers	Frequency	Percent
Yes	31	60,8
No	13	25,5
I do not know/Do not wish to answer	7	13,7
Total	51	100,0

Table 12

Does the institution provide training opportunities related to academic ethics (ex. Avoiding plagiarism, research methods, citation methods, etc.) for students?

Possible answers	Frequency	Percent
Yes	44	86,3
No	5	9,8
I do not know	2	3,9
Total	51	100,0

Table 13

In your opinion, is more training necessary for students on academic integrity (ex. Avoiding plagiarism)?

Possible answers	Frequency	Percent
Yes	33	64,7
No	13	25,5
I do not know/Do not wish to answer	5	9,8
Total	51	100,0

The results of Table 11 and Table 13 reinforce the position of those who have called attention to the necessity of strengthening training and education on academic integrity.

Together with the previous question, we asked whether the institution has a designated person/body in place that deals with determining policy, promoting, and teaching academic integrity (including plagiarism), that students, teachers, and researchers can turn to. Table 14 shows the results. From the text response of the 25 "Yes" answers, it became clear that in many cases such a body is in the process of being created, or

this task is a deputy-rector or deacon level responsibility. A single institution wrote that they have this kind of organizational unit, thus, this is the only institution where students have a clear option available outside of their teachers and perhaps the library.

Table 14
Does the institution have a person/body in charge of dealing with academic integrity?

Possible answers	Frequency	Percent
Yes	25	49,0
No	20	39,2
I do not know	6	11,8
Total	51	100,0

Institutional storage of students' theses (diploma work)

Referring back to the earlier plagiarism scandals, there were cases in which the theses of relevant politically exposed persons disappeared from university libraries.

Regarding the questions on this topic, it is important to mention the legal uncertainty around academic theses. Within the Act CCIV of 2011 on National Higher Education, the rules on PhD theses are clear, however, the rules on theses submitted at the undergraduate and graduate level are much less so. The length of time that these papers are required to be stored is also unclear.

This part of the survey was designed to investigate in what form various institutions expect their students to submit their theses, and in what manner and for how long these papers are then stored. (Table 15, 16) What procedures are followed, what laws and internal rules do they base these on? The respondents were asked to mark which laws and internal rules the institution bases its procedures on.

Table 15
In what form must students submit their academic thesis?

Possible answers	Frequency	Percent
Only on paper (bound)	2	3,9
Only electronically	5	9,8
Both on paper and electronically	44	86,3
Total	51	100,0

In the case of 5 respondents, they only ask for theses electronically, which is adequate for the requirements of the modern age, but further investigation is required into how they ensure the authenticity of the document.

Table 16
Form of storage of student theses at the institution

Possible answers	Frequency	Percent
Only on paper	4	7,8
Only electronically	10	19,6
Both on paper and electronically	37	72,5
Total	51	100,0

Similarly, to the first question, it is worth looking into how the institutions that store the documents only in electronic form ensure authenticity, especially long-term authenticity.

Beyond what is necessary for the administration of giving the diploma, respondents were asked whether finished papers are categorized in the institution's library system at the metadata level. Table 17 shows the responses.

Table 17
Does metadata-level categorization happen in the institution's library catalogue system?

Possible answers	Frequency	Percent
Yes	32	62,7
No	19	37,3
Total	51	100,0

4 institutions store submitted documents on paper only (3 for an indefinite time, 1 for more than 10 years). 47 institutions responded that the papers are stored in full-text form, at least electronically. These institutions were then asked how long they store the papers in electronic form.

Table 18 shows the length of storage of papers in electronic form.

Table 18
Length of storage of papers in electronic form

Possible answers	Frequency	Percent
1–2 years	1	2,1
3–5 years	1	2,1
More than 10 years, but not indefinitely	7	14,9
Indefinitely	38	80,9
Total	47	100,0

Table 19
Papers submitted to the institution are stored in full-text form.

Possible answers	Frequency	Percent
Yes, BUT they are not made available electronically.	26	57,8
Yes, AND they are made available electronically.	16	35,6
I do not know	3	6,7
Total	45	100,0

On the question of whether the submitted papers are stored in full-text form, 45 institutions responded (of the respondents 1 institution only asks for and stores documents on paper, thus, for example, they are not available in scanned form either). Of those that answered no, 4 store the theses on paper only, 2 store them both on paper and electronically. 3 do not know, 16 make them available to be accessed. The stored electronic copies are not made available to be accessed through the library repository by 26 institutions. (Based on cross-analysis of further data, it became clear that 17 of these institutions do not have a central repository.)

The following table shows in what manner the available papers can be accessed by interested parties (with the exception of papers required to be secret/classified).

Table 20

Accessibility of papers stored electronically and in full-text form.

Possible answers	**Frequency**	**Percent**
Through a dedicated internal computer	8	50,0
Through an internal network	6	37,5
Through the internet by anybody	2	12,5
Total	16	100,0

In the following subsection of the survey, respondents were asked whether the institution has a central repository (with a document server) through which theses and other publications by the institution can be accessed.

Table 21

Supply of institutional repositories

Possible answers	**Frequency**	**Percent**
Yes, central repository	17	33,3
Yes, multiple independent repositories of various types	6	11,8
No	26	51,0
Other	2	3,9
Total	51	100,0

Surprisingly, 26 institutions responded that they do not have a central repository. This supports the earlier answer (Table 19), that electronically stored papers cannot be made available in such a way. The two "Other" responses indicated unique systems that had become outdated.

With the following question, we were interested to know whether the institutions know of two centrally operated systems in the neighbouring countries of Slovakia and Slovenia, as mentioned above, that provides full-text open-access and conduct text-matching at the national level. The question did not directly refer to these two solutions, instead, it was stated in general terms, thus making it suitable for the uncovering of other solutions. "Are you familiar with an internationally developed (national-level) central portal (repository), that provides full-text open-access for BSc and MSc theses, PhD dissertations and habilitation evaluations, published in the given country?" Table 22 shows the responses about knowledge of national repositories.

15 institutions responded with "yes", however, none of the text responses met the full criteria posed in the question, and the Slovakian/Slovenian example was not mentioned.

Table 22

Knowledge of national repositories

Possible answers	Frequency	Percent
Yes	15	29,4
No	36	70,6
Total	51	100,0

With the following question, respondents were asked how open institutions of higher education are to the creation of a national repository. "Would your institution support a central portal (repository) that would make openly-accessible all BSc/MSc theses, PhD dissertations and habilitation evaluations, that are published in Hungarian higher education."

Table 23

Support for a Central Repository

Possible answers	Frequency	Percent
Yes	26	53,1
No	3	6,1
It is unfeasible	5	10,2
I cannot/Do not wish to respond	15	30,6
Total	49	100,0
Did not respond	2	

Of the 26 respondents who answered "Yes", 13 further expressed their opinion in text. The common themes of the text responses were that such a repository would increase coordination, cooperation, transparency, and improve the flow of information. They deemed it much more efficient from a cost perspective, although a few see it being implemented alongside their current repositories. The question did not address the possibilities of a text-matching service on purpose, regardless, the search for plagiarism was mentioned in many responses. Some responses singled out the potential of such a central system to solve issues of plagiarism. There were also two institutions that expressed their support for Open Science and any such initiatives.

Out of the 3 "No" responses, two were accompanied by a text response. One supports the ability to search institutional repositories in aggregate, ex. Dart-Europe. The other respondent stated they would not support a central repository as "it would increase the opportunity to plagiarize", in their opinion.

Out of the 5 responses that deemed the project impossible, 4 provided text explanations, which mentioned differing institutional traditions, particular institutional interests, and lack of institutional capacity as reasons. Furthermore, it was mentioned that theses at the undergraduate and graduate level are not necessarily mature enough to be made openly available.

The number of "I cannot/Do not wish to respond" answers was the highest for this question (n=15). Of the 26 institutions that provided a "Yes" answer, 16 have their own repository, while 10 do not.

Use of a plagiarism-checking system

In the third section of the survey, the questions were on the topic of text-matching programs. The initial step was to ask how many institutions currently use plagiarism-checking software, and how many have plans to acquire such software. This was then followed up with a theoretical question, asking for opinions on the implementation of a plagiarism-checking software at the national level.

The first question was whether the institution uses a plagiarism-checking system (financed by the institution and mandatory to use). Beyond the simple "No" answer, there were three further responses that allowed for more nuance in understanding the lack of use.

Table 24

Use of plagiarism-checking software by the institution

Possible answers	Frequency	Percent
Yes	17	33,3
No	15	29,4
No, but there are plans to acquire and implement in the future	10	19,6
No, but due to a lack of resources, would use if possible	7	13,7
No, and do not plan to use in the future	2	3,9
Total	51	100,0

The responses show that 17 out of the 51 institutions use a plagiarism-checking system, and only 3 of these have licences for the entirety of their student body.

In the responses (Table 25) from an earlier section of the survey titled: "There are available digital, or other, tools at the institution that help in discovering plagiarism.", there were 24 "Yes" answers. The contrast with the 17 "Yes" responses to the current question is explained in the text responses. In those institutions where there "are available digital tools" but no plagiarism-checking system, teachers individually use various web search engines or free-use plagiarism-checkers.

Table 25

There are available digital, or other, tools at the institution that help in discovering plagiarism.

Possible answers	Frequency	Percent
Yes	24	47,1
No	25	49,0
I do not know	2	3,9
Total	51	100,0

The 17 institutions that consistently use a plagiarism-checking system received further questions regarding their currently used software and methods of use. The plagiarism-checking software was typically used to check Hungarian-language (88.2%)

and English-language (94.1%) documents. The most often checked documents are: undergraduate theses (76.5%), graduate theses (82.4%), PhD dissertations (58.8%), and professional articles in institutional publications (47.1%).

In the final section of the survey, the questions were once more addressed to all institutions and were not mandatory. These questions asked about institutional needs and expectations regarding plagiarism-checking software, and thus were answerable by all institutions, regardless of whether they currently use such software, or plan to implement or not it in the future.

The presentation of the results of this section of the survey has been omitted, as they go beyond the limits of this study. The goal is to investigate the currently implemented rules, procedures, and tools in Hungarian higher education in the field of academic integrity.

Conclusion

In many cases, academic integrity is viewed similarly to digital literacy, in that one is expected to be familiar with it by default. However, neither of these skills can be learned without proper education. This study is the first undertaking of its kind in Hungary, a statistical overview of the practices of Hungarian higher education institutions regarding academic integrity. The study was conducted at the leadership level of these institutions, it did not gather data from teachers or students. Plagiarism-checking at the institutions in question is investigated in this study, as a component of the broader field of academic integrity. The large amount of data collected over the course of this study provides both the opportunity and the impetus for further research on this topic. The results and correlations show by this study indicate that there is much to be done in this field, but it is clear that Hungarian higher education institutions are on board with working together and moving forward.

Acknowledgements

The author would like to sincerely thank the following individuals and organizations for their help in this project. Irene Glendinning, for making available the surveys from previous studies, and for encouraging me to conduct this research. The ENAI, for valuable knowledge and help in the field of academic integrity. The HRC working group members, who helped in improving the survey. The HRC, which helped in reaching the many institutions included in the project. The survey respondents, who put much time and effort into providing valuable data. Thank you to the *Department for Training in Higher Education, Ministry for Innovation and Technology*, for giving me access to the necessary institutional statistical data. Thank you to András Vaski, for helping with English-language editing. And last but not least, thank you to Nóra, who supported my work throughout the entire process.

References

Act CCIV of 2011 on National Higher Education. (2011). Retrieved from http://njt.hu/cgi_bin/njt_doc.cgi?docid=142941.377300

Educational Authority. (2019, August 6). Higher Education Institutions in Hungary (Államilag elismert felsőoktatási intézmények). Retrieved March 17, 2020, from https://www.oktatas.hu/felsooktatas/kozerdeku_adatok/felsooktatasi_adatok_kozzetetele/felsooktatasi_intezmenyek/allamilag_elismert_felsookt_int

Fésüs, L. (2014). Science Ethics in Hungary and Europe: Challenges and Responses (Tudományetikai kihívások és válaszok hazánkban és Európában). Magyar Tudomány, 175(6), 645–650. Retrieved from http://epa.oszk.hu/00600/00691/00129/pdf/EPA00691_mtud_2014_06_645-650.pdf

Future of Higher Education Research Centre (FHERC) at Budapest Business School (BBS). (n.d.). Student Cheating and Academic Integrity. Retrieved February 17, 2020, from https://future-higher-education.com/publications/student-cheating-and-academic-integrity/

Glendinning, I. (2013). Plagiarism Policies in Hungary. Retrieved from http://plagiarism.cz/ippheae/files/D2-3-13%20HU%20RT%20IPPHEAE%20CU%20Survey%20HungaryNarrative.pdf

Hungarian Rectors Conference. (2015). Hungarian higher education, 2015. Retrieved from http://www.mrk.hu/wp-content/themes/mrk/documents/hungarian_higher_education_2015.pdf

International Center for Academic Integrity. (n.d.). Academic Integrity Rating System. Retrieved November 17, 2019, from https://academicintegrity.org/academic-integrity-rating-system-ai/

IPPHEAE (2013). The Impact of Policies for Plagiarism in Higher Education Across Europe Retrieved from http://plagiarism.cz/ippheae/

Mezey, B. (2014). Issues on Ethics of Science in the Hungarian Higher Education (A tudományetikai felelősség kérdései a magyar felsőoktatásban. Az egyetemi és tudományos élet etikai szabályozása – az egyetemi etikai kódexek). Magyar Tudomány, 175(6), 655–664. Retrieved from http://epa.oszk.hu/00600/00691/00129/pdf/EPA00691_mtud_2014_06_655-664.pdf

Ojsteršek, M., Brezovnik, J., Kotar, M., Ferme, M., Hrovat, G., Bregant, A., & Borovič, M. (2014). Establishing of a Slovenian open access infrastructure: a technical point of view. Program, 48(4), 394–412. https://doi.org/10.1108/prog-02-2014-0005

SEEPPAI (2017). South East European Project on Policies for Academic Integrity Retrieved from http://plagiarism.cz/seeppai/

Science and Ethics in Hungary and Europe (Tudományetika Európában és Magyarországon). (2013). Retrieved March 16, 2020, from http://old.mta.hu/mta_hirei/az-mta-europaban-elsokent-alkotta-meg-tudomanyetikai-kodexet-132816/

Tuhkanen, T. (n.d.). Electronic Detection of Plagiarism in Finnish Higher Education Institutions 2013. Retrieved from https://confluence.csc.fi/download/attachments/66690545/electronic_detection_of_plagiarism_in_finnish_higher_education_institutions_2013.pdf

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WHAT DRIVES STUDENTS' INTENTION TO PLAGIARISE IN MONTENEGRO: THE MODERATING ROLE OF TEXT MATCHING SOFTWARE

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Abstract: We enrich the extended theory of planned behaviour (ETPB), to which we introduced two additional components – academic and computer literacy – to examine how different behavioural, moral and educational traits influence students' intentions to plagiarise. We argue that the relationship between components of the ETPB and students' intention to plagiarise is likely to be nuanced – and may display significant divergence depending on the students' awareness of text matching software utilisation. Using a sample of around 400 students from the University of Montenegro, our results partly confirmed that the extended theory of planned behaviour is an accurate predictor of the students' intention to plagiarise. More precisely, favourable attitudes towards plagiarism, low perceived behavioural control and low moral obligation influence positively students' intention to plagiarise. On the contrary, low subjective norms as well as both low academic and high computer literacy are found to be not significantly related to the students' intention to plagiarise. Further analysis reveals that the introduction of the moderator variable (students' awareness of text matching software utilisation) weakens the relation between the ETPB's components and students' intention to plagiarise. Overall, the obtained findings undoubtedly demonstrate that students' awareness of the utilisation of the text matching software acts as a strong impediment to the intention to plagiarise, mainly neutralizing the positive relations between the ETPB's components and intention to plagiarise.

Key words: Students' Intention to Plagiarise; the Extended Theory of Planned Behaviour; Academic Literacy; Computer Literacy; Text Matching Software; Moderating Approach

Introduction

Over the last several decades, the field of academic integrity entered the mainstream scholarship and academics around Europe started questioning different forms of academic misconduct and strategies for enhancing integrity and preventing non-ethical behaviour in academia (Melgoza & Smith, 2008). The academic integrity, in broadest sense, could be defined as '*the values, behaviour and conduct of academics in all aspects of their practice (teaching, research and service)*' (Macfarlane et al., 2014, p. 341). Violations of academic integrity remain one of the major global challenges in higher education (e.g. the International Centre for Academic Integrity reported that 70% of students cheat on tests), as academic dishonesty influences negatively the credibility of universities at the national and international level (Park, 2003). Moreover, the continued technological advancement enhances possibilities for non-ethical academic behaviour and creates additional forms of academic misconduct. Furthermore, it has been reported that the academic non-integrity proliferates into the business world, as some market actors blamed universities for corporate scandals since they failed

DOI: https://doi.org/10.11118/978-80-7509-772-9-0127

to embed stronger ethical values into students' mind-set in preparing them for the workplace (Verschoor, 2003). Indeed, several studies reported a strong correlation between levels of academic dishonesty of undergraduate students and dishonesty in the working world of those same students later in their career (Carpenter et al., 2004; McCabe et al., 1996; Nonis & Swift, 2001) – apparently, students who cheat in the academic setting are more likely to engage in unethical behaviour in the workplace later in their professional career.

Referring to the research of numerous scholars (Angell, 2006; Roig & Caso, 2005; Whitley, 1998), Belter & du Pré (2009) remind that the studies in the field consistently concluded that at least half of the college students reported they committed some sort of academic cheating during their studies. The scope and importance of this phenomenon sparked the interest of international scientific community, which profoundly analysed different aspects of academic (non)integrity, reasons for non-academic behaviour, frequency of cheating, impact of sanctions (Davis & Ludvigson, 1995), compared strategies that have a better effect on students, e.g. fear-based vs. participation in discussion of cases (Compton & Pfau, 2008), established relations between the moral perspective of students and the circumstances that lead to cheating (Eisenberg, 2004) and questioned number of related practices, strategies and challenges. Some researches differentiate between the planned and the so-called spontaneous cheating (Genereux & McLeod, 1995) and some studies, such as Semerci (2006), reveals that students claim cheating to be unlawful and a forgery, but nonetheless cheat themselves. In this article, we will address the specific form of students' cheating, the well-known and wide-spread phenomena named plagiarism.

Plagiarism is considered to be one of the most common forms of academic dishonesty (Lathrop & Foss, 2000; Park, 2003; Wilcox, 2005; Hodges et al., 2017). It can be broadly defined as the *"unauthorized appropriation of another's work, ideas, methods, results or words without acknowledging the source or the original author"* (Bilic-Zulle 2007; p. 146). Working on the sample of around 5000 students, McCabe et al. (2001) found that more than 65% students plagiarise on their written essays, while some scholars (e.g. Curtis & Vardanega, 2016) argue the plagiarism rate to be even higher – up to 80% in some student populations. Moreover, scholars argue that plagiarism is on the constant rise due to the possibilities provided by digital technologies and especially the Internet (Howard & Davies, 2009; Towneley & Parsell, 2004; Bradley, 2015; Rogerson & McCarthy, 2017). This is in line with Wang's (2008) findings which reveal that approximately 30% of students used ideas, 15% of students used text and 5% of students used projects from the Web without indicating the appropriate source. As explained by Wilcox (2005), since the Internet provides the easy access to the information, it also gives the impression that one may appropriate others' ideas without attribution – as it can be accessed so easily. Thus, the author stresses that easy access to information is at the heart of many incidents related to plagiarism. Additionally, Ellery (2008) found support for the positive correlation between the frequency of the Internet use and the incidence of students' plagiarism.

Taking into consideration the scope and the severity of the problem, special attention has been dedicated to establishing profiles of those who plagiarise (Hodges et al., 2017) and understanding why they do it (Tindall & Curtis, 2019). Yeung et al. (2018) found that

poor information literacy and insufficient language skills represent some of the major factors instigating students to plagiarise. Jones (2011) identified that main reasons for plagiarising are students being too busy and the need to earn good grades. Batane (2010) highlighted that 75% of the participating students (in his survey) reported that they plagiarise mainly because of the laziness. Investigating the two-year students' self-reported perceptions of acts of plagiarism, Ferguson (2010) found that the demographic traits such as age and gender played important role in determining students who chose to engage in self-reported acts of plagiarism. Using a series of group interviews, Devlin & Gray (2007) argue that contributing reasons for plagiarism are: institutional admission criteria, students' understanding of plagiarism, poor academic skills, a range of teaching and learning factors, personality factors and external pressures. McCabe (2005) concluded that the reasons driving students to plagiarise are related to the increase of competitiveness, pressures to achieve academically, awareness that their peers also plagiarise without being caught and possibility to obtain someone else's work easily. Underwood & Szabo (2004) acknowledged the fear of failure as the main factor that increases students' probability to plagiarise. The authors further explained that the fear could be associated to many different repercussions such as parents' disappointment, scholarship loss and student not wanting to fail the course, which is why it often influences students' decision to cheat. Weinstein & Dobkin (2002) corroborated that students' attitude towards plagiarism increases when the likelihood of being caught is low and the punishment minimal. Moreover, Davis et al. (1993), working on the sample of 6000 students, found that 36% of students indicated they would plagiarise in order to pass a certification test.

One of the most common mechanisms for combating plagiarism in academia is the use of the text matching software *Turnitin* (Bradley, 2015). It was developed by PhD students from the University of California, Berkeley in 1998. Today more than 30 million students use the software in one of the 15 000 institutions spread over 140 countries. Researchers (e.g. Groark et al., 2001; Batane, 2010) agree that the software became extremely important device for universities in order to prevent plagiarism, as the plagiarism detection discourages potential plagiarisers. In the same vein, several scholars suggest that when student are aware that their writing assessments will be checked for potential plagiarism, they are less likely to plagiarise (Martin, 2005; Braumoeller & Gaines, 2001). In other words, students' awareness of the existence of plagiarism detection software serves as an essential deterrent to plagiarism (Burke, 2004). On the other hand, as underlined by Willen (2004) even when students are aware that there is a practice regarding plagiarism prevention, they still may plagiarise when under pressure to perform well. Grebing (2015) stressed that there is a gap in literature regarding the effects of online tools on changing student behaviours and perceptions associated to academic dishonesty. Accordingly, it is crucial to understand if the students' behaviour towards plagiarism is dependent on their awareness of the existence and use of the text matching software. In addition, Batane (2010) also highlighted that other aspects of academic environment should be considered when examining the effectiveness of text matching software, thus we propose to examine the interaction effect between the ETPB and awareness of text matching software utilisation.

Although plagiarism has been recognised as a global problem, affecting both the developed and developing world, Carnero et al. (2017) argue that in developing countries the problem is poorly discussed, which hinders the adoption of the preventive strategies. What more, den Ouden & van Wijk (2011) underlined that the notions such as authorship, copyright and intellectual property have come into existence only recently in Western culture, while in Eastern cultures these notions are even less common. Actually, as explained by Brennan (2015), students' examination in Eastern countries barely ever relies on the essay-writing, which limits students' understanding of authorship, academic writing and plagiarism. Indeed, countries of Southeast Europe only recently started acknowledging the importance of academic integrity.

Montenegro, as one of the EU membership candidate countries, dedicated the last decade to aligning its higher education with the requirements, standards and practices of the EU universities. The topic of academic integrity, thus, revealed to be one of the major challenges for both academia and the society in the process of reforming higher education. Over the last several years, important steps have been taken in order to reduce the prevalence of academic dishonesty and plagiarism. In 2019, Montenegro was the first country in the region to adopt the Law on Academic Integrity, aiming to precisely define forms of academic misconduct and respective penalties for violating principles of academic integrity. Furthermore, all universities in the country (4 in total – 1 public and 3 privates) acquired the text matching software (*iThenticate*) through the national Ministry of Education, in the framework of the project supporting the development of higher education and research potential entitled '*Enhancement of HE Research Potential Contributing to Further Growth of the WB Region*'. Accordingly, University of Montenegro adopted the decision to use the *iThenticate* software in April 2018. During the last year, the University engaged in number of activities aimed to support the implementation of the Law on Academic Integrity, improve overall academic culture, deliver policy recommendation, provide education and training to students and researchers in the area of anti-plagiarism and increase institutional capacities to combat plagiarism, corruption and fraud. It organised several seminars, workshops and roundtables aiming to enhance the understanding of existing and adoption of new mechanisms for combating plagiarism and other non-academic behaviour at institutional and national level. Furthermore, the University went through the certification in the field of academic integrity, acquiring the certificate from the Institute for Research and Action on Fraud and Plagiarism in Academia, University of Geneva in 2019.

Despite the increasing efforts to introduce new mechanisms for enhancing academic integrity, in Montenegro there was yet no comprehensive analysis of the impact of adopted measures. As indicated by Cortes-Vera et al. (2018) there has been a general lack of studies on the specific causes of plagiarism. In order to build an environment that will integrate academic behaviour as an integral part of teaching, learning and research that is suitable for Montenegrin context, it is necessary to provide research-based evidence that would ground further recommendations on academic integrity and anti-plagiarism. This paper aims to address this gap in the field, by analysing how different factors influence students' intentions to plagiarise. In order to do so, the paper relies on data collected through the survey of students of University of Montenegro,

which is the largest university in the country (enrolling around 80% of student population). The novelty of the approach consists in both employing the extended theory of planned behaviour (Ajzen, 1991) and using the two additional factors mostly absent from the research on academic integrity – namely the academic literacy and the computer literacy. Actually, the theory of planned behaviour (TPB) is used to predict behavioural intentions by analysing three factors: attitude toward the *behaviour*, subjective norms and perceived *behavioural* control. Scholars from the field extensively used the TPB as an efficient tool for analysing, understanding and predicting factors underlying the academic misconduct behaviours and intentions (Stone et al., 2007; Stone et al., 2009; Stowe, 2017; Passow et al., 2006; Salehi & Ghasemzadeh, 2018). The extended model that we use in the paper includes an additional component – moral obligation, which has been increasingly used in the analysis of the intentions to plagiarise and cheat (Chudzicka-Czupała et al., 2016; Harding et al., 2007), as well as the two components rarely used in these studies so far – academic and computer literacy. One exception is study of Camara et al. (2017), which uses the ethical theoretical framework called the theory of reasoned action (TRA) and the TPB to demonstrate that having knowledge of plagiarism decreases probability for academic misconduct to happen intentionally. Furthermore, regarding the computer literacy, this component may be found in work of Uzuna & Kilis (2020) who considered Information and Communication Technologies (ICT) literacy, measured by the Internet, computer and information literacy, as indicators of the perceived behavioural control.

In Montenegro, but also in the larger region of Southeast Europe, there has been no study on the topic using this approach and the use of the TPB represents highly innovative concept. In addition, we add a moderator variable to our model – the text matching software, as according to Carroll (2009), although the software cannot eliminate the problem of plagiarism completely, it is important to analyse the moderator effects of the software when examining the predictors of students' intentions to plagiarise. The importance of moderator analysis is accented by Cohen et al. (2003) who argue that moderating approach is '*at the very heart of theory testing in the social sciences*' (Cohen et al., 2009; p. 255). Different authors used moderating variables in their research of academic dishonesty and plagiarism. For instance, examining the factors associated with students' plagiarism, Bennett (2010) uses two moderating variables – attitudes towards plagiarism and the intensity with which anti-plagiarism rules are enforced. Hoo Quah et al. (2012) analysed the relationship between ethical orientation of students and their attitudes toward plagiarism, using the religious orientation as a moderating variable. Van Zyl & Thomas (2015) addressed perceptions of academic honesty of millennial university students considering the role of the gender, age, first language, faculty and qualification type as moderating variables.

As we indicated before, many scholars used the extended TPB (Stone et al., 2009; Chudzicka-Czupała et al., 2016; Stowe, 2017; Camara et al., 2017) and only few included academic and computer literacy (e.g. Camara et al., 2017; Uzuna & Kilis, 2020) as a framework for studying students' cheating and plagiarism intentions. However, we have not so far encountered studies merging the extended theory of planned behaviour (ETPB) and moderating factors. The importance of analysing not only the direct effects of the TPB's components has been demonstrated in recent work of Hendy &

Montargo (2019) who using the TPB model analysed the mediating role of justification of cheating. Accordingly, the aims of the present study are threefold: (1) to identify the ETPB's components as well as socio-demographic characteristics that drive students' intention to plagiarise (2) to analyse the moderating role of text matching software; (3) to define mechanisms that would advance academic integrity and ethical behaviour in Montenegro. In general, empirical findings will help us to better define strategy related to the quality of research and higher education in Montenegro by spreading the culture of academic integrity, promoting ethical behaviour and preventing plagiarism and other types on non-ethical practices in academic work. Figure 1 depicts our research framework.

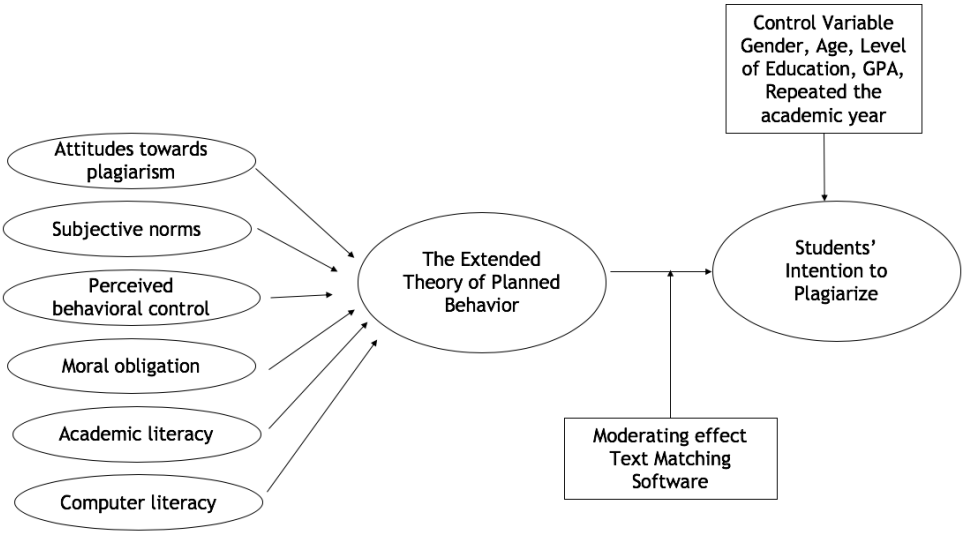

Figure 1. Theoretical model

The rest of the paper is organized in the following structure. In the next section, we discuss the existing relevant literature and develop our hypotheses. In the following section, we analyse our data and empirical strategy. Then, we report and discuss our main results. Finally, we conclude by summarizing the main findings and providing the implications and limitations of our study.

Literature review and Hypotheses development

Number of studies from the field (e.g. Chudzicka-Czupała et al., 2016; Alleyne & Phillips, 2011; Harding et al., 2007; Stone et al., 2009; Whitley, 1998) use the Ajzen's (1991) model the theory of planned behaviour as the most appropriate theoretical framework for explaining academic dishonesty. This theory represents a conceptual extension of the Fishbein & Ajzen's (1975) theory of reasoned action (TRA) which proposes that human behaviour results from the attitude towards that particular

behaviour and from the subjective norms. In 1991, Ajzen adds an additional variable for predicting people's behaviour – the perceived behavioural control. The author defined intention as people's willingness to try or their planning effort to perform the behaviour while attitude toward a certain behaviour presents personally held beliefs concerning that behaviour. Subjective norm is considered as the social component which indicates person's perception of how others view the behaviour in question and whether or not they would approve the action. Finally, perceived behavioural control explains discrepancies between intentions and behaviours.

This influential theory has been further expanded by Beck & Ajzen (1991), who introduced additional dimension to the model related to the moral obligation. As explained by Chudzicka-Czupała et al. (2016), moral obligation explains personal feelings associated with the obligation to engage in a specific behaviour (e.g. sense of duty), or to the refusal to undertake it (e.g. guilt, reluctance, or the sense that the behaviour is incompatible with the individual's values and principles). Using the theory of planned behaviour as a model of academic dishonesty, Harding et al. (2007) provide several arguments that support the inclusion of moral obligation dimension into this framework. The authors argue that as the decision to cheat is an ethical one, a moral dimension may be critical in such decisions; considering that college has important influence on gains in moral reasoning scores, there may be significant differences in this component according to the college level; but also, there may be differences in the effect of a moral component by discipline.

Although the ETPB provides important framework to analyse students' intention toward academic misconduct, over the years' scholars have been consistently upgrading the model adding components they considered significant for explaining the phenomenon. Harding et al. (2007) stress that scholars should continue to examine other constructs that can further explain intention to cheat and extend the original theory of planned behaviour model by introducing additional component. Imran & Nordin (2013) added ethical belief (ETB) to the TPB components. In this paper, besides the moral obligation, we add two additional components that are considered important for explaining students' intention to plagiarise – namely, the academic literacy and the computer literacy. According to Reid (2005), academic literacy encompasses not only the operational literacy (clear writing, correct spelling and punctuation), but also the cultural literacy (capacity to structure an essay, including introduction and conclusion, quote and paraphrase other's ideas, write references) and the critical literacy (analysing an assignment question, reading academic texts and reflecting critically on ideas and experiences). Computer literacy has been defined by Uzun & Kilis (2020) as capability or skill to use the computer effectively. The rationale for choosing academic literacy is based on the fact that plagiarism can arise from the lack of knowledge of proper quotation and citation rules or of interrelationships of meaning, knowledge, expression and argument (Park, 2003). For example, the inadequate writing skills can lead to direct copying of text without acknowledging the source (Pecorari, 2008). Therefore, in order to avoid plagiarism, students need to understand the rules and standards of academic writing (Selemani et al., 2015). What more, several scholars (Leask, 2006; Macdonald & Carroll, 2006; Pecorari, 2008; Walker, 2010) underline that good academic writing skills are indispensable in order to reduce incidence of plagiarism. Furthermore, Uzun & Kilis

(2020) argue that students with high computer literacy have better skills to manipulate the contents and provide correct source.

Park (2003) indicated that plagiarism can be considered as a form of cheating or academic misconduct or dishonesty. Therefore, in order to develop our hypotheses, we will use literature that tackles both cheating and plagiarism.

Attitudes toward plagiarism

Attitude toward behaviour has been defined by Beck & Ajzen (1991) as the extent to which an individual approves or disapproves that specific behaviour. As early as in 1975, Fishbein & Ajzen (1975) underlined that an individual who positively evaluates a specific behaviour is more likely to exhibit behavioural intentions toward the action and ultimately to perform that particular behaviour. Several scholars empirically confirmed that positive attitude toward plagiarism will drive students' intention to plagiarise. For instance, drawing on both the TPB and the General Theory of Crime (GTC), Curtis et al. (2018) concluded that students' attitude significantly predicts their engagement in plagiarism. In fact, their study demonstrated that students which expressed more negative attitudes toward plagiarism showed less intention to plagiarise and engaged in plagiarism less often. In the same vein, working on the sample of students from 7 countries (Poland, Ukraine, Romania, Turkey, Switzerland, United States, and New Zealand), Chudzicka-Czupała et al.'s findings (2016) demonstrate that attitudes predict students' intentions to engage in academic cheating. Similarly, using a sample of 363 undergraduate students at the West Indian University, Alleyne & Phillips (2011) found that attitudes were significant predictors of students' intentions to perform academic dishonesty behaviours in the form of cheating and lying. Harding et al. (2007), working on a sample of 527 randomly selected students show that attitude towards cheating influence positively their intention to engage in such behaviour. According to Simon et al. (2004), students with favourable attitudes toward academic integrity policies are also more likely to report cheating.

This is noteworthy, the literature also problematized this measure – as there is evidence that even though students may have negative attitude toward academic dishonesty, they may still engage in academically dishonest behaviours (Davis et al., 1992; Smyth & Davis, 2004; Semerci, 2006; Park & Blenkinsopp, 2009). For instance, Semerci (2006) revealed that even though students consider that cheating is illegal and a forgery, they still do cheat, while Smyth & Davis (2004) found similar inconsistency – while 92% of the respondents in their sample reported that cheating is unethical, 45% admitted that according to them cheating is acceptable social behaviour.

In line with the previous arguments, we propose the following hypothesis:

Hypothesis 1: Favourable attitudes toward plagiarism increase students' intention to plagiarise.

Subjective norms

It has been widely acknowledged that people's behaviour is influenced by the behaviour of others – or by their expectations of how the others will behave. Drawing on the

literature on social norms, scholars from the field concluded that the perception of peer behaviour presents an influential predictor of one's decision-making regardless of the perceptual accuracy (Perkins, 2003; Engler et al., 2008; Camara et al., 2017). Accordingly, Engler et al. (2008) argued that the presence of cheating culture at the campus increases students' propensity to cheat. Existing empirical research showcased that the subjective norms have a direct impact on the intention to plagiarise. For instance, in the previously mentioned analysis of Alleyne & Phillips (2011), the findings confirmed the positive relationship between subjective norms and intention to plagiarise. Camara et al. (2017) also found the positive correlation indicating that students with less intention to plagiarise do not believe that plagiarism is acceptable to their family, friends or peers. These results were also confirmed by Imran & Nordin (2013), Hsiao (2015), Chudzicka-Czupała et al. (2016), Curtis et al. (2018). In an influential study from 1993, McCabe & Trevin revealed the importance of the perception of peer behaviour – when students reported that they have seen their peers cheating, they were more prone to perceive cheating as an acceptable behaviour. According to the authors, the peers' academic misbehaviour is likely to become a justification – *"a normative support for cheating"*. Even more, McCabe et al.'s (2002) further studies of honour codes and other contextual influences on academic integrity, emphasized that the perception of peers' behaviour acts as the best predictor of cheating behaviour.

Considering the previous reasoning, we define the following hypothesis:

Hypothesis 2: Low subjective norms increase students' intention to plagiarise.

Perceived Behavioural Control

Perceived behavioural control, according to Asare (2015) could be understood as the *"people's perception of the ease or difficulty of performing the behaviour of interest"*. It measures perceived obstacles to conducting certain behaviour (such as cheating and plagiarism). Previous literature analysing the effect of perceived behavioural control on cheating intentions provided conflicting conclusions. On the one hand, it is argued that when an individual faces the important obstacle to certain behaviour, the low perceived control of behaviour may discourage him/her from undertaking that particular behaviour (Chudzicka-Czupała et al., 2016). Accordingly, several scholars empirically confirmed this positive relationship (Camara et al., 2017; Chudzicka-Czupała et al., 2016; Alleyne & Phillips, 2011). McCabe et al. (2002) revealed that probability of being caught while cheating acts as a strong predictor of the extent of dishonesty in which student is ready to engage. Most recently, Handy & Montargot (2019) analysing the academic dishonesty amongst business school students in France using the TPB found that the perceived behavioural control was positively related to the self-reported cheating behaviour. On the other hand, according to Harding et al. (2007), the perceived behavioural control does not predict cheating behaviour, as participants' perceived ease of cheating has little bearing on their actual cheating. Similar conclusion was obtained by Passow et al. (2006) who argue that perceived behavioural control does not explain importantly the cheating behaviour.

Considering that the previous discussion proposes arguments that support both positive and neutral effects, we define the following competing hypotheses:

Hypothesis 3a: Low perceived behavioural control increases students' intention to plagiarise.

Hypothesis 3b: Low perceived behavioural control does not influence students' intention to plagiarise.

Moral Obligation

The original TPB model was expanded by Beck & Ajzen (1991) to accommodate fourth component – moral obligation. As previously explained, the moral obligation refers to the individuals' sentiment of obligation to behave in certain manner or the refusal to conduct such behaviour (Chudzicka-Czupała et al., 2016). It reflects the degree to which individual considers particular behaviour to be compatible with his/her values, principles and ethical standards. The literature argues that as the academic dishonesty encompasses also the moral aspects, moral obligation should be considered as an important predictor of the cheating intention (Cronan et al., 2018; Uzun & Kilis, 2020). Actually, the fact that people are ready to cheat or steal other people's idea demonstrates that there have been minimal advances in moral behaviour (Semerci, 2006). Beck & Ajzen (1991), who proposed that moral obligation should be introduced in the TPB, were among the first to claim that moral obligation was an important driver of students' intentions to cheat. In words of Imran & Norodin (2013), high levels of ethical consciousness and moral development decrease likelihood that students will behave in academically dishonest ways. Inversely, students with low moral standards are more likely to engage in non-ethical behaviour. Several previous scholars empirically confirmed these findings such as Passow et al. (2006), Harding et al. (2007), Alleyne & Phillips (2011), Chudzicka-Czupała et al. (2016).

We therefore expect the following:

Hypothesis 4: Low moral obligation increases students' intention to plagiarise

Academic literacy

Academic literacy refers to the capacity to write, read and communicate in academic setting, following the rules and standards of the academic discourse (Calvo et al., 2020). It is one of the essential skills which students and academic staff need to master in order to engage in debates on academic subjects using the scientific methods. The rigorous practice of academic writing is thus indispensable in order to strengthen students' academic capacity and academic integrity. Indeed, Bellack (2004) considers high standards in written communication to be the main feature of academic integrity. Selimani et al. (2018) further develop this idea highlighting that in order to decrease the incidence of plagiarism it is indispensable to enhance the academic writing capacities. Camara et al. (2017) argue that having knowledge of what is considered to be plagiarism reduces the probability that students will actually commit plagiarism. Providing the students practice in proper paraphrasing, Barry (2006) concluded that students' knowledge about plagiarism was higher after the academic writing exercise than before. Furthermore, the author argues that plagiarism occurs when students are not familiar with the correct protocols for referencing the academic work. The findings by Belter

& du Pré (2009) follow the same line of argumentation indicating that the important extent of plagiarism encountered was the result of inadequate knowledge about proper quotation and citation rules. However, academic writing literacy is considered to be a complicated activity as it includes summarizing, quoting and paraphrasing other authors' concepts and ideas (Bailey, 2011). Thus, poor academic writing skills are likely to increase the probability of students' plagiarism (Selimani et al., 2018). Husain et al. (2017) suggest that students who lack the academic writing literacy are more tempted to plagiarise. Similarly, Yeung et al. (2018) conclude that poor academic literacy entails poor academic behaviour. Several scholars confirm that students plagiarised unintentionally due to a lack of knowledge about academic writing and plagiarism (Scouller et al., 2008; Ramzan et al., 2012). Consequently, in her book, Pecorari (2008) stresses that institutional plagiarism policy should be more focused on development of academic writing skills.

Taking into consideration that a number of authors claimed a positive correlation between being academically illiterate and committing plagiarism, we formulate the following hypothesis:

Hypothesis 5: Low academic literacy skills increase students' intention to plagiarise.

Computer Literacy

Lathrop & Foss (2000) argue that the availability of online resources represents a major factor that contributes to the increase of plagiarism among students. Uzuna & Kilis (2020), working on a cross-sectional survey data which includes 588 university students, demonstrated that information literacy is a significant predictor of students' intention to engage in plagiarism, but both the Internet literacy and the computer literacy do not drive students' intention to plagiarise. Similar results were obtained by Trushell et al. (2012) who found that ICT capability and the Internet did not correlate significantly with cheating behaviours. In the same vein, Selwyn (2008) demonstrated that the likelihood of plagiarising online was only weakly associated with the students' ICT expertise. On the other side, Eret & Ok (2014) find that students with more experience in using computers reported greater tendencies to plagiarise. They argue that obtained findings could be due to the fact that as students feel more self-confident in using computer and the Internet, they have more skills and knowledge about manipulating an electronic resource. Their findings are supported by those from Newstead et al. (1996) and Selwyn (2008) who reveal that students taking the computer science as a major plagiarise more frequently than students with other majors. The line of findings is further supported by Ashworth et al. (1997) and Campbell et al. (2000) who conclude that the increase in plagiarism is related to students' greater knowledge of and familiarity with the information systems, the Internet, online electronic information sources, and the ease with which the information can be retrieved and used.

Using the previous scholarly discussion as a starting point, we defined competing hypotheses as follows:

Hypothesis 6a: High computer literacy skills increase students' intention to plagiarise.

Hypothesis 6b: High computer literacy skills do not influence students' intention to plagiarise.

Moderating role of Text Matching Software

The text matching software such as *iThenticate* is considered to be one of the most effective tools for reducing students' intention to plagiarise (Ercegovac & Richardson, 2004; Bradley, 2015; Curtis & Vardanega, 2016). Previous scholars (Bennett, 2005; Sutherland-Smith & Carr, 2005; Murray, 2006; Davis, 2007) examined the learning role of these software, indicating that they can deter students from plagiarising. Another stream of research looked at how students' awareness that their work will be checked by plagiarism detection software can increase their efforts to avoid plagiarism. Actually, as students realize they can be easily caught in plagiarism due to the use of software, they tend to be afraid of the punishment which discourages them from plagiarising. This is confirmed by previous analyses arguing that fear of being caught prevent academic dishonesty (Diekhoff et al. 1999; McCabe & Treviño, 1997; McCabe et ac., 2001, 2002; Ledwith & Rísquez, 2008). Accordingly, Burke (2004) suggests that if students are aware that their papers are checked by the text matching software, it could decrease the incidence of plagiarism. In this sense, Batane (2010) revealed that after *Turnitin* was introduced to the students of the University of Botswana, their plagiarism level dropped by 4.3%. As the author explains the plagiarism did not completely disappear but the software had a significant impact on reducing the rate of plagiarism. In the same vein, Bilic-Zulle et al. (2008) compare two groups of students, noting that the students from 2002/2003 who were only warned against plagiarism had 21% of plagiarised text on average in their essays, whereas the students from 2004/2005 who were warned that their essays would be checked through the plagiarism detection software (and that those who plagiarised would be penalized) had only 2% of plagiarised text. Similar results were obtained by Martin (2005) who reported that students who hold a stronger belief that plagiarism will be detected may be less likely to plagiarise. What more, the author concludes that students' awareness of the detection software will engage them in the learning process, which will further decrease plagiarism in the long run.

Previous research established that certain correlations will change direction, gain or lose statistical significance when a moderator variable is introduced (see Baron & Kenny,1986 for more information). In this paper, we consider students' awareness of the text matching software utilisation as a potential moderator since it is theoretically possible that the ETPB's components might have a different impact on students' intention to plagiarise in presence of this additional criteria. In simple terms, this means that, for example, even if students having positive attitude toward plagiarism show more intentions to plagiarise, when they are aware of the existence and use of the text matching software, they might however avoid plagiarising (show less or no intention to plagiarise) as the positive correlation between attitudes and intentions might be buffered by the moderating variable. Thus, we formulated the following hypotheses:

Hypothesis 7a: The relationship between attitudes toward plagiarism and intention to plagiarise is moderated by students' awareness of the text matching software utilisation,

such that the students' awareness of text matching software utilisation weakens the positive relation between favourable attitude towards plagiarism and intention to plagiarise.

Hypothesis 7b: The relationship between subjective norms and intention to plagiarise is moderated by students' awareness of the text matching software utilisation, such that students' awareness of the text matching software utilisation weakens the positive relation between low subjective norms and intention to plagiarise.

Hypothesis 7c: The relationship between level of perceived behavioural control and intention to plagiarise is moderated by students' awareness of the text matching software utilisation, such that students' awareness of the text matching software utilisation weakens the positive relation between low perceived behavioural control and intention to plagiarise.

Hypothesis 7d: The relationship between moral obligation and intention to plagiarise is moderated by students' awareness of the text matching software utilisation, such that students' awareness of the text matching software utilisation weakens the positive relation between low moral obligation and intention to plagiarise.

Hypothesis 7e: The relationship between academic literacy skills and intention to plagiarism is moderated by students' awareness regarding text matching software utilisation, such that students' awareness of the text matching software utilisation weakens the positive relation between low academic literacy skills and intention to plagiarise.

Hypothesis 7f: The relationship between computer literacy skills and intention to plagiarise is moderated by students' awareness of the text matching software utilisation, such that students' awareness of the text matching software utilisation weakens the positive relation between high computer literacy skills and intention to plagiarise.

Methodology

Data

In order to answer the research questions and examine proposed hypotheses, we created a questionnaire solely dedicated to the issue of academic integrity. The questionnaire is designed to reflect experiences from similar scholarly endeavours (e.g. McCabe, 2005; Bradinova, 2006; Boehm, 2008; Broeckelman-Post, 2009; Bradley, 2010; Alleyne & Phillips, 2011; Curtis et al. 2013; Stout, 2013; Benett, 2017) which analysed the topic of academic integrity. More precisely, other than the general information on students' background, the questionnaire included additional sections associated to students' perception of their academic skills, academic work environment, promotion of academic integrity, institutional policies associated with the academic integrity, academic dishonesty, motivations for academic dishonesty, workplace integrity, etc.

We conducted a survey and collected data from students of University of Montenegro between December 2019 and February 2020. More precisely, the questionnaire was administered to a representative sample of the University of Montenegro student population including all 19 faculty units (Faculty of Architecture; Faculty of Biotechnology; Faculty of Civil Engineering; Faculty of Drama; Faculty of Economics; Faculty of Electrical Engineering; Faculty of Fine Arts; Faculty of Philosophy; Faculty of Philology Faculty of Law; Faculty of Maritime Studies; Faculty of Mechanical Engineering; Faculty

of Medicine; Faculty of Metallurgy and Technology; Faculty of Natural Sciences and Mathematics; Faculty of Political Sciences; Faculty of Tourism and Hotel Management; Faculty for Sport and Physical Education; Music Academy). In addition, we strived to ensure a representative pool regarding gender, age, level of education. More than 500 university students participated in this survey. We eliminated those observations with the missing values relevant for this paper, which resulted in a final sample of 401 usable observations.

Measure

Students' intention to plagiarise. Our dependent variable entitled *INTENTION TO PLAGIARISE* was measured by five items adapted from Harding et al. (2007), Imran & Nordin (2013), Chudzicka-Czupała et al. (2016), Camara et al. (2017) and Uzun & Kils (2020). The items included are the following: (1) Sometimes I feel tempted to plagiarise because so many other students are doing so; (2) If my roommate gives me the permission to use his or her paper for one of my classes, I do not think there is anything wrong in doing so; (3) Plagiarism is justified if the professor assigns too much coursework; (4) The punishment for plagiarism should be light because we young people are just learning in vain; (5) I do not think plagiarism is right, but there are still some situations in which a student might be forced to plagiarise in order to get a decent grade in a course. For each item, respondents were requested to indicate to what extent they agreed with the statement regarding the academic issue. The items were presented on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach alphas for the intention scale is 0.70.

Attitudes toward plagiarism. Our first independent variable denoted *ATTITUDES* was measured by eleven items adapted from e.g., Stone et al. (2009), Chudzicka-Czupała et al. (2016) and Camara et al. (2017). The following items are included: (1) Students should be held responsible for monitoring the academic integrity of other students (inversely coded) (2) If I had known that another student in the class was planning to plagiarise a paper, I would try to persuade him or her not to plagiarise (coded inversely); (3) If I discovered that a student had plagiarised, I would try to persuade him or her to confess (coded inversely); (4) Plagiarism is always wrong, regardless of the circumstances (coded inversely); (5) If a student in my class got caught plagiarising a paper, he or she would deserve to fail the course (coded inversely); (6) If a student buys or downloads free research paper and turns it in unchanged with his or her name as the author, the student should be expelled from the university (coded inversely); (7) If students caught plagiarising would receive a special grade for cheating on their permanent transcript, that policy would deter many from plagiarising (coded inversely); (8) Students should require to take a class in ethical behaviour as a part of the general education requirements (coded inversely); (9) Faculties in all disciplines should address integrity and ethical behaviour throughout their courses; (10) Person can learn to have personal integrity from learning about the academic integrity (coded inversely); (11) Plagiarism is as bad as stealing the final exam ahead of time and memorizing the answers (coded inversely). The Cronbach's Alpha for this construct equals 0.70.

Subjective norms. Our second independent variable called *SUBJECTIVE NORMS* includes fifteen items adapted from Stone et al. (2009). The items we use to measure *SUBJECTIVE NORMS* component are as follows: (1) Writing or providing a paper for another student; (2) Copying few sentences from written source without citing; (3) Turning in a paper copied from another student; (4) Turning in a paper obtained in large part from a term paper "mill" or website that did not charge this information; (5) Fabricating/falsifying a bibliography; (6) Turning in a paper written by someone else; (7) Writing a paper for someone else to submit; (8) Copying material 'word for word' from the written source; (9) Selling a self-written paper to another student to submit it as his/hers; (10) Buying a paper online to submit; (11) Copying a few sentences of the material from an Internet source without acknowledging it in the paper; (12) Submitting the same paper for two courses; (13) Copying directly from a source (word for word) without citing; (14) Listing sources in a bibliography after only reading the abstract of an article; (15) Listing sources in a bibliography that were not actually read. For each item, respondents were requested to indicate how often the previous situations occur at their faculty. Items were presented on a 5-point Likert-type scale, ranging from 1 (never) to 5 (very often). The Cronbach's Alpha value is 0.95.

Perceived Behavioural Control. Variable named *PERCEIVED BEHAVIOURAL CONTROL* is comprised of seven items adapted from Stone et al. (2009), Alleyne & Phillips (2011) and Hsia (2015). The included items refer to the motivations for plagiarising and are as follows: (1) Belief that they will not get caught; (2); Belief that those who are caught are not punished; (3) Belief that those who plagiarise will get a better grade; (4) Chances of getting caught are thin; (5) Belief that other students are doing the same; (6) Everyone cheats; (7) What some consider cheating, I do not consider cheating. Items were presented on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The Cronbach's Alpha equals to 0.87.

Moral Obligation. Variable *MORAL OBLIGATION* is assessed following previous scholars such as Harding et al. (2007), Alleyne & Phillips (2011) and Uzun & Kils (2020). Actually, the variable is represented by following: (1) Plagiarism is against my ethical values. Item was presented on a 5-point Likert-type scale, ranging from 1 (strongly disagree) to 5 (strongly agree), but we coded it inversely.

Academic Literacy. In line with the previous research (e.g. Stout, 2013; Selimani et al., 2018), the*ACADEMIC LITERACY* variable includes the following items: (1) Able to compose and revise clear and coherent essays and basic documents; (2) Able to develop essays with clear thesis statements and topic sentences as well as the specific support; (3) Able to analyse reading; (4) Able to express critical thinking skills in discussions; (5) Able to apply argumentation in writing; (6) Able to express critical thinking skills in my writing; (6) Able to proofread my own papers; (7) Able to provide feedback to other writers regarding their papers; (8) Able to apply library and research skills to locate and organize research data; (9) Able to employ appropriate tone, diction (voice) in writing; (10) Able to employ appropriate grammar and punctuation correctly; (11) Able to write a paper based on a case study; (12) Able to employ the requested referencing style (APA, Harvard, etc); (13) Able to demonstrate how to use quotes and citations correctly; (14) Able to demonstrate how to paraphrase correctly; (15) Able to demonstrate what an abstract should look like. We used 5-point Likert scales, ranging from 1 (strongly

disagree) to 5 (strongly agree), but we coded it inversely. The Cronbach's Alpha equals 0.90.

Computer Literacy. Following Eret & Oak (2014) and Uzun & Kils (2020), we created variable denoted *COMPUTER LITERACY* corresponding to students' perception about his/her computer knowledge and related technical skills. We used 5-point Likert scales, ranging from 1 (strongly disagree) to 5 (strongly agree).

Text Matching Software. Drawing on previous work from Martin (2005), Bilic-Zulle et al. (2008), Batane (2010)and Brenan (2015), we use binary variable denoted *TEXT MATCHING SOFTWARE*, corresponding to whether students are aware that the text matching software is used at their faculty.[1]

Furthermore, we control for our students' socio-demographic characteristics that are found in previous literature (e.g. Passow et al., 2006; Harding et al., 2007; Alleyne & Phillips, 2011; Chudzicka-Czupała et al., 2016) to be important drivers of students' intention to plagiarise. More precisely, we include the following control variables: (1) gender; (2) age; (3) level of education; (4) cumulative grade point average; and (5) if the student repeated the academic year.

In Table 1 we present the descriptive statistics of variables used.

Empirical model

The relationship between the independent variables and our dependent variable *INTENTION TO PLAGIARISE* is tested using an Ordinary Least Square (OLS) regression. The model can be written as:

$$y_i = X_i a + e_i$$

where $y_i, X_i a$ and e_i represent *INTENTION TO PLAGIARISE*, the vector of exogenous variables, estimated coefficients, and error term, respectively.

Noteworthy, in order to test our moderating effect, we interact our main independent variable i.e., *ATTITUDES, SUBJECTIVE NORMS, PERCEIVED BEHAVIOURAL CONTROL, MORAL OBLIGATION, ACADEMIC LITERACY* and*COMPUTER LITERACY* with variable representing *TEXT MATCHING SOFTWARE* to see if it moderates the relation between our independent and dependent variables. In order to avoid multicollinearity between the interaction terms and their components, we follow the approach suggest by Aiken & West (1991). More precisely, we mean-centre the direct terms by subtracting the mean of each variable from the values of each observation.

Results

The OLS estimation results are provided in Table 2. The fit is reasonable, with a pseudo R-squared of 0.248 for direct effect model while it is 0.271 for moderating effect.

[1]Due to relatively large number of missing values regarding variable *TEXT MATCHING SOFTWARE*, we set the missing values to be equal to zero. Actually, we supposed that students who did not answer the relevant question were not aware about text matching software as they did not answer any of the questions associated with the software and simply continued to answer further questions. In order to check whether it significantly influences our results, we run the same model without setting missing variable equals to zero and received similar findings. Further results are available upon request.

Table 1
Definition of variables and descriptive statistics (N = 401)

Variables	**Mean**	**SD**	**Min**	**Max**
INTENTION TO PLAGIARISE	13.70	3.84	5	25
ATTITUDES	26.91	6.67	11	56
SUBJECTIVE NORMS	37.33	15.53	15	75
PERCEIVED BEHAVIOURAL CONTROL	23.26	6.08	7	35
MORAL OBLIGATION	2.36	1.08	1	5
ACADEMIC LITERACY	30.66	10.10	15	64
COMPUTER LITERACY	4.21	0.97	1	5
TEXT MATCHING SOFTWARE	0.29	0.45	0	1
GENDER	0.66	0.47	0	1
AGE	21.99	0.45	19	48
1ST YEAR UNDERGRADUATE	0.21	0.41	0	1
2ND YEAR UNDERGRADUATE	0.20	0.40	0	1
3RD YEAR UNDERGRADUATE	0.32	0.47	0	1
4TH YEAR UNDERGRADUATE	0.19	0.39	0	1
MASTER LEVEL	0.07	0.25	0	1
PhD LEVEL	0.01	0.12		
CULMULATIVE GRADE POINT AVARAGE-A	0.14	0.35	0	1
CULMULATIVE GRADE POINT AVARAGE-B	0.27	0.44	0	1
CULMULATIVE GRADE POINT AVARAGE-C	0.31	0.46	0	1
CULMULATIVE GRADE POINT AVARAGE-D	0.22	0.41	0	1
CULMULATIVE GRADE POINT AVARAGE-E	0.05	0.22	0	1
REPEATED A YEAR	0.27	0.44	0	1

Comparison between R-squared of direct and moderating effect models indicates that introducing moderating effect improves the explained variance in students' intention to plagiarise which further justifies the analysis associated with the moderating effect.

Model 1 (Table 2) shows the effect of favourable attitude toward plagiarism on students' intention to plagiarise, controlling for students' socio-demographic characteristics. According to the results, the favourable attitude increases students' intention to plagiarise ($b = 0.07$, $p < 0.01$), thus supporting the H1. This result is consistent with several prior empirical studies (e.g. Curtis et al., 2018; Chudzicka-Czupała et al., 2016; Alleyne & Phillips, 2011) indicating that students who express positive attitude toward plagiarism are more prone to plagiarise.

Moreover, a positive effect of low subjective norms on students' intention to plagiarise is found, however the effect is not significant ($b = 0.01$, ns), rejecting the H2. Therefore, the evidence obtained is in contrast with those from previous scholars (Alleyne & Phillips, 2011; Imran & Nordin, 2013; Hsiao, 2015; Chudzicka-Czupała et al., 2016; Camara et al., 2017; Curtis et al., 2018). However, Beck & Ajzen (1991) acknowledged that in some samples and some populations most of the intention will be explained by one or two variables, as it is probable that relative importance of each of the components of the TPB model may be different from one population to another.

Table 2
OLS estimates of the effect on Intention to plagiarism

Variables	**Coefficients and significance**			
	Model 1 Direct Effect		**Model 2 Moderating Effect**	
Intercept	8.08***	(2.56)	8.38***	(2.55)
ATTITUDES	0.07***	(0.03)	0.07***	(0.03)
SUBJECTIVE NORMS	0.01	(0.01)	0.01	(0.01)
PERCEIVED BEHAVIORAL CONTROL	0.18***	(0.03)	0.19***	(0.03)
MORAL OBLIGATION	0.61***	(0.18)	0.65***	(0.18)
ACADEMIC LITERACY	0.03	(0.02)	0.03	(0.02)
COMPUTER LITERACY	0.07	(0.22)	0.02	(0.22)
TEXT MATCHING SOFTWARE	0.83**	(0.40)	0.83**	(0.40)
ATTITUDES *TEXT MATCHING SOFTWARE			0.11*	(0.06)
SUBJECTIVE NORMS *TEXT MATCHING SOFTWARE			−0.04*	(0.03)
PERCEIVED BEHAVIORAL CONTROL *TEXT MATCHING SOFTWARE			0.06	(0.07)
MORAL OBLIGATION *TEXT MATCHING SOFTWARE			−0.66*	(0.39)
ACADEMIC LITERACY *TEXT MATCHING SOFTWARE			−0.06	(0.05)
COMPUTER LITERACY *TEXT MATCHING SOFTWARE			−1.04***	(0.48)
GENDER	−0.88***	(0.38)	−0.85***	(0.38)
AGE	−0.17***	(0.07)	−0.19***	(0.07)
1ST YEAR UNDERGRADUATE	0.24	(0.52)	0.08	(0.52)
2ND YEAR UNDERGRADUATE	0.49	(0.51)	0.32	(0.51)
4TH YEAR UNDERGRADUATE	1.10**	(0.52)	1.15**	(0.53)
MASTER LEVEL	−1.48*	(0.83)	−1.54*	(0.83)
PhD LEVEL	−3.72***	(1.68)	−2.79*	(1.72)
CULMULATIVE GRADE POINT AVARAGE-A	1.03*	(0.57)	1.12*	(0.57)
CULMULATIVE GRADE POINT AVARAGE-C	−0.23	(0.46)	−0.27	(0.46)
CULMULATIVE GRADE POINT AVARAGE-D	0.65	(0.54)	0.62	(0.54)
CULMULATIVE GRADE POINT AVARAGE-E	0.40	(0.91)	0.78	(0.91)
REPEATED A YEAR	−0.17	(0.48)	−0.25	(0.48)
Observations	401		401	
R-squared	0.248		0.271	

(*), (**), (***) indicate parameter significance at the 10, 5 and 1 per cent level, respectively.
Standard error reported in the bracket.

Regarding the H3, we found that the students' intention to plagiarise increases with low perceived behavioural control ($b = 0.18$, $p < 0.01$) supporting the H3a while rejecting the H3b. This result also joins previous empirical literature (e.g. Camara et al. 2017; Chudzicka-Czupała et al., 2016; Alleyne & Phillips, 2011) that stresses that perceived behavioural control is decisive in determining students' intention to plagiarise. Hence, the findings are in contrast with those obtained by Harding et al. (2007) or Passow et al. (2006) that find no support that low perceived behavioural control predicts students' intention to plagiarise.

In addition, low moral obligation is positively and significantly related to the students' intention to plagiarise ($b = 0.61$, $p < 0.01$). Thus, Hypothesis 4 receives support. Therefore, consistent with previous scholarly work (Passow et al., 2006; Harding et al., 2007; Alleyne & Phillips, 2011; Imran & Nordin, 2013; Chudzicka-Czupała et al., 2016) low moral obligation increases students' tendency to plagiarise.

Contrary, low level of academic literacy is not significantly related to the students' intention to plagiarise ($b = 0.03$, ns). Thus, Hypothesis 5 did not receive support. This is in line with Eret & Oak's (2014) discussion arguing that even when students have knowledge about the academic writing rules, this does not diminish their tendencies to commit plagiarism as they do not necessarily put this knowledge into practice. Furthermore, the authors conclude that understanding of academic writing rules might not be sufficient to establish a strong academic integrity culture. Accordingly, Estow et al. (2011) stress the importance of the hands-on experience and repeated exposure to the topic of plagiarism that are necessary to decrease students' engagement in plagiarism.

Similar results are obtained for the computer literacy. More precisely, low level of computer literacy is not significantly related to the students' intention to plagiarise ($b = 0.07$, ns), rejecting the H6a while supporting the H6b. The finding corroborates with those from Uzun & Kilis (2020) and Trushell et al. (2012) who argue that students today do not need to be tech savvy in order to plagiarise as it can be only simple 'copy and paste' strategy, which requires only the basic computer skills.

Surprisingly, we obtained a positive effect of the students' awareness of software utilisation on their intention to plagiarize. Walker (2010) listed several reasons that could explain our finding: (1) lecturers did not explain well potential of the software in identifying plagiarism; (2) students are not dedicated to their studies, so they did not understand the utility of the software; (3) profile of the students; (4) students prefer to 'gamble' as they think if they caught, the university would not take serious action against them; (5) international students have difficulties associated to language and adapting to a new culture; (6) the easy the Internet access makes it 'hard' for students to resist to plagiarise. Further explanation about this finding could be traced in Batane's work (2010), revealing that even when students knew their papers will be checked through the software, 75% of the students indicated that they reduced the amount of material plagiarised as they believe that they could still get away with that type of academic dishonesty since it was at a lower scale. The author however stressed that the effectiveness of the text matching software could be contingent by other components of academic integrity. Important to underline, it could be also that the student population at the University of Montenegro only recently get familiarized with the text matching software, thus it might still need some additional time that the benefits of the software utilisation can be perceived.

Some results regarding the control variables may also be noticed. Actually, as expected, gender, age, higher level of education and repeating the academic year are inversely related to students' intention to plagiarise while being 3rd year undergraduate student and having high GPA (GPA=A) drives positively students' intention to plagiarise.

Table 1, Model 2, displays the results for the moderating effect. Regarding the H7a, we may observe that the awareness of the use of the text matching software (for checking students' papers) weakens the positive relationship between attitude toward plagiarism and intention to plagiarise in a sense, that this relationship is still positive however we obtained importantly lower level of significance ($b = 0.11$, $p = 0.10$). Therefore, we may support the H7a. The results hence suggest that even when students have favourable attitude towards plagiarism, their intention to engage in such behaviour could be importantly diminished by using the text matching software. Turning to the H7b, we may notice that when students are aware of the use of the text matching software, subjective norms will not drive students' intention to plagiarise ($b = -0.04$, $p = 0.109$). What more, the interaction between low subjective norms and text matching software becomes negative and slightly significant. Accordingly, we accept the H7b. Considering the H7c, we may notice that the awareness of the use of text matching software neutralises the positive effect between perceived behavioural control and students' intention to plagiarise in the sense that the effect of perceived behavioural control interacted with the awareness of software utilisation on intention to plagiarise becomes non-significant ($b = 0.06$, ns). Based on the obtained findings we accept the H7c. Furthermore, as it can be noticed, H7d is supported ($b = -0.66$, $p = 0.90$). More precisely, when students are aware of the use of the text matching software, it weakens the positive and significant link between moral obligations and students' intention to plagiarise in the sense that this relation becomes negative and weakly significant. Thus, even if the students consider that plagiarism is not against their ethical values, they are cognisant that the utilisation of the software increases the chances of them being caught, so they will try to avoid it. The result associated to the H7e induces that the interaction between perceived level of academic literacy and the awareness of the use of text matching software does not influence students' intention to plagiarise, however the sign now turns to be negative ($b = -0.06$, ns). Therefore, we can support the H7e. Finally, the interaction between computer literacy and awareness of the use of the text matching software becomes negative and significant what implies the acceptance of the H7f ($b = -1.04$, $p > 0.05$).

Thus, the introduction of our moderating variable – the awareness of the text matching software utilisation – is crucial in order to understand how the ETPB's components relate to students' intention to plagiarise, as this factor may shape their influence on students' intentions. In other words, our findings concerning the moderating effect induce that the relationship between the ETPB's components and intention to plagiarise is subject to the influence of the text matching software utilisation. Therefore, utilisation of the text matching software can deter the intention to plagiarise.

Overall, these findings partially lend support to the ETPB. Hence, the ETPB is efficient in predicting students' intention to plagiarise. However, as our theoretical model and empirical findings suggest, the awareness of the use of text matching software may weaken the positive effects of the ETPB's components. Therefore, ignoring the moderating effect could have misleading effect on the overall conclusion regarding the academic integrity issue.

Conclusion

The extended theory of planned behaviour has become an essential framework for examining students' intention to plagiarise (Cronan et al., 2018; Camara et al., 2017; Salehi & Ghasemzadeh, 2018; Stowe, 2017; Stone et al., 2010; Meng et al., 2014). However, additional components should be also considered when applying this theory (Imran & Nordin, 2013; Uzun & Kilis, 2020; Curtis et al., 2018; Stone et al. 2009; Chudzicka-Czupała et al., 2015). Our study used this extended theory of planned behaviour, including (besides attitudes, subjective norms and behaviour control) the moral obligation (Chudzicka-Czupała et al., 2016; Harding et al., 2007) and the two additional components – academic and computer literacy, aiming to interrogate if and to which extent these items influence students' intention to plagiarise. Moreover, for the first time, up to our knowledge, the ETPB model for studying academic dishonesty was expanded to include a moderating variable – awareness of the use of the text matching software. The role of the moderating variable is to challenge the relation between the ETPB's components and students' intention to plagiarise, namely to verify how the use of the text matching software might influence the impact of attitudes towards plagiarism, subjective norms, perceived behavioral control, moral obligation, academic literacy and computer literacy on students' intention to plagiarise.

We find that three components of our ETPB influence positively students' intentions to plagiarise i.e., favorable attitudes towards plagiarism, low perceived behavioral control and low moral obligation. Contrary, the evidences reveal that subjective norms, academic literacy and computer literacy are not significant determinants of students' intention to plagiarise. These results are mostly consistent with the previous findings, which confirmed that components of the ETPB model act as an efficient predictor of students' intention to plagiarise. The only major dissonance is related to the subjective norms, which in our study did not have a significant impact on students' intention to plagiarise. However, in their seminal work Beck & Ajzen (1991) warned that the relative importance of the subjective norms (as well as other components) is expected to vary in different populations or in relation to different behaviours. But the most important contribution of our study relates to the moderating extension of the ETPB, which reveals how the effect of the ETPB's components on intentions to plagiarise weakens when the students are aware their papers will be checked through the text matching software. Therefore, we may conclude that the text matching software should be used as a supplementary measure to ensure that student respect academic integrity principals (Batane, 2010).

Noteworthy, our findings show that even though the students were informed about software utilisation, it was not sufficient to discourage their intention to plagiarise completely, which implies that the HEIs should implement other strategies in order to eliminate the problem of plagiarism (Batane, 2010). In this vein, Willen (2004) posits that teachers should pay more attention to the way that they present writing to students by demonstrating them the process that includes invention, drafting, collaboration revising, and editing and not only focusing on the final outcome.

This paper makes three theoretical contributions. Firstly, the study further encompasses the extended theory of planned behavior by including two additional

components, namely the academic and computer literacy. Secondly, in comparison to the previous analyses, rather than investigating only the direct effects of the ETPB's components on students' intention to plagiarise, this study also focuses on the moderating effects, measured by students' awareness of the use of the text matching software, impacting the relations between ETPB's components and intention to plagiarise. Thirdly, most of the studies of academic dishonesty in general, and especially academic dishonesty in the framework of the ETPB, were conducted in the USA with only few (such as Chudzicka-Czupała et al., 2016; Hendy & Montargot, 2019) using the samples from European countries or even more samples from the developing countries in Europe. Thus our analysis provides additional insights bringing to the general discussion a European perspective and a specific environment of the developing country.

Policy Implications

Our study has important implications for the policy-makers and integrity officers at the HEIs. In fact, our results undoubtedly reveal that students' awareness of the existence and use of the text matching software acts as a strong impediment to the intention to plagiarase, weakening the positive effects of the relation between the ETPB's components and intention to plagiarise. The results clearly corroborate that even when students have favourable attitude towards plagiarism, consider the academic environment to be dishonest, find relatively easy to plagiarise and have low moral obligation, the introduction of the text matching software can significantly reduce their intention to plagiarise. Based on these findings, we recomend HEIs in the region to further increase use and visibility of the text matching software in order to discourage students from plagiarising. It is evident that the educational institutions might benefit from investing in plagiarism detection software as a part of their strategy of academic integrity. However, software should be used jointly with other activities aimed at strenghtening the academic culture, such as targeted educational interventions, honour codes and promotion of ethical norms. Teachers and managers in education should therefore create comprehensive strategies including, but not limited to, the use of the text matching software as a tool for preventing plagiarism and academic mis-behaviour.

Limitations

Several limitations of the study should also be acknowledged in order to suggest avenues for future research. First, the link between the ETPB's components and students' intention to plagiarise through the text matching software is only one way in which the ETPB's components may affect students' intentions. Therefore, it would be useful to introduce other potential moderators found relevant in previous literature (Bennett, 2010; Hoo Quah et al., 2012; Van Zyl & Thomas, 2015; Finn & Frone, 2004) such as religious orientation, code of honour, online academic integrity tutorials, the severity of punishment, etc. Second, even though this is the first study applying the ETPB in Montenegro, providing important contribution to the topic of academic integrity in developing countries, it would be interesting to examine whether our

results regarding the moderating effect apply to different countries. Third, the current work can be also improved by addressing some methodological limitations related to our questionnaire. Actually, when measuring academic and computer literacy we used student's subjective perception of their academic and computer skills. However, it has been proved that students often overestimate their actual skills and capacities (Kruger & Dunning, 1999), hence their subjective evaluation could produce some bias associated to our findings. Therefore, it would be safer to use the objective indicators. Fourth, research in the field would benefit from considering additional components that could be further integrated in the ETPB and might propose a more comprehensive model when examining students' intention to plagiarise.

Acknowledgements

This manuscript has been produced in the framework of the national project entitled "Strengthening Academic Integrity – Interdisciplinary Research-based Approach to Ethical Behaviour in Higher Education" which was financed by the Ministry of Science of Montenegro.

References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211.

Alleyne P., & Phillipos K. (2011). Exploring academic dishonestly among university in Barbadis: an extension to the theory of planned behavior. *Journal of Academic Ethics*, 9, 323–338.

Angell, L. R. (2006). The relationship of impulsiveness, personal efficacy, and academic motivation to college cheating. *College Student Journal*, 40(1), 118–131

Asare, M. (2015). Using the theory of planned behavior to determine the condom use behavior among college students. *American Journal of Health Studies,* 30 (1), 43–50.

Ashworth, P., Bannister, P., & Thorne, P. (1997). Guilty in whose eyes? University students' perceptions of cheating and plagiarism in academic work and assessment. *Studies in Higher Education,* 22(2), 187–204.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.

Barry, E. (2006). Can paraphrasing practice help students define plagiarism? *College Student Journal*, 40, 377–384.

Bailey, S. (2011). Academic writing: A handbook for international students (3nd ed.). London: Routledge

Batane, T. (2010). Turning to Turnitin to Fight Plagiarism among University Students. *Educational Technology & Society*, 13(2), 1–12.

Bennett, R. (2005). Factors associated with student plagiarism in post-1992 university. *Assessment& Evaluation in Higher Education*, 30 (2), 137–162.

Benett, R. (2017). Online academic integrity: an examination of MBA students' behavioral intent of engaging in plagiarism. Ph.D. Dissertation, University Phoenix.

Beck, L., & Ajzen, I. (1991). Predicting dishonest actions using the theory of planned behavior. *Journal of Research in Personality*, 25 (3), 285–301.

Belter, R., & du Pré, A. (2009). A Strategy to Reduce Plagiarism in an Undergraduate Course. *Teaching of Psychology*, 36, 257–261.

Bellack, J. P. (2004). Why plagiarism matters. *Journal of Nursing Education*, 43(12), 527–528.

Bilic-Zulle, L., Azman, J., Frkovic, F., & Petrovecki, M. (2008). Is there an Effective Approach to Detering Students from Plagiarizing? *Science and Engineering Ethics*, 14, 139–147.

Boehm, P., Justice, M., & Weeks, S. (2009). Promoting academic integrity in higher education. *The Community College Enterprise*, 15(1) 45–61.

Bradinova, M. (2006). Exploring students' and university teachers' perceptions of plagiarism. Ph.D. Dissertation, Indiana University of Pennsylvania.

Bradley, H. T. (2010). Student Plagiarism and the Use of a Plagiarism Detection Tool by Community College Faculty. Ph.D. Dissertation, Indiana State University.

Bradley, E. G. (2015). Using computer simulations and games to prevent student plagiarism. *Journal of Education and Technology Systems*, 44(2), 240–252.

Braumoeller, B., & Gaines, B. (2001). Actions do speak louder than words: Deterring plagiarism with the use of plagiarism-detection software. *Political Science & Politics*, 34, 835–839.

Brennan, T. (2015). The Effect of Turnitin.com on Non Traditional, Graduate Student Awareness, Behavior and Trust. Ph.D. Dissertation, Trident University, Cypress, USA.

Broeckelman-Post, M. A. (2009) Building a Culture of Academic Integrity: The Role of Communication in Creating and Changing Understandings and Enactments of Academic Integrity. Ph.D. Dissertation, the Scripps College of Communication of Ohio University.

Burke, M. (2004). Deterring plagiarism: a new role for librarians. *Library Philosophy and Practice*, 6 (2), 1–9.

Calvo, S., Celini, L., Morales, A., & Martines, J. M. G. (2020). Academic Literacy and Student Diversity: Evaluating a Curriculum-Integrated Inclusive Practice Intervention in the United Kingdom. *Sustainability*, 12 (3), 1155.

Camara, S. K., Eng-Ziskin, S., Wimberley, L., Dabbour, K. S., & Lee, C. M. (2017). Predicting Students' Intention to Plagiarize: an Ethical Theoretical Framework. *Journal of Academic Ethics*, 15, 43–58.

Campbell, C. R., Swift, C. O., & Denton, L. (2000). Cheating Goes Hi-Tech: Online Research Paper Mills. *Journal of Management Education*, 24, 726–40.

Carnero, A. M., Percy M.-T., Konda, K. A., Mezones-Holguin, E., Bernabe-Ortiz, A., Alvarado, F., & Canelo-Aybar, C. (2017). Plagiarism, Cheating and Research Integrity: Case Studies from a Masters Program in Peru. *Science and Engineering Ethics*, 23 (4), 1183–97.

Carroll, J. (2009). Plagiarism as a Threat to Learning: An Educational Response. In G, Joughin, (Ed.). *Assessment, Learning and Judgement in Higher Education: A Critical Review* (pp. 115–131). Berlin: Springer.

Carpenter, D. D., Harding, T. S., Finelli, C. J., & Passow, H. J. (2004). Does academic dishonesty relate to unethical behavior in professional practice? An exploratory study. *Science and Engineering Ethics,* 10, 311–324.

Chudzicka-Czupała, A., Grabowski, D., Mello, A. L., Kuntz, J., Zaharia, D. V., Hapon, N., & Boru, D. (2016). Application of the theory of planned behavior in academic cheating research – cross-cultural comparison. *Ethics & Behavior*, 26, 638–659.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*. Mahwah, NJ: Erlbaum.

Compton, J., & Pfau, M. (2008). Inoculating against pro-plagiarism justifications: Rational and affective strategies. *Journal of Applied Communication Research*, 36(1), 98–119.

Cortes-Vera, J. A. (2018). Mexican strategy to promote greater ethics in academic communications through nation-wide access to Turnitin. *Information Development*, 34(4), 422–427.

Curtis, G. J., Cowcher, E., Greene, B. R., Rundle, K., Paull, M., & Davis, M. C. (2018). Self-control, injunctive norms, and descriptive norms predict engagement in plagiarism in a theory of planned behavior model. *Journal of Academic Ethics*, 16(3), 225–239.

Curtis, G. J., Gouldthorp, B., Thomas, E. F., O'Brien, G. M., & Correia, H. M. (2013). Online academic-integrity mastery training may improve students' awareness of, and attitudes toward, plagiarism. *Psychology Learning & Teaching*, 12(3), 282–289.

Davis, S. F. (1993). Cheating in college is for a career: Academic dishonesty in the 1990s. Paper presented at the The 39th Annual Meeting of the Southeastern Psychological Association, Atlanta, GA.

Davis, M. (2007). The role of Turnitin in the formative process of academic writing: A tool for learning and unlearning? *Brookes e-Journal of Learning and Teaching*, *2*(1) Available at: http://bejlt.brookes.ac.uk/article/the_role_of_turnitin_within_the_formative_process_of_academic_writing/

Davis, S., Becker, A., Grover, C. A., & McGregor, L. (1992). Academic Dishonesty: Prevalence, Determinants, Techniques, and Punishments. *Teaching of Psychology*, 19 (1), 16–20.

Davis, S. F., & Ludvigson, H. W. (1995). Additional data on academic dishonesty and a proposal for remediation. *Teaching of Psychology*, 22, 119–122.

den Ouden, H., & van Wijk, C. (2011). Plagiarism: Punish or prevent? Some experiences with academic copycatting in the Netherlands. *Business Communication Quarterly*, 74(2), 196–200.

Devlin, M., & Gray, K. (2007). In their own words: a qualitative study of the reasons Australian university students plagiarize. *Higher Education Research & Development*, 26 (2), 181–198.

Diekhoff, G. M., LaBeff, E. E., Shinohara, K., & Yasukawa, H. (1999). College cheating in Japan and the United States. *Research in Higher Education,* 40, 343–353.

Eisenberg, J. (2004). To cheat or not to cheat: effects of moral perspective and situational variables on students' attitudes. *Journal of Moral Education*, 33(2), 163–178.

Ellery, K. (2008). An investigation into electronic-source plagiarism in a first-year essay assignment. *Assessment and Evaluation in Higher Education*, 33(6), 607–617.

Engler, J. N., Landau, J. D., & Epstein, M. (2008). Keeping up with the Joneses: Students' perceptions of academically dishonest behavior. *Teaching of Psychology*, 35, 99–102.

Ercegovac, Z., & Richardson, J. V. (2004). Academic Dishonesty, Plagiarism Included, in the Digital Age: A Literature Review. *College & Research Libraries*, 65 (4), 301–318.

Eret, E., & Ok, A. (2014). Internet plagiarism in higher education: tendencies, triggering factors and reasons among teacher candidates. *Assessment & Evaluation in Higher Education*, 39(8), 1002–1016.

Ferguson, L. M. (2013). Student Self-Reported Academically Dishonest Behavior in Two-Year Colleges in the State of Ohio. Ph.D. Dissertation, University of Toledo, USA.

Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behaviour: An Introduction to theory and research.* Reading, MA: Addison-Wesley.

Genereux, R. L., & McLeod, B. A. (1995). Circumstances surrounding cheating: A questionnaire study of college students. *Research in Higher Education*, 36(6), 687–704.

Grebing, R. E. (2015). The effect of online academic tutorial on student perception of cheating. Ph.D. Dissertation, University of Missouri-Columbia, USA.

Groark, M., Oblinger, D. G., & Choa, M. (2001). Term paper mills, anti-plagiarism tools, and academic integrity. *Educause Review*, September/October, 40–48.

Harding, T. S., Mayhew, M. J., Finelli, C. J., & Carpenter, D. D. (2007). The Theory of Planned Behavior as a Model of Academic Dishonesty in Engineering and Humanities Undergraduates. *Ethics and Behavior,* 17(3), 255–279.

Hodges, A., Bickham, T., Schmidt, E., & Seawright, L. (2017). Challenging the profiles of a plagiarist: a study of abstracts submitted to an international interdisciplinary conference. *International Journal for Educational Integrity*, 13(7), 1–15.

Hoo Quah, C., Wai, J., Lee, C., & Stewart, N. (2012). Attitudes of Business Students' Toward Plagiarism. *Journal of Academic Ethics*, 10 (3), 185–199.

Howard, R. M., & Davies, L. J. (2009). Plagiarism in the Internet age. *Educational Leadership*, 66(6), 64–67

Hendy, N., & Montargo, M. (2019). Understanding Academic dishonesty among business school students in France using the theory of planned behavior. *The International Journal of Management Education*, 17, 85–93.

Hsiao, CH. (2015). Impact of ethical and affective variables on cheating: Comparison of undergraduate students with and without jobs. *Higher Education*, 69, 55–77.

Husain, F., Ghayth K. Al Shaibani, S., & Madfoodh, O. (2017). Perceptions of and Attitudes toward Plagiarism and Factors Contributing to Plagiarism: A Review of Studies. *Journal of Academic Ethics*, 15 (2), 167–195.

Imran, A. M., & Nordin, M. S. (2013). Predicting the Underlying Factors of Academic Dishonesty among Undergraduates in Public Universities: A Path Analysis Approach. *Journal of Academic Ethics*, 11(2), 103–120.

Jones, D. L. R. (2011) Academic dishonesty: Are more students cheating? *Business Communication Quarterly*, 74(2), 141–150

Lathrop, A., & K. Foss. (2000). *Student cheating and plagiarism in the Internet era: A wake-up call*. Englewood, CA: Libraries Unlimited.

Leask, B. (2006). Plagiarism, cultural diversity and metaphor – implications for academic staff development. *Assessment & Evaluation in Higher Education*, 32 (2), 183–199.

Ledwith, A., & Rísquez, A. (2008). Using anti-plagiarism software to promote academic honesty in the context of peer reviewed assignments. *Studies in Higher* Education, 33(4), 371–384.

Macdonald, R., & Carroll, J. (2006). Plagiarism – a complex issue requiring a holistic institutional approach. *Assessment & Evaluation in Higher Education,* 31, 233–245.

Macfarlane, B., Zhang, J., & Pun, A. (2014). Academic Integrity: A Review of the Literature. *Studies in Higher Education*, 39(2), 339–358.

Martin, D. (2005). Plagiarism and technology: A tool for coping with plagiarism. *Journal of Education for Business*, 80, 149–152.

McCabe, D. L. (2005). It takes a village: Academic dishonesty & educational opportunity. *Liberal Education*, Summer/Fall, 26–31.

McCabe, D. L., & Treviño, L. K. (1993). Academic Dishonesty: Honor Codes and Other Contextual Influences. *The Journal of Higher Education,* 64 (5), 522–538

McCabe, D. L., & Treviño L. K. (1997). Individual and Contextual Influences on Academic Dishonesty: A Multicampus Investigation. *Research in Higher Education,* 38 (3), 379–396.

McCabe, D. L., Treviño, L. K., & Butterfield, K. D. (2002). Honor codes and other contextual influences on academic integrity: A replication and extension of modified honor code settings. *Research in Higher Education, 43*, 357–378.

McCabe, D. L., & Treviño, L. K. (1996). What We Know About Cheating in College. *Change*, 28, 28–33.

McCabe, D. L., Treviño, L., K., & Butterfield, K. D. (2001). Cheating in academic institutions: A decade of research. *Ethics & Behavior*, 11 (3), 219–233.

Melgoza, P., & Smith, J. (2008). Revitalizing an Existing Honor Code Program. *Innovative Higher Education*, 32(4), 209–210.

Newstead, S., Franklyn-Stokes, A., & Armstead, P. (1996). Individual Differences in Student Cheating. *Journal of Educational Psychology*, 88, 229–241.

Nonis, S., & Swift, C. O. (2001). An examination of the relationship between academic dishonesty and workplace dishonesty: A multicampus investigation. *Journal of Education for Business*, November/December, 60–76.

Park, H., & Blenkinsopp, J. (2009). Whistleblowing as Planned Behavior – A survey of South Korean Police Officers. *Journal of Business Ethics,* 85, 545–556.

Park, C. (2003). In other (people's) words: Plagiarism by university students – literature and lessons. *Assessment & Evaluation in Higher Education*, 28, 471–488.

Passow, H. J., Mayhew, M. J., Finelli, C. J., Harding, T. S., & Carpenter, D. D. (2006). Factors influencing engineering students' decisions to cheat by type of assessment. *Research in Higher Education,* 47, 643–684.

Pecorari, D. (2008). *Academic writing and plagiarism: a linguistic analysis*. London, New York: Continuum.

Perkins, H. W. (2003). *The social norms approach to preventing school and college age substance abuse: A handbook for educators, counselors, and clinicians*. San Francisco, CA: Jossey-Bass.

Ramazan, M., Asif, M., & Siddique, N. (2012). Awareness about plagiarism amongst university students in Pakistan. *Higher Education*, 64, 73–84.

Reid, J. (2005). Academic literacy. Available `http://www.une.edu.au/tlc/alobefore1.htm.`

Rogerson, A. M., & McCarthy, G. (2017). Using internet based paraphrasing tools: Original work, patch writing or facilitated plagiarism? *International Journal for Educational Integrity*, 13(2), 1–15.

Roig, M., & Caso, M. (2005). Lying and Cheating: Fraudulent Excuse Making, Cheating, and Plagiarism. *The Journal of Psychology Interdisciplinary and Applied*, 139 (6), 485–494.

Salehi L., & Ghasemzadeh, M. (2018). Application of Theory of Planned Behavior in Prediction of Factors Affecting the Intention of Plagiarism. *Journal of Medical Education Development*, 11 (31), 52–62.

Selwyn, N. (2008). Not necessarily a bad thing...: A study of online plagiarism amongst undergraduate students. *Assessment & Evaluation in Higher Education*, 35 (5), 465–479.

Scouller, K., Bonanno, H., & Smith, L. (2008). Student experience and tertiary expectations: factors predicting academic literacy amongst first-year pharmacy students. *Studies in Higher Education*, 33(2), 167–178.

Selemani, A., Chawinga W. D., Dube, G. (2018). Why do postgraduate students commit plagiarism? An empirical study. *International Journal for Educational Integrity*, 14, 1–15.

Semerci, Ç. (2006). The effect of problem-based learning on the critical thinking of students in the Intellectual and Ethical Development Unit. *Social Behavior and Personality*, 34, 41–50.

Simon, C. A., Carr, J. R., McCullough, S. M., Morgan, S. J., Oleson, T., & Ressel, M. G. (2004). Student perceptions, institutional commitments and academic dishonesty: who reports in academic dishonesty cases? *Assessment and Evaluation in Higher Education*, 29, 75–90.

Smyth, M. L., & Davis, J. R. (2004). Perceptions of dishonesty among two-year college students: academic versus business situations. *Journal of Business Ethics*, 51, 63–73.

Stone, T. H., Kisamore, J. L., & Jawahar, I. M. (2007). *Predicting Academic Dishonesty*. Paper presented at the 2007 Management Education Division of the Administrative Sciences Association of Canada, Ottawa, Ontario.

Stone, T. H., Jawahar, I. M., & Kisamore, J. L. (2009). Using the theory of planned behavior and cheating justifications to predict academic misconduct. *Career Development International,* 14, 221–241.

Stout, D. (2013). Teaching students about plagiarism: What it looks like and how it is measured. Ph.D. Dissertation, Western Michigan University.

Stowe, S. (2017). Will They Or Not? Online Faculty Intentions To Report Student Plagiarism. *Academy of Educational Leadership Journal*, 21(1).

Sutherland-Smith, W., & Carr, R. (2005). Turnitin.com: Teacher's perspectives of antiplagiarism software in raising issues of educational integrity. *Journal of University Teaching and Learning Practice*, 2(3b), 94–101.

Szabo, A., & Underwood, J. (2004). Cyber cheats: Is information and communication technology fueling academic dishonesty? *Active Learning in Higher Education*, 5(2), 180–200.

Tindall, I., & Curtis, G. (2020). Negative Emotionality Predicts Attitudes Toward Plagiarism. *Journal of Academic Ethics*, 18(1), 89–102.

Townley, C., & Parsell, M. (2004). Technology and academic virtue: Student plagiarism through the looking glass. *Ethics and Information Technology*, 6(4), 271–277.

Trushell, J., Byrne, K., & Simpson, R. (2012). Cheating behaviours, the Internet and Education undergraduate students. *Journal of Computer Assisted Learning*, 28(2), 136–145.

Uzuna, A. M., & Kilis, S. (2020). Investigating antecedents of plagiarism using extended theory of planned behavior. *Computers & Education*, 144, 103700.

Van Zyl, A., & Thomas, A. (2015). Academic honesty: Perceptions of millennial university students and the role of moderating variables. *Koers*, 80(1), 1–15.

Verschoor, C. (2003). 10 Steps to an effective ethics and compliance program. *Strategic Finance*, 85(6), 2–4.

Walker, J. (2010). Measuring plagiarism: Researching what students do, not what they say they do. *Studies in Higher Education*, 35(1), 41–59.

Wang, Y. (2008). University student online plagiarism. *International Journal on E-Learning*, 7(4), 743–757.

Weinstein, J. W., & Dobkin, C. E. (2002). Plagiarism in U.S. Higher Education: Estimating Internet Plagiarism Rates and Testing a Means of Deterrence, Available: http://webdisk.berkeley.edu/Weinstein/Weinstein-JobMarketPaper.PDF.

Whitley, B. E., Jr. (1998). Factors associated with cheating among college students: A review. *Research in Higher Education*, 39, 235–274.

Wilcox, B. L. (2005). Plagiarism in the information age. *English Leadership Quarterly*, 28(1), 1–2.

Willen, M. (2004). Reflections on the Cultural Climate of Plagiarism. *Liberal Education*, 90(4), 55–58.

Yeung, A. H. W., Chu, C. B. L., Chu, S. K., & Fung, C. K. W. (2018). Exploring junior secondary students' plagiarism behavior. *Journal of Librarianship and Information Science*, 50(4), 361–373.

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EQUITY IN ADMISSION: COMPARATIVE STUDY OF SECONDARY DATA IN HIGH SCHOOL CURRICULUM VALUATION

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Abstract: A student's journey from high school to university begins with the admission department evaluating their credentials. Worldwide school curriculum varies in terms of syllabus, structure, assessment methodology and learning outcomes. This variation in pre-university curricula imposes the challenge of equally benchmarking them in providing university admission. The challenge extends beyond the initial admission process due to existence of improper valuation of quality of students, which co-relates to academic performance and misconducts. So how do universities go about providing admission to students from varied curricula? This study tracks the admission requirements of five local accredited universities in the United Arab Emirates to demonstrate the importance of equity in admission.

Key words: Admission Criteria, Equity, Benchmarked Criteria, Valuation, High School, Curriculum

1 Introduction

Education is an essential integrated part of society which provides knowledge, morality and integrity of an individual. The pathway from high school to university is a crucial journey that differs nationwide in terms of different pre-university curriculum adopted by different countries across the globe. Each curriculum entails distinctive course content, structure and assessment criteria defining an individual's credentials through certification. Gudo and Olel (2011) postulates in their study the admission equivalency associated challenges encountered due to globalization and cross-border mobility of students across the globe. This provides the platform for evaluating with the use of secondary data in understanding how universities across the United Arab Emirates (UAE) equalize high school qualification for admitting students. Aidoo-Buameh and Ayagre (2013) suggested in their study that there exists lack of consideration of quality of students taking admission in university. This absence attributes to evaluation of student performance at undergraduate level which sets the platform of this research. Additionally, the correlation of admission criteria to academic performance leading to practice of academic misconduct is an objective of this research.

A comparative study about university students engaging in academic misconduct in the United States of America (USA) and the UAE by Williams et. al. (2014) reported that 70% and 73%, respectively, of business faculty students have engaged in some academic misconduct activities. Even though the study considered business students only; the figure 73% evokes the importance of considering proper valuation and set standard criteria to be identified for recruiting well-informed students about academic integrity along with outstanding academic performance to university programs. Furthermore, Tabsh et al. (2015) stated in his study regarding responsibility of universities

DOI: https://doi.org/10.11118/978-80-7509-772-9-0155

to ensure academic integrity along with student success in academic performance. Along with that emphasizing how academic dishonesty specifically in undergraduate programs has become a significant issue (Tabsh et al., 2015). In their exploratory study, (Harding et al., 2004) demonstrated similarities in the decision-making process associated to participation in professional dishonesty due to prior involvement in academic misconduct at college level. Academic dishonesty results in substantial consequences for society in general. The "Theory of Planned Behavior" elaborates the correlation among future behaviors to prior behaviors. Similarly, several studies highlighted engagement in academic dishonesty as a prior deviant behavior which is demonstrated in future deviant behaviors in terms of tax evasion, dangerous driving, alcohol abuse, embezzlement, etc. causing significant distress in society. Therefore, policy development to ensure academic integrity is essential to eliminate such negative notions in professional level and in society. To begin with at university level; it is the responsibility of the university to support all students in meeting the academic integrity. Universities incorporating multi-cultural and students from diverse high school background are required to advocate a holistic approach ensuring fairness, equal opportunity and understanding of the appropriate conventions (Atkinson et al., 2016).

As such, a student's journey to university starts from admission; thus, it is essential for equity to be present in admission process ensuring equitable calibre students are enrolled who demonstrates ethical and outstanding success in their undergraduate programs. For this reason, it is essential to understand how universities equalize different curricula. Therefore, this paper is one such attempt at conducting a comparative study on a small group of universities in order to understand how each university perceives equity among different curricula.

Literature Review & Background Study

Importance of higher education:

Knowledge and higher education are harmoniously co-related in local, national and global level. The emerging of higher education for the worldwide knowledge economy incorporated in many government policies, illustrates the universal importance of higher education. Besides the primary role of higher education towards economic development along with catering opportunities to individuals, it now extends to include promotion of trading, cultural diversity and political democracy. Higher education is a key driver of globalization. A strong co-relation has been illustrated between a country's global competitive performances with enrolment ratio of country's higher education. In his study, Marginson (2010) posited that the next great challenge to humanity is the construction of world society. To construct the world society, higher education and the exchange process of worldwide knowledge play a vital role.

Perspective on higher education:

In today's world, the purpose and value of a degree of higher education is debatable in comparison to 60 years back when it was associated to development of knowledge and skills training as illustrated by Knight (2020).

Knight (2020) elaborates on her study about continuous reinventions associated in understanding the meaning of higher education to society and vice-versa. As such an in depth, analysis of historical trend of value of a higher education degree is established. This analysis helps us to understand different perspective on higher education. For instance, through the lens of liberal-humanist perspective, education viewed as an entitlement catering to personal empowerment and individual fulfilment. Furthermore, a preparation for employment is education; an idea that has been extensively emphasized originates from a constricted instrumental-perspective (Knight, 2020).

Elements of traditional higher education is illustrated through society's perspective on higher education. Introducing a class-laden concept in terms of associating higher education to formation of "well-rounded citizens". This concept is further illustrated when undergraduate degrees are shown as pathway to white-collar roles. Most importantly, to enter knowledge-based occupations, an individual's minimum initial education is the successful completion of undergraduate degree (Knight, 2020). The above elaborative perspectives on higher education sheds the light towards importance of higher education to economy and the reason for equity to be present in curriculum valuation to enter higher education to ensure that the students are well-versed in understanding of applicable norms and standards suggested in academic studies in a university.

Accessibility & inclusivity of higher education:

UNESCO (2017) addresses admission entry requirements as a fundamental tool for establishing equity in higher education. Essentially, the importance of equity elaborated in terms of incorporating intermediary pathways between secondary school and higher education providing higher education access to everyone. In this process, UNESCO (2017) also discussed the engineering of admission requirements necessary for achieving equity objectives. This further emphasizes the importance of equitable measures to be present in admission criteria.

Accessibility and inclusivity of higher education, defined by the new fundamental elements set by Organization for Economic Co-operation and Development (OECD) are equality of right, equality of opportunity and equity. OECD defines a higher education is equitable based on an individual's innate ability and study effort as the only basis of evaluation to access, participate and obtain outcome from that higher education. This policy formed to disregard 19th century established norms when education was only accessible to an individual based on inherited elements: social class and gender. Thus, to avoid discrimination and establish equality of right Government Legislations steps in to govern policies in higher education (UNESCO, 2017). Similarly, in the United Arab Emirates, the Ministry of Education – Higher Education Affairs along with Commission of Academic Accreditation (CAA) governs the higher education policies.

Furthermore, in coordination with legislative measures of ensuring equity in higher education, benchmarking plays a key role. Benchmarking, a process of identifying best practices among organizations; now elaborated as a structural and strategic organization approach to compare, identify opportunities and improve. During the 1900s,

higher education adopted benchmarking to inculcate external evaluation structure, develop communication network among institutions and to bring about improvements. Benchmarking is defined as a conceptual collection of techniques and approaches similar to most practices. Internal benchmarking (one of the types) is suitable for operational functions within an organization. It incorporates many processes and one such is admissions related to hiring and assessment of student learning. This internal benchmarking provides a starting point to external benchmarking where comparison to similar organization takes place. Hence, in this research Table 1 reflects the benchmarking adopted in the context of setting admission criteria among universities in the United Arab Emirates. However, regardless of this benchmarking methodology, are the universities really comparing multiple curricula variation for admission criteria? Gary & Sharron (2010) concludes their study stating the opportunity available to higher education for innovating their benchmarking. Hence, their conclusion portrays the necessity to bring about equitable and fair change to admission criteria.

Importance of academic integrity in higher education:

Higher education is addressed as a platform fundamental for lifelong learning. Traditionally, instillation of relatively advanced nature of intellectual activity has been through higher education (Reza Khan, 2014). Thus, her study accentuates the importance of academic integrity in higher education. Creation of responsible citizenship through academic integrity can help benefit greater society. Hence, developing academic integrity among students in higher education is crucial. As they eventually contribute in economic development ensuring greater society through knowledge, skill, research, intellectuality and ability. In academia, the code of conduct comprising moral and ethics is academic integrity (Reza Khan, 2014). Respect, responsibility, honesty, trust, fairness and courage are defined as fundamental values of academic integrity (ICAI, 2020). These values emphasize the necessity of establishing rigid and thorough academic integrity in higher education to eliminate any form of misconduct and produce high quality responsible citizenship. Thus, portraying the importance of academic integrity in higher education (Reza Khan, 2014).

Importance of Admission Criteria

Does the university have to meet the expectations of the students. . .or is it the idea that the students grow to fit the expectations the university has of them? (Evans 1999, p. 10) (Lee, 2000, p. 12).

The above question, posited by Lee (2000) in her study about the correlation of higher education and employment portrays the norm of establishment and expectation of higher education to students and vice versa. However, Lee's (2000) study indicates towards development of critical and empowered learners is associated with teaching methodology reformation. What about the relationship between admission criteria catering to empowered learners as it is the very first step to university? The implications of admission criteria to students learning experience, as bringing multi-curricula students together under one umbrella is often unaddressed.

Furthermore, the association of higher education to globalization results in extensive student mobility among nations. International students from a foreign nation also pursue a foreign national examination syllabus rather than the widely studied curricula mentioned in this research. Bista (2011) in his study states that academic misconduct is prevalent among international students in comparison to students who studied curriculum in English. Academic misconduct associated with previous learning attitude in school is an important reason. A comparison of Western education norm of understanding and application of concepts vs. non-Western education norms of memorization and rote learning has been mentioned to elaborate the reason that hinders smooth academic performance of international students in higher education. Since international students are accustomed to their cultural practices and norms, it is very difficult for them to adopt academic methods and techniques in higher education. Additionally, ineffective communication in terms of language barrier obstructing understanding of academic integrity associated guidelines such as importance of paraphrasing, citation, referencing contributes to academic misconduct by international students (Bista, 2011).

To address Bista's (2011) study on the barriers encountered by international student and their engagement of academic misconduct; Lee's (2000) question about university meeting expectation of student comes in the picture. Thus, highlighting the role admission criteria plays in this context and the important to establish proper valuation of admission criteria before admitting students from various curricula.

To this effect, the research objective of this study is to focus on the key role, admission criteria plays towards ensuring quality, integration, equity and success to prevail in higher education. Higher education is imperative in terms of providing opportunity and success for not only an individual but also world economy. Additionally, the contribution of higher education in building world society through exchange of cross-border knowledge; it is crucial for higher educational institutions to form equitable measures in admission criteria. This ensures that students of equal calibre with adequate knowledge has been converged supporting development of knowledge economy. Furthermore, the valuation of higher education in terms of creating individual empowerment and intellectuality development towards outstanding citizenship stresses the significant presence of equitable measures in all aspects of higher education. Nevertheless, this study further aims to elaborate the role of admission criteria in eliminating academic misconduct in higher education. Hence, ensuring professional, qualified and ethical citizens for greater good of society and global economic development.

Methodology

Admission criteria used for qualitative analysis:

Accessing secondary data from open-source mainly university websites, data from 5 universities was obtained. Local universities across the Emirates have been chosen which are accredited by Ministry of Education – Higher Education Affairs of the UAE. The admission criteria to undergraduate programs have been extracted and those data have been coded for qualitative analysis (table 1). Owen (2014) stipulates in his

study about the use of qualitative analysis for research. Incorporating in his study interpretivism, a theoretical perspective in analyzing setting of the social world through derived interpretation of cultural and historical contexts. Max Weber (1948) emphasis the importance of interpretivism associated with study of human science. Owen's (2014) study focuses on understanding policy of a particular institution incorporating interpretivism. Similarly, for our research, admission criteria of different universities are analyzed to understand student integration and identify problem associated with inequity. Additionally, in our study, the concept of interpretivism plays a role as we analyze different school curriculum studied all around the world, which portrays interpretation of cultural context.

Furthermore, social constructivism has been utilized to qualitatively analyze our research of equity in admission. As Owen (2014) postulates in his study that constructivist paradigm is an important approach adopted by majority of researcher conducting qualitative research. Constructivism elaborates how human perspectives are used to understand the world. Owen (2014) adopted social constructive approach to understand the reality context and rules associated with the administrative function of his study. Likewise, in our research, data from secondary source have been extracted to analyze the actual context in reality associated with equity being present or absent in admission criteria. Through the use of social constructive approach, it can be seen in (Table 1) secondary data that the focused universities for this study incorporates similar admission criteria for each curriculum. This valuation of similar admission criteria helps us to understand equity in admission.

Additionally, document analysis is a vital component for any qualitative research (Owen, 2014). The process of systematically studying and assessing documents which exists either in printed or electronic form is known as document analysis. It creates platform for scrutinizing and interpreting elicit meaning of data similar to different analytical methods used in qualitative research. Document analysis provides in-depth understanding which cater towards development of experiential knowledge. In qualitative research, document analysis is used as an independent method and some research exclusively relies on it (Bowen, 2009). For our research about equity in admission, document analysis of different university's admission criteria and the importance of equity has been incorporated to understand and identify gap in system causing distress among student community in society. The reliability of document analysis for this research is further illustrated through the use of "phenomenological reflection" technique which helps to produce important incidental themes such as absence of equity in admission across universities. Additionally, besides providing background knowledge, research scope and data supplement; documents also enable to track any variation or progress of an event used in the qualitative research (Bowen, 2009). "A university (any university) is in its documents rather than its buildings" (Owen, 2014, p. 10). This quote emphasizes the importance of formal policies of universities. In addition, documents are regarded as collective social products produced in social settings, a thought from Maw Weber's work Economy and Society (Owen, 2014).

Theoretical research of three curriculums:

Additionally, a theoretical research of curriculum structure has been reviewed to juxtapose the following three curriculums: UK curriculum [Ordinary (O), Advance Subsidiary (AS) and Advanced (A) Level], Indian Curriculum [Central Board of Secondary Education (CBSE Grade – 12)] and Worldwide International Baccalaureate Diploma (IB).

The research methodology revolves around understanding the above-mentioned curriculums in evaluating the basis of set admission criteria for each curriculum. UK curriculum comprising of three different levels pursued from Grade – 10 to 13 in high school enables students to choose preferred number of subjects of their choice in each level. Usually, students opt to pursue a greater number of subjects in O Level compared to AS and A Level. A grading scheme of (A* to G) is followed in UK curriculum (Department for Education, 2020). Comparatively, student's graduation from school with Indian Curriculum (CBSE) usually pursues minimum of 5 subjects with a percentile grading scheme for each subject out of 100 (CBSE Research & Development Unit, 2012). Furthermore, briefly IB Diploma program incorporates 6 subject groups equally divided into higher and standard level categories along with core components: theory of knowledge (TOK), extended essay, creativity, action and service (CAS). A point system grading scheme is implemented in IB along with multiple requirements for awarding of Diploma. The highest point awarded is 45 in IB (International Baccalaureate Organization,2020).

Results and Discussion

Importance of standardization of pre-university qualification

Achieve (2007), a non-profit organization based in United States of America evoked the necessity of standardization of pre-university qualification to be modified and aligned with university academic requirements. The organization holds seminars and summits bringing multiple stakeholders (corporate CEOs, school and university leaders, governors etc.) under one umbrella representing the necessity of educational level alignment. Achieve (2007) evaluated the components of university admission test and standard placement test where the prior portrayed more effectiveness in student appraisal for admission generally. However, both the form of tests lacked elements of Achieve's criteria. This initiative of Achieve (2007) portrays the importance of proper benchmarked scrutinization of admission process and how the juxtaposition is established among different curriculums as stipulated in Table 1 (below).

In the context of the UAE, like Achieve (2007), Commission for Academic Accreditation and the Ministry of Education monitors the integrity, standard, assessment, certification and qualifications provided by private and public accredited universities. As such the entry requirements for admission to the both type of universities is set and monitored by the above-mentioned bodies (Godwin, 2006). However, the in-depth analysis of how the entry requirements are set remains undefined which further contributes towards poor academic performance and engagement in academic misconduct by students coming from multi-curriculum pre-university backgrounds.

The Ministry of Education and Commission of Academic Accreditation has been unsuccessful in monitoring and assuring quality of education provided by private high schools in the UAE posited in the research by Godwin (2006). This furthermore demonstrates the inequality present in student's pre-university knowledge and as such the question arises on the process of equalizing different curricula.

Comparative analysis of admission criteria

Comparative analysis of five local Ministry accredited universities in the UAE stipulated in Table 1 (below) show that the entry requirements for undergraduate university program for each curriculum is based on distinctive grades. Across the universities, the entry requirements for UK curricula remained consistent as opposed to CBSE and IB curriculum. However, IB Diploma of 24 points remained consistent among 4 out of 5 universities. In contrast to UK and IB curriculum, CBSE (Grade-12) portrayed fluctuations in grade requirement for admission to different universities. The range of grade requirements varied from 50% to 70%.

Table 1

Comparative data of admission requirements across universities based in the United Arab Emirates.

Serial no.	Emirates	University	UK Curriculum [O Level, AS Level & A Level]	Indian Curriculum [CBSE Grade – 12] overall score	IB Diploma
1	Dubai	A	Combination of O Level: 5 subjects As or A Level: 2 subjects with a minimum of C grade for each subject.	70%	24 points
2	Dubai	B	Minimum 7 subjects with grade: 3 B's and 4 C's from – (O) Levels, AS Levels and/or A Levels.	55%	26 points
3	Abu Dhabi	C	Five (5) subjects in the O level with minimum grade E or above in each subject. Two (2) subjects in Advance Subsidiary Level with min. D or above in each subject. One (1) subject in the Advanced Level with min. D or above.	50%	24 points
4	Sharjah	D	The highest 7 grades obtained will be considered as follows: A minimum grade of C in 5 O-Level subjects, and minimum grade of D in 2 AS-Level subjects or A minimum grade of C in 6 O-Level subjects and a minimum grade of E in one A-Level subject.	70%	24 points
5	Fujairah	E	(7) seven subjects at O' level with a minimum grade of C in each subject. If a subject is taken at the AS Level or A Level the required minimum score is reduced to D and E	55%	24 points

Source: official websites of five universities, which are open sources of information to public.

However, the question arises as to how this comparison has been established. Theoretical research analysis of curriculum content, structure, examination and grading of each curriculum portrayed distinction and individuality across them. Therefore, this further stimulates the condition that there is inequity in admission portraying the absence of academic integrity value integrated in admission process across universities.

An empirical study regarding the importance of high school grades over placement tests such as SAT towards determining college graduation, GPA, etc. depicted in the research of (Gala et al., 2019) indicates the importance of equalizing different curricula for the basis of university admission.

There exists insufficient research and thought towards the base line criteria which compares, for instance, 70% CBSE Grade – 12 grades is equivalent to IB points: 24. How two completely distinctive curriculum grade margins are equivalent for students to pursue admission for same program? This question further provides platform to evaluate the unfairness and unawareness present in valuation of high school curriculum assessment for admission purposes across the universities, which could be setting students to disadvantage in the classroom.

Conclusions

The qualitative analysis of five local accredited universities in the UAE portrayed the importance of proper curriculum valuation of different high school curriculums as a basis of admission to universities. The existence of complete distinctive components in terms of structure, content, marking criteria, examination methodology arises the question of equity present in admission process. There exists no research on this topic; thus, creating the platform of further investigation and possible solution in bringing about equity in admission.

This study is the first such attempt, paving way for possible solutions and equivalent benchmarked criteria for valuation of high school curriculum enabling effective establishment of integrity among students from multiple pre-university curriculum background through transparent, standardized entrance requirement.

Recommendations

The absence of consideration of curriculum contents, structure, style of examination and learning outcomes depicts the importance of identification of structured valuation guidelines towards setting admission criteria. A possible and quick solution could be implementation of worldwide-standardized placement examination, but this test only evaluates the cognitive ability of a student, which is insufficient for student appraisal for admission (Gala et al., 2019).

References

Achieve, I. W. D. (2007). Aligned Expectations? A Closer Look at College Admissions and Placement Tests. *Achieve, Inc*. Retrieved from https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=eric&AN=ED496080&site=eds-live

Aidoo-Buameh, J., & Ayagre, P. (2013). The Effect of Entry Grades on Academic Performance of University Accounting Students: A Case of Undergraduates of Central University College. *Research Journal of Finance and Accounting, 4(7)*, 198–207.

Anna Zimdars. (2010). Fairness and undergraduate admission: a qualitative exploration of admissions choices at the University of Oxford. *Oxford Review of Education, 36*(3), 307. https://doi-org.ezproxy.uow.edu.au/10.1080/03054981003732286

Atkinson, D., Zaung Nau, S., & Symons, C. (2016). Ten Years in the Academic Integrity Trenches: Experiences and Issues. Journal of Information Systems Education, 27(3), 197–207.

Atkinson, R. C., Geiser, S., & University of California, B. C. for S. in H. E. (2009). Reflections on a Century of College Admissions Tests. Research & Occasional Paper Series: CSHE.4.09. Center for Studies in Higher Education. Retrieved from https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=eric&AN=ED507062&site=eds-live

Bista, K. K. (2011). 12: Academic Dishonesty among International Students in Higher Education. *To Improve the Academy*, *30*(1), 159.

Bowen, G. A. (2009). Document Analysis as a Qualitative Research Method. Qualitative Research Journal (RMIT Training Pty Ltd Trading as RMIT Publishing), 9(2), 27–40. https://doi-org.ezproxy.uow.edu.au/10.3316/QRJ0902027

CBSE Research & Development Unit. (2012). *Curriculum for the Academic Year 2019–20.* Central Board of Secondary Education: http://cbseacademic.nic.in/index.html

Department for Education, O. a. (2020). *Curriculum and qualifications.* GOV.UK: https://www.gov.uk/topic/schools-colleges-childrens-services/curriculum-qualifications

Galla, B. M., Shulman, E. P., Plummer, B. D., Gardner, M., Hutt, S. J., Goyer, J. P., & Duckworth, A. L. (2019). Why High School Grades Are Better Predictors of On-Time College Graduation Than Are Admissions Test Scores: The Roles of Self-Regulation and Cognitive Ability. *AMERICAN EDUCATIONAL RESEARCH JOURNAL*, *56*(6), 2077–2115. https://doi-org.ezproxy.uow.edu.au/10.3102/0002831219843292

Godwin, M. S. (2006). GLOBALIZATION, EDUCATION AND EMIRATISATION: A STUDY OF THE UNITED ARAB EMIRATES. *The Electronic Journal of Information Systems in Developing Countries, 27(1)*, 1–14.

Gudo, C. O., & Olel, M. A. (2011). Students' Admission Policies for Quality Assurance: Towards Quality Education in Kenyan Universities. *International Journal of Business and Social Science,* 2(8), 177–183. http://www.ijbssnet.com/journals/Vol._2_No._8%3B_May_2011/22.pdf

Harding, T. S., Carpenter, D. D., & Finelli, C. J. (& others). (2004). Does Academic Dishonesty Relate to Unethical Behavior in Professional Practice? An Exploratory Study. Science and Engineering Ethics, 10(2), 311–324.

ICAI. (2020). *Fundamental Values of Academic Integrity*. International Center for Academic Integrity. Retrieved from www.academicintegrity.org: https://www.academicintegrity.org/fundamental-values/

International Baccalaureate Organization. (2020). *Diploma Programme.* ibo.org: ibo.org/programmes/diploma-programme/

Knight, E. (2020). Tracing the changing value of higher education through English prospectuses 1976–2013. *HIGHER EDUCATION RESEARCH & DEVELOPMENT*, *39*(1), 141–155. https://doi-org.ezproxy.uow.edu.au/10.1080/07294360.2019.1681373

Lee Harvey. (2000). New Realities: The Relationship between Higher Education and Employment. *Tertiary Education & Management*, *6*(1), 3–17. https://doi-org.ezproxy.uow.edu.au/10.1080/13583883.2000.9967007

Levy, G. D., & Ronco, S. L. (2012). How Benchmarking and Higher Education Came Together. *New Directions for Institutional Research*, *156*, 5–13.

Marginson, S. (2010). Higher Education in the Global Knowledge Economy. *Procedia – Social and Behavioral Sciences*, *2*(5), 6962–6980. https://doi-org.ezproxy.uow.edu.au/10.1016/j.sbspro.2010.05.049

Mattern, K., Radunzel, J., Bertling, M., & Ho, A. D. (2018). How Should Colleges Treat Multiple Admissions Test Scores? *Educational Measurement: Issues and Practice*, *37*(3), 11–23. Retrieved from https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=eric&AN=EJ1191362&site=eds-live

Owen, G. T. (2014). Qualitative methods in higher education policy analysis: Using interviews and document analysis. Qualitative Report, 26, 19p.

Reza Khan, Z. (2014). *Developing a factor-model to understand the impact of factors on higher education students' likelihood to e-cheat*. School of Information Systems and Technology.

Santelices, M. V., Horn, C., & Catalán, X. (2019). Institution-Level Admissions Initiatives in Chile: Enhancing Equity in Higher Education? *Studies in Higher Education*, *44*(4), 733–761. Retrieved from https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=eric&AN=EJ1209610&site=eds-live

Tabsh, Sami, El Kadi, Hany, & Abdelfatah, Akmal. (2015). Past and Present Engineering Students' Views on Academic Dishonesty at a Middle-Eastern University. International Journal of Engineering Education, 31(5), 1334–1342.

UNESCO. IIEP [3376] (2017). Six ways to ensure higher education leaves no one behind. UNESDOC Digital library [Online]. 4–5. Available: https://unesdoc.unesco.org/ark:/48223/pf0000247862

Wilkins, S. (2010). Higher Education in the United Arab Emirates: An Analysis of the Outcomes of Significant Increases in Supply and Competition. *Journal of Higher Education Policy and Management*, *32*(4), 389–400. Retrieved from https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=eric&AN=EJ892316&site=eds-live

Williams, S., Tanner, M., & Beard, J. et al. (2014). Academic Misconduct among Business Students: A Comparison of the US and UAE. *Journal of Academic Ethics*, *12*(1), 65–73. Retrieved from https://search-ebscohost-com.ezproxy.uow.edu.au/login.aspx?direct=true&db=pif&AN=PHL2219698&site=eds-live

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USE OF DIGITAL CONTENT IN ENSURING INTEGRITY FOR TEACHING AND LEARNING ENGLISH AT THE SECONDARY LEVEL OF EDUCATION: PERSPECTIVE OF BANGLADESH

Rahul Chandra Shaha, Md. Sakhawat Hossain, Md. Asaduzzaman

Abstract: The use of digital content (DC) in teaching and learning English has become a buzzword. Infusing DC into the English teaching-learning process is really important as it caters the needs of the contemporary learners. At the same time, the availability of DC allows learners to adopt many unfair means by copy-pasting. So, it is important to ensure the integrity for teaching and learning in today's world. This study focused on exploring the actual use of DC in ensuring integrity for teaching and learning English at grade IX–X of Bangladesh and finding out the challenges of using DC in ensuring integrity. A mixed method design (Creswell, 2012) has been employed to conduct the study. To accomplish the study, data has been collected from teachers, students and content specialists by using semi-structured interview schedule, semi-structured questionnaire, FGD and classroom observation checklist. The data was analysed in mixed approaches using simple statistics and thematic analysis process and presented through tables and graphs. The result and detailed analysis of the study have brought out that most of the teachers use free plagiarism software for tracing out unethical writings in English for ensuring integrity in English subject. This study also brings into light that lack of necessary equipment (there is no plagiarism deduct software in the observed school) and teachers' negative attitudes toward using DC are the prevalent challenges of using DC in ensuring integrity for teaching and learning English. In this circumstance, the study suggests that schools should be provided with new equipment such as plagiarism deducts software strategically and equitably for frequent and successful trace out, and teachers should get training on how to use DC effectively in ensuring integrity.

Key words: Bangladesh, Digital Content, English, Integrity, Mixed Method, Teaching-Learning

Introduction

Digital technology is ubiquitous in most of the world. Due to the abundant presence of digital technology English teaching-learning process has also undergone a sea-change. Consequently, various digital contents (DC) are used in the teaching-learning process. It is therefore important to extend the notion of teaching and learning beyond the traditional modes of listening, speaking, reading and writing by including various DC for English subject.

Recent movements in the field of the English language teaching and learning have ushered in a new era for digital content. Driven by the digital content revolution, powered by eBooks, PDF files, software and apps and so on, many students are studying when and where they choose and any topics they wish. This facilitates the teaching-learning process of English language, as English is a skill based subject. DC opens many

DOI: https://doi.org/10.11118/978-80-7509-772-9-0166

avenues to practice the skill of English. The easy obtainability of DC sometimes drives students to copy and paste in their assigned work without proper acknowledgment and reference which led them to plagiarism. On the other hand, teachers can use many DC to trace out such kind of unethical works done by the students such as ordered students to submit soft copy of the assignment via email so that teacher will easily ensure integrity amongst the students. This study was undertaken to gauge such actual situation from the secondary level of education of Bangladesh.

Since ICT is placed in every aspect of teaching and learning, language teachers need to understand its potentiality as well as utilize it to enhance their development to cope with the changing nature of education system (Vethamain, 2009). With a view to integrating ICT in education, the ICT policy (formulated in 2009) suggests preparing digital learning content. By starting the use of ICT in education, a2i has introduced the digital content in Bangladesh (a2i, 2011). Now, most of the students and teachers of the secondary schools are habituating with DC but concern is that how appropriately they can adapt or adjust with and how they ensure the integrity in education when they use DC. This study focuses on it. Hence, the study was carried out.

In Bangladesh secondary school classroom teaching, the use of digital content or e-learning technology is increasing gradually (Didar, Abdullah, Abul & Jamal, 2011). At present, there are 3287 junior secondary schools, 13275 secondary schools, 1558 higher secondary schools, and 5626 secondary and 1105 higher secondary madrasahs in Bangladesh (Alauddin et al, 2010). Access and use of DC for ensuring integrity at these secondary schools in teaching and learning English were examined by this study.

Consequently, the focal aim of the study, was to explore the use of DC in ensuring integrity for teaching and learning English at the secondary level of education in Bangladesh. Underneath the focal aim following specific objectives were seeking out through this research study:

- to explore the actual use of digital content (DC) in ensuring integrity for teaching and learning English at grade IX–X
- to find out the challenges of using digital content (DC) in ensuring integrity for teaching and learning English at grade IX–X

Literature Review

Literature review is known as the platform for the research study. This section deals with reviewing of the previous studies relating to the areas of this research, models related to the study, cites, conceptual patterns, theories, definitions, figures, comparisons etc. to obtain clear insights about this study. All the reviewed literature such as books, articles and relevant thesis papers are discussed under several different concepts into the following sections.

Digital Content

Digital content (DC) is any type of content that exists in the form of digital data with digital storage system. Forms of digital content include information, audios, videos, images, pictures, animations, streamed audios and videos, files etc. Baker (2010)

denominates that Digital content in the form of digitised photographs, images, videos and audios can be accessed and used in collaborative learning environments, the use of interactive digital content (i.e. learning objects) typically involves individual learners engaging with a critical educational concept. On the other hand, Lamanauskas, Slekiene, Raguliene & Bilbokaite, (2011) posited that DC is a sort of content which is available in digital form. In this regard, Garcia (2006) stated that while talking about digital content I meant anything that could be created and stored digitally and used to support teaching and learning, and also items such as a useful URL, apps, software, a text document or presentation file and in some cases a package of content or structured set of course materials and tasks are known as DC.

Integrity in Education

Previously, when few people had entrance to formal education and it was expected that educated persons would display civilized behaviour, decency, good manners and ethical conduct, on the other hand, uneducated persons would display uncivilized behaviour and mostly crimes were committed by them. However, with a huge expansion of the education system and time, there is a noticeable decline in the characters, ethics, moral values and integrity (Shelly & Jain, 2012). But now-a-days, scenario is quite the opposite. Crimes are still committed by students coming out of schools and colleges and well-educated people (Shelly & Jain, 2012). So, it is a great matter of concern that we should uplift the integrity in education.

According to the International Centre for Academic Integrity (ICAI) (2014) "integrity is a commitment to five fundamental values: honesty, trust, fairness, respect, and responsibility." (p. 6). Integrity in education is essential for maintaining excellence and for keeping the public's trust. For an educational institution, it is a commitment to creating an environment that promotes responsible conduct by embracing standards of excellence, trustworthiness, and lawfulness and then assessing whether teachers as well as students and administrators perceive that an environment with high levels of integrity has been created (National Academy of Sciences, 2002).

Way to Uplift Integrity in Education and Preventing Academic Misconduct

As per, Cavico & Mujtaba (2009) most students will do their own work, as hiring others to complete their assignments goes against their personal and professional values. One should adopt following ways or find following cues prescribed by Harris (2004) to stop such academic misconduct amongst the students and ensure integrity in education (as cited in Cavico & Mujtaba, 2009):

- Mixed citation styles
- Lack of references or quotations
- Unusual formatting
- Off topic
- Signs of datedness
- Anachronisms (i.e. references to old events as current- "once the cold war is over")

- Anomalies of diction (mix of paragraphs with different levels of words and their usage)
- Anomalies of style – British and American English grammar or writing formats
- Smoking guns. This category might be called "blunders of the clueless," since it includes obvious indicators of copying.

In addition, Robert Harris (2004) proposes the following strategies and information for awareness, prevention, and detection of plagiarism (as cited in Cavico & Mujtaba, 2009):

- Understand why students cheat. By understanding some of the reasons students are tempted to cheat on papers or exams, you can take steps to prevent cheating by attacking the causes.
- Educate yourself about plagiarism. Plagiarism on research papers and online exams takes many forms.
- Educate students about plagiarism, its consequences and conditioning impact. What if everyone in the world cheated?
- Discuss the benefits of citing sources appropriately as per the school's requirements.
- Make the penalties clear to all students at the beginning of each class.

Conceptual Framework of the Study

A conceptual framework provides a total idea about the research at a glance. Based on the review of the literature, research objectives and research variables, a conceptual framework was developed to guide the conceptualisation of this study which derived from mapping the issues that impacted upon and influenced the conceptualisation of this research. It is mentioned below:

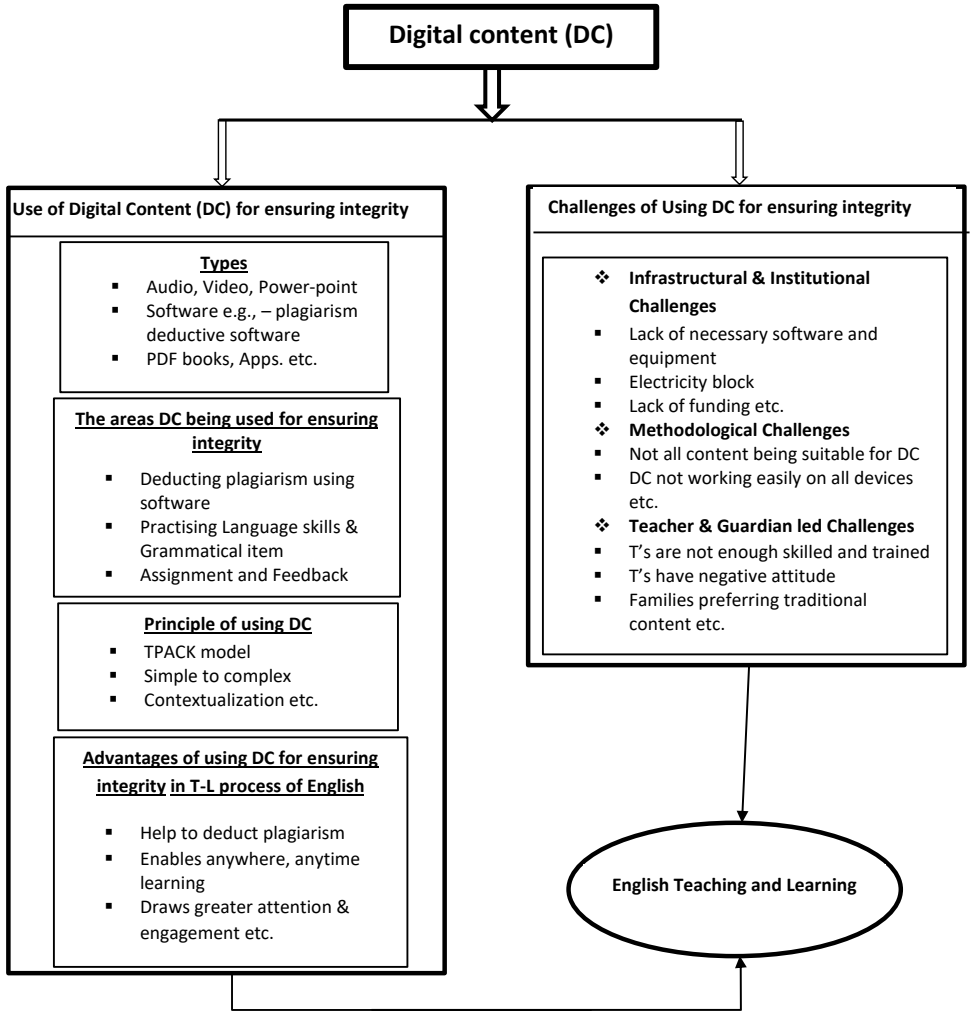

Figure 1. Conceptual framework of the study

Methodology

Nature of the Study

Gay and Airasian (1996) noted that the nature of the question or problem to be investigated determines whether the study is qualitative or quantitative. If we look back the specific research objectives, we understand that the first research objective which seeks to explore the actual use of DC in ensuring integrity for teaching and learning English demands both quantitative and qualitative data to depict a holistic picture.

The final research objective aims to find out the challenges of using DC in ensuring integrity for teaching and learning English which needs qualitative data as well as quantitative data. So, ultimately all the research objectives deal with both quantitative and qualitative data. As the research needs mixed type of data, so the whole research had followed a mixed method approach. To be more specific, this study employed a mixed method research design.

Sample Design of the Study

For this study, the schools were chosen conveniently: total 4 schools, 2 from Dhaka city and 2 from Chandpur district of Bangladesh. Teachers, content specialists and classes were selected purposively. And from each school 20 students were selected through random sampling. The whole sample design of the study is depicted below:

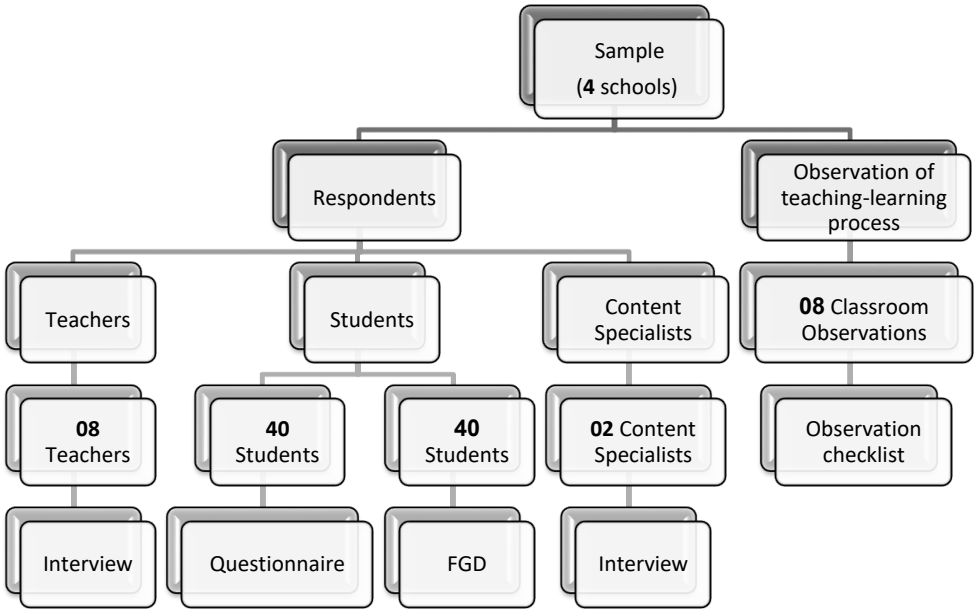

Figure 2. Sample design of the study

Data Processing and Analysis Technique

Two types of analyses were conducted in this study – the Quantitative data was analysed using Quantitative approaches of analysis and qualitative data in qualitative approach.

Table 1
Tools, Data sources and Research objectives

Research Objectives	Tools	Data Source
to explore the actual use of digital content in ensuring integrity for teaching and learning English at grade IX–X	Semi-structured Questionnaire; *FGD;* Classroom observation Checklist; Semi-structured interview schedule.	Students; Teachers; Content specialist
to find out the challenges of using digital content in ensuring integrity for teaching and learning English at grade IX–X.	Semi-structured Questionnaire; *FGD;* Classroom observation Checklist; Semi-structured interview schedule.	Students; Teacher; Content specialist

Source: (Authors')

Scaffolding of the Study

Results and Discussion

Major findings Related to the Specific Research Objective One

The major findings about the actual use of DC in ensuring integrity for teaching and learning English at grade IX–X comprise of the following (organized as to significance):

- Maximum Students (63.50%) and teachers (7 out of 8) are acquainted with DC and integrity in education.
- In most of the schools maximum teachers (6 out of 8) and students (55%) have said in favour of this DC is used for teaching and learning English, at a time, teachers consented that DC have used for purpose of ensuring integrity in English. But teaching-learning activities in English classroom using DC are not so good and it is not fully implemented, although the used DC and its scenario have fulfilled the technical parameters.
- Most of the students of secondary schools accused for academic dishonesty in terms of completing their assigned assignment, homework or something like that by using DC. (In favour of this statement respectively 5 out of 8 teachers and 54% of students have given opinion.).
- Power point (respectively said by Teachers & Students 36.37% & 40.91%), video (equally said by Teachers & Students 27%) and audio (respectively said by Teachers & Students 22.09% & 31.82%) are vastly used types of DC in teaching and learning English for grade IX–X.
- Most of the teachers (7 out of 8) use free plagiarism software for tracing out unethical writings in English for ensuring integrity in English subject.
- DC is used majorly in the areas of delivering lecture, deduct plagiarism (teachers & students respectively say that 51.41% & 52.53%), assigned (Group/pair) work (where teachers & students respectively say that 14.28% & 18.32%) and giving feedback (where teachers & students respectively said that 14.28% & 16.90%).

- Best advantages of using DC in teaching-learning process of English are that DC help to deduct plagiarism, DC draws greater attention and engagement, and DC allows to practice independently as well as to work collaboratively.

Major Findings Related to the Specific Research Objective Two

The major findings about the challenges of using digital content in ensuring integrity for teaching and learning English at grade IX–X are summarized below (rank order of significance):

- Lack of necessary software and equipment (infrastructural problem) is the biggest challenge in using DC in ensuring integrity for teaching and learning English.
- DC not working easily on all devices is the second leading challenge in using DC in teaching and learning English at grade IX–X.
- Teachers' attitude (negative) towards using DC and lack of appropriate knowledge and skills are another prevalent challenge in using digital content in ensuring integrity for teaching and learning English.

Other challenges of using DC including leading challenges are presented in the graphical format by segmenting into the major and minor themes (based on first hand data from field work after thematic analysing).

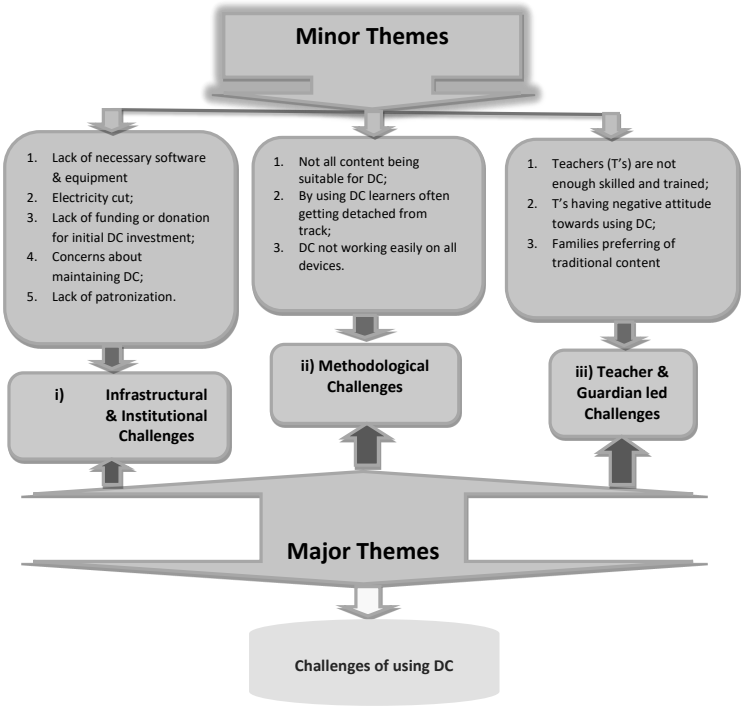

Figure 3. Challenges of using DC in Ensuring Integrity for English subject
Source: (Authors')

Discussion

Study reveals that maximum students (63.50%) and teachers (7 out of 8) are acquainted with DC and integrity in education. This finding is quite similar with the findings of Chowdhury, Yesmin & Obaydullah (2019) who voiced that most of the teacher and students perceived that moral and ethics mean good or bad, legal or illegal and good practice in our personal life like speaking the truth, showing respect to elders, helping others, showing good behaviour, attending school regularly, obeying parents and following rules and regulations. Both teachers and students mentioned that students learn moral and ethical values in schools, home and society.

The present study disclosed that most of the students (54%) of secondary schools accused for academic dishonesty in terms of completing their assigned assignment, homework or something like that by using DC. In a similar fashion, in the 1990s, Davis (1993) quoted surveys indicating that between 40 and 70 per cent of all students have reported cheating at some point in their career, while Pavela (1997) quoted McCabe's survey of over 4,000 students of whom between 47 per cent and 60 per cent admitted dishonesty. In the perspective of Bangladesh, secondary school's students aged 11 to 11+ are very regular with DC and get access into the great horizon of internet world which persuade them to complete their assigned work by copy-pasting. One of the students namely Jubayer of grade IX expressed that in the time of data collection –

> *"Our teacher gives us do critical analysis of some literary work or writes a job application. We usually surf internet and thus way manage our assignment."*

On the other hand, one of the teachers from teachers' interview opined that –

> *"When I get assignment from the students and give a glimpse eye on it, then maximum time I assume that the work isn't brainchild of the particular students."*

Another prevalent finding of the study is that most of the teachers (7 out of 8) use free plagiarism software for tracing out unethical writings in English for ensuring integrity in English subject. One of the teachers from interview asserted that –

> *"I use free online based plagiarism software for tracing out unethical writings in English for ensuring integrity in English subject. There is no way to deduct plagiarism except it. Registering with plagiarism software and getting licensees of plagiarism software without support of school authority and government is totally impossible for me. It costs much in the context of Bangladesh. For this why, I am bind to use free online based plagiarism software which is not enable to trace out full plagiarism of works. Though I adopt such means but I assume that most of the teachers of Bangladesh neither go such way nor adopt any means to deduct plagiarism."*

DC is used majorly in the areas of delivering lecture, deduct plagiarism (teachers & students respectively say that 51.41% & 52.53%) the other important finding of this study. This study also refers that best advantages of using DC in teaching-learning process of English are that DC help to deduct plagiarism and ensure integrity in education. In line with this finding, one teacher said that –

> *"I usually command students to submit their assignment in the form of soft copy instead of hard copy via email so that I easily deduct plagiarism using plagiarism checker software and make student academic misconduct free."*

Cavico & Mujtaba (2009) mentioned that technology like DC certainly has made cheating more opportunistic for the students. Academic misconduct, cheating, and fraud never have been easier due to internet and advanced technology (such as email, cell phones, pagers, "paper mills" and term paper websites with papers, exams, and essays for sale – and usually with a "for research purposes only" disclaimer, "thanks" to the lawyers – online courses with chat rooms). Therefore, technology provides many, and perhaps too tempting, opportunities to cheat. It is very easy to abuse technology in the classroom and outside the classroom. In line with the Cavico & Mujtaba, present study also revealed almost the same finding wherein students are very much eager to use mentioned advanced technology to accomplish their assigned work and perform academic duty.

Last but not least, finding of this study is: lack of necessary software and equipment (infrastructural problem) is the biggest challenge in using DC in ensuring integrity for teaching and learning English, and, teachers' attitude (negative) towards using DC and lack of appropriate knowledge and skills are another prevalent challenges in using digital content in ensuring integrity for teaching and learning English. Sakib (pseudonym) mentioned that (in the data collection stage from students) –

> *"Our teachers do not prefer digital content but the traditional content. If we use power point in our class they discourage us and sometimes they devalue us. I think they have lacked of positive attitude towards DC."*

In line with this finding, content specialist1 emphasized that –

> *"Every teacher of each secondary school should have access in the plagiarism software so that they easily deduct plagiarism and academic misconduct of the students. In this regard, government and school authority should immediately take appropriate steps."*

Recommendations

Based on the research findings and the discussion on emerging factors resulting from the evidence of gathered data, the researchers have formulated recommendations for future actions to achieve greater impact on ensuring integrity for both the areas of teaching and learning English at grade IX–X.

- School should be provided with new (ICT and digital) equipment.
- Awareness based initiative e.g. campaign on DC etc. should be taken to change the attitude of teachers and guardians towards the digital content.
- Teachers should get training on how to use DC effectively in ensuring integrity.
- Training programmes on DC should be adapted to the particular needs of students and fit to subjects and institutional related needs.
- Alternative power supply system like generator should be introduced to recover electricity cuts.
- Government and education authorities should allocate resources e.g. plagiarism deduct software strategically and equitably, and should monitor the use of digital content for ensuring integrity.

Conclusions

Use of digital content in teaching and learning English is very much important in this digital age especially for ensuring integrity. It encompasses a great horizon of facilities with its various dimensions. Those are crucially necessary for the teachers and students in the teaching-learning process of English. In Bangladesh present scenarios are not up-to-mark. This research is a small effort to bring it into focus. It will hope that further research study will explore more.

Delimitations of the Study

The delimitations of the study are described below:

- **Representativeness**: The representativeness of the participants was the first limitation. Only 90 respondents were involved in this study. It does not give the complete picture of Bangladesh.
- **Coverage:** It is not possible to interpret the findings in light of gender, age, or experience as these variables were clearly not set as selection criteria.
- **Time:** The major limitation of this study is the limited time for conducting this study. A long time research could give us a more effective and viable picture.
- **Level:** Another limitation of the study was that this study was conducted only for the grade IX–X. Further research would be needed to address other grades.
- **Diversity:** Lastly, the diversity of schools was not fully represented in this study. The study mainly focused on mainstream school of secondary level of education.

References

A2I. (2011). *Strategic Priorities of Digital Bangladesh.* Dhaka: Access to Information (A2I).

Alauddin et al. (2010). *Handbook on research on strategic performance management.* Dhaka: Bangladesh.

Baker, R., A. (2010). *Pedagogies and Digital Content in the Australian School Sector.* Curriculum Corporation: Melbourne.

Cavico, F. J., & Mujtaba, B. G. (2009). Making The Case For The Creation Of An Academic Honesty And Integrity Culture In Higher Education: Reflections And Suggestions For Reducing The Rise In Student Cheating. *American Journal of Business Education*, 2(5), 75–88.

Chowdhury, M. S. R, Yesmin, S., & Obaydullah, A. K. M. (2019). Teaching Moral and Ethics in Primary Education: Practices and Challenges. *IJARIIE*, 5(1), 473–484.

Creswell, J. W. (2012). *Qualitative inquiry and Research design: choosing among five approach.* SAGE publication, 448.

Davis, B. G. (1993). *Tools for Teaching*, Jossey-Bass, San Francisco, CA.

Didar, Abdullah, Abul, & Jamal. (2011). *Localization of Digital Content for use in Secondary Schools of Bangladesh.* Dhaka: Bangladesh.

Garcia, S. M. (2006). *Sharing Digital Content in the West Midlands Region.* Networked Learning. 1–4.

Gay, L. R., & Airasian, P. (1996). *Educational Research: Competencies for Analysis and Application.* Colombus, Ohio: Prentice-Hall.

International Center for Academic Integrity. (2014). *The Fundamental Values of Academic Integrity.* Clemson: Clemson University.

Lamanauskas, V., Slekiene, V., Raguliene, L., Bilbokaite, R. (2011). Digital Teaching and Learning Content in Natural Science Education: Pedagogical Evaluation. *Acta Universitatis Latviensis / Scientific Papers University of Latvia (Science and Technology Education: Trends and Main Tendencies in the 21st Century,* Riga, Latvia, November 30 – December 3, 2011), 778. 129–137. ISSN 1407-2157.

National Academy of Sciences. (2002). *Integrity in Scientific Research: Creating an Environment That Promotes Responsible Conduct.* The national academies press: Washington, D.C.: USA, Retrieved from: http://www.nap.edu/catalog/10430.html on 28 February 2020.

Pavela, G. (1997). *Applying the Power of Association on Campus: A Model Code of Academic Integrity*, The Center for Academic Integrity, available at http://www.academicintegrity.org/resources_inst.asp.

Shelly, & Jain, K. (2012). Declining Ethical Values in Indian Education System. *Journal of Education and Practice*, 3(12), 23–27.

Vethamain. (2009). E-Learning. *International education studies journal*, 2(4), 182–194.

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ENGAGING MEDICAL AND BIOMEDICAL STUDENTS TOWARDS ETHICS AND ETHICAL CONDUCT VIA CASE STUDY BASED APPROACH: REFLECTIONS FROM AN ONLINE WORKSHOP

Shiva Das Sivasubramaniam, Zeenath Reza Khan

Abstract: Ethics and ethical behaviour form an important part in clinical science and biomedical research. Ethical education should be comprehensively taught aiming to help graduate/undergraduate students to practice by applying underlying principles. Several innovative types of learning strategies are being employed to deliver these sessions. One such method is the "case study based delivery" in which students are presented with a variety of case studies highlighting the issues to create an interactive learning. In this investigation authors wanted to showcase this approach to the Middle-Eastern medical/biomedical students and thereby (a) validate the effectiveness of this case study based delivery and (b) to explore the effectiveness of delivering case study based ethical education in a virtually online environment. In this manuscript, we share our experiences from this session by a narrative commentary of our observation and analysis on student interactions

The study shows that the opportunities for integrated learning and problem solving abilities can be the best solution for learning to apply the appropriate ethical principle in clinical context. Conducting an online interactive session with a large scale of attendees (around 258 participants) can be a challenge which can be tackled by excellent IT support.

Key words: Bioethics, Medical ethics, Case Study Approach, Education, Medical Research

Introduction

Ethics and ethical behaviour form an important part in clinical science and biomedical research. Whilst patient safety, confidentiality and privacy take precedence in clinical medicine; ethically warranted study design, methodologies and data handling is vital for biomedical research. In fact, ethics in medical research deals with the conflicts of interest across various levels. Many treaties and declarations are in place to enforce ethical behaviours, especially in medical research (Gurayaa et al, 2014). As clinicians and researchers have the obligation to follow the ethical principles in their practice, it is imperative to educate young medical students on different dimensions of ethics in medical practice, such as research ethics, and the seriousness of misconducts. It is also essential to teach young scientists about good laboratory and scholarly practice in research (Masic, 2012). Also, more young doctors are getting involved in basic research and scholarly activities outside their usual territory of "clinical/patient based medicine" involving in vitro/animal research, and data handling. Likewise, several basic scientists are carrying out *in vivo* medical research involving patients.

At the beginning of this decade, the World Medical Association's (WMA, 2015) included ethical education as an obligatory curriculum within medical education.

DOI: https://doi.org/10.11118/978-80-7509-772-9-0178

Whilst there is a greater emphasis of incorporating ethical education to medical students, it is not clear whether the research scientists are being taught about ethics, ethical behaviour and the consequences on intentional or un-intentional misconducts. On other hand, with the advent of genetic engineering, stem cell therapy, and genomic manipulations, the medical profession itself is facing new ethical challenges. Therefore, teaching bioethics to students with multi-disciplinary focus is imperative. Especially the fact that, the ethical decisions are subject to the situation, local legislations, and may be incorrectly influenced by moral justifications (Safuan et al, 2017). Young scientist/doctors are expected to critically analyse the situation with proper reasoning according to each ethical problems/situations. They need to develop critical thinking based on the information provided, as they become accountable for their own decisions.

Therefore, bioethics should be comprehensively taught aiming to help graduate/undergraduate students to practice by applying underlying principles. Many medical schools and other institutions use traditional lecture based delivery on ethical principles. Whilst it is important for young clinicians/scientists to learn the basic ethical principles, these lecture based delivery is often seen as *"boring"* and "dry", which is not always linked to day-to-day practice.

Also, the teaching curricula in many universities are fully *"saturated"* with course specific contents which often makes it difficult to incorporate ethical education into their delivery. Hence some institution run extra sessions to deliver bio/medical ethics (Weatherall, 1995). In fact, it has never been clear how to deliver sessions on ethics and ethical conduct. Therefore, more innovative types of learning strategies are being employed to deliver these sessions. One such method, a "case study based delivery" was employed by the corresponding author in his institution. In this methods, students were presented with a variety of case studies highlighting the issues in biotechnology, clinical medicine, food technology, biomedical science etc. Students were then grouped into two panels to discuss/debate (for and against) each scenario. Finally, the underlying principles were discussed in a plenary session. Although this approach was found to be time consuming (3 hour sessions as opposed to one-hour lecture slots), it has generated full attention and engagement amongst the students.

The authors originally wanted to showcase this approach to the Middle-Eastern medical/biomedical students and validate the effectiveness of this case study based delivery with students of cultural background. However, due to Covid-19 pandemic it was impossible to carry out this face-to-face interactive teaching. Yet we transformed this challenge into an opportunity to examine the possibility of delivering this session online but maintain the interactive nature of the session. Thus the modified aim of this investigation is to explore the effectiveness of delivering case study based ethical education in a virtually online environment. In this manuscript, we share our experiences from this session.

Methods

This workshop was conducted in the Department of Biomedical Sciences, College of Medicine, Gulf Medical University, Ajman in the United Arab Emirates. The session

was delivered using GoTomeeting® webtool. There were 258 attendees, many of them were medical/biomedical science students with some junior doctors and biomedical scientists. The session was voice recorded and the interactions were anonymously monitored in accordance with the ethical policies of Gulf Medical University for conducting lectures and student activities. The convener (Dr Sivasubramaniam) was visible to the students but his video link to the "class" was disabled to maintain anonymity. Yet students/attendees could still raise questions, discuss and interact with the convener via audio link. Feedback as written comments from the participants on the overall satisfaction of the session were collected at the end of the session

Originally the session was intended to run for two hours, but due to high levels of interaction, it was prolonged for an additional hour (see discussion). Six different real life example case studies used in this session. Their summary together with links to the original stories are given in table 1. An example case study with related questions to generate discussion/interactions are given below (underneath the table 1)

Table 1
Summary of Case studies used in the session

Case	Short title/Ethical dilemma	Brief description
1	The right to use the embryo	Ms Evans Vs United Kingdom – Withdrawal of consent for using embryos by the former partner (WWW-1)
2	The right to live / Parent's right	Alfie Evens Vs United Kingdom – Parents fight against withdrawing life support of a brain dead baby (WWW-2)
3	The right to end life	Dr David Goodall – Wanted to end his life due to the fear of losing human dignity related to old age (WWW-3)
4	Patient's right	Unknown patient with a Do Not Resuscitate (DNR) tattoo (WWW-4)
5	Informed consent	Research methodology – HIV vaccine trial using injecting-drug addicts (WWW-5) – (Smit et al, 2005)
6	Genetic modification	Genetic engineering – Inserting protein to resist nematode infection in potatoes (WWW-6) – (Gewin, 2013)

Observation and analysis on student interactions

The session started with an initial introduction about the aims of this workshop and followed but a brief overview of the basic principles of medical and bioethics. Then each case study was presented with respective questions for polling. In fact, these questions were generated to create discussion/interactions between the students/attendees and conveyer. An example summary poll of results (for the questions linked to the case study given above) is summarised in figure 2 (see below). Here the data is used to show the engagement, as can be seen on average around 51% of the students (131 out of 258) attempted to answer the questions within the allowed 3-minute window. As organisers we realised the time window given was not enough for all of them to complete their answers, only when we received comments such as *"the duration for poll is not enough"* and *"the poll closed before I completed my response"* in the interactive comments window.

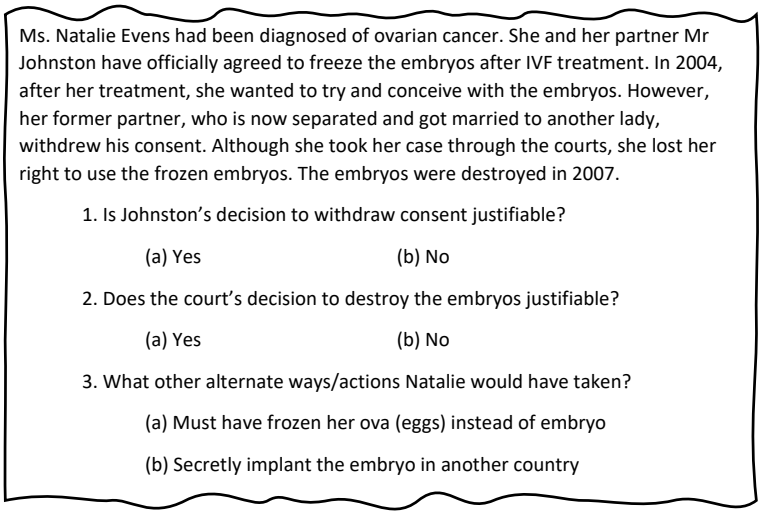

Figure 1. An Example Case study with questions for discussion

The figure 2 shows an indication of percentage student engagements. On average 131 students/attendees (out of 258) (i.e. 51%) to all three questions related to the case study 1 (see an example case study given above)

Likewise, the GoTomeeting® webtool generated data, based on clicks, responses (both written and oral), and feedback suggested that the *"total average attentiveness"* was 82.75 out of 100 in arbitrary units. Although this does not necessarily reflect the participant engagement, it can be said the session created an interactive dialogue between the participants and the convener. In addition, there were a lot of questions, comments (both oral and written) in the interactive comments window. We originally allocated 20 minutes for discussing each case study, however due to the high demand and interactions, we were forced to increase the allocation to 30 minutes per case study. Interestingly, the interactions did show that the participants were thinking outside the box as real life ethical dilemmas are more complicated than the text book definitions. In fact, the participant has realised that in real life the day-to-day decision making the focus should on "how" to approach the situation in hand (rather than what ethical principle to apply). The interaction clearly shown that the participant has understood the practical application of ethical principles in medicine and research depends on them (or the front line staff). There were several example conversations to show this. During discussions about case study 1, one participant asked a question *"Dr XXXX! Isn't it justifiable for Johnston to be forced to financially and emotionally support a child he doesn't want"*. This question itself shows that the participant is considering the wellbeing of all parties involved (and not just the obvious victim). Another student stated *"I love that you chose this case scenario. Myself and a friend actually discussed this specific case before and we couldn't really decide"*. This again shows that they

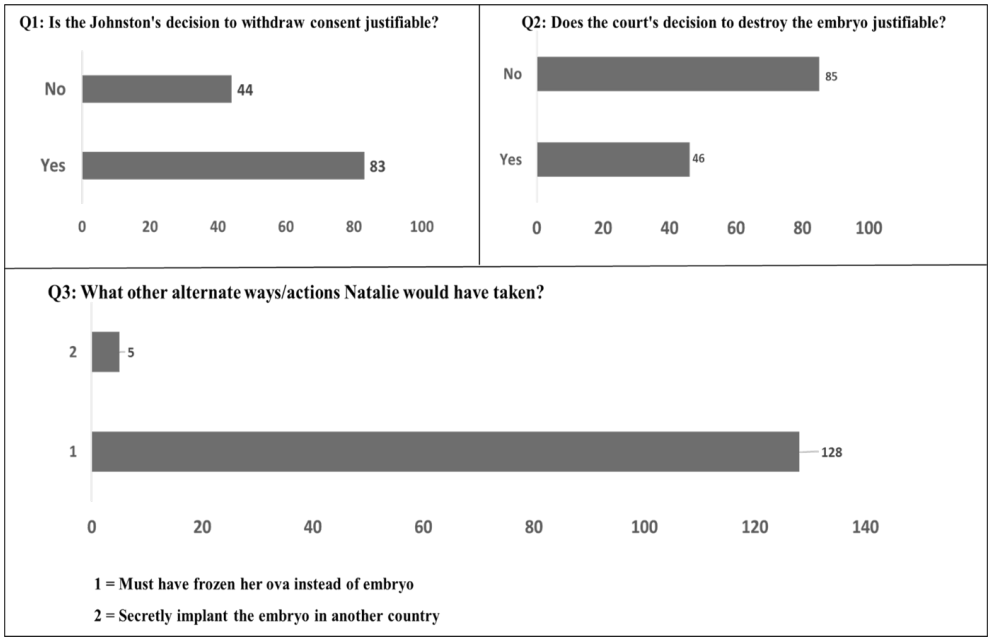

Figure 2. Example responses for the case study one to show average online engagement

have understood the ambiguous nature of real life situation. Likewise, in case study 2 about Alfie's case (parents right to decide on the fate of keeping this child alive), one participant correctly pointed out *"in a scenario where there is a conflict between the parents and the hospital, the decision should be with the courts. They would have the best interests of the child at hand"*. This shows he/she have clearly weighed the pros and cons of *"the parent's right to decide"* and put forward the most practicable solution. Another participant thought laterally beyond the scenario and correctly stated *"leaving the parents (solely) with the right to decide would have huge implications in a child abuse case"*. Similarly, during discussions of case study 4 (patient's right to decide) about an unknown patient with "Do not resuscitate (DNR)" tattoo, one participant asked "*do you think a different decision would have been taken in a country where the law states that DNR is unacceptable*?" This proves that the participants are thinking of real life applications by relating these case studies to their day-to-day practice. This is an indication of maximum engagement with the session.

At the end of the session some students sincerely thanked the organisers and requested to similar webinar's to be held in the future. As for where the anonymous written feedback is concerned there were several positive comments from the participants. Table 2 summarises the important comments received, it was promising to note several commendations from the students and the conference attendees. On the negative side, there were only a few points raised, most of them are highlighting the issues with the online platform.

Table 2
Summary of anonymous feedback comments from the participants

Positive comments	**Negative comments**
"Really interesting. Thank you!"	*"Only one concern! Each question shall be projected for 3 mins instead of 2 mins"*
"Value for attending this session is striking; we all are enjoying"	*"Biomedical science student here; others attending as well – Can you include more biomedical case studies too"*
"Your questions are making us think a lot."	*"Unfortunately often ethical decisions kill our moral values... Is it right?"*
"You are an amazing teacher, a lot to learn from you"	*"We could not see some of the questions"*
"An excellent session and to keep us thinking all the time"	*"The duration for poll is not enough"*
"It is very interesting! Trust we will have more session with you..."	*"The poll closed before I completed my response"*
"It has been an amazing session thank you doctor"	
"This was a very enlightening lecture on ethics really gained a lot. Thank you Dr"	
"Bravo for this post-conference session offer for the PAEB2020 delegates too!"	
"Excellent Post Conference Workshop. Stay safe and Take care"	

With the perception of the sessions being delivered in a medical school, we have included more medical ethics cases with minimal (only one) relating to biotechnology related case study (case study 6). This was highlighted by the biomedical science students who insisted on receiving similar workshops with biomedical science related case studies in future. Also there was a one general comment regarding the conflict between *"ethical decision"* and *"moral values"* which was handled within the session and full explanation given. The other two were related to the online platform and the fact that there was less time provided to attempt all the questions.

Concluding remarks

Medical ethics and bioethics are broad, and interdisciplinary fields which encompass many controversial matters. Likewise, teaching ethics involves practical applications which might change depending on clinical or research situation. Therefore, many universities are adopting innovative teaching methodologies. The concept of these innovative techniques of teaching was first put forward by Ronald Harden in 1984 (see also Harden and Laidlaw, 2012) and named as SPICES model (the acronym SPICES stands for student-centred learning, problem-based learning, integrated/inter-professional teaching, community based education, elective studies, and a systematic approach). In this context, some of the medical/biomedical schools started including short stories, novels, plays, and films as a part of the bioethics education. These materials present case examples that would highlight practical problems in a clinical and/or research set up (Robeson and King, 2017; Dent, 2014). Thus, case-based approaches to teaching medical ethics have a long tradition in medical education.

As a part of European Network Academic Integrity (ENAI) strategy, we have been delivering similar workshops to medical/biomedical students in different countries around Europe and beyond since 2016. However, this is the first occasion in which the workshop was delivered entirely online. Therefore, we wanted to measure the effectiveness of the online delivery of case study based approach (which needs student interactions). We wanted to know whether a large scale workshop can be delivered with maximum student interactions. As explained in the narrative observational analysis above, despite the fact that the session was delivered online, the participants have shown a keen interest in the discussions of each case studies. Conducting an online interactive session with a large scale of attendees (around 258 participants, all at different places/venues) was a challenge. This was tackled by the excellent IT support received from the organisers (see acknowledgements). Above all, the data shows that the opportunities for integrated learning and problem solving abilities can be the best solution for learning to apply the appropriate ethical principle in clinical context.

Acknowledgements

The authors wish to thank Dr. Gomathi Kadayam Guruswami, the head of biomedical science department and Mr. Suraj Sebastian, the senior IT technician at College of Medicine, Gulf Medical University, Rashid Al-Khadar Street, Al Jerf 1, Ajman – United Arab Emirates for organising and providing excellent IT support respectively.

References:

Aguilera, M. L., Martínez Siekavizza, S., & Barchi, F. (2019). A Practical Approach to Clinical Ethics Education for Undergraduate Medical Students: A Case Study From Guatemala. *J Med Educ Curric Dev.* doi:10.1177/2382120519869207

Dent, J. (2014). Using the SPICES model to develop innovative teaching opportunities in ambulatory care venues. *Korean Journal of Medical Education.* 26(1): 3–7. www.doi:https://doi.org/10.3946/kjme.2014.26.1.3

Gewin, V. (2013). Genetically modified corn–environmental benefits and risks. *PLoS Biol*. 1(1):E8. doi:10.1371/journal.pbio.0000008

Gurayaa, S. Y., London, N. J. M., Gurayaa, S. S. (2014). Ethics in medical research *Journal of Microscopy and Ultrastructure.* 2(3): 121–126 https://doi.org/10.1016/j.jmau.2014.03.003

Harden, R. M., & Laidlaw, J. M. (2012). Essential skills for a medical teacher: an introduction to teaching and learning in medicine. Edinburgh, UK: Churchill Livingstone; 2012.

Harden, R. M., Sowden, S., & Dunn, W. R. (1984). ASME Medical Education Research Booklet No. 18. The SPICES Model. *Med Educ* 18:284–297

Masic, I. (2012). Ethical aspects and dilemmas of preparing, writing and publishing of the scientific papers in the biomedical journals. *Acta Inform Med*. 20:141–8.

Robeson, R., & King, N. M. P. (2017). Performable Case Studies in Ethics Education. Healthcare (Basel). 5(3):57. www.doi:10.3390/healthcare5030057

Safuan, S., Ali, S. H., Kuan, G., Long, I., Norliza, N., & Hassan, N. (2017). The Challenges of Bioethics Teaching to Mixed-Ability Classes of Health Sciences Students. *Education in Medicine Journal*. 9(4): 41–49

Smit, J., Middelkoop, K., Myer, L., Lindegger, G., Swartz, L., Seedat, S., Tucker, T., Wood, R., Bekker, L. G., & Stein, D. J. (2005). Socio-behaviour challenges to phase III HIV vaccine trials in Sub-Saharan Africa. *Afr Health Sci.* 5(3):198206. doi:10.5555/afhs.2005.5.3.198

Weatherall, D. J. (1995). Guest editorial Teaching ethics to medical students *Journal of medical ethics*. 21: 133–134 http://dx.doi.org/10.1136/jme.21.3.133

WMA. (2015). https://www.wma.net/policies-post/wma-resolution-on-the-inclusion-of-medical-ethics-and-human-rights-in-the-curriculum-of-medical-schools-world-wide/

Links for case studies:

WWW1

https://www.theguardian.com/society/2007/apr/11/health.medicineandhealth1

WWW2

https://www.bbc.co.uk/news/uk-england-merseyside-43754949

WWW3

https://www.abc.net.au/news/2018-05-10/david-goodall-ends-life-in-a-powerful-statement-on-euthanasia/9742528

WWW4

https://www.washingtonpost.com/news/to-your-health/wp/2017/12/01/a-man-collapsed-with-do-not-resuscitate-tattooed-on-his-chest-doctors-didnt-know-what-to-do/

WWW5

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1831933/

WWW6

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC212689/

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VARYING INSTITUTIONAL PROCEDURES FOR DEALING WITH STUDENT ACADEMIC MISCONDUCT: A SHORT COMPARATIVE ANALYSIS

Shiva Das Sivasubramaniam, Zeenath Reza Khan

Abstract: Establishing and maintaining academic integrity has always been a focal point amongst all higher education organisations. A few studies have been designed to compare the efficacy of measures/procedures amongst different institutions. Some other attempts were also made to compare the procedures for academic misconduct investigations amongst different institutions about handling potential plagiarisms and/or academic misconducts. The aim of this workshop based investigation was to show the participants, the importance of pro-activeness and practical awareness to establish institutional procedures for handling potential plagiarism and/or academic dishonesty. We wanted to show the inconsistencies in the approaches of conducting academic investigations relating to plagiarism related misconducts.

We have carried out a simple Google® search and selected publicly available institutional policies and procedures of five different international universities representing different geographical representations. The comparison has highlighted the approaches to investigate plagiarism or academic misconduct are varied amongst these universities. Some institutional policies have established clearly defined processes, others have vague and ambiguous procedures. The study has highlighted the importance of investigating institutional procedures in a comparative manner. In order to provide some recommendation of institutional policies and procedures, we would work closely with the European Network of Academic Integrity (ENAI), and other international stakeholders to expand this study in a larger scale.

Key words: Institutional Policies, Disciplinary Procedures, Academic Integrity, Misconduct

Introduction

Establishing and maintaining academic integrity has always been a focal point amongst all higher education organisations. Different institutions use a variety of measures to deter, detect, and discipline student as well as staff misconducts. As for under/postgraduates, the emphasis is now mainly focus against plagiarism and the use of ghost writing. Since these types of behaviours have become a serious challenge to academia, a holistic approach is necessary. Therefore, many institutions have rightfully established (or improved their own) institutional policies, procedures and proactive strategies. The objective of policies/procedures is to provide clear guidance with institutional expectations. They should ensure a high degree of understanding, cooperation, and good practice amongst the students and staff. On the other hand, institutional proactive strategies, include educational workshops/training, honour codes to deter plagiarism and disciplinary processes to punish the offenses (Kibler, 1993; Cole and McCabe, 1996).

DOI: https://doi.org/10.11118/978-80-7509-772-9-0186

The institutional policies, in theory, should provide fair, and appropriate responses that are consistent and transparent in detection and/or handling of suspected plagiaristic activities. Since "plagiarism", in practice, comprises of a spectrum of different dishonest behaviours including collusion, ghost writing, unattributed copying, submission of another student's work etc., robust institutional policies are important. In fact, these policies are vital in delivering a clear message to the student (and staff) about institutional perspective on plagiarism. As Cole and Conklin (1996) pointed out *"students learn from institutions' responses to academic dishonesty and from institutions' expectations about students"*. Also, due process policy responses are equally important to deter plagiarism (Academic Integrity Project, 2013). Several authors have studied about the effectiveness of institutional policies, and compared different policies (Martin, 2014; Glendinning, 2014; Foltýnek and Glendinning, 2015; Macdonald and Carroll, 2006; Hua and Sun, 2017; Rodafinos, 2018). In 2013, a large scale EU funded project, impact of policies for plagiarism in higher education across Europe (IPPHAE) have reported the strategies, including policies and procedures employed or implemented by different institutions in 27 EU countries. The study is now being extended to other countries. Apart from IPPHAE, there are only a few studies designed to compare the efficacy of measures/procedures amongst different institutions. In fact, no attempts were made to compare the procedures for academic misconduct enquiries handling a potential plagiarism/academic misconduct amongst different institutions.

Especially the steps, academic involvement, resource use and the robustness of the procedures from the point of "suspected academic misconduct" until it is resolved (either with sanctions or the case acquitted). On the other hand, discussions with fellow academics and students (during academic investigation or otherwise), have indicated their understandings about institutional procedures are somewhat blurred. Students, on one hand, showed less interest in reading these policies. Quotes such as *"these are only guidelines, and therefore no need to understand"*; or *"we are here to study, not to read polices"* are commonly voiced by many students. On the other hand, some academics said *"the policies are for reference purposes only; they are here to protect the university from law suits"*. These observations indirectly emphasise the importance of establishing institutional policies and procedures that can be easily understood by the users (i.e. students and academics). Thereby, due processes can be taken forwards in the event of any potential breaches. This workshop attempted to compare the procedures of five different institutions to understand the robustness of these processes.

The aim of this workshop was to show the participants, the importance of proactiveness and practical awareness to establish institutional procedures for handling potential plagiarism and/or academic dishonesty.

Methods

The investigation was carried out according to research ethics policy and code of practice in University of Derby. Initially a simple Google® search was employed to randomly select publicly available institutional policies of five different international universities. The selection includes universities from America, EU, UK, Australia and Asia to provide

a geographical representation. The names of the institutions were anonymised (and arbitrarily assigned as A to E), as the aim of this study (and related workshop) is to compare and contrast the due processes of academic misconduct enquiries in different institutions. Dishonouring any institutions and their due processes is beyond the scope of this study. These procedures were summarised in the form of flow charts for easy comparison. Since this is a qualitative study, a narrative comparison (with some discussions) of the procedures amongst these five universities is provided (see below).

Narrative commentary on varying institutional policies

Interestingly, the comparison of summary flow charts has shown a wide range of due processes. In fact, each institution has its own unique procedures for academic enquiry, involving different members of staff including academics, registry, special officers (such as academic integrity or misconduct officers) etc. These procedures are summarised in figures 1 to 5 below.

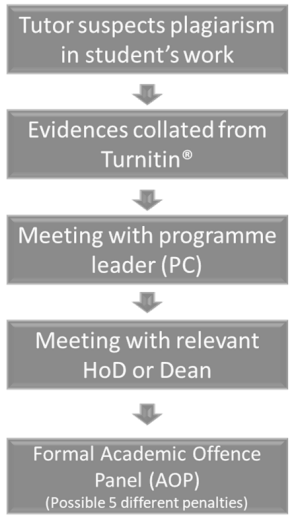

Figure 1. Flow chart summary of academic investigation procedures of university A

Procedures are summarised according to author's interpretation. This particular university uses Turnitin® software for text matching PC = programme coordinator; HoD = Head of the Department

Figure 1 summarises the procedures followed in one of the universities (university A). The procedure starts with tutor/academic suspecting potential plagiarism. Policy states that collecting supporting evidences for the accusations are expected to be carried out by the academic who then pass the "case" to the respective programme coordinator/leader (PC/PL). He/She then inspects the case, conduct an initial meeting with the student(s) to explore the case.

Should the student(s) accept the accusation, PC/PL will decide the course of actions/penalties. Although there is no clarity about the penalties, a general state-

ment describes depending on the seriousness of the misconduct, PC/PL may impose penalties such as capping the mark allocation, re-work/resubmission or may request the dean (or head of the department – HoD) to decide. The procedure up to this is considered as informal, and therefore no records (or minutes) are created about this incidence. If student fails to attend the meeting with the PC/PL, denies the accusation, or the case seems to be too complicated to be handled by the PC/PL, it is then passed it on to the dean/head of the department, who will carry out the formal investigation involving all parties and decide the fate/penalties. The prescribed penalties are similar to the ones at PC/PL level with the additional options of either failing the student or dismissal (due to seriousness of the misconduct). Finally, in the event of the dean/HoD failing to conclude a decision, the case is passed onto a college based formal academic investigation panel, which investigate and action according to the guidelines given in the policy (possible 5 different levels of sanctions from resubmission (for a capped mark) to expelling from the university. In summary, there are three important levels of investigations namely PC/PL, the dean/HoD and/or formal academic investigation panel. However, for the first two levels, the decision making is depended on a single academic. It was not clear that the academics involved were trained to handle academic offences in accordance with the policies. Moreover, there is no clear guidance on penalties for the first two levels. This would, in practice, result in inconsistencies in the approach, and sanctions applied. Most importantly, penalties are mainly linked to "severity" of the offense but no consideration for academic level.

The procedures for academic investigation in the university B is entirely different (see figure 2). There is a defined "school academic investigation panel" (SAIP) to handle misconducts. The tutors (academics), and the HoDs would prepare, check and determine whether any investigation is needed (or not) but then pass the case to SAIP. Also the accusation is independently verified by two academics before the case is passed to the HoD. All academic misconducts are dealt with one schoolwide panel which meets on regular basis. Maintaining a centralised panel would help maintaining consistency, and record keeping. However, it is not clear how it is represented, whether it consist of several members (whose representation would be on voluntary basis). Also, authors were unable to verify whether these panel members have been specifically trained in accordance with the institutional policy.

The institutional guidelines state a possible 8 different penalties which are linked to the severity of the offence, the number of times it happened (i.e. whether repeat offence), and the level of studies (entry, mid, final and/or Master levels). It looks like the penalties are made in full consideration of the nature of offense in relation with student attitude, academic abilities, and their level of study.

Procedures are summarised according to author's interpretation. Matching. Head of the Department; SAIP = School academic investigation panel

The academic investigation process in university C is unique, in that the misconduct investigation is removed from the subject specific academics and handled by academic integrity officers (or AIOs). These AIO's are specially trained to promote academic integrity, not only taking measures to educate the students to deter plagiarism and other misconducts but also to handle potential plagiarism and other offenses. When a tutor/academic suspects plagiarism, the case is passed to AIO who then schedule

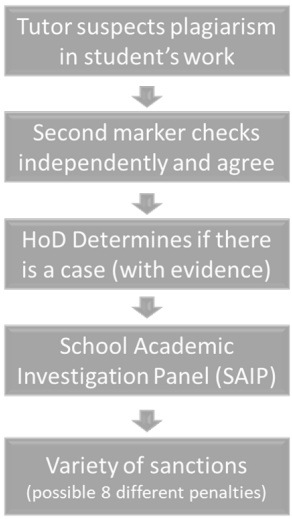

Figure 2. Flow chart summary of academic investigation procedures of university B

an informal meeting with the student(s) to discuss the issue, investigate and collect further evidences. Depending on these, the AIO decides about the penalties (if any). Based on severity, there are four different penalties prescribed, compulsory revision & resubmission; zero grade for assignment, failure of course, and suspension or expulsion from institution. Yet there is no evidence whether these are linked to the level of study or not. The investigation is centrally documented and therefore available for future references.

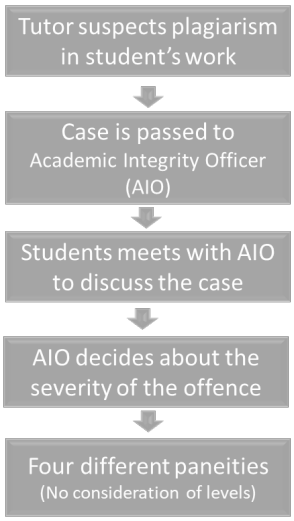

Figure 3. Flow chart summary of academic investigation procedures of university C

Procedures are summarised according to author's interpretation. Matching. AIO = Academic integrity officer

The procedures for the university D is almost identical to university C but the only difference is the academic conduct officer (ACO) does the initial data/evidence gathering, analyse the case and passed it to an institutional level academic ethics conduct panel (AECP). There are some advantages of having an institutional wide conduct panel. A centralised panel would help to maintain consistency and the records can be kept and revisited by any schools/colleges or departments. This is especially useful to the combined courses where two or more schools/departments are involved. However, it is not clear about the memberships of this panel. Is this the same panel? Are the members undergoing regular training? These questions remain to be answered.

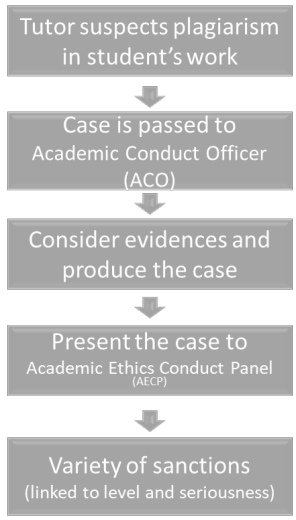

Figure 4. Flow chart summary of academic investigation procedures of university D

Procedures are summarised according to author's interpretation. Matching. ACO = Academic conduct officer; AECP = academic ethics conduct panel

The investigation procedures of university E is based according to the "severity" of the misconduct (See figure 5). Any misconduct is linked to percentage matches and weighting of the submission. If the percentage copied is less than 10% of the work, it is handled by the module convener (or leader) who may apply penalty such as 10%-mark reduction. If this is more than 10% but less than one third of the submitted work, it is handled by the programme leader. Submissions with more than one third plagiarism are handled by the departmental panel.

Procedures are summarised according to author's interpretation. Complex levels handling depending on the "severity" of the misconduct (i.e. up to 10% match – module convener; more than 10% match – programme leader; more than 1/3 of component – Departmental panel)

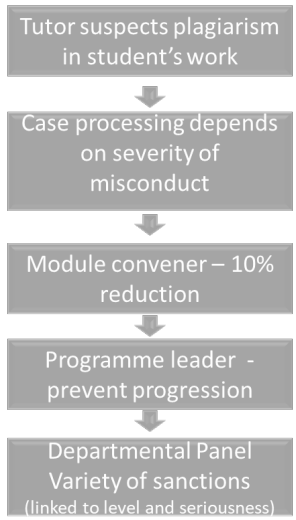

Figure 5. Flow chart summary of academic investigation procedures of university E

In our opinion, the procedure itself is too confusing which lacks vision. Firstly, the process is based on percentage plagiarised. It was not clear how this was measured. Does this mean they are relaying on percentages given by the text matching software such as Turnitin?

Secondly, depending on the "percentage matches" the case would be handled by three different individuals/panels. Despite the fact that there is a centralised documentation, it is not clear whether there be consistency in decision making?

Concluding remarks

This paper is based on a comparative analysis on the institutional policies and their effectiveness of a cross sectional selection of five universities around the world. By presenting this in a workshop at the 6th international conference on plagiarism across Europe and beyond, authors intended to generate a critical discussion to set up a general institutional guideline for academic investigation procedures. However due to the unexpected global pandemic and the resultant online delivery of this workshop, it was not possible to fulfil the second aim. Therefore, we are presenting this as authors' analysis with comparative comments.

The importance of robust institutional policies has been emphasised by several authors (Benso et al, 2019; Morris, 2018; Foltýnek and Glendinning, 2015). These procedures should be well thought probably involving all stakeholders, including academics, and student bodies (Akin and Johnson 2018). They should be transparent and due considerations should have been taken to protect the innocent victims. However, this initial comparison of these five different procedures does not show these considerations have been taken in majority of universities investigated in this study. This brief analysis

has highlighted a variety of approaches towards handling academic misconduct, some mainly focussed on plagiarism, others have considered other offenses. We have compared the procedures and produced flow charts based on their policies/procedures. Interestingly, the prescribed panels that handle these offences, in three (out of five) institutions were comprised of academics; and in some cases the academics who were involved in detecting/supporting the claim for plagiarism. It is not clear, how this setting would be fair, or would maintain confidentiality/anonymity. Others use a special panels of members of non-academics or academic support officers, who are specially trained to handle these offenses in accordance to their institutional policies. By this way, these institutions make sure the panel considering the accusation (whether it is plagiarism or not) is not involved in the assessment of work. At least one university used academics from a different discipline to handle these issues. Another institution selected members on ad-hoc or voluntary basis. This might result in inconsistencies in decision making as it was not clear whether these academics are trained to handle these accusation, especially in accordance with the institutional policies.

As for definition of severity of the offences, it was found to be varied amongst these institutions. Some have clearly defined different types of academic misconduct/plagiarism with pre-defined *"tariffs"*. For example, using Carroll & Seymour's (2006) simple classification, some universities have categorised plagiarism as (a) poor academic practice, (b) academic misbehaviour, and (c) academic misconduct and prescribed appropriate punishments for each of these categories. At least one institutional policy (university D) provided further explanation on defining the *"severity"* of these offenses. Its policy considered each occurrence of plagiaristic behaviour in two measurable characteristics namely, "intention" – the student's intention to deceive the marker (on a scale of 0 to 10); and "extent" – the amount of plagiarism (expressed as a percentage of the submission). It further explains, how to combine these two variables under different permutations. By comparing varying levels of "intention" and "extent", the policy tries to link different plagiaristic behaviour with probable penalties. On the other hand, other institutional policies are not explicit on defining different types of plagiaristic behaviours and linking them with tariffs. In contrast another institution (university E), simply linked the "severity" to percentage matches. Most institutions in this study have measures in place to maintain a clear record keeping that would help in investigating repeat offences.

In summary, this initial comparison of policies highlighting due processes in a small sample of five different institutions, has highlighted the approaches to investigate plagiarism or academic misconduct are varied. Some institutional policies have established clearly defined processes, others have vague and ambiguous due procedures. Although the original intention of this workshop was to present, discuss, and try to conclude the important elements within institutional investigation processes by involving the conference participants, we were unable to do so. Therefore, presenting this as a short paper, however the study has highlighted the importance of investigating institutional procedures in a comparative manner to provide some recommendation of institutional policies and procedures. As a part of the European Network of Academic Integrity (ENAI), we would work closely with other partners and international stakeholders to carry out a larger study and report in the future.

References

Academic Integrity Project. (2013). Embedding and extending exemplary academic integrity policy and support frameworks across the higher education sector. Office for Learning and Teaching Strategic Commissioned Project 2012–2013. Retrieved from https://lo.unisa.edu.au/course/view.php?id=6751

Akin, I., & Johnson, E. (2018). Cultivating Academic Integrity in a Digital Learning Environment. International Journal of Digital Society (IJDS): 91) https://infonomics-society.org/wp-content/uploads/ijds/published-papers/volume-9-2018-2/Cultivating-Academic-Integrity-in-a-Digital-Learning-Environment.pdf

Benson, L., Rodier, K., Enström, R., & Bocatto, E. (2019). Developing a university-wide academic integrity E-learning tutorial: a Canadian case. *International Journal for Educational Integrity* 15, 5. https://doi.org/10.1007/s40979-019-0045-1

Carroll, J., & Seymour, D. (2006) The effect of a penalty tariff on consistent decision-making in cases of student plagiarism. In: *2nd International Plagiarism Conference*, June 19–21, 2006.

Cole, S., & Conklin, D. L. (1996). Academic integrity policies and procedures: opportunities to teach students about moral leadership and personal ethics, *College Student Affairs Journal* 15(2), 30–39.

Cole, S., & McCabe, D. L. (1996). Issues in academic integrity, *New Directions for Student Services* 73, 67–77. https://doi.org/10.1002/ss.37119967307

Foltýnek, T., & Glendinning, I. (2015). Impact of policies for plagiarism in higher education across Europe: Results of the project. *Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis* 63(1), 207–216. DOI: 10.11118/actaun201563010207

Hua, G., & Sun, X. (2017). Institutional policies on plagiarism: The case of eight Chinese universities of foreign languages/international studies. *System* 66, 56–68.

Kibler, W. L. (1993). A Framework for Addressing Academic Dishonesty from a Student Development Perspective. *NASPA Journal*. 31:1, 8–18 DOI: 10.1080/00220973.1993.11072332

Morris, E. J. (2018). Academic integrity matters: five considerations for addressing contract cheating. International Journal for Educational Integrity 14, 15. https://doi.org/10.1007/s40979-018-0038-5

Glendinning, I. (2014). Responses to student plagiarism in higher education across Europe. *International Journal for Educational Integrity*. 10(1), 4–20 ISSN 1833-2595

Macdonald, R., & Carroll, J. (2006). Plagiarism – a complex issue requiring a holistic institutional approach. Assessment & Evaluation in Higher Education, 31(2), 233–245.

Martin, B. (2004). Plagiarism: Policy against cheating or policy for learning? Nexus. *Newsletter of the Australian Sociological Association*, 16(2), 15–21

Rodafinos, A. (2018). Plagiarism management: Challenges, procedure, and workflow automation. Interdisciplinary *Journal of e-Skills and Lifelong Learning*, 14, 159–175. DOI:10.28945/4147

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JOURNEY FROM CLASSROOM TO WORKPLACE – ONE STUDENT'S STORY

Swathi Venugopal, Zeenath Reza Khan

Abstract: This paper uses narrative writing to track the journey of one student's perceptions and understanding of academic integrity values through practice immersion and experiences and how that is carried into the workplace. Literature has posited that narratives offer increased comprehension, interest and engagement (Dahlstrom, 2014). The paper uses storytelling as a unique methodology to capture the student's perceptions and emotions and provides a fascinating insight into the kind of experiences that shape students' understanding of academic integrity values, thus posing as valuable contributions for academics and research globally.

Key words: Academic Integrity, Contract Cheating, Plagiarism, Workplace Ethics

Introduction

Integrity in the current world has been recognized as a character that must be inculcated within students from school age. It has been included as a part of the character building strategy in schools as they direct their attention to ethics in curriculum (McCabe et al., 2006). Technological advancements have made data and knowledge sharing easier than ever before which has also drastically increased academic misconduct. Reasons ranging from passing a simple test to landing in a desired position in the highly competitive job market have been quoted as the reasons for indulging in such unfair means (McCabe et al., 2001). This has posed a challenge for various academic personnel such as educators, researchers and librarians – the necessity to control academic dishonesty incidents with students. The rise of every new challenge in this expedition has driven academic experts to experiment various pedagogical approaches to steer students away from cheating (Chao et al., 2009). However, the effect of such approaches may go unnoticed or undermined when they are not measured effectively. Measuring an output, therefore, must include all the entities that have been involved in the procedure. Who other than students themselves would be the best scale of measurement – the ones to whom academic integrity is being taught to or at least pointed to.

However, few studies have been successful in capturing student perception, other than quantitative results. This study attempts to use a novel story telling method in the form of a case study of one student's journey and experience to provide in-depth insights on factors that enable students' likelihood to cheat and factors that help shape moral decision making in students.

Background

Brinkworth (2009) highlighted the importance of student experiences wherein despite many efforts to bridge the gap between the transition from school to university, about

DOI: https://doi.org/10.11118/978-80-7509-772-9-0195

60% of students felt inadequate followed by 'reality shock' with the onset of their first semester. This has led researchers to dig deeper into understanding student perceptions, perspectives and gain better understanding between the teacher – student interaction. Very few studies have been able to examine actual student perspectives when new modules have been introduced to realize the impact of those courses. Even as early as 1984, Robert Pace noted the 'missing element' in understanding the efficacy of higher education among students; there was a pressing need for a systematic, large scale measurement of student experiences that can shape their college journey. In the past decade, there have been many studies regarding academic misconduct mitigation, teaching methods and plagiarism detection tools. However, McCabe's surveys have shown that 95% of students have admitted to engaging in some form of cheating (ICAI, 2020). Another student survey conducted in an American school reported about 65% of its students confessed to cheating, while an alarming 85% have admitted to seeing a fellow student cheat (Danilyuk, 2020). With no intention of demeaning the efforts of academic integrity experts today, sadly, there still exists a clear discrepancy in their efforts to bridge the ethical gap and seemingly preconceived notions that exist about academic integrity. Both literature and facts clarify an important truth – cheating episodes amongst students have not decreased and academic experts need to address this seriously today more than ever before. Thus, examining a student as an individual can help educators to consider microscopic details about their academic integrity journey which may not be underscored when they are studied as a population. There are barely any studies that record the grass root reality that students encounter.

The objective of this paper, therefore, is to capture one student's experience and bring the thoughts, notions and adaptation of the student to the foreground for researchers to learn and adapt their research endeavors.

Methodology

As outlined in the beginning of this paper, a storytelling methodology has been adopted by choice to delve deeper into the real life experience of one Asian female student and her encounter with academic integrity values. Understanding a student's emotional cycle and the thought process behind a student's attitude to academic integrity was a revelation into their perspective.

In a study by David Kolb (1981), he highlighted the importance for educators to understand academic disciplines from a learner's viewpoint to address barriers that were involved in their choice of an academic discipline for higher education. Typically, this would include a student's thought process that could vary based on individual cognitive development as portrayed by William Perry (1970) in his theory of Cognitive Development. In this regard, case studies and analysis of contexts has been long critiqued in the research arena for higher education. Corcoran et al. (2004) have noted that the case study approach "allows the researcher to 'go deep' and learn what works and what does not". It can help a researcher define the various complexity of factors by contextual analysis and description. Generally, case studies embark on the journey and find the answers to "how" and "why" a situation arises as it did. For academic integrity, this facet of case studies may be critical in perceiving the role of academic

integrity in cognitive development which is critical to the student's orientation towards learning and their long term success (Markwell, and Courtney, 2006) If a case study is well-validated and defines interaction of all factors present in a system thoroughly, it can transform the course of research and yield rich results, just like any quantitative research methodology does. While researchers do understand that case studies should not always follow the generalization route by upholding one case's analysis as a template or verdict, building a database of good case studies can improve the final outcome of a research objective by its repeatability and transparency. There have been many studies being conducted on academic integrity on a quantitative basis to understand students as a population. However, there exists a definite need to understand the thoughts and emotions involved from an individual student's perspective (Comas-Forgas, and Sureda-Negre, 2010)

Correlating to this approach, narration and storytelling can explore various intricate details within human character with a window into the lives of those who experience a phenomenon (Solórzano, and Yosso, 2002). Stories have been a part of the fundamental unit of building societies as they share thoughts, experiences and structures amongst people to elicit emotion. It can help both hearers and speakers to separate positive models from negative models by providing vital support in problem solving amongst all participants of a story (Jonassen, and Hernandez-Serrano, 2002) This case study uses such methodology seeking to identify, verify and rectify the essence behind the characters involved in the case study.

Case study

Case background

The story is that of an Asian female who graduated with a bachelor degree in Business and Commerce from a western university and is currently employed. Before that, she graduated from an Asian schooling system. She began working as a research assistant to a faculty whose primary area of research was academic integrity. During her tenure working on literature, conducting background studies, and helping with organizing the International Day of Actions Against Contract Cheating and a conference on integrity on campus, she began her journey reflecting on integrity as a value, how and when it was introduced to students and how it impacted her at class, work and life.

This is her story.

My journey from classroom to workplace

"Do not be misled… Whatever a person is sowing, this he will also reap." – Galatians 6:7.

If life can be likened to a fruit – integrity would be its seed. The seed in most fruits is covered by the fruit pulp, only to be discovered after we consume the fruit. It may not be visible, but it is the core and can grow to life. Integrity is the core of a person's character, his intentions and deeds. Integrity can determine authenticity, trustworthiness and dependency of a person. Yet, it is not deemed as a 'practical' or a 'cool' concept. In my

life, I learnt the words of Galatians 6:7 by heart early on, but understood the importance of it much later.

Right from primary school, I loved to learn at school. I loved so many of my teachers and still remember them in nostalgia. My learning was sometimes determined by my love for the subject or the teacher who taught me. To the extent, if my mother taught me something at home, I wouldn't really listen but if my teacher told the same thing, I wouldn't think twice. Amongst the subjects I loved was Moral Science. It was an exclusive subject taught in Indian Schools and had a final exam. It was easy to score and had value based stories that students loved. But no teacher or moral science topic taught me integrity. It was not even a concept for consideration.

In my wits, the first time I bumped on integrity was on an exam paper that said: "Zero marks will be awarded for students who engage in unfair means and the paper will be cancelled."

So cheating or compromising your integrity was a self-understood value. The reasoning would be:

"Cheating is wrong and if you do so, you will be punished."

There was always an underlying fear of being caught cheating if you had the courage to do so.

As I progressed to middle and secondary school, subjects became more difficult to cover and understand.

From a society that judges based on marks, high net worth students are the ones that score the highest marks. With time, pressure only increased stress levels for students and parents in a race for the top rank. No matter how hard one would study, there were so many factors that determine your marks in the subject such as:

- understanding from the teacher who taught that subject,
- the teacher who sets the paper,
- the teacher who would examine answer sheet (not necessarily the one who taught would examine the paper always),
- the private tuition teacher who taught the same concept, and
- student stress management capabilities.

If you notice, none of the above factors are related to real time learning – they are related to scoring of marks in an exam.

As students, all we were worried about were – marks.

At one tipping point, we students gave up studying for exam. The pressure turned into courage – to do the wrong, to cheat. If one could spend time, think of 'sharing' strategies – marks would flow automatically. Factors that determined how well one could cheat were:

- the subject,
- your friendship with the smartest kid,
- the seating of your best friend,
- the type of 'strategy', and
- the invigilator in the exam hall.

After all, sharing is caring and students cared about their marks, the smile of approval from their parents and of course their student net worth. No student was in a position to think of real and long term consequences of such measures and neither was I.

Secondary school 'sharing' can also have a different purpose. It may not even be considered for marks but to be 'cool'. It was a 'cool' act and labelled you 'courageous'. Often instigated by the popular students who did not have 'time' to study – this was an opportunity not to be missed if you wanted to be a part of the gang. Finding different ways to cheat was cool, executing the plan was even cooler. 'Dodging the invigilator and sending signals on which answer you want' sent an adrenaline rush through teenage spines. I am not an angel; I did try it out.

I hated Physics – I still do. But I loved it once because my teacher Miss X made it practical and enjoyable. But her tests were tough or so we thought. So once when I did not study enough, I decided to try it out. The gang was there, my best friend was there and they all had a plan. It was too good to miss and I had to prove my mettle to be a gang member too. The test day arrived and we all executed it with ease. I remember the feeling of accomplishment I had – Miss X did not find out. Next Physics class was the climax, she was going to handover our test results and we were anxiously waiting. I still remember the scene: Miss X walked into the class, we wished her and for a good five minutes only kept the papers down and looked at us in silence. Anxiety was at its peak because her face suggested that we had fared badly in the test – until she uttered those terrifying words. "I know what happened – Your papers are too similar. I will give you until next class to own up."

All the gang members gazed quick looks at each other. Little did I realize then, I had not done badly in a test – I fared badly in life. After so much thinking, I went alone and owned up my mistake even though I knew I was going to be reported on.

But Miss X did the unbelievable – she didn't report to anyone. I heard there were others who owned up for some reason, but she did not say one name. Miss X did not use the fear route, her action taught us the value of actions. All she told me was: "don't do this next time – you will go nowhere in life."

Believe it or not, that was the last time I ever did so. Cheating did not take me anywhere that time and I realized there was nothing 'cool' about it. If one facet of integrity was refraining from cheating at school – I had learnt my lesson.

University came with its own challenges of a new environment and new subjects but that episode was unforgettable to every last detail. Essay mills and vendors were available with assignments to 'purchase' from but it was not a long term solution. I could 'purchase' an assignment but who would do my assignments later in life?

It was in university where I was introduced to academic integrity as the name of this entire proposition and realized it was the need of the hour than ever before.

But integrity did not stop at university too.

As a young graduate eagerly waiting to carve her niche in the corporate world, landing into a job was the next step. I was accepted into a startup digital agency that was dealing with digital marketing solutions. I was appointed as a Coordinator and Writer for websites and social media. It was a challenging role for me with its own temptations. I had to be on my toes, attending to client's requirements and multi-task.

Writing being one of those tasks, was often deemed the easier of the lot. Other writers were at constant pressure of completing their writing deadlines. I was not an exception; pressure did get to me, though.

In an effort to help me out, my management suggested that I take some content from the internet. I was quite surprised that they were ready to copy and paste it from an unknown website, change a couple of words just enough to escape from text matching websites. The work was comparatively menial, so they felt this would save a lot of time for me. But what they didn't realize was this – even if the client was not really going to check the authenticity of the content, there was a sense of trust involved. Although they never pressured me, I must admit that as tempting as it got, I was not going to do it. This was because there is an image of the company I was working with and I did not want it to be tarnished.

There were times when they felt I was a little extreme, but in the end when the client lauded the work, they too felt I had a point. To me copied content was like stealing if I did not reference my work; and it was not going to define another company's work.

Integrity took a new turn and it was the ultimate peak at work. What often amazes me in this ordeal is how they treated plagiarism – the fact that everyone knows shoplifting is wrong but not 'Netlifting' content or someone's work still boggles me. Principally, they knew that it was wrong but it was not practical enough to go the extra mile.

So does that mean one can steal from a grocer if it was 'practical' and if no one was watching? As ironic as it sounds, it is the attitude that plays an important role in determining integrity at work places.

As the saying goes, "you don't make a mistake twice, the second time you do, it's a choice". So is integrity a choice in today's world. I learned that if you are aware of integrity values, you can't make a mistake the second time. It starts from within – the attitude. And just like respect, don't expect integrity from the opposite side if you don't give it. I have learned to demonstrate integrity in my practice and expect it back. If you are denied it, demand it because the world needs it.

In the end, I believe a variety of experiences shape how we understand integrity values, particularly in the academic arena. One teacher changed my outlook. But how many students are fortunate in this curriculum?

If a student is introduced to integrity values for the first time in the university, is our education system really preparing honest, fair, trustworthy, courageous, respectful and responsible individuals? It does not stop at school, it carries deeper consequences into the workplace and beyond and I hope my story provides the insight to teachers and decision makers to realize the importance of making an active effort to introduce integrity to students at a young age.

Inferences and Implications for educators

Educators today are exploring various teaching methods to reach student minds with academic concepts that form a part of their knowledge acquisition. However, the story above does not suggest that a student can welcome plagiarism so easily, just like an

academic concept. There exists an interplay of factors that affect a student who resorts to cheating and plagiarism (refer *Figure 1*).

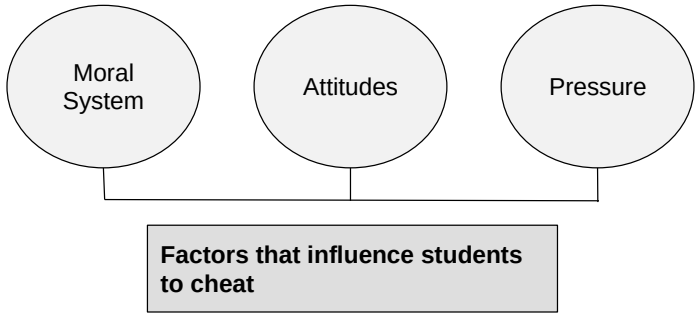

Figure 1

Firstly, students may not necessarily feel plagiarism is a part of their ***Moral system***; it is quite often an imposed value, one without much explanation about its consequences and its long term effect on individual success (Power, 2009). The female student in the story was not exposed to academic integrity as a value with a series of serious consequences. Rather, it was a self-taught concept with a narrow perspective. Hence, a student is influenced to think that it does not really matter if one cheats, as long the short term results are favorable.

The second factor that contributed to the cheating strategy is also the ***Attitude*** of the student towards learning itself. If there is a subject that did not appeal to the student due to its difficulty level or a pre-existent mental barrier (physics, in the case above), there was an additional reason to ease the situation at hand by cheating. According to the student, a well-executed plan with a good cheat "strategy" was enough to pass a test. There was no goal increasing proficiency in that subject that could add to the student's existing knowledge base. This highlights the third important factor – ***Pressure***.

In this case, ***pressure*** was to score and become a "high net worth" student in order to conform to the society composed of parents, who want their child to be the best and fellow pupils with a passive influence to "fit in" to the groupism game to attain their sense of belongingness.

This model abbreviated as MAP, reveals the basic ground level truth that provides an insight for all educators and parents who need to rethink their approach towards teaching, right from primary school onwards.

A significant lesson for educators and parents can be learned from the teacher in the story. Disciplinary actions require considerable forethought and must change for modern students. Reyna et. al (2001) outlines two types of typical teacher reactions towards students – one being Utilitarian, which focuses on amending thinking and future behavior of students and the other Retributive, which highlights a past wrong and avenges for it.

In this case of the student, the MAP model sees a slight change when the Utilitarian goal was addressed wherein the fear route was not adopted. A direct appeal to the student's moral system by highlighting a long term consequence seems to have had an

effect in the student's subsequent approach at the university level and the workplace. *Table 1* depicts the MAP model across three levels of this student's journey and shows a considerable shift in her approach which was a result of the teacher's approach.

Table 1
MAP model applied to the case study

	SCHOOL	UNIVERSITY	WORKPLACE
Moral System	Flawed – with a little or no understanding of academic integrity	Renewed thinking, introduction to academic integrity	Academic Integrity has become a way of life
Attitude	Short term – pass a test or exam. Cheating was okay if not caught by authority.	Temptation to outsource assignments but not acted upon	Integrity was important to keep company goodwill
Pressure	Scoring of marks and "fit in" peer groups	Complete complex assignments on time, new environment.	Integrity won the war, efforts recognized.

While the MAP model has simplified a student's thinking, this model may differ when having a binocular view of other students' journeys who belong to other cultures. Since different cultures have different learning techniques, therefore academic integrity approaches may also vary. The MAP model is a window to the Asian student's journey towards her understanding and maybe applied across institutions to understand any person's academic integrity journey.

Conclusion

This story brings a stark truth to the forefront – plagiarism and cheating have no starting age group when it comes into action. More often than not, it has crept into the minds of students when they are quite young and has been linked into cognitive behavior. Research shows that preschool children as young as 3 years are susceptible to various cheating practices. Children are capable of devising tactics even before they can reason, which gives another purpose for parents and educators to help students to reason out the consequences of cheating right from childhood (Ding, et al., 2014). If children have the capability of adopting 'cheat' tactics, why can they not be influenced to adopt 'study' tactics that keeps their minds away from cheating? Today, we as research experts that are envisioning the ethical future of tomorrow's leaders also have a greater responsibility to influence student's minds and steer it in the right direction. Educators have adopted and undoubtedly continue to adopt more learning strategies, with every new technology. However, it is imperative to access the student mind as frequently as possible to maneuver our approach as educators. Whether we choose to accept it or not, academic integrity is largely also a personal value that must reach hearts and it is important that we avoid restricting our studies to considering students as groups alone.

Every student's individuality, background, culture and religion may play significant roles in each approach. As researchers of academic integrity, we may need to accept that there may not be one "pill" that solves the "pandemic" called academic dishonesty, just

like every patient, every student is different and might need a combination of social, psychological, emotional and ethical prescriptions tailored for their needs. As daunting a task as this sounds with billions of students around the world within the responsibility of relatively few teachers and/or parents alone – deriving trends as a result of studying many individual experiences can improvise the MAP model to a broader concept that encompasses future challenges. If one study such as this one can provide noteworthy inferences, one can only imagine how much can be derived from studying different types of students using this methodology and model. Indeed, students may well have the antidote that we researchers may be looking for elsewhere.

References

Brinkworth, R., McCann, B., Matthews, C., & Nordström, K. (2009). First year expectations and experiences: Student and teacher perspectives. *Higher Education*, *58*(2), pp. 157–173.

Chao, C. A., Wilhelm, W. J., & Neureuther, B. D., (2009). A study of electronic detection and pedagogical approaches for reducing plagiarism. *The Journal of Research in Business Education*, *51*(1), p. 31.

Corcoran, P. B., Walker*, K. E., & Wals, A. E. (2004). Case studies, makeyourcase studies, and case stories: a critique of casestudy methodology in sustainability in higher education. *Environmental Education Research*, *10*(1), pp. 7–21.

Comas-Forgas, R., & Sureda-Negre, J. (2010). Academic plagiarism: Explanatory factors from students' perspective. *Journal of Academic Ethics*, *8*(3), pp. 217–232.

Dahlstrom, M. F. (2014). Using narratives and storytelling to communicate science with nonexpert audiences. National Academy of Sciences. Proceedings of the National Academic of Sciences of the United States of America. Available URL: https://www.pnas.org/content/111/Supplement_4/13614

Danilyuk, J. (2020). *Academic Cheating Statistics: This Is What You Ought To Know*. [online] Unicheck Blog for Education Junkies. Available at: https://unicheck.com/blog/academic-cheating-statistics

Ding, X. P., Omrin, D. S., Evans, A. D., Fu, G., Chen, G., & Lee, K. (2014). Elementary school children's cheating behavior and its cognitive correlates. Journal of experimental child psychology, 121, pp. 85–95.

Gallagher, K. M., (2011). In search of a theoretical basis for storytelling in education research: Story as method. *International Journal of Research & Method in Education*, *34*(1), pp. 49–61.

ICAI. (2020). *Statistics.* [Online] Available URL https://www.academicintegrity.org/statistics/ Accessed 24 May 2020

Jonassen, D. H., & Hernandez-Serrano, J. (2002). Case-based reasoning and instructional design: Using stories to support problem solving. Educational Technology Research and Development, 50(2), pp. 65–77.

Joy, M., Cosma, G., Yau, J. Y. K., & Sinclair, J. (2010). Source code plagiarism – a student perspective. *IEEE Transactions on Education*, *54*(1), pp. 125–132.

Kendall, J. E., & Kendall, K. E. (2012). Storytelling as a qualitative method for IS research: heralding the heroic and echoing the mythic. *Australasian Journal of Information Systems*, *17*(2).

Kolb, D. (1981). Learning styles and Disciplinary Differences. [online] Available at: https://learningfromexperience.com/downloads/research-library/learning-styles-and-disciplinary-differences.pdf

Markwell, J., & Courtney, S. (2006). Cognitive development and the complexities of the undergraduate learner in the science classroom. *Biochemistry and Molecular Biology Education*, *34*(4), pp. 267–271.

McCabe, D. L., Butterfield, K. D., & Treviño, L. K. (2006). Academic dishonesty in graduate business programs: Prevalence, causes, and proposed action. *Academy of Management Learning & Education*, 5(3), pp. 294–305.

McCabe, D. L., Treviño, L. K., & Butterfield, K. D. (2001). Cheating in academic institutions: A decade of research. *Ethics & Behavior*, *11*(3), pp. 219–232.

Munaro, A. C., & Vieira, A. M. D. P. (2016). Use of Transmedia Storytelling for Teaching Teenagers. *Creative Education*, *7*(07), p. 1007.

Pace, C. R., (1984). Measuring the Quality of College Student Experiences. An Account of the Development and Use of the College Student Experiences Questionnaire.

Perry, W., (1970). *Forms Of Intellectual And Ethical Development In The College Years*. New York [N.Y.]: Holt, Rinehart and Winston.

Power, L. G., (2009). University students' perceptions of plagiarism. *The Journal of Higher Education*, *80*(6), pp. 643–662.

Reyna, C., & Weiner, B. (2001). Justice and utility in the classroom: An attributional analysis of the goals of teachers' punishment and intervention strategies. *Journal of educational psychology*, *93*(2), p. 309.

Rooney, T., Lawlor, K., & Rohan, E. (2016, May). Telling tales: Storytelling as a methodological approach in research. In *ECRM2016 – Proceedings of the 15th European Conference on Research Methodology for Business Management: ECRM2016* (p. 225). Academic Conferences and publishing limited.

Rowley, J. (2002). Using case studies in research. *Management research news*.

Solórzano, D. G., & Yosso, T. J. (2002). Critical race methodology: Counter-storytelling as an analytical framework for education research. *Qualitative inquiry*, *8*(1), pp. 23–44.

Cunsolo Willox, A., Harper, S. L., & Edge, V. L. (2013). 'My Word': Storytelling and Digital Media Lab and Rigolet Inuit Community Government. Storytelling in a digital age: digital storytelling as an emerging narrative method for preserving and promoting indigenous oral wisdom. *Qualitative Research*, *13*(2), pp. 127–147.

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Integrity in Education for Future Happiness
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Published by Mendel University in Brno
Printed by MENDELU Publishing Centre
Typeset by Jiří Rybička
First edition
Brno 2020
206 pages, 80 pcs
ISBN 978-80-7509-771-2 (print)
ISBN 978-80-7509-771-2 (on-line)