



PLAGIARISM ACROSS EUROPE AND BEYOND 2017

Conference Proceedings

May 24–26, 2017
Brno, Czech Republic



Co-funded by the
Erasmus+ Programme
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AND BEYOND 2017**

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Supported by the Erasmus+ Strategic Partnerships project 2016-1-CZ01-KA203-023949.

Brno 2017
ISBN 978-80-7509-493-3

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KEYNOTE PRESENTATION ABSTRACTS

PLAGIARISM IS EVERYWHERE: DETECTING AND REPORTING PLAGIARISM IN PREDATORY JOURNALS AND OTHER PUBLICATIONS

Jeffrey Beall

Abstract: This presentation will describe the current state of predatory journals and publishers in the context of plagiarism and intellectual property theft. With author-pays open-access, authors become the publishers' customers, a relationship that disincentivizes the detection and rejection of plagiarized scholarly manuscripts. The talk will also describe new methods of defeating plagiarism detection – such as article spinning – and will critically analyze methods of detecting plagiarism. It'll also examine the risky, thankless, and generally futile task of reporting plagiarism. The stigma associated with plagiarism seems to have decreased, perhaps signaling a cultural change, as higher education institutions continue to grant credit for work published in predatory journals, including plagiarized work.

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EVIDENCE-BASED RESPONSES TO CONTRACT CHEATING

Tracey Bretag

Abstract: Following a number of scandals in Australia and internationally, contract cheating has been identified as a significant problem for higher education institutions across the globe. This keynote address¹ will report the preliminary findings from surveys conducted as part of a current Australian Office for Learning and Teaching (OLT) funded project, Contract cheating and assessment design: Exploring the connection (led by Tracey Bretag and Rowena Harper) which aimed to determine if and how authentic assessment may be used to minimise opportunities for students to outsource their work.

The keynote will present ground-breaking data from two large Australia-wide surveys – one of students and one of teaching staff – which explored attitudes toward and experiences with students' use of third parties to complete assessment, and related teaching and learning factors. The data provides the higher education sector with a clearer understanding of the relationship between university learning and assessment environments and contract cheating behavior.

The surveys were conducted in late 2016 at 12 higher education institutions and received over 15,000 student responses and 1,200 teaching staff responses. The keynote will share critical findings of international interest, and make recommendations for evidence-based approaches to addressing the issue of contract cheating. Delegates will be informed of:

- Self-reported rates of contract cheating, and the relationship with discipline, mode of study, age and other variables
- Implications for assessment design, teaching and learning, and institutional practices
- Evidence regarding the critical role of the student-teacher relationship

The findings from this project will inform the development of teaching and learning resources which will be freely available on the project website, as well as an online Academic Integrity training program for students and staff, led by Tracey Bretag, and due for release in 2018 by Epigeum, Oxford University Press.

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¹This keynote address is based on data from an Australian research project co-led by Associate Professor Tracey Bretag and Dr Rowena Harper, in collaboration with team members, Associate Professor Cath Ellis, Professor Phil Newton, Dr Pearl Rozenberg, Ms Karen van Haeringen and Ms Sonia Saddiqui. Project website: www.cheatingandassessment.edu.au. Preliminary versions of this presentation have been shared at the Project Symposium, University of South Australia, 13 April 2017, internal university forums and other educational conferences.

EXPERIENTIAL LEARNING, AUTHENTICITY, AND IMPROVISATION IN THE SERVICE OF ACADEMIC INTEGRITY

Teddi Fishman

Abstract: Engagement and sense-of-community have both been identified as key factors positively associated with encouraging and maintaining academic integrity. Increasing engagement and fostering community, however, are perpetual challenges with lack-of-engagements being one of the most frustrating impediments to learning. This keynote address will suggest ways to encourage engagement and community building by creating participatory, active learning experiences. The presentation will conclude with a demonstration, modeling one of the improvisational meaning-making exercises previously described. Questions and discussion are warmly encouraged.

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EUROPEAN NETWORK FOR ACADEMIC INTEGRITY

Tomáš Foltýnek

Abstract: A consortium of twelve European higher education and research institutions is running an ambitious three-year project to establish a European Network for Academic Integrity (ENAI), led by Mendel University in Brno, Czech Republic, funded through the European Union's Erasmus+ Strategic Partnerships scheme.

The Europe-wide ENAI platform is being developed as a sharing portal with learning and teaching materials for everyone to make use of, including members and non-members of the network. The presentation describes what resources the consortium members will provide, how the network will work and what events will be organized (annual conferences, training events) in the course of the three-year project and beyond.

The main idea of ENAI is to support higher education institutions to work together in the field of academic integrity: to provide a platform for academics to exchange and develop resources, to present best practices, to organize conferences, workshops and networking events, to offer opportunities for researchers and educators, to make available a central point of reference and offer awards appreciating effort of individuals or institutions.

ENAI was inspired by and is affiliated with several other organisations including the International Center for Academic Integrity (ICAI) and the Asia-Pacific Forum for Educational Integrity (APFEI).

The presentation will also provide information about the plans and progress of the ENAI project and explain how conference participants, from all levels of education and business, can take advantage of the resources being developed.

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POURING ALE ON CONTRACT CHEATING. RECENT DEVELOPMENTS IN STRATEGIES TO TACKLE GHOSTWRITING AND ESSAY MILLS USING ASSESSMENT DESIGN, LEGAL APPROACHES AND STAKEHOLDER EDUCATION

Philip M. Newton

Abstract: Any sort of university assignment can be purchased from ‘Essay Mills’ or other contract cheating services. These typically use ghostwriters to produce bespoke custom-written assignments. Contract cheating services are quick, cheap, flexible and widespread.

Many strategies have been proposed to address the use of Essay Mills and other ‘contract cheating’ services. This keynote will review recent research and development in three key areas; Assessment design, Legal strategies, and stakeholder Education.

Assessment design considerations will be influenced by recent research on the types of services currently offered (or not), the numbers and characteristics of students using them, and their reasons for doing so.

Legal and regulatory approaches have been the subject of research which identified key areas where contract cheating might be targeted, but has also revealed some complicating factors. These could be addressed by the creation of new laws or the modification of existing legislation.

Education of all stakeholders is essential to ensure that students understand how and why to do ‘the right thing’, and the hazards associated contract cheating. Staff need access to education which helps them understand the issue, along with the design of valid and resilient assessments that can withstand challenge from contract cheating. Recent research has shown that academic integrity is not, currently, part of the mainstream discourse of learning and teaching in Higher Education.

Future priorities for research and advocacy will be identified and discussed.

The content of this session will be complementary to a workshop on legal approaches to contract cheating and a panel discussion on contract cheating.

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COMPETENCES FOR DEMOCRATIC CULTURE – A REFERENCE AND A TOOL FOR PROMOTING ACADEMIC INTEGRITY

Calin Rus

Abstract: The final declaration of the Conference of the Ministers of Education of the Council of Europe member states, adopted in Brussels in April 2016, endorsed the model of competences for democratic culture (CDC) and encouraged the Council of Europe to pursue the development of a reference framework around this model, with potential use at all levels of education. The RFCDC can be also useful in promoting academic integrity in higher education. Some of the elements of the CDC model, including values, attitudes, skills and knowledge and critical understanding, as well as some of the corresponding descriptors of competence, are particularly relevant for building the capacity of students to initiate their research activity based on the principles of academic integrity, to recognise plagiarism and to take a stand against unfair academic behaviour. The promotion of CDC in higher education is also conducive to a general climate supporting integrity and discouraging plagiarism.

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SECTION I
BEST PRACTICES AND STRATEGIES FOR AWARENESS,
PREVENTION, DETECTION OF ACADEMIC
MISCONDUCT

FULL PAPERS

HONORARY AUTHORS AND UNWITTING: PERSONAL EXPERIENCE WITH A JOURNAL FROM A PUBLISHER INCLUDED IN THE BEALL'S LIST OF PREDATORY PUBLISHERS

Marco Cosentino, Franca Marino, Chandana Haldar, Georges J. M. Maestroni

Abstract: Honorary authorship is naming as authors individuals not meeting authorship criteria. Disregarding or violating authorship criteria undermines research accountability and it's a reason for paper retraction.

Two of us (MC, CH) were unwittingly included as authors of a paper in an open access journal from a predatory publisher according to the Beall's list. Discovery occurred on Google Scholar. Data used in the paper were collected by the corresponding author while she was visiting scholar at MC's lab. Data were inconclusive and were presented with multiple fabrications and falsifications. Two of us (FM, GM) were not mentioned despite major contributions to study conception and data acquisition.

We asked the editor-in-chief for paper retraction, informed the corresponding author's University in India, and the Indian Society for Scientific Values (ISSV). The editor-in-chief agreed about retraction, which was however delayed with specious reasons. ISSV will take up the case only after retraction. The corresponding author's University did not reply so far. After one year, the paper is still online, and might be retrieved by anyone e.g. reviewing unwitting authors' manuscripts or grant applications.

This case highlights the need to develop sound authorship criteria and best practices to ensure integrity of the authorship attribution process as well as of scientific publications as a whole. The potential role of research institutions, scientific societies and other national and international bodies will be critically analysed.

Key words: authorship criteria; honorary authorship; scientific misconduct; predatory journals

1 Introduction

Results of scientific research are usually communicated in the form of meeting presentations, journal articles, books and other original work. Authorship of abstracts, articles, books and book chapters, patents, etc. are the basis for individual credit and reputation among peers as well as more in general at the societal level, and may have important implications for academic career, social acknowledgement and popularity, economic and financial revenues, etc. From a societal point of view, academic authorship is one of the main fundamentals of scientific research accountability, and unethical allocation of authorship credit is considered as a kind of scientific misconduct (reviewed in Kumar, 2008).

Criteria for authorship assignment are usually different across academic disciplines, and even journal editors do not always agree on what constitutes authorship. In the biomedical field however the most authoritative and extensively acknowledged guidance has been published and periodically updated by the International Committee of Medical Journal Editors (ICMJE, 2016). According to the ICMJE, authorship should be based on the following 4 criteria:

- i. *“Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND*
- ii. *Drafting the work or revising it critically for important intellectual content; AND*
- iii. *Final approval of the version to be published; AND*
- iv. *Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.*

In addition to being accountable for the parts of the work he or she has done, an author should be able to identify which co-authors are responsible for specific other parts of the work. In addition, authors should have confidence in the integrity of the contributions of their co-authors. All those designated as authors should meet all four criteria for authorship, and all who meet the four criteria should be identified as authors.” (ICMJE, 2016).

Several types of infringement of authorship criteria are well known to occur across the scientific community, resulting in various types of fake authorship (Table 1).

Besides these well known categories, in recent years a novel type of misattributed authorship is being reported, which consists in the inclusion of senior colleagues as co-authors without their knowledge (Dyer et al., 2017; McCook, 2016). Such behaviour has been reported to occur together with data fabrication/falsification and may aim at increasing the impact of the manuscript as well as the reputation of the author, who in this way appears to have conducted fruitful collaboration with well known senior colleagues.

We report hereafter a recent experience involving some of us, who discovered just by chance that they had been unwittingly included as authors of a paper in an open-access journal from a predatory publisher according to the Beall’s List. The case is discussed in the context of the current framework for authorship protection and paper retraction, highlighting its inherent limitations and suggesting possible solutions.

2 Case study

2.1 *The beginning: asking to delete authors’ names*

On September 13th 2015, one of us (MC) serendipitously discovered – thanks to the automatic email update service provided by Google Scholar – that he had been listed as co-author on a recent paper (from here and thereafter “Paper”) published on an open-access journal (“Journal”). The Paper listed a total of four co-authors, including the corresponding author (SR), who in 2007 had been visiting scholar at MC’s lab. The Journal which published the Paper was at the time included in the

Table 1

Unethical allocation of authorship credit (adapted from: Kumar, 2008; Pearson, 2006; Weijer and Akabayashi, 2003)

Type	Description
Guest authorship	One has not done any significant work towards the paper but has his name as one of the authors.
Gift authorship	A kind of guest authorship in which the authorship has been gifted to a person by other author/s, to receive some other favours in return from the 'gift author' (e.g., the gift author is a senior researcher involved in promotion and salary of other authors).
Pressured authorship	Also known as "publication parasitism", it occurs when a senior colleague forces the original researchers to include his/her name due to the fear of his/her authority in the institution.
Ghost authorship	The named author is not the actual author of the article. It typically occurs in industry-academic partnerships, e.g. whenever drug companies would like to mask their involvement in the research thereby hiding their conflict of interests.
Honorary authorship	Similar to gift authorship, except that it does not necessarily imply any favours in return. For instance, biologists may routinely put supervisors or lab heads last in an author list, while organic chemists might put them first, and in some countries it is standard for the department head to take credit on a paper regardless of contribution.

Beall's List of potential, possible, or probable predatory scholarly open-access publishers, a list published and regularly updated by University of Colorado Denver librarian and researcher Jeffrey Beall, including open-access publishers which, according to Beall's definition, tend to exploit the open-access model by charging the authors fees without providing all the expected publishing services display "*an intention to deceive authors and readers, and a lack of transparency in their operations and processes*" (Butler, 2013). Jeffrey Beall coined the term "predatory publishing", one of the most prominent questionable practices of these journals being the publication of manuscripts without any rigorous editorial and/or peer review, as also suggested by the results obtained by John Bohannon, a staff writer for the journal *Science*, who submitted to 304 open-access journals a spoof paper which was eventually accepted by about 50% of them (Bohannon, 2013).

The data used in the Paper had been actually collected by SR at MC's lab during her stay, however they were used without MC's knowledge and permission. In previous discussions with SR, MC clearly expressed his definite opinion that data were inconclusive and at least awaited further confirmation in replication experiments. SR was therefore well aware that MC would not agree with their publication in the present form.

Further concern was due to the failure by SR to acknowledge: (i) the role of another colleague (GJMM, co-author of the present study), who substantially contributed to the conception and design of the work, and assisted SR in performing some assays; (ii)

the role of the colleagues and staff at MC's lab, who extensively supported SR in her work and performed many of the assays; and (iii) the fellowship grant that SR received from the hosting University during her stay in MC's lab. Finally, among the co-authors was listed another colleague (CH, also co-author of the present study), who had been SR's mentor and was not aware as well of the existence of the present Paper.

After a brief email consultation, we (MC, GJMM, CH) decided to ask the Editor-in-Chief (EIC) of the Journal to delete MC's name from the list of authors, as well as from all related records, stating that none of us knew about the manuscript and had any opportunity to revise the text and therefore to approve it. Furthermore, none of us would agree to be accountable for the work and would support its accuracy or integrity.

2.2 *Further step: reviewing the paper and identifying serious misconduct in data analysis and reporting, supporting a retraction request*

The EIC replied in less than 24 h, stating that “*we take issues such as the ones you've raised above very seriously and we will take the appropriate measures*”. However he also added that before proceeding with any action, he would like to know from us “*whether or not the data presented in this paper... meets the scientific rigor that you would have expected had [SR]seen fit to have you look at the paper prior to its submission*”.

We therefore performed a thorough analysis of the data as presented in the Paper, comparing them with the records contained in the lab books of MC's lab, and in a subsequent email to the EIC we highlighted the following main flaws:

(i) Several figure legends were mistakenly attributed. In the legends it was stated that $n = 5$ replications were performed, however according to our records only one sample was assayed in duplicate. Pretended significance of the differences was therefore not supported by any reproducibility of the data and of course neither by any statistical analysis;

(ii) In legends to other figures, it was stated that $n = 5$ replications were performed however, according to our records, samples from only 2–3 different subjects were assayed. Reproducibility and statistical significances therefore were not supported by the data;

(iii) In several instances it was stated that 5 replicates were performed, however in our lab records we had only 3 experiments, which moreover did not include treatments with many of the reported pharmacological agents. Moreover, statistical analysis as described in the methods and figure legends made no sense at all;

(iv) In the methods used for cell proliferation, the use of ^3H thymidine was mentioned, however no results were subsequently provided. Indeed, no experiments with ^3H thymidine were ever planned, also because the technique was not available in our lab.

We detailed our findings in a subsequent email to the EIC, concluding that as a whole the Paper suffered from many serious violations of scientific integrity, including data falsification.

Once more, the EIC replied stating that he was going to meet with “*several members*” of the Editorial Board of the Journal. He was back in touch with us on October 12th 2015, about one month after our initial report, proposing two alternative options: (i) email

him a short note stating that the Paper was submitted without our consent, and asking to delete the names of unwitting authors (which we actually already did one month before, in our first email!), or (ii) ask for retraction. In the latter case the EIC would have informed SR's institution, but he also added that he would publish the retraction but SR could choose not to agree with this decision. It was unclear what would then happen, in that case. We therefore asked for clarification, but the EIC just confirmed his previous email without adding any additional detail.

At this step, we decided to inform officially the Rector of MC's University, which originally provided the fellowship grant to SR and that was mentioned in the Paper as the affiliation of MC. We also informed the Chancellor and the Vice Chancellor of the University in India where SR was currently working. We were then back in touch with the EIC asking for a retraction of the Paper "*for research misconduct, and to protect our scientific reputation as well as the reputation of our institutions*".

This time, the EIC replied stating that he completed the analysis of our request and that his decision was to retract the paper. To this end, he asked that we will write a short paragraph regarding the retraction, for publication in the next available issue of the Journal. He also added that "[he] *decided that, indeed, [SR] has committed 'scientific misconduct'. However, due process dictates that she will have an opportunity to indicate if she does or does not agree to the retraction of this paper. This formality is in keeping with standard procedures regarding matters such as these. I anticipate that she will not sign on to the retraction, but nevertheless the paper in question IS TO BE RETRACTED* [uppercase in EIC's email]". On November 7th 2015 we sent the required paragraph, which the EIC forwarded to the Editorial Office (?) of the Journal 10 days later, stating in the email that he "*will await [SR]'s response. She can disagree with the retraction. However, this paper is hereby retracted.*"

2.3 Indefinite procrastination

Despite EIC emails and commitment, on December 30th 2015 the paper was still online, and a web page counter indicated that it had been visualized more than 11,000 times (!). During 2016, we contacted several times the EIC, who as usually replied with generic apologies, reassuring us about the ongoing process, but at some point also stating that the corresponding author, SR, was opposing the decision.

Meanwhile, we had written also to the President and to the Secretary of the Society for Scientific Values in India, providing them with all the information about the case. They quickly answered in less than 24 h, stating that SR "*appears to be guilty of fabrication of data, forgery and cheating. In any case, the journal should retract the paper on the complaint of the two co-authors who were not involved in clearing the manuscript.*" They however also added "*Please let me know when the Journal retracts the paper. We will, thereafter, take up the case with the Vice Chancellor*".

As a final step, more than 6 months after our official request for retraction and nearly 9 months after our initial report to the Journal, we contacted RetractionWatch, a blog that reports on retractions of scientific papers to increase the transparency of the process, and obtained an interview which allowed us at least to clarify that we were very frustrated by the delay in the retraction of the Paper and that we worried very

much about the possibility “*that anyone might retrieve this paper e.g. while reviewing a submitted manuscript or even a grant application from my group. It will be never possible to establish whether, when and how it might happen, but clearly this is a serious possibility as long as that paper will remain out on the web.*” (Palus, 2016).

In the meantime: MCs University, which as all universities in Italy has no Office for Research Integrity and/or any dedicated offices, took no action; SR’s University in India provided no answer; the Society for Scientific Values in India answered (as above described) stating that they would not take any step before the Journal would retract the Paper. And of course the Journal did not retract the paper at least for the whole year 2016.

2.4 *Finally an end, maybe*

The case came to an apparent end only at the beginning of 2017, when SR contacted by email MC to inform that her University in India was going to take serious sanctions on her based on the allegations received in the previous months. It is noteworthy that the University in India never acknowledged the receipt of our email and/or surface mail sent by courier. MC replied stating that “*I sincerely hope that you will not suffer any excessive consequences from this very sad situation. From the personal point of view I remember you during your stay in our institute as a very serious and hard working researcher, as it is also stated in the letter of support which I was pleased to provide you in 2008. I can easily believe that the subsequent events were due mainly to lack of experience and excess of naivety. Nonetheless, I am also confident that at this point you can very clearly perceive the seriousness of what happened.*” Despite her previous opposition, SR now complied with MC’s requirement to support the Paper retraction request, which she did several times without any answer from the EIC of the Journal. Anyway, after some weeks the Paper was finally retracted and the retraction note now available on the Journal website states that “*soon after publication of the paper in the Volume..., the authors of the paper would like to retract the paper for their personal reasons.*”

We are not aware of any specific agreement or transaction eventually occurred between SR, the Paper corresponding author, and the EIC of the Journal, neither we know about any eventual result of the putative disciplinary procedure at SR’s University in India. Meanwhile, SR has published three more papers on this same Journal.

3 Discussion

Academic authorship is fundamental for research accountability as well as for individual reputation and career of scientists. It is therefore surprising that very few is made to ensure honest and ethic authorship attribution. But who is actually in charge of such a fundamental responsibility?

According to the ICMJE (2016), “*The individuals who conduct the work are responsible for identifying who meets these criteria and ideally should do so when planning the work, making modifications as appropriate as the work progresses. It is the collective responsibility of the authors, not the journal to which the work is submitted, to determine that all people named as authors meet all four criteria [mentioned in the Introduction*

section]; it is not the role of journal editors to determine who qualifies or does not qualify for authorship or to arbitrate authorship conflicts.”

The Committee on Publication Ethics (COPE), with over 10 000 members worldwide among journal editors from all academic fields, provides advice to editors and publishers on all aspects of publication ethics and, in particular, how to handle cases of research and publication misconduct. The COPE in 2003 issued a guideline for authors about how to handle authorship disputes (COPE, 2003). According to such guidelines, “You may ask a journal to withdraw your name from a paper if it has been included against your wishes. However most editors are reluctant to get involved in disputes about omitted authors since they do not have enough information to judge such cases. Some journals have an ombudsman, but they deal with cases of alleged misconduct by the journal. Similarly, COPE only hears cases submitted by journal editors and is not an appeal body for cases of disputed authorship.”

Both the ICMJE and the COPE therefore support the notion that it is not the primary responsibility of journals and editors to deal with authorship conflicts, and that scientists are primarily responsible to identify who meets criteria for authorship, a situation which nonetheless is in turn widely vulnerable to flaws and frauds like those summarized in Table 1 and described in the present case report.

Interestingly, however, the ICMJE also states that “If agreement cannot be reached about who qualifies for authorship, the institution(s) where the work was performed, not the journal editor, should be asked to investigate.” The COPE database includes some cases which were actually resolved with a similar approach (COPE, 2015). Indeed, some of us previously already supported the idea that also institutions must be accountable for research integrity (Cosentino and Picozzi, 2013), considering that so far “unfortunately, research institutions are still mainly concerned with responding to allegations of misconduct. They are, however, affected by individual researchers’ misconduct in that their reputation will be damaged and their attractiveness reduced to potential funders and partners in scientific research. Prevention of misconduct and training in research integrity, targeting primarily young researchers, should therefore become a priority and will also meet ethical and social obligations and responsibilities.”

In the case described above, institutions are absent for most of the time: the University where the unwitting co-author was working was informed that its name was included into an extensively flawed Paper freely available on the Internet but did not take any initiative. It must be mentioned that in Italy no universities have anything similar to an Office for Research Integrity, and research integrity issues still receive low priority in both teaching and research. On the other side, the University in India where the corresponding author of the paper presently works, although nearly immediately informed, did not act to any appreciable extent for more than one year, and we can just hypothesize that eventually any disciplinary procedure took place, based on the recent email correspondence between the corresponding author and the unwitting co-author. No information however is available on the website of such University, in particular regarding research integrity policies and procedures.

A first conclusion which can be drawn from the present experience is that institutions where scientists work should be prepared to take their own responsibility in ensuring the integrity of research performed under their names, as well as to deal

with allegations of misconduct, for the reasons mentioned above (Cosentino and Picozzi, 2013). We believe however that the successful achievement of such objectives is not just a matter of rules, audits and eventually of sanctions, but – first of all – it depends on the promotion and development of an appropriate institutional culture and environment which should support individual and collective behaviours characterized by transparency, openness, continuous discussion and exchange of information among research groups as well as between individual researchers. Academic departments should encourage periodical meetings and seminars where researchers will have the opportunity to present and discuss their ongoing research activities, confronting with both junior and senior colleagues. We consider that a paper (a book, a book chapter, etc.) which includes the affiliation of our institution, even if it does not list our names among the authors, may nonetheless affect in some way also our own reputation, as well as the reputation of all the people working in the institution. We were recently told about the “experimental procedure” attempted in a Portuguese University, where the authors of a study, before submission to a scholarly journal, sent out the manuscript for review and discussion to all the members of the department (Laura Ribeiro, personal communication). Such kind of procedure should be carefully evaluated in terms of costs and benefits as well as of sustainability, in particular in large and/or multi/interdisciplinary departments, nonetheless we feel that novel approaches like this one might have the potential to significantly improve the overall quality and integrity of research, including the fairness of the authorship attribution process.

From the technical point of view, journals and publishers should also take some responsibility, e.g. in doing their best to ensure that the indicated authors are actually aware and agreeing to be listed as authors. An increasing number of journals is now sending all the correspondence related to a manuscript submission not only to the corresponding author but also to all the other authors. The use of fake email accounts may however easily circumvent this measure. Faking an email account is a well known strategy e.g. to allow for fake reviews by the authors themselves (Ferguson et al., 2014). It would be ethical that scientists use their institutional email in any situation related to their scholarly work (when submitting manuscripts to journals, as email address for future correspondence, as email contact during the process of grant application submissions etc.). Such a behavior would result in a sort of certification of the identity of the person sending (and receiving) the correspondence, at the same time also representing a sort of due acknowledgement of the support received from the institution which is hosting the scientist.

A final comment is deserved by the fact that the reported case involved a Journal by a publisher at the time included in the *Beall's List of potential, possible, or probable predatory scholarly open-access publishers*. Indeed, the EIC of the Journal adopted a self-contradictory and procrastinating approach, and delayed Paper retraction for more than one year, finally mentioning in the retraction note just “*personal reasons*” of the authors as the only explanation.

Since then, Jeffrey Beall, associate professor and librarian at the University of Colorado Denver, has decided to take down his website, which is now no longer available (Oransky, 2017), and it seems that also his personal faculty page is no longer available (Kulkarni, 2017). Beall's blog had listed more than 1000 open-access publishers

which used more or less fraudulent practices, undermining the open-access model and in a wider perspective the confidence of the scientific community and of the society in general in scientific research. His list over the years was actually also a source of controversies and some publishers threatened to sue Beall for defamation (Kulkarni, 2017). Our experience with a Journal and a Publisher originally included in the Beall's List cannot but support the need for more research and inspection into the methodologies and practices of the too many questionable open-access publishers.

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SCORECARD FOR ACADEMIC INTEGRITY DEVELOPMENT: BENCHMARKS AND EVALUATION OF INSTITUTIONAL STRATEGIES

Irene Glendinning

Abstract: This paper develops and elaborates on the content of a recent workshop that was presented at the ICAI Athens conference in September 2016.

The Scorecard in Academic Integrity Development (SAID) has evolved from two earlier tools that were designed with a similar purpose: the Academic Integrity Rating System (AIRS) developed by the International Center for Academic Integrity (ICAI) and the Academic Integrity Maturity Model AIMM, that was developed as part of the project Impact of Policies for Plagiarism in Higher Education Across Europe (IPPHEAE). The purpose of all three tools is to provide a supportive evaluation of institutional strategies for academic integrity and suggest where there are strengths and where improvements could be made. The feedback from SAID is designed to encourage institutions to review policies and systems that appear to be less robust.

SAID uses of a set of on-line surveys to create an institutional profile of a university or college based on responses from the perspectives of students, teachers and managers. The questions are designed to explore a range of academic integrity strategies, policies and practices. The scoring is currently semi-automatic and the feedback is generated manually.

The paper will elaborate on the details of benchmarks on which the survey questions and evaluation methods are based. It will also explore key influences in the development of the tools and how they have been refined over time. The paper provides an insight into what an evaluation under SAID will mean for an institution in terms of resource commitments and benefits.

At this stage the team are piloting the tools with interested institutions and the only available language version is English. However the plan is to validate the tools by running surveys in several countries to gain feedback on whether the questions and concepts are meaningful for different educational cultures and systems and whether the feedback is valuable, meaningful and accurate. The next stage will be to translate all the survey questions into other languages to extend the possible use (Spanish, French, German initially) and automate the evaluation process as much as possible using suitable technology.

Key words: Academic Integrity; higher education policies; academic misconduct; plagiarism; good academic practice

1 Introduction

1.1 Background

Higher Education can be increasingly perceived as a global industry, not just in terms of the international nature of collaborative research, but also concerning mobility of students, academic teachers and free access to ideas and knowledge. Internationalisation makes it imperative that the education community develops a globally shared vision about academic standards, understanding of best practices and reliability of academic qualifications.

Recent research into higher education in different parts of the world (e.g., Davis, 2011; Glendinning, 2016; Hayes & Introna, 2005, SEEPPAI results 2017) reveals a range of conflicting views about what constitutes good academic practice. In some countries, such as Albania, Bulgaria, Romania, Nigeria, China, corruption and cheating can be perceived as a normal aspect of daily life in both civil society and education (Transparency International 2013, Glendinning 2016, Daniel 2016, SEEPPAI results 2017). In such cultures people who do not resort to unfair practices can be at a disadvantage when considering day to day matters, business transactions and academic qualifications.

Where academic integrity is compromised within an academic community, either through condoning or ignoring different forms of academic misconduct, or having no effective counter-measures for discouraging misconduct, then academic qualifications can no longer safely reflect the achievements of graduates. Where this happens the reputation of the institution is undermined and its capacity to engage in globalisation becomes severely limited.

In common with many like-minded researchers throughout the world, the author and co-developers are exploring ways to disrupt current unfair and unethical practices affecting education by encouraging the adoption of values aligning with principles of academic integrity. The first priority is to find a shared language about what is included under the term academic integrity and agree definitions of what constitute acceptable academic practice. The initial focus is limited to higher education institutions, but the intention is to broaden the scope to other levels of education once the tools have been validated.

The development team aims to address disparities in approaches taken towards academic integrity in different institutions and regions. Our particular focus is first to identify and pilot a set of benchmarks and associated tools that can be used to measure current institutional status regarding their approaches to academic integrity. The tools have been designed to indicate where strengths and weaknesses lie in current policies, procedures and educational programmes, in order to encourage the institution to set priorities in developing their institutional culture.

1.2 Strategies for Academic Integrity

Although many higher education institutions across the world have well established policies for managing academic integrity, including how allegations of academic misconduct should be handled, what penalties should be applied (e.g. Bretag & Mahmud 2014, Morris 2011) and how students receive instruction and guidance on sound academic practice, many other institutions do not have such policies and systems. Research suggests that even when institutions claim to have strategies and policies in place, sometimes there is no monitoring or enforcement, which means that students do not receive adequate guidance and cheating can go unchallenged (IPPHEAE results 2013, SEEPPAI results 2017, Orim 2015, Bakradze et al 2016, Hajrulla 2015, Manasiey & Mujkic 2016, Zhivkovikj 2016). Clearly where there is no effective control of academic standards underpinning academic qualifications, there are very serious implications for graduates (for example in medicine, healthcare, engineering,

architecture) who become responsible for aspects of workplace safety (Copy-Shake-Paste blog).

A statement that has appeared occasionally in surveys about student cheating is the claim that “our students do not plagiarise or cheat” (for example see IPPHEAE report for Estonia 2013 and SEEPPAI results 2017). It is easy for senior managers in higher education institutions to be convinced that their strategies, policies and procedures for managing violations to academic integrity are adequate for deterring academic misconduct if there is no evidence to the contrary. However different managers, teachers and students in the same institution will have their own views about this that may differ substantially. One way to find out about the institutional culture of academic integrity is to conduct an institution-wide survey to capture and compare the views of managers, academic teachers and students.

2 Evaluating Academic Integrity Strategies

When designing an institutional survey to explore customs and practices, the first consideration is what factors to include and how measure and distinguish the shades of grey between excellent and poor practice. The team is currently working on the fine detail to implement their ideas, based on previous research throughout the world.

The Scorecard in Academic Integrity Development (SAID) is a set of on-line tools developed by the team that can be used by educational institutions to evaluate their academic integrity strategy, policies and procedures and receive feedback on areas of strength and opportunities for further development.

SAID was inspired by two previous tools created independently by two of the team, each with a similar purpose: Tricia Bertram Gallant developed the Academic Integrity Rating System (AIRS) on behalf of the International Centre for Academic Integrity (ICAI); the author developed the Academic Integrity Maturity Model (AIMM) as part of the project Impact of Policies for Plagiarism in Higher Education Across Europe (IPPHEAE). SAID has adapted features from both AIRS and AIMM, together with evidence from research undertaken previously in the UK (Glendinning 2016; Morris, 2011), Australia (Bretag & Mahmood, 2014), and USA (AIRS; Bertram Gallant & Drinan, 2008; McCabe & Pavella, 2012).

At the heart of SAID is a set of ten characteristics that the team believes are indicative of well-designed, effective and mature strategies for encouraging a culture of academic integrity and for managing violations to the institutional values:

- Top level governance and strategic commitment to support academic integrity
- Clear and consistently applied policies and procedures for academic integrity
- Fair and proportional sanctions applied across the institution or campus
- Engagement and buy-in of whole academic community towards strategies for deterring academic misconduct
- Institutional culture and values for encouraging scholarship and deep learning
- Student leadership in actively supporting the institutional strategy for academic integrity

- Transparency, openness, maintaining institutional data, effective communications at all levels
- On-going evaluation, monitoring, reviews to enhance strategy, policies and systems
- Engagement with research and development within and external to the institution into academic integrity
- Institutional understanding about what is acceptable academic practice, in line with international norms

The on-line tools take the form of an institutional survey that can operate in two different ways, either a short-cut assessment or a full survey.

The short-cut approach requires a designated representative to answer the survey on behalf of an institution. This will produce a score for each characteristic and brief overview on the institutional strategy that can be compared to other anonymous institutional results. The result may be used to identify which areas of policy need strengthening or justify whether a more detailed full institutional survey would be beneficial.

The full survey requires responses from students, academic teachers and senior managers. It can be conducted across part or all of an institution, either using a sample of the academic community or whole population approach. Survey questions have been customised for the three different levels of respondents. The score and feedback for each of the ten characteristics factors in the level of consistency in the responses collected from the three levels of participants.

The feedback for both short-cut and full survey provides information about strengths and weaknesses and suggestions for how to improve and where to prioritise effort. The scoring and feedback is currently done off-line, but the plan is to automate the process, when trials have proved the value and efficacy of the tools and scoring process.

3 Benchmarks for Academic Integrity

Independent of the on-line tools, the ten SAID characteristics potentially provide a set of global benchmarks that can guide institutions when designing and strengthening their strategy. In promoting and piloting the tools the plan is to try to reach a consensus with feedback from participants internationally on what is seen as important and what has the most impact in different educational settings and cultures. The first stage is to appreciate the nature of each of the characteristics in some detail. The ten characteristics and underlying principles and values described below were synthesised by the team members, drawing on a range of pivotal resources (AIRS, Bretag & Mahmud 2014, Glendinning 2013, 2014, McCabe & Pavela 2012, Morris 2011).

1. **Top level (typically institution or campus-wide) governance and strategic commitment to support academic integrity.**

The team asserts that for a strategy to be effective there needs to be commitment and investment at the top level of the organisation. Therefore questions in this part of the survey largely target senior management level to explore these aspects. However related questions for students and teachers check how well the strategies are communicated and understood. Evidence of any institutional preventative

strategies for deterring cheating and how diligently and consistently they are implemented are also of interest. Exploring who is involved in the process of formulating strategies and in what capacity, help to determine the inclusivity of the approach taken. The team believes that a transparent and inclusive approach is a sign of mature governance.

2. Clear and consistently applied (institution-wide) policies and procedures for academic integrity

The second characteristic concerns policies and procedures for dealing with integrity violations. The key factor on violations is to determine what measures are taken to try to ensure that all students accused of cheating are treated fairly and consistently, including provision of training for decision makers and rules on rights of appeal. Understanding whether records on violations are maintained and how the statistics are used in strategy and change management is indicative of whether the institution is self-reflective and improvement focused.

3. Fair and proportional sanctions applied across the institution

To be fair to all students, sanctions or penalties for integrity breaches need to be applied consistently according to rules or formulae decided for the whole institution. Any sanctions should be in proportion to the seriousness of the offence, but taking into account the student's background, knowledge and circumstances. The institutional community should be aware of what purposes the sanctions will serve (for example: educationally corrective, adjustment to address unfair advantage, personally punitive, serving as a deterrent) and be mindful of any unwarranted side-effects from decisions that could adversely affect the student's future career.

4. Engagement and buy-in of whole academic community towards strategies for deterring academic misconduct

There are several interdependent elements to this point that we will unpack for clarity. Firstly the whole academic community, students, teachers, managers, administrators all have serious interest in helping to discourage student misconduct; if misconduct is not actively discouraged, then workload increases in order to manage the growing number of disciplinary cases; moreover, academic standards and qualifications become insecure, to the detriment of the whole institution. A blunt approach to deterrence would be to apply very draconian procedures and sanctions, which can encourage academics to ignore or by-pass the rules and procedures, inevitably leading to inappropriate outcomes (Glendinning 2013 IPPHEAE report on Sweden). In summary a balanced and mature approach to deterrence involves an academic community that grasps the broad consequences of student cheating and works together to support measures to strengthen assessment, to educate and guide against all forms of academic misconduct.

5. Institutional culture and values for encouraging scholarship and deep learning

The logical reasoning behind this characteristic is that by encouraging learning as an essential part of acquiring essential knowledge and skills and promoting institutional values that demand scholarly thinking and dialogue throughout education,

the purpose of cheating becomes irrelevant. To approach this nirvana, institutional integrity and ethical values must permeate the whole academic community and all its practices. Conduct of senior management should be exemplary and academic staff viewed as role models on academic conduct. Such a culture of academic integrity should encompass all areas of public and private life of every member of the academic community. Areas of note for ethical practice and integrity applying across the institution include a transparent and robust approach to quality assurance, individual honesty about experience and academic qualifications, integrity in research and publications, not admitting students who lack suitable qualifications and fairness and equality in employee recruitment.

6. Student leadership in actively supporting the institutional strategy for academic integrity

The author considers that involving student leaders as partners in the process of formulating strategy and implementing an institutional culture, is a sound indicator of a mature institutional approach. The roles assigned to students and the respect given to their contributions, provide evidence about how serious the institution is about listening to and acting on students' views and ideas. Student leaders have a vested interest in building and supporting strategies that encourage academic integrity, ethical values and discourage any form of cheating and corrupt practices. Mature institutions capitalise on supporting and building a strong and effective relationship with student leaders.

7. Transparency, openness, maintaining institutional data, effective communications at all levels.

Transparency and open access to relevant institutional information are essential elements in developing an institutional culture of academic Integrity. The extent of transparency can be tested by asking different stakeholders what they know about policies and strategies that are a key part of the institutional regulatory framework. While allowing for security of sensitive and confidential information that it is not reasonable to make accessible, it is in the interest of institutions to make available to students and academic teaching staff information about institutional strategies, policies and sanctions for academic misconduct. If sanctions are applied consistently and proportionately, such information can help to deter students from cheating. Lack of openness in such information can be seen as a way of disadvantaging students. Good and clear communications and ease of availability of important information for the whole academic community are seen by the team as characteristics of a mature strategy.

8. On-going evaluation, monitoring, reviews to enhance strategy, policies and systems

This characteristic acknowledges the wisdom of UK researcher and consultant Jude Carroll (2011) who said that if policies for academic misconduct have not been reviewed for three years or more, then they are most certainly out of date. Unless policies are regularly monitored and reviewed, an institution has no idea how effective they are. Unfortunately types of student misconduct evolve very rapidly in response to the capacity of higher education institutions to identify and

address such conduct. A few years ago the main threat to UK institutions was student plagiarism, which was countered to a large extent by systematic use of sophisticated text matching tools. At the time of writing this paper far greater threats are perceived as: firstly examination cheating by making use of hidden communications technology; secondly ghost writing, particularly taking advantage of the global contract cheating industry (QAA 2016, Lancaster & Clarke 2016). These evolving threats demand that institutions remain vigilant. A mature institutional strategy will have evidence that regular monitoring and review are central to the systematic review cycle.

9. Engagement with research and development within and external to the institution into academic integrity

The pursuit of academic integrity requires vigilance on a range of issues both internally and externally, and pro-activity in generating ideas for responding to new and evolving threats to the security of academic systems and processes. Encouraging involvement in research and development by members of the academic community provides the means for institutions to keep abreast of growing evidence on possible ways to respond to and manage academic misconduct. Investment in resources for research and development also allows for testing new ideas and sharing of effective practice, potentially to the benefit of a wide audience.

10. Institutional understanding about what is acceptable academic practice, in line with international norms

The team believes that most if not all researchers in this field across the world strive to find common ground in the form of internationally acceptable academic conventions about academic practices and expectations for educational standards at different levels. The questions in this category seek reassurance that the institutional community is aware of any local and international standards, conventions and recommendations for good practice and open to any new developments that can improve academic integrity.

It may be possible to consolidate categories 9 and 10 because there is considerable synergy between involvement in research and development and awareness of internationally acceptable norms. However the current reason for keeping both categories separate is that category 10 serves to highlight that great differences exist in what are seen as acceptable practice within and across institutions, countries and regions (for example as shown in the IPPHEAE and SEEPPAI country by country results). Although there are international standard conventions on ethical practices for research and publication (Retraction Watch blog, COPE) these are not always followed. Educational standards frameworks such as the Bologna Process are a long way from achieving consistency in Europe at present.

Specifically relating to SAID, there is no formal agreement internationally on what constitutes acceptable practice generally for different levels of education in the area of academic integrity. The extent of internationalisation in education increasingly makes agreements on such international standards a necessity. To address this problem the SAID toolset is supported by a glossary that has been designed to clarify ambiguities in usage of terms in different parts of the world.

4 Institutional evaluation using the SAID toolset

The institutions that agree take part in pilots will be asked to evaluate the toolset, commenting on relevance and wording of different questions and the feedback received on strengths and weaknesses, from their institutional and national perspectives. The pilot runs will help to refine and improve the tools before automating the scoring and feedback process. The next stage will be to provide translations of the tools, questionnaires and feedback in different languages, initially focusing on Spanish, French and German.

The results will be confidential to each institution that participates, but anonymous institutional profiles will be made available for comparison purposes to institutions that make use of the tools. Institutions will be encouraged to conduct surveys periodically using SAID, to evaluate their development and progress.

The International Centre for Academic Integrity website is likely to be the portal for accessing the operational version of the tools. There will be no charge for institutions that take part in pilot runs, but it may be necessary for a modest charge to be levied for institutional evaluations in the longer term, to cover maintenance costs associated with on-going operation of SAID.

5 Conclusions

The main purpose of disseminating information about SAID at this point in the development is to capture feedback from a wide range of possible users of this service. The author and colleagues would like to ascertain whether this toolset would be of use to the target audience of institutions in different parts of the world. Recent feedback from several conference presentations has provided encouragement that there will be a good demand for the tools.

An overview of the categories suggests that the benchmarking criteria appear to be appropriate. However more detailed feedback would be more welcome on any aspect of SAID described in this paper. It would be of particular value to hear of any views about alternative benchmarking criteria relating to academic integrity strategies and suggestions for improvements. It would be of particular interest to hear from institutions who would like to take part in the piloting of the toolset.

It is anticipated that SAID will be seen as a useful addition to the portfolio of guidance and advice already available to help institutions develop their strategies for improving the standards and quality of education across the globe.

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Acknowledgments

Although this paper has a single author, the subject of this paper—the Scorecard for Academic Integrity Development (SAID) is the work of a team of three people. SAID is the result of combining the Academic Integrity Rating System (AIRS), developed by the International Center for Academic Integrity (ICAI) and the Academic Integrity Maturity Model (AIMM), developed by the author. The author would like to acknowledge the significant contributions of team members and SAID co-creators Tricia Bertram Gallant (University of California, San Diego) and Jennifer Eury (Penn State University). The team extends thanks all ICAI members who contributed to the creation of AIRS and colleagues around the world who have provided feedback to AIMM and SAID.

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INSTITUTIONAL REPOSITORY DRIVEN BY ACCESS RIGHTS AS A PART OF PLAGIARISM DETECTION SYSTEMS

Daniel Jakubík, Šimon Suchomel, Luboš Lunter, Michal Brandejs

Abstract: Masaryk University (MU) has developed an institutional repository with plagiarism detection service as an extension of the university's information system (IS). The repository enables various options of storing research and eventually publishes it in accordance with copyrights. Setting the access mode is managed by approval process, which is enabled by the repository. Therefore, the university had to set the rules and processes for proposing and approving the access modes in order to be able to set the proper access rights. The article advocates the hypothesis that the implementation of the university repository must focus not only on technical tasks, but also on methodological tasks. The paper describes both tasks and also the benefits of institutional repository driven by access rights deployment, where some files can be hidden for common users. Our approach is based on the idea that even the inaccessible files are usable in limited access mode and valuable sources for plagiarism detection tools and related services.

Key words: institutional repository; plagiarism detection; open access

1 Introduction

Institutional repositories are becoming more and more widely accepted components for preserving and disseminating accumulated data and knowledge in the form of scientific papers, proceedings, and less conventional genres like software or art-related works. As such they have a potential to be an important part of digital scholarly communication, and thus an accelerator of scientific progress. According to Hanlon and Ramirez (Ramirez and Hanlon, 2011), a key barrier to fulfill this potential lies in an insufficient intellectual property management. Our research aimed to establish institutional repository with embedded rights management and security mechanisms that balance a protection of property rights owners (e.g. publisher) and utilization of non-public works.

The purpose of this paper is to provide an overview of development of access rights driven repository with decision making features for access management. A general philosophy behind our solution is that the data should be maintained directly from the authors that can also participate on the rights management process. Therefore, a heavy emphasis is placed on simplicity and automated checking.

2 Background

IS MU has been under continuously development since 1999. It is focused on administration of university education, e-learning and other related areas of academic life. The significant objective of our research lies in plagiarism detection and e-learning applications to enhance academic integrity. (Lunter et al., 2013)

In 2004, Masaryk University provided its students and teachers an electronic archive of theses together with the plagiarism detection tool, which helped them to identify textually reused parts in theses. Since 2004 all students of MU are required to upload their thesis and metadata into the information system. Subsequently, a thesis is published in accordance with access rights. At that time, demand for a similar service arose at other universities as well, which represented an impetus for the joint project *Theses.cz*¹ and *Odevzdej.cz*². The project has started in 2008 and involved MU as well as 16 other universities. Nowadays, there are 41 institutions involved.

After signing the Berlin Declaration in 2013 (Berlin Declaration, 2003), the development of the university repository was commenced. During its development, the experience from aforementioned projects were utilized, in order to build the repository on similar technologies. The repository was designed as an extension of registry of publications and results of scientific activities in the IS MU. Original purpose of the registry was to collect only metadata for scientific publications and the mandatory reporting. Although, the full texts are not required for government reporting, the archive of scientific production is beneficial for the university.

Main Benefits:

Plagiarism detection—Scientific papers are potential source of cheating and violation of academic integrity. Consequently, the extension of the database for similarity searching naturally increases the probability of a successful text reuse detection. In particular, papers with limited access are included when computing document similarities for plagiarism detection.

Visibility and citations elevation—As Olsbo shows (Olsbo, 2013), there could be a connection between the Internet visibility, ranking and the relative citation impact of universities in different countries. These relationships can be traced back to the effectiveness of the open access publishing, self-archiving and Open Access policies of the countries and the universities. (Hitchcock, 2013) The impact of Open Access model on the citation is described in the case study of Koler-Povh et al. (Koler-Povh et al., 2012)

Long term preservation—University's repository is the option how to ensure long term preservation of academic outputs. Even though that individual requirements for repositories may differ between institutions, a long-term preservation of their intellectual heritage is generally essential. (Conway et al., 2011)

E-learning—The advantage of integrated repository in university information system is possibility of accessing the papers, which could not be public due to license agreements.

For the universities, the main objectives of digital libraries lie in storing and disseminating the peer-reviewed knowledge and information of high standard. Naturally, there is an effort to make most of the records open to public, but it is not possible to fully achieve the goal for various reasons, such as publisher's copyrights or a disclaimer. Therefore, a wide range of access rights were incorporated into the repository. It allows

¹<http://theses.cz>

²<http://odevzdej.cz>

the authors to create different levels of access modes for different users for each file with respect to their agreement with a publisher.

3 Interconnected Text Reuse Detection

Plagiarism in academia is often referred as an academic dishonesty. It is a persistent moral offense and if it is brought to light later on, it also discredits the institution where it originated from, because it passed unnoticed and should have been detected and dealt with accordingly at the time of submission. Higher educational institutions are not usually fond of making such cases public, on the contrary, they try to conceal it and resolve the issue internally as much as it is possible (Weber-Wulff, 2014). Prevention and early detection are the best ways of solving plagiarism issues.

3.1 Prevention

The issue of plagiarism is addressed at Masaryk University now for many years. All faculties teach their courses concerning plagiarism working with texts and citing skills individually, but they are all obliged to follow the university's study and examination regulations. Students are required to sign a declaration of originality in their theses. Also, a supervisor mandatorily confirms the state of submitted thesis prior to its defense. The supervisor needs to evaluate the text before the confirmation. However, evaluating text reuse may be quite a difficult, tedious and time consuming process and so, when marking papers, such as theses or seminar works, an automated computer system facilitating the task of checking for plagiarism, has proved to be very helpful. The supervisor needs to understand the output of the software and to decide whether the detected similarities are actual plagiarism.

Plagiarism is not only cheating, it may appear in form of unintentional plagiarism such as omitting citations or quotations. Students are encouraged to use university's text reuse detection systems for themselves prior to handing in the work into the IS. In fact anyone can have their work checked using the Odevzdej.cz system. (Lunter et al., 2013) While Odevzdej.cz utilizes the interconnected database with other anti-plagiarism tools run by MU, it allows the students to retrieve the same results as the supervisor will obtain by checking their work in the IS. The user is informed about similarities via an e-mail report, which they can study as part of the formative feedback before handing in the final version of their paper. The formative feedback, with assistance from an automated text reuse detection system, has a positive impact on students' final submissions. (Davis and Carrol, 2009) The main goal of existence of text reuse detection systems is to improve the quality of students' works.

3.2 Detection

Plagiarism detection system which works on the basis of evaluating documents similarities must be aware of both the original document and the plagiarized document in order to report the similarity. It is up to the implemented algorithm and methodology of the system what similarity to detect. Modern plagiarism detection systems recognize similarities even between variously altered texts. The similarity is calculated based on

specific document characteristics, which are collected and stored in the database for each document known to the system. Documents in university repositories are good candidates to be included in similarity evaluation of the anti-plagiarism system. Such academic works could be targeted for plagiarism, because they contain high quality texts. Importance in access right lies in their ability to include into similarity search also documents, which are inaccessible for the user. The output of the software differs in different usage scenarios. For example, if the user is not granted with required access rights to a similar document, the software displays information about the issue, thus the similarity detection remains comprehensive. In the output, there can be provided a contact at the author or at the administrator. On the other hand, an administrator or a supervisor will get access not only to the similarities, but also to the source document.

Having indexed documents in the system with proper access rights has also benefits for the authors. It is a kind of protection for the text where its originality and also its age can be easily proofed, even if the document have not been made public.

It is crucial for an antiplagiarism system to have documents base of high quality. The goal is achieved by the usage of different document resources beginning with theses, seminar works, and institutional papers from the repositories up to relevant documents from online sources. The process of online source retrieval is performed for each document entering the anti-plagiarism detection and the main purpose is to retrieve a relatively small subset of similar documents, which may have been plagiarized from, from the vast document corpus, which in real world is the Web. (Suchomel and Brandejs, 2014) Documents are looked up utilizing modern search engines, which possess the computational power to index the whole Web. The searches are executed based on multiple types of queries created based on textual characteristics of the input document and on automatically extracted keywords. Firstly, this leads to retrieving textually similar documents from the Web. Secondly, which is particularly beneficial when done based on academic papers in the institutional repository, it retrieves thematically related documents. The scientific papers in the repository represent variety of contemporary themes in academia. The keywords extracted from such papers provide an opportunity to retrieve more theme-related and current material from the Web. All the retrieved documents based on each input paper are indexed and consequently compared to all future suspicious documents during the plagiarism detection. As a result of that the system obtains related documents from online sources based on each newly added document into repository, which does not have to be publicly accessible. This supports coverage of the overall research theme for any future plagiarism detection of documents concerning that theme (Suchomel, 2017).

4 Plagiarism Detection in Limited Access Mode

Different types of files require different approaches of accessibility. Plagiarism detection systems need to process data irrespective of accessibility, however they cannot reveal any inaccessible text to the user. Many universities in the Czech Republic demanded plagiarism detection system, but only few of them were prepared to publish their theses online. Analogous challenge arouse when developing plagiarism detection for seminar papers, which cannot be published without the author's permission.

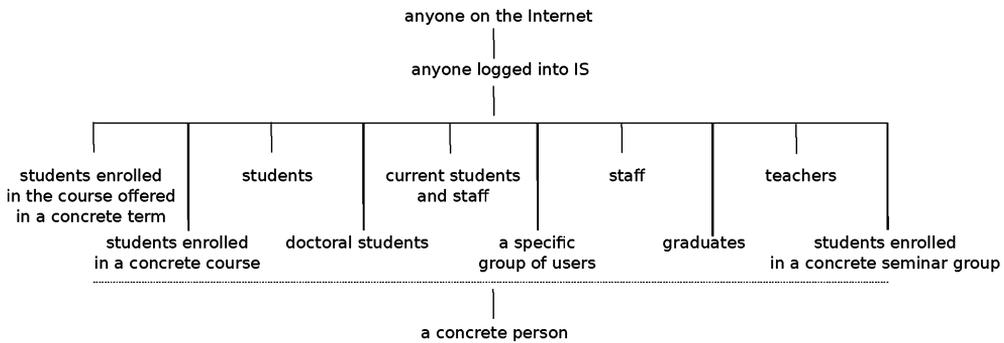


Figure 1. Hierarchy of access rights

Limited access of results published via a university repository is even more complex, as discussed in chapter 5.

4.1 Access Rights Approach in Repository Structure

In the repository, we distinguish three basic types of access rights, which are by their philosophy quite similar to access rights in UNIX systems. Right to read permits the user to enter the directory, dump its content, read the files and mark them as read. Right to upload permits the user to enter the directory, create new subdirectories and upload new files. Right to administer enables to perform all operations on a given file or a directory. Besides these traditional access rights, a right to view has been added. It was originally incorporated due to the embedded video player, but today it is also used by the embedded PDF reader. The view right allows to read the files, even though the user is not permitted to download the file. The right may be granted to one or more entities including groups of students, teachers, or all authenticated users. The whole hierarchy of possible entities can be seen in figure 1.

All files are stored in our database file system. A basic unit of this deposit is a node which can be both the directory and the file. Any node can contain any number of objects, with links to a network of resources or stored files, as shown in figure 2. This enables the system to store different formats (e.g. PDF, DOC, and TXT) of one file in different objects under one node. By binding access rights with a node and not with an object, the access to the attached paper does not depend on the format preferred by the user.

Since nodes can be nested, the access rights must reflect the whole path to the file. In the early stages of repository development, a hierarchy of system access rights was used. Consequently, in order to access the file it was necessary to check rights of every node on the path from the root directory to the given file. The result of this state was a serious slowdown of access rights checking. Therefore, the system was rebuilt to system of flat access rights in which every node keeps the rights of its parent directory. Disadvantage of this approach is in necessity to recalculate the rights of each descendant, when modifying permission of the directory.

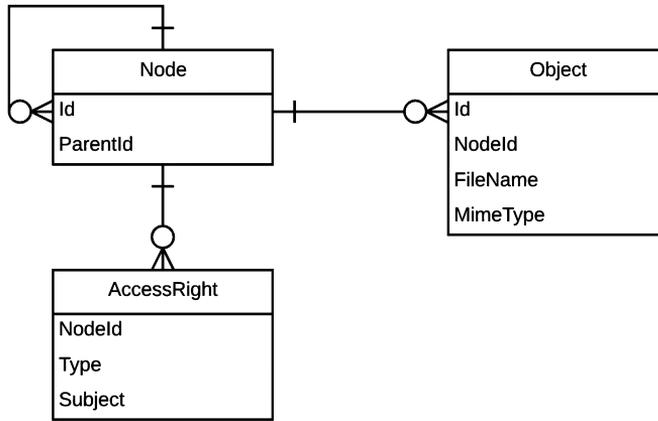


Figure 2. Node and objects relations

4.2 A Role Based Access Control

Behind each repository, there are number of roles and responsibilities that can be identified and that need to be fulfilled. The people who occupied these roles often need to access files in the repository. Therefore, it is desirable to grant access to files for these users regardless of permissions. A role based access control can ensure this. It determines access only for authenticated users based on the function which the user is allowed to perform within the system. The determination of membership and the allocation of transactions to a role must comply with organization-specific protection guidelines. In the repository, there are three main types of application access roles recognized:

- Repository management—the members of this role are academic authorities, who are responsible for decision making and sustainability issues.
- Repository administration—the members are employees authorized by a dean. They are responsible for authorization of access rights and for communication with the authors.
- System support—the members are responsible for providing a technical support.

Depending on their roles, users have different views of the data in the repository. For example, the repository management needs to display detailed statistics, reports and overviews of the repository content for each department in order to evaluate the research, but they do not need to manipulate with the records. Next, the repository administration needs to access all materials in order to assist the author with filling metadata and setting the access rights. The access roles are principally assigned to a specific department, resulting that the privileges given by a membership in a group are applied only to data associated with that department.

4.3 Access to the Content

Any digital library or institutional repository of substantial size relies on software-based search engines to help the users to locate documents related to their information need. However, since there are lot of documents which are not permitted to be read by every user, the search engine should not allow them to be discovered. A method proposed by Kasprzak et al. (Kasprzak et al., 2010) was utilized for the purpose of handling access rights in enterprise full text search systems. The method is based on incorporating access rights descriptions into the inverted index in the form of “virtual tokens”. Virtual tokens are special words which have no weight nor position within the document, therefore they are excluded from either the proximity or the exact phrase searches. To incorporate access right of a given document into inverted index, we can add a virtual token with the user group identification for each user group, whose members can read the document. Consequently, before query execution the query must be modified by following way:

$$a \text{ query AND } (p : group_1 \text{ OR } \dots \text{ OR } p : group_n)$$

The prefix $p :$ marks virtual token describing the access rights and $group_1$ – $group_n$ denote all groups the user belongs to.

The approach based on virtual tokens has proven to be very useful. In our submission, the virtual tokens are used not only for access rights, but also for implementation of faced search, which is popular among librarians, because it enables to showcase metadata.

A research institution may produce many different types of research outcome, from experimental data through scientific publications and patents to software. Based on the type of the outcome it can be desirable to attach several types of an output, e.g. research data, presentation or preprint, to one record in the repository. In such cases, different access rights may be applied to both metadata and to each attachment. Therefore, they must be indexed separately. If necessary, they can be connected via unique hash, a virtual token with a unique value for a given group. In our case we used PURL of landing page for given record.

5 Approval Process

The dissemination of academic results via the repository is based on the assumption that the author knows best about the copyright of the result, which may include rights of third parties, and the author decides whether to include the paper into repository and under which circumstances. Nevertheless, the final responsibility lies mostly on university due to owning the property rights. In practice, this means that only the university as an author’s employer can decide whether the work can be open to public use. Concerning institutional repositories, setting the publishing mode of a scientific result may pose a significant administration overhead for larger institutions which produce thousands of papers each year. This resulted in the establishment of a two-tier process of setting access rights.

The first tier represents the initial result submission settings entered by the author who has to determine the nature of the work, such as its type and whether it is job-related. The author can also set the access rights directly, if the work was not determined as job-related or the employer does not own the property rights for the given type of the publication. Otherwise, the employee is entitled to suggest the access rights, but the rights must be authorized by a delegate of the dean, which represents the second tier in the process of authorization. Delegates rely on a special application for accepting or rejecting suggested access rights. If the access rights are accepted, they are immediately applied and the file is published in accordance with them. In the other case, e.g. if the suggested access rights do not match the agreement with the publisher, or the author cannot substantiate the authors' consent with other possible co-authors to make the file public, the reasons for rejecting are automatically sent to the author. Consequently, they can decide about repeating the approval process and suggesting new access rights, or let the decision be made by the authorized employee.

In addition to this functionality the application also provides support for setting-up the policies of approval process. This includes choosing the types of scientific outputs for which the author can set the rights directly, which can be set globally or separately for each department. The application also holds the whole approval history, which helps to resolve disputes. On top of that, the data from this evidence are used for recommending appropriate rights. Our experience show that all parties can benefit from granting an appropriate rights at the time of submission. Therefore, the technical and methodological support such as incorporating the copyright information service for open access archiving provided by SHERPA / RoMEO (Flick et al., 2016), is emphasized in the system.

In terms of the repository content, the growth of the repository has been positive. Although, the authors are not forced to upload a full text, we are noticing a growing trend in number of repository submissions. At the time of writing this article, the repository included almost 7 thousands of publications containing the full text (about 18% of university production). Approximately one third of this number had to be authorized to accept the suggested rights. A key factor in this outstanding result is the wide range of access rights. In the repository, there are approximately one quarter of attached files open to the public. The rest of the attached files are accessible in restricted mode.

6 Conclusion

This paper has given an account of access rights driven repository implemented as part of university's information system, which extends the integrated plagiarism detection solution. The main goal of the study was to describe important aspects of the repository with included support of decision-making processes of access rights setting. This study has shown a solution based on two tier access rights management, complying with third parties rights. Taken together, this approach supports the employer to be able to control the access to the job-related works. The positive effect of the proposed solution is to promote the authors' motivation to upload even non-public research. Specifically, the

added value is represented by plagiarism detection or utilization of not public content for e-learning.

The future work will focus especially on further motivation of the authors to submit the full texts into the repository. The content of the repository is continuously interconnected with more applications across the information system, which increases user comfort. Simultaneously, the central service, which is based on similar principles, was developed with cooperation of 23 educational institutions, which resulted in development of system Repozitar.cz (Jakubík et al., 2011). The Repozitar.cz is a nationwide repository service offering necessary technical, organizational, social and legal environment.

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DETECTING ACADEMIC MISCONDUCT IN INTRODUCTORY COMPUTER SCIENCE COURSES

Inés Friss de Kereki

Abstract: Most Computer Science programs start with introductory Computer Science courses (“CS1” and “CS2”) where the fundamentals concepts of software development are introduced. In our courses, there are some large compulsory programming assignments to be done in pairs to develop the required basic skills. Since 2004, we are using different tools to detect plagiarism, that is, similarities between different students’ works. Before 2004 we compared each work manually. Nowadays, due to their increasing number (cohort size CS1+CS2: +225 students), we use tools like MOSS which automatically detect similarities. We wanted not only to check the use of others code as their own, but also to check that both students of each team co-develop the programs. So, we included an evaluation (“defense”) to check authorship and knowledge of the program. It is compulsory, must be done individually and consists of modifying specific details or correcting a mistake of their program. Also, we emphasized the importance of prevention, and developed some materials and recommendations for students to promote good and ethical practices in programming assignments. The detected number of plagiarism cases with automatic tools decreased from 3–6 each semester (2004–2012) to 0 in the last 4 years, possibly due to the prevention activities. With the “defense” we continue finding some cases of students not involved in the work they hand in. In this paper, we detail courses, strategies, a students’ survey, and results.

Key words: Computer Science I, Computer Science II, Plagiarism, Programming

1 Introduction

Academic misconduct, according to Berkeley University, is “any action or attempted action that may result in creating an unfair academic advantage for oneself or an unfair academic advantage or disadvantage for any other member or members of the academic community.” (Berkeley). Among others, they refer to cheating and plagiarism. “Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question” (Berkeley). Plagiarism is “the practice of taking someone else’s work or ideas and passing them off as one’s own” (Oxford). IEEE (Institute of Electrical and Electronics Engineers) defines plagiarism as: “the reuse of someone else’s prior processes, results, or words without explicitly acknowledging the original author and source.” (IEEE). MIT (Massachusetts Institute of Technology) refers that “Cheating, plagiarism, unauthorized collaboration, deliberate interference with the integrity of the work of others, fabrication or falsification of data, and other forms of academic dishonesty are considered serious offenses” (MIT).

Some renowned universities have an “Honour Code”. The Stanford Honour Code is “an undertaking of the students, individually and collectively: that they will not give or receive aid in examinations; that they will not give or receive unpermitted aid in

class work, in the preparation of reports, or in any other work that is to be used by the instructor as the basis of grading” (Stanford University). Similar ideas are included in our “Honour Code” (Universidad ORT Uruguay). The University of Edinburgh includes in their Student Conduct Code examples of misconduct offences: “Assessment offences, including making use of unfair means in any University assessment or assisting a student to make use of such unfair means” (The University of Edinburgh).

MIT offers some concrete suggestions to students to avoid plagiarism: “Don’t purchase papers or have someone write a paper for you. Undertake research honestly and credit others for their work. Don’t copy ideas, data or exact wording without citing your source.” (MIT 2). Also, it offers suggestions to avoid unauthorized collaboration: “Don’t collaborate with another student beyond the extent specifically approved by the instructor.”, and cheating: “Don’t copy answers from another student; don’t ask another student to do your work for you” (MIT 2).

Although clear recommendations about academic integrity are available for students like the previous ideas presented, academic misconduct is a big and prevalent issue in academia in general: “Plagiarism is a problem in probably the majority of high education institutions” (Hammond, 2002); “Plagiarism is a serious problem of today’s copy-paste generation” (Sraka and Kaucic, 2009).

Computer Science (CS) is not an exception. In our case, almost in every course we detect some cases. This paper presents a unified proposal to try to mitigate that problem. The organization of this work is presented as follows. In Section 2 are concepts about academic misconduct. Also, some mechanisms to detect and mitigate it are included. Section 3 describes Computer Science I (CS1) and Computer Science II (CS2) in Universidad ORT Uruguay. Section 4 describes our proposal. In Section 5 the results are analyzed, and also include a students’ survey. Finally, in Section 6 we present some conclusions and future lines of work.

2 Academic Misconduct

2.1 Academic Misconduct in Computer Science

CS1 is in the heart of computer science (Kinnunen and Malmi, 2006). CS requires a high level of abstraction at the cognitive level and a constant effort and dedication from the students (Silva-Maceda et al, 2016). Programming is a very useful skill but learning to program is difficult (Robins et al, 2003). Learning to program may be overwhelming for students (Price and Smith, 2014) and also to teach CS is complex (Vihavainen et al, 2011).

In CS courses, plagiarism and other forms of academic misconduct are not new. In 1989, Parker and Hamblen (1989) defined a plagiarized program as a program which has been produced from another program with small changes. In that year, they refer that student plagiarism of programming assignments has been made easier because of networks, easy to use editors, and large class sizes, among other factors. More recently, Sraka and Kaucic (2009) also refer to a higher number of students, while the number of staff is not increasing, so “the energy put into a single assessment will reduce”. The problem is increasing (Jadalla and Elnagar, 2007) and serious: “Students have a practice

to copy and share their solutions rather than doing them by themselves” (Konecki et al, 2009).

“No matter how strict the system be, students somehow manage to copy” (Sharma et al, 2015). A student can copy the work of another student in the class or work together with other students to produce nearly identical code, or even work with students of different class (Koss and Ford, 2013). In particular, the situation when “two or more students submit either the same paper or very similar papers that have only had a number of superficial modifications done to them” is called “collusion” (Weber-Wulff, 2014). Collusion is an unpermitted group activity and “may be regarded as the middle ground in a spectrum of practices ranging from collaboration to outright plagiarism” (Fraser, 2014). Also, students can obtain solutions for the assignments from Internet (Sraka and Kaucic, 2009). Besides, they can hire an expert programmer for individual assignment (Koss and Ford, 2013). This is a case of “contract cheating”: the submission of work for academic credit where the students had paid contractors to write for them (Clarke and Lancaster, 2006). Moreover, there are many sources like Facebook (Facebook) or StackOverflow (StackOverflow) – an online community for programmers to learn and share knowledge – where students can upload questions and obtain guides and code from other people. Sraka and Kaucic (2009) refer that some students used program assignments for previous generations. The social network formed in the classroom can act as a source of plagiarism (Luquini and Nizam, 2011).

To sum up, CS is a difficult area to learn, and plagiarism and other forms of academic misconduct are highly present nowadays in that area. There are a growing number of sources to obtain illegal help.

2.2 Detecting and mitigating academic misconduct in Computing Science

In CS, manual detection of plagiarism was found “to be inefficient but it is effort and time consuming”, refers Jadalla and Elnagar (2007), so automated systems become essential. In those systems, the computer calculates the similarity rate of two coded files and generates a measuring standard; the user further decides whether the code is plagiarized with reference to this standard (Chen et al, 2011). MOSS (Measure of software similarity) (MOSS) is a free automatic system for determining the similarity of programs. It supports different programming languages like Java, C, and C++. JPlag (JPlag) is a system that finds similarities among multiple sets of source code files. Jadalla and Elnagar (2007) propose PDE4Java with similar results than JPlag. Sharma et al (2015) propose “Parikshak”: “the results given by the tool endorse its effectiveness and usability”. Zkov et al (2013) propose SIM, useful for detecting plagiarism in case of shorter program codes. Zhang et al (2014) note that those tools do not detect plagiarism originating from the Internet. Novak (2016) indicates that no similarity detection engine can be used to positively accuse someone of plagiarism: the teacher should always manually check the cases.

There are many proposals to mitigate academic misconduct. Roberts (2002) refers the approach taken in Stanford some years ago to control plagiarism in CS courses. It includes the use of electronic tools to detect instances of plagiarism, explicit departmental policies about collaboration and plagiarism, and make sure that those policies

are well understood by students (Roberts, 2002). Carroll and Appleton (2001) suggest changing assessments, creating individualised tasks, and integrating assessment task. This idea of frequent change of assignments is also referred by Z kov et al (2013). Similarly, Manoharan (2016) proposes personalized assessments with unique problem set for each student. Halak and El-Hajjar (2016) refer to unique assignments and individual presentation sessions, where each student is required to explain his-her own results to the class or to the professor; their evaluation indicates a reduction in plagiarism acts. As Sant (2015) mentions, these techniques (changing assignments, creating individualized assignments) are problematic for instructors of software development courses. Koss and Ford (2013) propose to check previous versions of the student's code. That would let instructors determine the student's development processes (Koss and Ford, 2013). Sant (2015) proposes repurposing code, to assess the ability to comprehend a code sample and use it to create a new solution.

Sraka and Kaucic (2009) suggest tackling the academic misconduct at different levels: using plagiarism detection systems, proper regulations, educating students about the topic, and proper assignments. Related to education, they refer to present the importance of authorship, intellectual rights, and rules of proper referencing (Sraka and Kaucic, 2009). Fraser (2014) suggests in CS coursework: "emphasizing the intended learning outcomes of each assignment, providing tutorial sessions to facilitate acceptable collaboration, delivering quizzes related to assignment content after each assignment is submitted", and "clarifying the boundary between collaboration and collusion in the context of each course." Pandey et al (2015) refer that "more seminars should be organized for students", where relevant case studies should be analysed and discussed. In their experience, those seminars contribute positively in student's perception and motivation against plagiarism practices (Pandey et al, 2015). Kumar and Abdus Sobhan (2006) summarise than over decades, some methods of detection and prevention have been proposed: a) the use of electronic tools to detect, b) improving learning and teaching ethics, c) penalizing persons for their guilt, and d) creating awareness about cyber law and copyright.

Also, we should consider student's own perspective about plagiarism. Zhang et al (2014) compare perceptions of Chinese students and UK students, and conclude that reuse source-code without acknowledging the original source and incorrect referencing appear to be issues in both countries. "UK and Chinese students are unsure of the boundary between legitimate academic activity and unacceptable plagiarism".

Dealing with plagiarism is time consuming: in detected cases, instructors need to conduct interviews, gather evidence, and fill administrative forms (Manoharan, 2016). Z kov et al (2013) suggest having a personal discussion with each involved student in a plagiarism case to see if he or she really understands the code and how it is working.

To sum up, academic misconduct in CS is an actual and open problem, with different proposals and tools to try to mitigate it, but, as Sharma et al refer: "cases of cheating have always been there as a part and parcel of examinations" (Sharma et al, 2015).

Table 1
CS1 description

Week	Topics
1–3	Variables, pseudo code, control structures
4	Classes and Objects
5–8	Relations between classes: Association, Inheritance
9–11	Relations between classes: Aggregation. Collections
12	Sorting and Searching
13–15	Advanced use of Collections.

3 Computer Science I and II Courses

3.1 *Computer Science I*

CS1 course is a first semester course at the School of Engineering of Universidad ORT Uruguay and is focused on teaching problem-solving methodology using Object-Oriented Programming (OOP). The course prepares the learner for constructing simple programs using that programming paradigm. By the end of the semester, the student will be ready to analyse simple situations, to design solutions and to implement them with an OOP approach, using Java as programming language. The duration of the course is 15 weeks, organized in 4 hours of lectures and 2 hours for lab session per week. There are 25–30 students in each class. Each year, we have two cohorts of CS1 students: March and August.

A brief description of the course is shown in Table 1. The main topics are: pseudo code, variables, and control structures, objects and classes, association, inheritance, aggregation and collections, sorting and searching, and advanced use of collections.

The course includes two relatively large programming assignments (done in pairs, 15 and 25 points each), in class participation (15 points) and a final written evaluation (45 points). Before 2016, there were no points for class participation, the assignments were worth 20 and 30 points and the written evaluation, 50 points. The first large assignment usually refers to develop some classes in Java to represent a situation in a business. The second assignment implies to expand that solution to include collections and inheritance. For those assignments each student is paired with another to work with, as Williams (1999) proposed as an useful application of collaborative programming to classrooms. The participation consists of 5 multiple choice quizzes, done individually in class and 4 short programming assignments to be solved by each student. These assignments are proposed early in the course to motivate and engage. To pass the course, the student must obtain 70 or more points. In case of less than 70 points, the student fails the course and must retake it.

3.2 *Computer Science 2*

This course in the second semester of the career continues the student's training in the paradigm of objects. It presents more advanced elements in the construction of

Table 2
CS2 description

Week	Topics
1–3	Data structures: arrays, maps. Algorithm design
4	Parameters. Aliases and references
5	Modelling systems: CRH (classes, responsibilities, helpers), use cases
6–8	User interface. Model-View-Controller
9	Pattern: observer
10–12	Streams. Persistence
13	Recursion
14–15	Exceptions

programs: reuse, polymorphism, modelling, and design. At the end of the course, the student can analyse more complicated domains, using methodology; design solutions and implement under the OOP paradigm. Like CS1, this course lasts 15 weeks: 4 hours of lectures and 2 hours for lab session per week. Java is the programming language.

The main topics are presented in Table 2. It includes: algorithm design, different data structures, tools for modelling systems, user interface design, persistence, recursion, and exceptions management.

The evaluation of the course is similar to CS1: two large programming assignments (also done in pairs, 20 and 25 points each), in class participation (10 points) and a final written evaluation (45 points). An example of the first large assignment may be to develop a game using bi-dimensional arrays. Interesting algorithms should be developed. Also, the design of the classes implies lots of thought. The second assignment may include developing a Windows-like visual interface, persistence, modification of the model and more. Like in CS1, if the student obtains 70 or more points, the course is passed. In other case, it must be retaken.

4 Proposal

4.1 Background

Since 2004, we are using different tools to detect plagiarism, that is, similarities between different students' works. Before 2004 we compared the large programming assignments manually. This was feasible because the number of works were relatively small. For instance, in March 2003 we had 170 students in CS1+CS2 and in August 2003 we had 165 students in CS1+CS2. In March 2004 the numbers grown: there were 213 students in CS1+CS2. Due to their increasing number (nowadays in each semester there are approximately 225–250 students in CS1+CS2), we use tools like MOSS (MOSS) and JPlag (JPlag). Since 2004, we keep records of the detected academic misconducts and the reasons argued by students, after the corresponding analysis. Most representative cases are presented in Table 3. The specific circumstances were considered when deciding penalties by the Director of the area and those penalties vary from loss of some

Table 3

Most representative cases detected (2004–2012)

Year	Case
2004	Using partial work of other group as owns code
	Different groups present identical solutions
2005	Using code of other student without authorization
2006	Task developed by more than 2 students
2007	Use of previous year work of other student as owns code
	Giving the work of one student to other, without knowledge of the original author
	Receiving too much help from other group
2008	Using code obtained without authorization from another computer in lab
2009	Two works almost identical
2010	Using code from other student, obtained by not authorized access in the lab network
2011, 2012	More than 2 students developed a task

points to suspension of academic rights during a year. In the last 4 years (2013–2016), no cases of plagiarism have been detected neither with MOSS nor JPlag in CS₁ and CS₂. A similar situation is reported by Kraemer (2008): plagiarism decreased in their courses since he began using a plagiarism catcher computer program.

4.2 *Our proposal*

Currently, our proposal against academic misconduct in CS₁ and CS₂ combines aspects referred by Kumar and Abdus Sobhan (2006) and Z kov et al (2013), among others, but also including personalized instances called “defenses”: we wanted not only to check the authorship of the code, but also to check that both students of each team co-develop the programs, to detect situations like using code of others, obtaining external assistance in the development, buying code to a professional programmer, and so on. We promoted lab based examinations, as suggested Culwin et al (2001) and Barros et al (2003).

As shown in Fig. 1, to avoid misconduct the complete proposal includes: a) prevention, b) use of automatic tools, and c) “defenses”. In case of detecting any problems, we: d) penalize, and e) keep records of the problems, which will be included in future prevention, as feedback.

Related to prevention:

- We created a “Decalogue of good practices” and it is discussed in class. It includes recommendations like: “Start the task as soon as possible”, “Be selfish: the code is personal, do not share it”, “Backup your work”, “Prepare the final version with enough time”, and “Check the final version in the labs”.

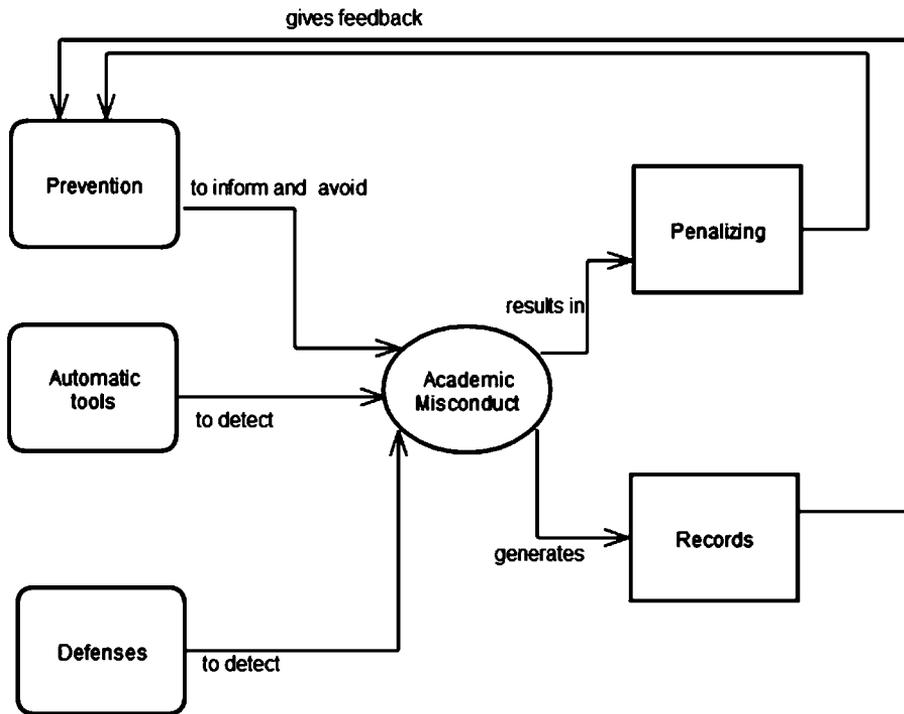


Figure 1. Proposal against Academic Misconduct in CS1 and CS2

- We showed and discussed with students a presentation of highlights of MOSS, and how the results are presented. We emphasized that “we check all the programs, it is not a myth, it is real!”
- We clearly informed the students the University’ policies against plagiarism and penalties.
- We created different tasks for each course, to avoid sharing solutions among previous year students. The idea of unique assignment specification for each student as propose Halak and El-Hajjar (2016) may not be applicable due to the size of our cohorts.
- We removed the forums of the courses. The forums in the website of the University are not-moderated. This allowed that some students uploaded solutions of tasks without any control. Although could be argued that closing the forums was a questionable idea because it may push students to private forums or other social networks to share code, we did not want to endorse or facilitate that practice inside the University. We encouraged personal questions via e-mail or in person (there are 10 hours per week of teaching assistants).

- We promoted an early engagement with the course with short and easy tasks at the very beginning of the course. For example, in CS₁ we ask the students to upload a Scratch program (Scratch).
- We promoted the knowledge of the “Honour Code” of our University (in class we mentioned it and its link in the website of the University to further references).

Related to automatic tools:

- We used MOSS (MOSS) systematically for the large Java assignments. In some semesters, we used also JPlag (JPlag). For each assignment, we upload all students’ tasks and compare. Each class is labelled with the initials of the teacher (for instance “AD”), and each group is numbered consecutively (“ADo₁”, “ADo₂”, “ADo₃”,...). To simplify this, our staff developed a Java program which uses the teacher’ initials, students’ directories and Java files as input (with one folder for each pair of students), and creates the respective folders for MOSS. We compare them all together and evaluate the results. In a similar way as Novak (2016) expresses, the pairs with higher similarity results are checked and the teacher should take into account that code, for instance, if that code are “setters” and “getters” and not relevant for the core assignment. In case of detection of any problems, we informed to the Director of the School and she took the corresponding actions.

Related to “defense”:

- We included individual and personalized “defenses”. Some years ago, we used an oral examination – viva – in pairs (both students who worked together in the task) as “defense”. The teacher asked oral questions to each pair of students about certain aspects of the task. Frequently, the student who took the leading role in the development of the task tried to answer all the questions, relegating the other member. We modified the “defense” to specifically ask each member some questions. In very few cases it was detected students who had not worked in the task, and it was difficult to document the situation for which it would later be penalized. So, we changed the procedure to “individual defenses” which involves changes in student’s work.

For example, if the task in CS₁ asked “to list customers who bought more than a certain amount”, we may request: “to list customers who bought between X and Y”, it is a similar algorithm. It implies knowing how the customers were stored; going through the necessary lists and filtering, with a somewhat broader criterion than they already did at work. In CS₂, if the task includes the use of a visual interface with a grid for a game, we could ask to paint some cells (borders, diagonal, etc.). It implies to know how the data is represented, how is presented and to develop an algorithm.

If the task was previously corrected by the teacher, the changes could refer to a particular problem detected in the student’s solution. An example could be: “in your task, if we remove the last two elements of the list of clients, the program crashes. Correct that problem”. Weber-Wulff (2014) suggests “to be attuned to unusual language” to detect “contract cheating”. In programming it may refer to unusual solution’s design, particular algorithms, or non-common programming

style. In those cases, the change may be specifically referred to any of those elements.

At the beginning of the “defense”, the time is recorded and the required change is presented. The description is written down. The proposed change is the same for both members. The original program is delivered to the students, each in one computer. It is student’s responsibility to load it into the computer and to edit it. Then, each student must program the change and when he or she estimates it is ready, ask the teacher to verify it. Students have one hour and a tolerance of 10 minutes for the development. If he or she makes the change successfully, the “defense” is approved, so he or she receives the original qualification of the work. If the change is not correct, and, or, the time is exceeded, it is recorded in the sheet details of this situation, leaving clearly documented the case. If it is needed, the modified code is saved too, for further revision. Both the teacher and the student sign the sheet. These situations involve loss of points (possibly all of the points of the task) and are analysed together by teachers, to unify criteria. With the “defense”, we usually detect 2–3 students per class (of 25–30 students) who cannot program the required modification.

If any case of misconduct is detected, the situation is recorded and used as input for prevention. The teachers directly do the penalization, in case of failed “defenses”, or by the Director of the School in case of plagiarism or other forms of academic misconduct. According to the particular case, the penalization could be from loss of some points of the task (in the case of excessive time to do the change in the program), fail the course and, or, a suspension of student’s rights for some time.

5 Results

With automatic tools, the detected number of plagiarism cases decreased from 3–6 each semester (2004–2012) to 0 in the last 4 years, possibly due to the prevention activities. With the “defense”, we continue detecting cases (2–3 in each class of 25–30 students). None of the curriculum of both courses was changed. The final written exam and large programming assignments maintained the same structure.

The previous format with oral instances were not as useful due to personal characteristics of the students and, or, the difficulties to record the exact situation. Also, it is time consuming. For us, the current format of the “defense” (as we presented, implementing a particular change in the code), is more effective. In our labs 20–25 students can work simultaneously. After each student completes the change, it takes few minutes to the teacher to check it. We can check about 6–8 groups in an hour. We include all the “defenses” of each class in the respective 2 lab hours of the week. In each course, there are two instances of “defense”, one for each large assignment.

In December 2016, we conducted an anonymous survey to ask CS2 students about their perceptions about academic misconduct and our proposal. To clarify, we included at the very top of the survey a detailed explication about academic misconduct and particularly plagiarism. We obtained 115 answers (of 122 participants in CS2). The results are summarized in Table 4.

Table 4

Academic misconduct: Students' opinions

Question	Answers (115 answers)
Do you know anybody who committed plagiarism?	Yes: 13.04% (15 students) No: 86.96% (100 students)
Did you commit plagiarism in CS1/CS2?	Yes: 5.22% (6 students), none of them was detected No: 94.78% (109 students)
Did your teacher emphasized against plagiarism and promoted good practices?	Yes, a lot: 49.57% (57 students) Yes, some: 40% (46 students) No: 10.43% (12 students)
In your opinion, committing plagiarism is. . .	Not ethical: 84.35% (97 students) Indifferent: 8.69% (10 students) No opinion, do not answer: 6.96% (8 students)
Do you know the "Honour code"?	Yes, I read it: 20.87% (24 students) Yes, but I did not read it: 40% (46 students) No: 39.13% (45 students)
Do you know about the use of antiplagiarism software in the course?	Yes: 98.26% (113 students) No: 1.74% (2 students)
"The defense is useful to validate authorship of the tasks". Your opinion is:	Yes: 65.22% (75 students) No: 24.35% (28 students) I do not know: 10.43% (12 students)
In your opinion, main reasons to commit plagiarism are:	Time problems: 58.26% (referred in 67 responses) Task difficulty: 55.65% (64 responses) Task overloading with other subjects: 50.43% (58 responses) Missing motivation: 44.35% (51 responses) Team problems: 13.91% (16 responses)

13.04% of students referred that they know somebody who committed plagiarism, and particularly 6 students (5.22%) indicated that they committed it, none of them were detected. Sraka and Kaucic (2009) refer the influence of the professors on plagiarism. In their survey, 53.4% of students (78 students) strongly agree with the statement that the professors "clearly stated that plagiarism is not desirable". In our case, almost 90% of the students (103 students) expressed that their teacher emphasized against misconduct.

Almost all students consider "not ethical" to commit plagiarism (84.35%). 60.87% of the students refer knowing the existence of an "Honour Code", but only 20.87% read it. Students know the use of antiplagiarism software: almost all of them indicated that they know that practice. Related to the "defense", 65.22% of the students refer that is useful to validate authorship, 10.43% indicated that they "do not know" and 24.35% refer that is "not useful".

The main reasons to commit plagiarism cited by students are: time problems, task difficulty, and task overloading with other subjects. We can relate those topics to time management and organizational skills. Those results are in the same line, according to the results of the survey of Pandey et al (2015): 80.2% of their participants refer that poor time management and lack of organizational skills are a cause of plagiarism.

6 Conclusions and future work

In this paper, we present our integral proposal against academic misconduct in CS1 and CS2. It includes: prevention, use of automatic tools, personalized “defenses” (instances of coding personalized changes of code in a limited time), and, in case of problems, penalizations and keeping records of the situation, to use that information as feedback.

When we used only automatic tools, some cases were detected, but that number decreases as students noticed that those tools are certainly used and powerful. With the introduction of the “defense”, the number of detected cases is 2–3 of each class of 25–30 students. Academic misconduct is still present based on the results of anonymous students’ survey (5.22% expressed committed undetected plagiarism) and we must continue working on that topic.

As future work, we propose personalized interviews to try to understand why some students (24.35%) indicated the “defense” as “not useful” to validate authorship and to discover missing aspects to avoid misconducts. Moreover, we plan to introduce more activities in CS1 to promote the detailed knowledge of the “Honour Code”. One of these may be a Scratch (Scratch) animation including it. Also, we plan to include activities in CS2 to promote reflection about misconduct. It may be useful adapt the case-scenarios of plagiarism to discuss in groups, for instance: “Mary found in Internet an algorithm that solves a requirement of a task. She uses it directly and puts in the code the comment that the algorithm was found in Internet”. Is this a case of plagiarism or not?

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RAISING AWARENESS ABOUT SCHOLASTIC HONESTY AT HIGHER EDUCATION INSTITUTION

Peter Kročity

Abstract: Vysoká Škola Manažmentu v Trenčíne has more than 15 years of experience in the area of scholastic honesty and application of zero tolerance for acts of dishonesty by its students. During the last decade, our school in cooperation with its mother university City University of Seattle had been in a process of continuous monitoring and reviewing the process of applying policies and procedures to fight acts of scholastic dishonesty. All these steps are aiming at building a name of an institution whose graduates are young managers with high ethical standards. Even though we can claim based on results of the work of our scholastic honesty committee that there is a downward trend in the number of cases where scholastic dishonesty was found, there is still space for improvement in raising awareness of academic integrity among students and staff. This paper examines the state of knowledge about scholastic honesty at the Vysoká Škola Manažmentu v Trenčíne. It focuses on how students perceive functioning of the program, what are the preferred information sources as well as differences among diverse specific groups of students and consequently suggests possible course of action for improvement in this area.

Key words: scholastic honesty program; plagiarism awareness; cheating; plagiarism checking

1 Introduction

In the academic world, we encounter plagiarism and other forms of unethical behavior almost every day and it is not an unknown phenomenon even in other spheres of our life, not excluding government institutions and their representatives. One of the reasons for plagiarism in the academic sphere is the difficulty in detection. Without the support of information technology, the responsibility for detection of copied text lies on the teachers' shoulders and their erudition and knowledge of texts that students use when creating their work. So how can plagiarism and cheating in the education system be fought? We provide an example of a status quo at Vysoká škola manažmentu v Trenčíne (VSM) and their scholastic honesty program through a study performed recently among its students focusing on the level of awareness about scholastic honesty and a possible course of action to improve its effectiveness.

2 Current situation

Based on international experience, we can say that just an introduction of any anti-plagiarism measures leads to its reduction. Many colleges use systems to detect plagiarism, and some even provide services in this area and other entities. There are several commercial companies providing such services for a fee (Genčí et. Al., 2009). Few years ago, steps have been taken to support the fight against plagiarism in Slovak universities using information technology. Thanks to the initiative of the Slovak Ministry of Education in 2008 to implement a comprehensive system solution for the

detection of plagiarism at the national level was to create a Central registry of theses and dissertations. This collects the papers and through the anti-plagiarism system and compares the text among each other and against selected Internet resources. Database against which it is compared consists mostly of previously submitted work and is constantly expanding, as there are added to the tens of thousands of new works every year. What Internet resources are included in the database however is not clear. The result of this control is an electronic document that shows the same or similar parts of the text with other works or documents stored in the database. This system is unique in that there is no similar system that would include all the universities in the territory of one country (Kravjar, 2011). The system has been used since 2010 and the experience is at the very least puzzling since the protocols of originality flag similarities with only other academic papers, not internet sources. Nevertheless, it should be noted that the authors standing behind this system won a contest with their algorithm for plagiarism detection at international competition PAN in 2011, which was part of the CLEF 2011 conference in Amsterdam (Kravjar, n.d.).

Colleges in Slovakia are using and have used from their own initiative other systems for detecting plagiarism before creating the central registry of theses. These are systems that work more consistently, due to their extensive databases, as well as many years of experience and continuous development on the basis of requirements and proposals of the users. One of these systems is Turnitin which is a leader in anti-plagiarism systems in the world. It works on a similar principle as the aforementioned system used by Slovak universities. However, the database consists of more than 337 million archived papers, 45 billion web pages, 130 million articles and essays of electronic books and is used by educational institutions in 136 countries (iParadigm, LCC, 2015). This system is used as a means of detecting plagiarism at the College of Management in Trenčín / City University of Seattle.

Nevertheless, similar electronic systems also have some shortcomings. Electronic systems, however perfect, are not able to unambiguously determine whether the work is plagiarism. They indicate similarities of text with other documents that may contain generally known facts or cited information and are limited by the scope of their database. Every suspected paper, in other words generated originality report, must be manually verified. If it is found that the work really shows plagiarism, meaning that the system indicated identical text that is not adequately treated with links to the source document, such work is forwarded to the Scholastic Honesty Committee, which deals with offenses against the Scholastic Honesty Policy. The credibility of such an initiative is created by the fact that there is a specific person or a team of people who deal with plagiarism offenses and other forms of unethical behavior and it is not just anonymous people somewhere in the background or a Committee, which meets on an ad hoc basis and not on regular basis. The existence of a department responsible for the promotion and observance of the rules of scholastic honesty attracts attention of students but also members of pedagogic staff and leaving them in no doubt that the school really tries to take the issue of plagiarism and scholastic honesty seriously and expects the same from the students and employees.

In order for the system to meet the purpose for which it was created, namely the fight against plagiarism and other forms of unethical behavior, it must clearly define

the rules and also penalties for subsequent violations. Most universities do have such rules or codes. How closely they familiarize students and monitor compliance with the rules is however questionable. Any system is only as good as consistent are those responsible for its operation. If compliance with the rules is not consistently monitored and violations penalized, the scholastic honesty program loses its justification (Kročitý, 2012).

Also important is the students' awareness of the issue, i.e. prevention. Students should be familiar with the rules of scholastic honesty at the beginning of the study at mandatory plenary sessions. It is also important to remind students of the existing rules and how to follow them at the beginning of each course. Supporting literature in booklet form explaining plagiarism issues and the ways of avoiding them is also important and should be easily accessible. Clearly defined processes and rules of doing testing, and paper submission reduce the possibility of unethical behavior. Creating academic writing courses and their inclusion in the curriculum right from the beginning of the study is another important aspect. Last but not least, there are clearly defined penalties for the infringement of scholastic honesty policy. The fight against this scourge is widespread in colleges, but certainly it is not an unknown concept at the elementary and high schools. The question is how and whether at all plagiarism is monitored at these levels of education.

We have contacted colleges in Slovakia with the question of whether they have a system of education and prevention in the field of scholastic honesty. Of the 36 public, state and private universities, we managed to get a response from 25 and we found that except for disciplinary policy, codes of ethics and already mentioned above Central registry of theses and dissertations, Slovak colleges do not pay any special attention to this topic in the field of education and prevention. The only exception is Matej Bel University, where in the words of prof. Fobela (2014), director of the Center for ethical advice, is an actively functioning ethical committee, which is currently working to develop technical assumptions, methodologies, and procedures for raising awareness of scholastic honesty. International School of Management in Prešov, Police Academy and the College of Management are the only colleges which, in addition to Central registry of theses and dissertations also use other systems for detecting plagiarism, not only for theses, but also regular coursework (Mlýnek, Madzinová, 2014). It is the aforementioned Turnitin system used by the VSM, system Ephorus at the Police Academy and Odevzdej.cz system that is used by ISM in Prešov.

VSM is unique in Slovakia in the field of scholastic honesty and rules of professional conduct applying zero tolerance to an offense against the rules. VSM has developed a system of rules and procedures for the fight against plagiarism and cheating, academic program called Scholastic Honesty Program. This system is not only based on application of penalties in case violations are detected by Scholastic Honesty Committee, which was created for this purpose, but also focuses on the education of students and academic staff in this area. The ultimate goal of this program is therefore not to catch and punish cheaters, after all VSM is an educational institution, but to build a name of an institution whose graduates are people with high ethical standards. Raising awareness of students and academic staff members, the issue of scholastic honesty by creating environments for sharing knowledge with the support of the knowledge

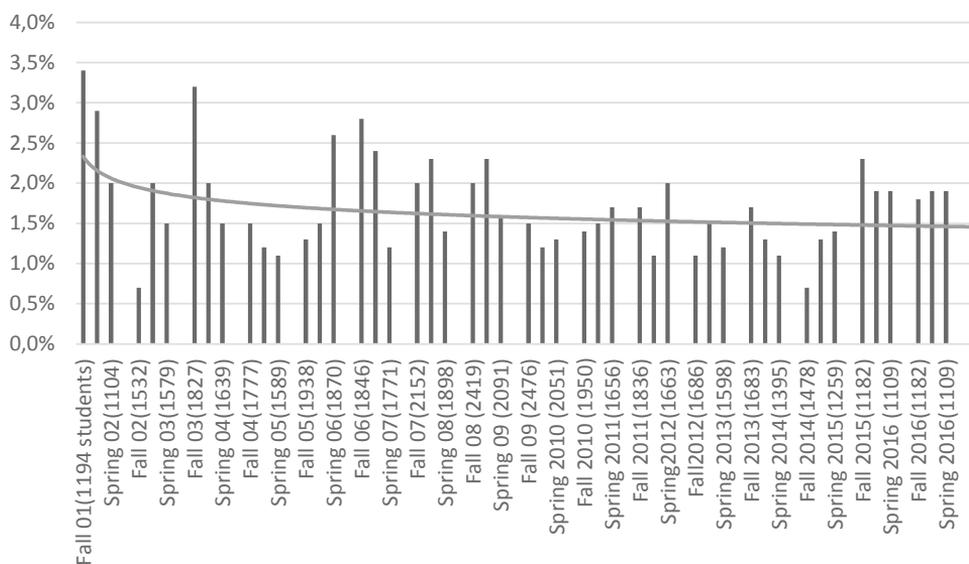


Figure 1. Percentage rate of SH cases 2001–2016

system is one of the objectives of this work. Although it could be said based on the results of the Scholastic Honesty Committee (Figure 1) that given the slight downward trend in the number of cases the Committee handled, awareness of scholastic honesty among students grows, improving efficiency of the means of raising awareness in this area is still necessary.

As shown in Figure 1, since 2001, when the school began to operate the Scholastic Honesty Committee, the case rate has been gradually falling, which is a result of better information, but also because the penalties applied to infringements of the rules. Originally significant downward trend has recently stopped and gradually begins to level off. VSM established a process to protect students from unfair and arbitrary penalty decisions. Cases are assessed by the Scholastic Honesty Committee, consisting of 3 members of the teaching staff and the chairman. Students are invited to a meeting where they are allowed to make a statement in their defense. After studying the evidence and hearing the student, committee decides whether the student violated the rules and possibly applies sanctions. The student has the right to appeal the decision, which then is reviewed by the rector. His decision is final. Penalties applicable to infringements of rules are ranging from zero grade for the assignment to the expulsion from the study program. Results of the investigation of such cases are published in order to provide for feedback and also serve as a means of prevention. For this purpose a section was created devoted to scholastic honesty at the institution's web page, which includes the complete documentation regarding the scholastic honesty program.

3 Methodology of the study

In the following pages we describe a study which was done to analyze the level of awareness among students at VSM/CU in the area of scholastic honesty and discover any possible discrepancies in its consistency. Subsequently, we suggest some possible course of action that could be used to reduce any such discrepancies. The goal of our study was to find how well the students are informed about scholastic honesty policies and procedures, whether they consider the current way of application of scholastic honesty rules as effective, which information channels they consider as efficient or inefficient and to what extent the level of scholastic honesty awareness differs among diverse groups of students. Ensuring efficient information sharing in the area should increase the level of scholastic honesty awareness among students and so improve the quality of education at VSM.

Data analysis was based on methods of inductive statistics which are directly related to the conclusions and decision making (Terek, 2014). Using spreadsheet software, Excel, and pseudo-random number generator we selected samples of students to be interviewed. The samples represent groups of students according to the place of study (branch in Bratislava and Trencin) form of study (external or daily), degree of study (Bachelor or Master), language of study (Slovak and English), year of Bachelor's degree (first, second and third year). Each of the samples contained 150 units. The questionnaire which served as the basis for statistical inference, included questions describing the various activities that our institution conducts to raise awareness and education on scholastic honesty to achieve a reduction in the likelihood of unethical behavior of students. Some of the questions included in the questionnaire were:

- When have you encountered the first time with the term scholastic honesty?
- How were you informed with the scholastic honesty rules and procedures?
- How would you evaluate your current level of knowledge in the area of scholastic honesty?
- How important as part of your study do you consider the scholastic honesty?

The survey was conducted online via Survey Monkey server applications (www.surveymonkey.com). Overall, 914 respondents were contacted, of which we received 360 completed questionnaires. The total return rate of the questionnaire was 39.39%. The collected data were entered in contingency tables. For data analysis we applied chi-square test method. Chi-square test we carried out using the statistical functions in Excel CHISQ.TEST. The significance level was set at 5%, that is, $\alpha = 0.05$. Using the chi-square test we determined p-value, which represents the smallest value significance levels leading to the rejection of the null hypothesis. The smaller the p-value, the more we are convinced that the null hypothesis is not true and should be rejected. In other words, the smaller the p-value, the more it indicates an association between variables.

A comparison of the observed and expected frequencies allows us to analyze the direction of the association between variables. Adjusted standardized residuals can be used informally to describe the relationship among the table cells. A too large value of an adjusted standardized residuum indicates a deviation from the cell homogeneity. If the null hypothesis is true, there is approximately just a 5% probability that the adjusted

Table 1

Survey question – When did you hear about the Scholastic Honesty rules and procedures applied at VŠM/CU for the first time?

Form of study	Before applying for admission 1	At the beginning of study during plenary session 2	During the first month of study 3	During the first year of study (later than first month) 4	During the second year of study 5	During the third year of study 6	Later than third year of study 7	Other 8	Never heard of it 9	nn_i
External	4(4.93)	24(29.57)	35(28.48)	3(2.19)	1(1.10)	0(0)	0(0)	0(1.10)	2(1.64)	69
Daily	5(4.07)	30(24.43)	17(23.52)	1(1.81)	1(0.90)	0(0)	0(0)	2(0.90)	1(1.36)	57
n_j	9	54	52	4	2	0	0	2	3	126

standardized residual exceeds 2 in its absolute value. Absolute values over 3 clearly indicate an association in a cell. We used the adjusted standardized residuals analysis in cases where the Chi-square test indicated an association between variables.

The chi-square is no indication of the strength of the association. To characterize the strength of association, we used the odds ratio characteristics. In general, the estimated odds for a response variable with two values equals the number of successes divided by the numbers of failures. The odds ratio Θ in 2×2 contingency tables equals to the ratio of the 1st row odds to the 2nd row odds. The odds ratio analysis was applied in cases where adjusted standardized residuals analysis indicated values exceeding 2 in its absolute value.

Given the objectives of our study, we set three hypotheses that were tested:

- H_1 – the means of disseminating information about scholastic honesty at VSM is not homogeneous across branches, program study, form of study, language of study or degree of study.
- H_2 – the level of knowledge in the area of scholastic honesty is not homogeneous across branches, program study, form of study, language of study or degree of study.
- H_3 – the level of knowledge in the area of scholastic honesty does not change with the length of study.

4 Statistical analysis

As aforementioned, collected data was put into the contingency table and analyzed as presented below.

We had to join columns with expected frequencies less than 5 since the chi-square test can be applied only if the theoretical frequencies are not less than 5. We constructed the following table. The expected frequencies are appearing in brackets.

The chi-square test produced p-value = 0.0359. This means that at the significance level of 0.05 we reject the assumption that random sample from the population – part-time students and full-time students are from the same probability distribution of random variable – the first contact with the rules of scholastic honesty, and accept the alternative hypothesis that they are not of the same distribution. Thus, the way of first contact with the rules of scholastic honesty differs significantly among external and

Table 2

Survey question – When did you hear about the Scholastic Honesty rules and procedures applied at VŠM/CU for the first time?

Form of study	Before applying for admission or during 1. year, 2. or 3. year, later than 3. year, other or never heard 1+4+5+6+7+8+9	At the beginning of study during plenary session 2	During the first month of study 3	n_i
External	10(10.95)	22(29.02)	35(29.02)	69
Daily	10(9.05)	30(23.98)	17(23.98)	57
n_j	20	54	52	126

Table 3

Adjusted standardized residuals

Form of study	Before applying for admission or during 1. year, 2. or 3. year, later than 3. year, other or never heard 1+4+5+6+7+8+9	At the beginning of study during plenary session 2	During the first month of study 3
External	-0.47	-2.18	2.53
Daily	0.47	2.18	-2.53

daily students. In other words, we accept the assumption that there is an association between the way of first contact with the rules of scholastic honesty and form of study.

Since the chi-square test revealed an association between variables, we followed with a residual analysis. We analyzed the association between the way of first contact with the rules of scholastic honesty and the form of study by calculating the adjusted standardized residuals, presented in the following table:

The table shows relatively large positive residual levels for daily students who have obtained the first information on the beginning of the study – at the plenary session and for external students who have received the first information during the study in the first trimester. This means that there are more daily students who have obtained the first information at the beginning of the study – at the plenary session and more external students who have obtained the first information during the study in the first month, as foreseen by the hypothesis of homogeneity. The table shows large negative residual value for external students who have obtained the first information at the beginning of the study – at the plenary session and for daily students who have obtained the first information during the study in the first month. This means that there is less external students who have obtained the first information at the beginning of the study – at the plenary session and fewer daily students who have obtained the first information during the first month of study as foreseen by the hypothesis of homogeneity. So the daily students received first information at the beginning of the study – at the plenary session and external students received first information during the first month.

Table 4
Odds ratio

Form of study	At the beginning of study during plenary session 2	During the first month of study 3	Total
External	23	36	59
Daily	30	17	47

Based on the results of the chi-square test, we focused on important associations and calculated the estimated odds and odds ratio. We considered option 2 as success and option 3 as failure. By simplifying the table we received

The estimated odds for group of external students = $\frac{23}{36} = \frac{23}{36} \approx 0.638$

As far as the external students are concerned, there is around 0,638 students who first learned about the scholastic honesty rules by option 2 per one student, who learned it through the option 3.

The estimated odds for group of daily students = $\frac{30}{17} = \frac{30}{17} \approx 1.764$

As far as the daily students are concerned, around 1.764 students first learned about the scholastic honesty rules by option 2 per one student, who learned it through option 3.

We calculated the odds ratio for group of daily students $\Theta = \frac{1.764}{0.638} \approx 2.766$

Daily student has 2.766 times greater chance that he first learned about the scholastic honesty rules through option 2 than an external student.

The analysis of the rest of contingency tables was performed in a similar way.

We have found that our first hypothesis H_1 was proven – the means of disseminating information about scholastic honesty on VSM is not homogeneous across branches, program study, form of study, language of study or degree of study. Our analysis also proved the second hypothesis – the level of knowledge about scholastic honesty is not homogeneous across branches, program study, form of study, language of study or degree of study. Finally, hypothesis H_3 – the level of knowledge in the area of scholastic honesty does not change with the length of study, was not confirmed, because we found a departure from homogeneity and therefore the association between year of studies and level of knowledge about scholastic honesty.

The above conclusions show that the level of awareness about the scholastic honesty is not homogeneous, and therefore there is room for improvement in this area, which would ultimately lead to a reduction in the number of cases addressed by the Scholastic Honesty Committee. A positive finding is that the level of awareness tends to increase with higher year of study. This positive finding justifies the existence of a program of scholastic honesty.

5 International perspective

What is the right approach for creating an environment conducive to academic integrity of the educational institution is not entirely clear. Miller and colleagues (2011) carried out a study which deals with the reasons for not cheating. The study included a

sample of 1,086 students of American universities. The research was based on previous studies that have defined three areas of the reasons why students do not cheat. These three areas are:

- educational objectives
- moral code
- sanctions.

Motivation theories state that the learning objectives have a great impact on scholastic honesty. Goal-oriented theory talks about two types of goals which are learning objectives and performance objectives. Students oriented to learning objectives are involved in the learning process with great effort and avoid activities representing unethical behavior, such as cheating or plagiarism. On the other hand, students oriented to performance results prefer the results to the way in which the results are earned. In other words, the end justifies the means. These methods often include the unethical behavior. It reveals that educational objectives can be considered a reason not to cheat (Murdock, 2006). Theories based on a moral code represent the connection between unethical behavior and morality. However, no study to date has shown a relationship between the level of morality and the level of cheating. People generally have the same opinion on what is immoral, unethical, but give different reasons why they think so.

The most widely used way to fight plagiarism is based on the application of sanctions. This approach was originally chosen at our institution. The situation in early 2001 was tragic. Internet served as an all-powerful medium for the production, or rather copying of any assignments and no standard process for addressing the abuse existed. We decided to intervene by setting strict rules and sanctions for violations. Initially, this approach appeared to be effective, but we realized that relying solely on sanctions may be counterproductive. Although a moral lesson is usually associated with lower levels of cheating, sanctions may also be a reason for unethical behavior. Miller's study shows that learning and morality were the reason for the lower incidence of cheating while applying sanctions was associated with a higher incidence of cheating. However, these results do not mean that sanctions do not work as prevention. Strict sanctions are a signal that unethical behavior represents a serious academic problem. However, what seems to work effectively, is the belief that the likelihood of detection of unethical behavior is high (Miller et. Al., 2011). Thus, penalties themselves will not deter students from cheating, no matter how strict. The focus of scholastic honesty program should therefore be the moral codes, learning objectives, and the atmosphere of academic integrity. Encouraging active participation of the students themselves as well as keeping them responsible for to building a similar atmosphere is the direction the scholastic honesty programs in educational institutions should take.

Authors of research at universities in Ontario, Canada recommended greater consistency in addressing the so-called unintentional plagiarism and implementation of sanctions as well as teachers' own attitude towards the issue in their own publications, which should set an example for students. One of the preferred methods of education in this area is using webinars that should be preferred over traditional lectures because students can return to them at any time if necessary (Griffith, 2013). The study of Jacob

and Dee (2012) found that when students had the opportunity to go through the online tutorial on the rules of scholastic honesty, the plagiarism level was reduced through education. They concluded that the tutorial taught the students how to follow the rules of scholastic honesty compared to expectations of raising their belief in the possibility of being caught in violations. Simply put, the Internet provides learning opportunities in the area in more friendly and attractive way than paper. Many academic portals abroad provide students with text information on scholastic honesty and academic integrity, but most of them also use the Internet as a dynamic medium for providing quizzes, interactive tutorials, PowerPoint presentations, videos, links to other sites dedicated to this issue, Word and pdf documents. These sites also allow educational institutions to provide training in this field to different groups depending on age, professional orientation or level of education.

What are the specific examples of the promotion of academic integrity through the internet? A survey involving 22 universities in Ontario showed that those institutions use separate sites within their portals or even separate portals for the promotion of scholastic honesty. The contents of these pages are sometimes divided according to which specific group they targeted, whether they are bachelor's students, master's students, academic staff, proctors or even parents of students. Most of the site contents are emphatically focused and try to present the scholastic honesty area to students affirming to them that it is possible to understand this issue and avoid situations that could lead to unethical behavior. Plagiarism is easily preventable, one just needs to be eager to learn something about it. For this purpose, these sites use a variety of tools. They indicate unethical behavior as unfair to students who approach their studies seriously and honestly, they present true stories of students who have violated the rules with details on what they have done, how they were caught, and what were the consequences for them. Recent trend is image-based sites that use pictures, cartoons, videos, quizzes, presentations. This trend is based on the current generation of students who prefer visual communication methods. The visual component of such sites can better address their message to students with different learning styles. (Griffith, 2013).

Websites covering the area of scholastic honesty are the most accessible and most dynamic form of education in this area. If their text focuses on the reader, if they are educational in nature, recognize different groups of users, have the graphical support, are updated regularly, they become an important means to support efforts to create an environment of academic integrity in educational institutions.

6 Possible course of action

The current web page Scholastic Honesty, as a part of the portal VSM provides only basic information about the rules and procedures without graphics and multimedia support. Relying on our research in this area we want to focus on virtual knowledge sharing through webinars, online tutorials, quizzes, presentations, and videos, i.e. some sort of online form of coaching as one of the tools for sharing knowledge. Students often have difficulties to recognize the differences between techniques of paraphrasing and quoting text, as well as situations when the information used should be cited,

in order not to commit plagiarism. Tutorials can provide the opportunity to verify techniques of paraphrasing and quoting text on concrete examples. They would show how to properly use in the text information taken from various types of sources, what is the right form of in-text citation referring to the source used, when the text is considered plagiarized and how to adjust it. Electronic quizzes would enable students to check whether the knowledge they get can be properly applied.

Regularly organized webinars can provide the opportunity for learning to those whom tutorials would not bring all the answers, or prefer the direct consultation with a specialist. Academic staff members who publish regularly and thus know the proper citation techniques and correct use of literature source, can serve as role models for their younger colleagues. Discussions with them provide opportunities for learning, not only on the part of students but also other academic staff members through the exchange of experience with the use of various tools and techniques to eliminate unethical practices. Each teacher has his/her own methods as to how these issues be addressed, some of which work better, some worse. But the important thing is to have the space and the opportunity to share this experience and to hear the experiences of colleagues in similar situations. Facebook as a communication platform could be included as an additional option for discussing scholastic honesty issues. A recent survey in Slovakia showed that only 93% of students and 75% of white-collar people use social networks and the most preferred platform is Facebook which is used by 49% percent of the Slovak population older than 14 years (Velšic, 2012). It would require the allocation of an administrator of discussions for their proper focus on questions and issues of scholastic honesty. Equally, however, we do not forget the traditional form of sharing knowledge using Word and PDF documents, supplemented by statistical data of the number and the typology of cases investigated by the Scholastic honesty committee, articles, results of current research in this area and also links to sites dealing with issues of SH on other educational institutions. All of these means should lead towards supporting the creation of an atmosphere of increased interest of the academic community in scholastic honesty issues

The active participation of students in Scholastic honesty committee would be another stage to greater integration of the students themselves directly in the process of resolving cases of unethical behavior during the study. Increased student motivation for learning in this area and thus their better awareness can be achieved through their involvement in the work of the Committee. Knowledge of academic staff members and their interest in the field of scholastic honesty started to improve after their involvement in the work of the Committee.

Likewise, we should seek to engage students in creating images and graphic add-ons thus focusing on the trend of visual communication techniques. In courses as Project Management, Business Ethics, Marketing in cooperation with teachers, students will be able to work on assignments aimed at the creation of supporting graphical tools for communicating the principles of scholastic honesty. The best proposals will be processed and used. Inclusion of such assignments in courses that appear to have nothing in common with scholastic honesty also contributes to increasing awareness of the area and get them to reflect on the situations in which a link with scholastic honesty would not be sought.

All of these forms of knowledge-sharing should lead to increased interest of students about scholastic honesty, provide students with an easy way to connect with teachers and classmates, enable learning anywhere and at any time and should lead to creation of a community of academic integrity – community that share values such as honesty, credibility, justice, respect and responsibility

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PLAGIARISM? I KNOW A DEFINITION, BUT I DON'T KNOW WHAT IT MEANS...

Anna Michalska

Abstract: Most researchers believe that plagiarism is a serious problem and some actions have to be taken to reduce its occurrence. One aspect of this problem concerns unintentional plagiarism which takes place when a student accidentally, through carelessness or lack of skill, uses another person's words without acknowledging it (Gillet 2001). This may happen for many reasons starting from forgetting to include references, through difficulties with expressing another person's ideas in student's own words, to unawareness of the term plagiarism. Therefore, the first step in tackling the problem should be to define the concept of plagiarism and to make sure that students are aware of its meaning. On the other hand, having a definition included in the university policy or checking if students are familiar with the expression may not guarantee proper understanding of the rules and recognising differences between acceptable and unacceptable practice.

This study aimed at comparing definitions of plagiarism presented by the students with their real understanding of where the line between acceptable and unacceptable practice is. The author analysed the answers stated to the question: "define what you understand by plagiarism" by investigating the keywords visible in the presented definitions and qualitatively compared them with responses to the more practical multiple-choice question: "indicate your judgment on plagiarism" which, by asking to examine different examples of academic misconduct, aimed at applying theory into practice. Comparing these two sets of questions the author was able to investigate differences between the students' perception of the concept and their actual understanding of what constitutes plagiarism.

Results exposed cases of plagiarism which were not considered misconduct or, according to the students, should not be penalised, therefore might be perceived as perfectly acceptable academic practice. This advocates the need of making sure that students fully understand of what constitutes plagiarism which can then become a stepping stone towards teaching them how to avoid it.

This paper has been based on extracts from the author's unpublished draft PhD thesis.

Key words: Student plagiarism, definition and meaning of plagiarism, unintentional plagiarism

1 Literature Review

The word "plagiarism" was derived from the Latin phrase "plagiarius" which means kidnapper, thief, and plunderer (Online Etymology Dictionary 2014). Even though there is one historic meaning of the "plagiarism" word itself, it is interesting that in the modern world there are many definitions and interpretations of plagiarism as a concept. Common definitions are as follows:

- "Take and use another person's (thoughts, writings, inventions) as one's own" (The Concise Oxford Dictionary (6th edition) 1976)
- "To use (another person's idea or part of their work) and pretend that it is your own" (The Cambridge international Dictionary of English 1995)

- “To copy another person’s words or work and pretend that they are your own” (The Oxford Advanced Learner’s Dictionary (6th edition) 2000)
- “The act of appropriating the ideas, writings, or inventions of another without due acknowledgement; specifically, the stealing of passages either for word or in substance, from the writings of another and publishing them as one’s own” (Funk and Wagnalls’ New standard Dictionary 1921)
- “Steal and pass off (the ideas or words of another) as one’s own: use another’s production without crediting the source; to commit literary theft: present as new and original an idea or product derived from an existing source” (Webster’s Online Dictionary 2011)

In 2003, Chris Park made an analysis of definitions and meaning of the word plagiarism by checking terminology used by other researchers. Park (2003) discovered that some authors describe plagiarism using more moralistic tone, for example by comparing it to a ‘sin’ (Colon 2001 and Miller 1993 cited in Park 2003). Other researchers, like Freedman (1994 cited in Park 2003), called plagiarism an ‘*attack on human right, property and identity*’, whereas Zangrando (1991 and 1992 cited in Park 2003) used the metaphor of a ‘*cancer that erodes the rich legacy of scholarship*’. Park (2003) also found out that some researchers use more legalistic language comparing plagiarism to ‘*theft*’ (Whiteneck 2002, Stebelman 1998, Hopkin 1993 cited in Park 2003), ‘*forgery*’ (Groom 2000 cited in Park 2003) and ‘*crime*’ (Franke 1993 cited in park 2003). Park noticed that other writers, like Leatherman (1993 cited in Park 2003) and Fialkoff (2002 cited in Park 2003) had less radical attitude, calling plagiarism a ‘*poor practice*’, or ‘*a lapse rather than a crime*’ (Gray 2002 cited in Park 2003). According to Park (2003), some authors were even more creative and used terminology like ‘*a disease of inarticulateness*’ (Bowers 1994 cited in Park 2003) or called plagiarism a form of ‘*mental illness*’ (Howard 2000 cited in Park 2003).

Furthermore, reporting lack of direct substitutes for the word ‘plagiarism’, Briggs (2009) separates plagiarism alternatives into two groups, depending on the level of moral accusation:

- Copying/borrowing
- Cheating/stealing

Briggs (2009: 66) believes that ‘*Copying*’ and ‘*borrowing*’ as morally neutral terms, describe the essential act constituting plagiarism, but without sufficiently indicating the inappropriateness of that act. IParadigms LLC on their website plagiarism.org (2014) also states that treating plagiarism as simply ‘copying’ or ‘borrowing’ someone else’s work might diminish its importance and camouflage its seriousness. On the other hand, terms like ‘*cheating*’ and ‘*stealing*’ only “underscore the seriousness of the ‘crime’—stressing the immorality of the act in order to encourage all right-minded students not to acquiesce to what might appear to be the easier way” (Briggs 2009: 67).

Lack of one universal definition, as well as ‘colourful’ language of plagiarism suggest that plagiarism is a complex concept which might provoke disputes in academic circles. According to Dahlia Yusof (2009), “on the surface, the meanings seem similar. In

practice, the meanings are rigorously subject to debates". Many teachers and authors present different opinions about plagiarism and argue about reasons for its prevalence and the forms of appropriate penalties. Such diverse opinions inside academia can also influence *students and their understanding of what constitutes proper and improper academic behaviour*.

What is more, having dissimilar educational experience and being guided by different sets of values, students may consider plagiarism in their own and very individual way. Steven Dutch (2005: 1) believes that "bad definitions of plagiarism confuse students and simultaneously trivialize the problem. The examples cited in style manuals are commonly so pedantic that students might be pardoned if they conclude the whole issue is a matter of academic nit-picking".

This suggests that plagiarism is not an easy to define concept and the existence of many, sometimes diverse definitions confuses academics as well as the students and may be one of the reasons for "accidental" plagiarism.

2 Methodology

This paper presents results of research conducted by the author as part of her PhD study and is based on extracts from the unpublished draft thesis. During the time of research design and data collection the author was a member of the Impact of Plagiarism Policies for Higher Education Across Europe (IPPHEAE) project which was funded through the Erasmus Lifelong Learning Programme, Multilateral Projects, under the Modernisation of Higher Education agenda. Questionnaires used in the author's thesis were part of the IPPHEAE project survey which asked teachers, students and managers from various EU institutions about their opinions regarding plagiarism meaning, measures for detection and possible prevention tactics.

As a Research Assistant to the project, the author contributed to the design of the survey. This allowed for the questionnaires to be worded in such a way that both IPPHEAE objectives and the author's own Research Questions could be answered. Since the thesis focused only on the student perspective, other angles of the IPPHEAE project concerning teachers and managers were not included in the analysis.

The survey contained a variety of questions regarding plagiarism awareness, perception and occurrence, institutional policies and procedures, plagiarism prevention and detection, as well as scholarly academic writing with an emphasis on citing and referencing. Questionnaires were distributed and completed electronically via a secure on-line platform. The survey was conducted on a group of bachelor and master's degree students from different HE Institutions across Europe. Questionnaires were available in 14 different language versions prepared by the native speaking project consultants.

Using contacts provided by the IPPHEAE project members, the author managed to conduct her study in nine European countries: Cyprus, Eire (Ireland), Finland, France, Germany, Poland, Romania, Sweden and the United Kingdom (further called "Group 9"). The total amount of participants from the nine selected countries that completed the questionnaires was equal to 2170.

This paper focuses on one aspect of the author's research (*How do students understand and perceive plagiarism?*) and compares definitions of plagiarism presented

by students in the Survey Question 1 with their real understanding of where the line between acceptable practice and plagiarism is—measured by a series of practical questions (Q15.a–15.f).

The author analysed the answers stated to the question: “define what you understand by plagiarism” by investigating the keywords visible in the presented definitions and qualitatively compared them with responses to the more practical multiple-choice question: “indicate your judgment on plagiarism” which, by asking to examine different examples of academic misconduct, aimed at applying theory into practice. Comparing these two sets of questions the author was able to investigate differences between the students’ perception of the concept and their actual understanding of what constitutes plagiarism.

3 Results

Question 1 (open question)

Define in one phrase or sentence what you understand by the word plagiarism

In order to analyse the answers, the author translated all non-English responses by means of her own language skills and the use of Google Translator. During the manual analysis of each of the responses the author distinguished 29 keywords which were noticeable in the answers. These keywords were then grouped in the following categories:

Less serious connotations of plagiarism:

- The act of “copy-paste”
- Copying
- Using / taking
- Presenting
- Imitating / replicating / duplicating

More serious connotations of plagiarism:

- Theft / Stealing / Usurpation / Appropriation
- Fraud
- Crime / offence
- Paying / buying

Links with legal context:

- Illegal / unlawful
- Breaking copyright law
- Intellectual property (*Note: also included under the “intellectual” category*)
- Publishing / posting

Not mentioning the original author:

- Not referencing / quoting / citing
- Not acknowledging the author / not giving credit
- Not mentioning the author / the source of information
- Without permission / knowledge of the author / unauthorised

False attribution of authorship:

- Taking credit / attributing work to yourself
- As my own / under my name
- Gaining advantage / benefit / for my own interest

Links with intentional nature of plagiarism:

- Cheating / dishonesty
- Deliberate/ intentional
- Unethical

Links with unintentional nature of plagiarism:

- Accidental / unintentional

Textual object of plagiarism:

- Words / text
- Speech/spoken words
- Directly / word-for-word / without changes / quoting

Intellectual object of plagiarism:

- Ideas / thoughts / information / work
- Intellectual property (*Note: also included under the “legal” category*)

Plagiarism of other than external sources:

- Copying other students

Overall 2170 participants from Group 9 took part in the Survey of which 2103 provided answers to Question 1. In 109 cases, it was difficult to judge whether participants understood the concept of plagiarism—37 students used words like fraud, cheating, dishonesty, theft or stealing without further explanation, therefore their answers could not be classified as “showing understanding”. What is more, 17 participants’ responses did not present any understanding of plagiarism giving incorrect definitions, like “*Plagiarism means bribe*”, “*Stealing from the food store*”, “*To copy an exam / test*”.

In 1971 cases (94%), it was possible to interpret definitions as demonstrating understanding and presenting appropriate meaning of the term plagiarism.

Every student presented his/her own interpretation of the word “plagiarism”, but some words and themes appeared more often than others. It was interesting to see how many participants mentioned aspects other than just “text”, for example plagiarism of “ideas”, “thoughts”, “information” and “work”. These “more than just words” themes

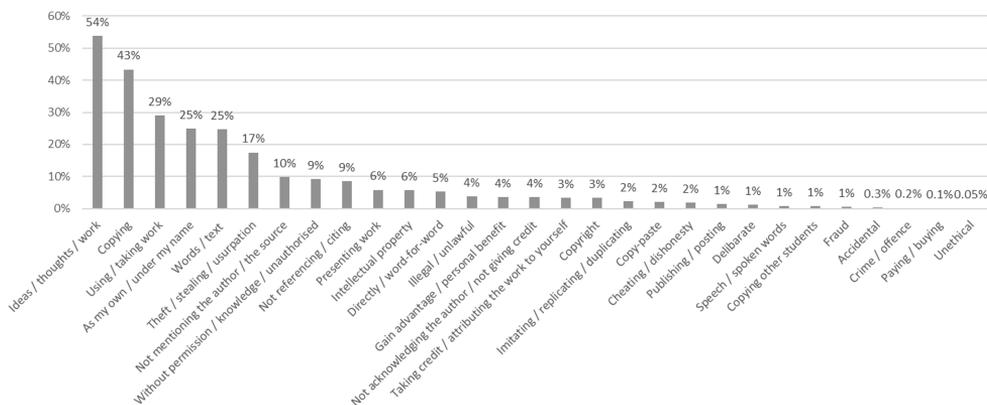


Figure 1. Question 1—Overall result for Group 9

were present in 54% of answers, however due to difficulties with translation the author experienced problems with finding the real meaning of definitions written by the students. For example, in Polish language the word “work” in academic sense can also denote student paper or coursework, therefore sometimes it was difficult to decide what meaning was intended by individual participants.

Large number of participants (43%) used the words “copy” and “copying” to describe plagiarism. 29% mentioned “using” or “taking”, whereas 17% of participants highlighted words like “theft”, “stealing”, “usurpation” and “appropriation”. Interestingly, 9% of students described plagiarism mentioning that it typically happens “without the knowledge” or “permission” of the original author. Very small number of respondents (24 = 1%) focused on “deliberate” nature of misconduct, whereas only 7 participants (which equals to 0.33%) mentioned possibility of “accidental” plagiarism.

Below are the results of each of the countries from the Group 9. Negligible results of 0% were not included in the graphs in order to focus on more frequently used terms and definitions.

Cyprus

38% of Cypriot respondents mentioned “words” and “text” plagiarism, whereas 21% talked about “ideas” and “work”. 31% described this concept by “copying” and 28% mentioned “using” and “taking”. At the same time 27% used words like “theft” and “stealing” which was ranked number 1 among the nine countries. Interestingly, 8% of participants mentioned “copyright” law and 4% also used the term “speech” or “spoken words” to express the object of the plagiarism act (which was the highest result among the nine countries). Cypriot participants also used the term “copy-paste” (5%) and linked plagiarism with “publishing” copied materials (1%). What is more, fewer respondents (compared to other countries) talked about plagiarism of “ideas / thoughts / work” (21%).

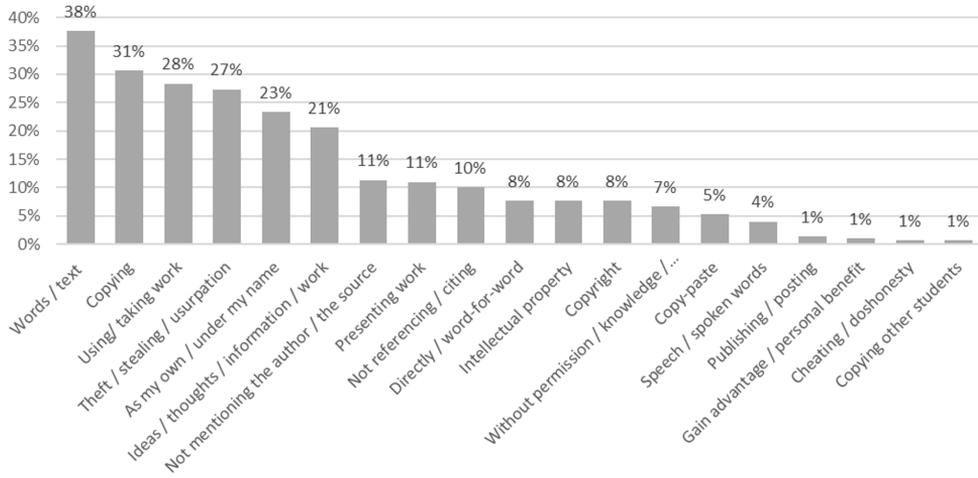


Figure 2. Question 1—Results for Cyprus

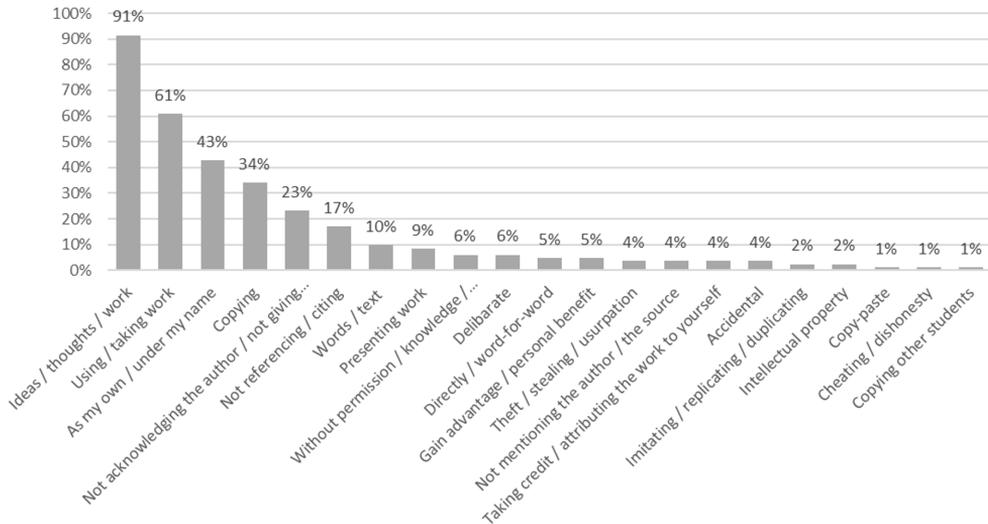


Figure 3. Question 1—Results for Eire (Ireland)

Describing plagiarism as “copying”, “using / taking” and a few times also “stealing” students presented rather moderate approach. Using a term “copyright” suggests placing plagiarism in legal context. This advocates that students in Cyprus might require more practical training on plagiarism, in order to relate it more to their day-to-day academic practice.

Eire (Ireland)

91% of Irish students mentioned “ideas”, “thoughts” and “work” when describing plagiarism (which was the highest result among the nine countries). 23% of answers also contained aspects like “not acknowledging the author” or “not giving due credit” (again ranked number 1). Interestingly, only 4% of definitions contained references to “theft” or “stealing” (which was the lowest result among Group 9), while many participants (61%) rather focused on “using” and “taking” the work of others—students used these terms even more often than “copying” (34%). 5% of respondents mentioned “gaining advantage” from plagiarism (2nd in the repeatability rank), whereas 4% talked about “accidental” nature of the concept which was ranked number 1 in terms of frequency among the nine countries.

Students presented rather good understanding of the plagiarism concept. On the other hand, their perception of plagiarism was shifted towards milder seriousness defining it more often as “taking / using” and “copying” and only in very few cases “stealing / theft”. Participants also mentioned possibility of accidental plagiarism and discussed more sublime issues of “not acknowledging the author” 9) which suggest more practical understanding of plagiarism.

Although a small number, but compared to other countries where these connotations were almost non-existent, 5% of Irish students mentioned “gaining advantage / benefitting” from plagiarism as one of its characteristics. This could advocate that some students may not properly recognise cases of plagiarism when gaining benefits is not involved, which means that plagiarism in less important pieces of work may not be considered a problem.

This might suggest that although being able to recognise more obvious cases of plagiarism, students are not aware of its other forms and so they believe they do not commit any misconduct.

Finland

Participants from Finland focused on “copying” (57%) (which was the highest result among the nine countries), as well as “using / taking” (30%) rather than “stealing” (5%). 11% of students also mentioned that plagiarism happens “without permission” or “knowledge” of the author. Interestingly, a few (4 = 2%) respondents said that plagiarism is “illegal” and talked about the concept of “accidental plagiarism” (1%) which resulted in the 2nd place among Group 9.

Although participants from Finland seemed to understand the concept of plagiarism some mentioned aspects that are not commonly included in the definitions and in fact are not characteristics of plagiarism (talking about “lack of permission or knowledge of the original author”). Presenting plagiarism as “stealing” and being “illegal” means placing plagiarism in a legal context and suggests that some students may still have difficulties seeing plagiarism in more practical terms.

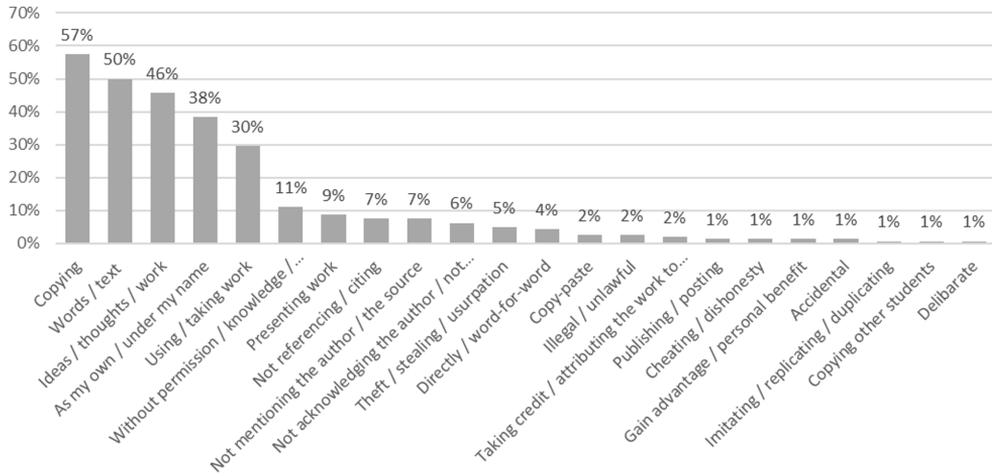


Figure 4. Question 1—Results for Finland

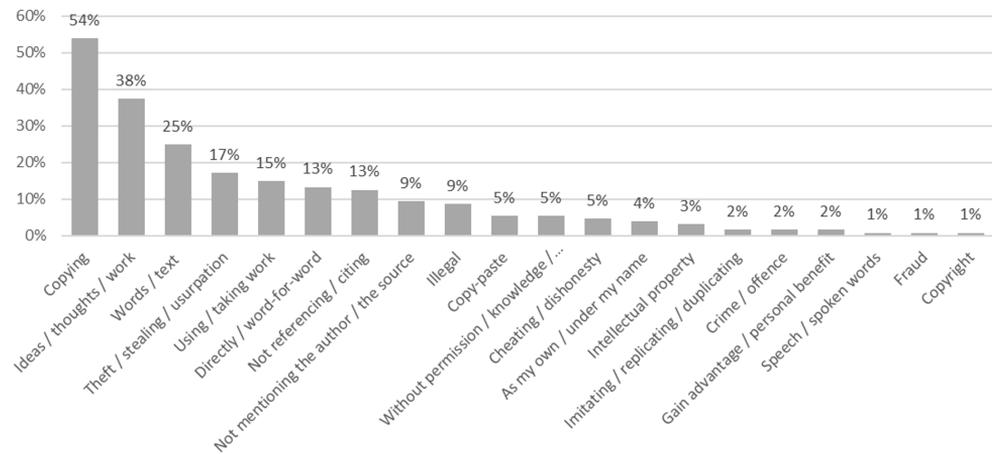


Figure 5. Question 1—Results for France

France

Students from France also presented the term “copying” as best describing the concept of plagiarism (54%), but 17% also mentioned “stealing / theft”. 9% of participants talked about “illegal” nature of plagiarism and 2% called plagiarism a “crime” (which for both themes was ranked as number 1 among Group 9). 13% described plagiarism as “word-for-word” (which was the highest result among the nine countries). Interestingly, 5% of respondents also mentioned the concept of “cheating” in their definitions.

When asked to provide definitions of plagiarism, views of the participants varied from “copying” to “stealing”. Interestingly, many respondents talked about “illegality”

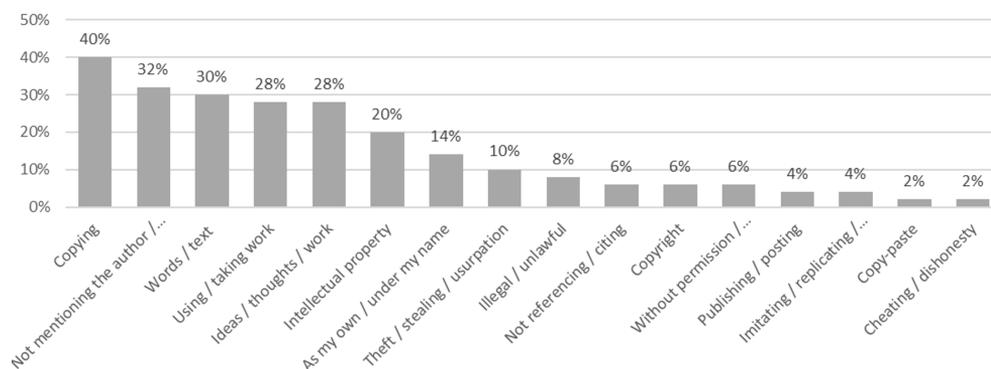


Figure 6. Question 1—Results for Germany

and “crime” which placed plagiarism in the legal context. Calling plagiarism “cheating” suggests deliberate nature of this form of misconduct.

Germany

German students again preferred the term “copying” (40%), however, in their definitions they also highlighted lack of source and “not mentioning the author”. 20% of participants focused on “intellectual property” (which was the highest result among Group 9) and 6% mentioned breaches in the “copyright” law. 8% of students said that plagiarism is “illegal” or “unlawful”. These results placed plagiarism in the legal context.

4% of participants mentioned that the act involves “publishing” or “posting” plagiarised material (which placed Germany at number 1 among the nine countries) focusing on more formal aspects of the misconduct.

Presented results suggest that students in Germany might be confused about the real meaning of plagiarism separating it into two forms: plagiarism in professional life and plagiarism in the academic context.

Poland

42% of Polish participants used the term “copying” when describing plagiarism, but 18% also talked about “theft” and “usurpation” of material. Moreover, 17% respondents discussed “lack of permission” or “knowledge” of the author (which is actually not a condition of plagiarism), whereas 11% mentioned “intellectual property” as the object of plagiarism. 8% described this concept as “unlawful” and 7% mentioned “gaining advantage” and “personal benefit” as the idea behind plagiarism (which placed Poland at number 1 among Group 9). Interestingly, 5% of respondents mentioned “imitating / replicating” which was again the highest score among the nine countries.

Although 65% of responses were classified as discussing more than just “words/text”, as it was mentioned before, the Polish word for “work” can be understood in two different ways—as achievements of someone’s work or student’s submission/coursework,

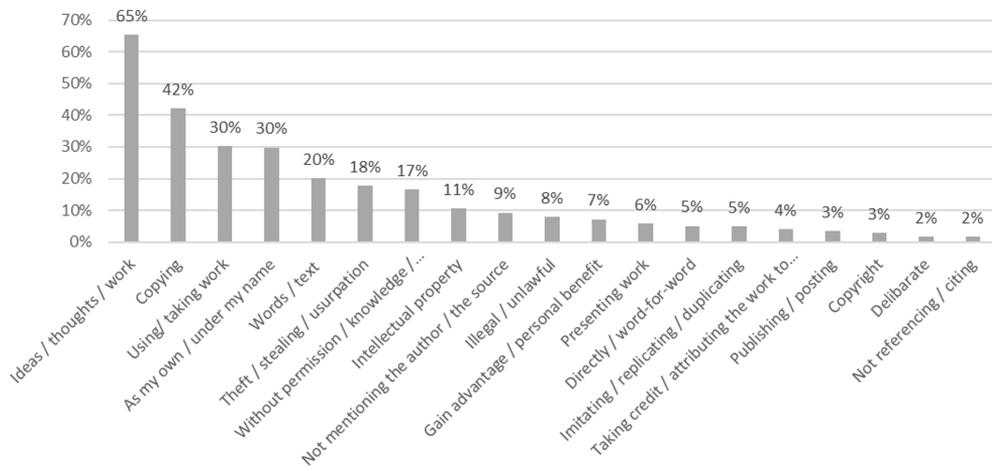


Figure 7. Question 1—Results for Poland

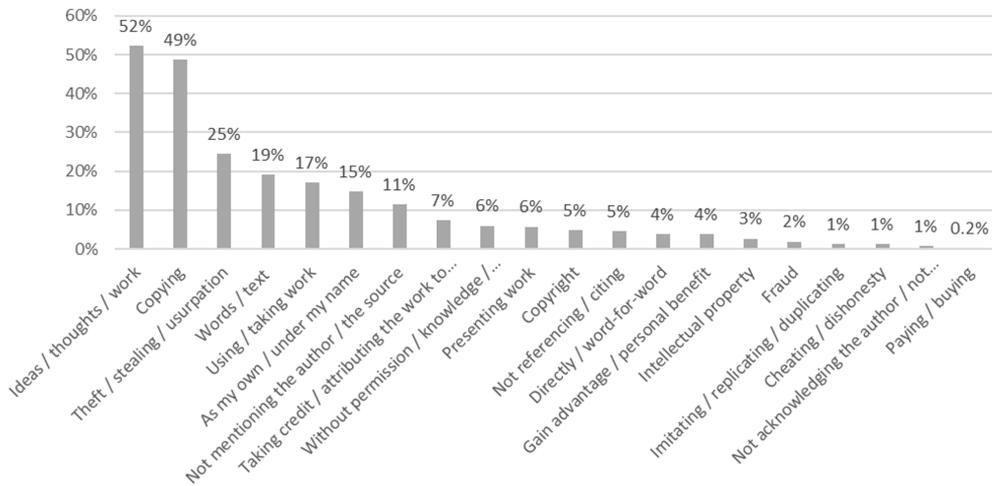


Figure 8. Question 1—Results for Romania

therefore it was impossible to prove that Polish participants knew about more than just “text” plagiarism.

Romania

49% of participants from Romania used the word “copying”, but 25% mentioned “theft” and “stealing” to describe plagiarism (which gave a second place among the nine countries). 52% of students talked about “ideas”, “thoughts” and “work”. Interestingly, 7% mentioned “taking credit” and “attributing the work” of someone else (ranked

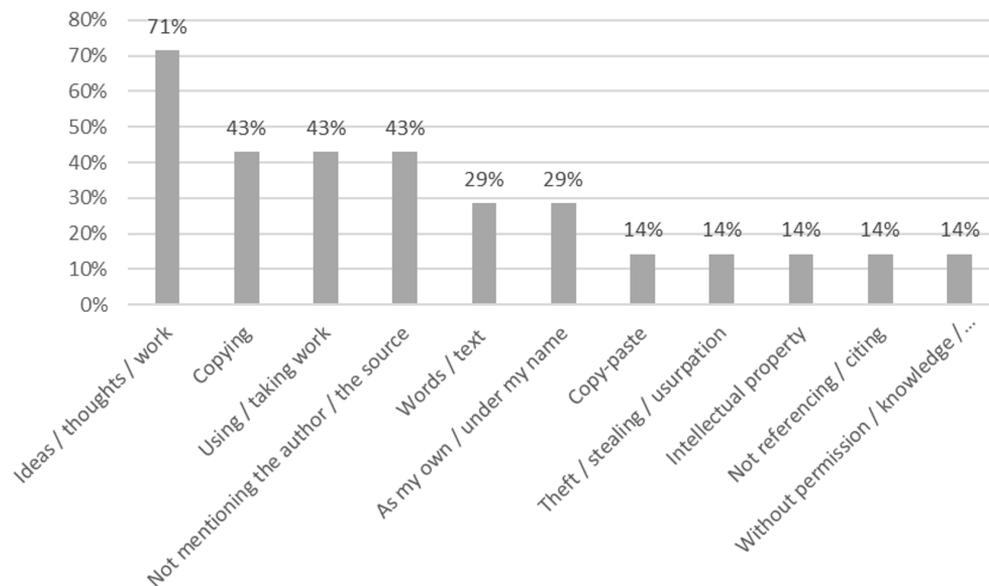


Figure 9. Question 1—Results for Sweden

number 1). 6% of students talked about “lack of permission or knowledge of the author” and 5% discussed breaking the “copyright” law. What is more, some students (0.2%) discussed the problem of “buying” the work which resulted as the second highest score among Group 9 (participants from only two countries mentioned this characteristic of plagiarism). 2% of participants described plagiarism as “fraud” (which was the top result).

Such connotations placed plagiarism in the legal context and suggest that practices of buying the work might be prevalent in Romania.

Sweden

Although only 7 participants took part in the Survey, most of them (71%) discussed “ideas / thoughts / work” as the object of plagiarism. 43% focused on “copying”, but 43% also talked about “lack of sources” or “not mentioning the original author” (which was the highest result among Group 9) demonstrating a link with scholarly academic writing. 1 person (14%) used the term “copy-paste” and 1 person (14%) also mentioned “intellectual property”.

The United Kingdom

42% of participants from the United Kingdom discussed plagiarism using the term “copying”, but 40% also mentioned “using” and “taking” to explain the concept. Only 10% presented plagiarism as “theft” or “usurpation”, but 23% discussed “lack of referencing” in their definitions (which was the highest result among Group 9).

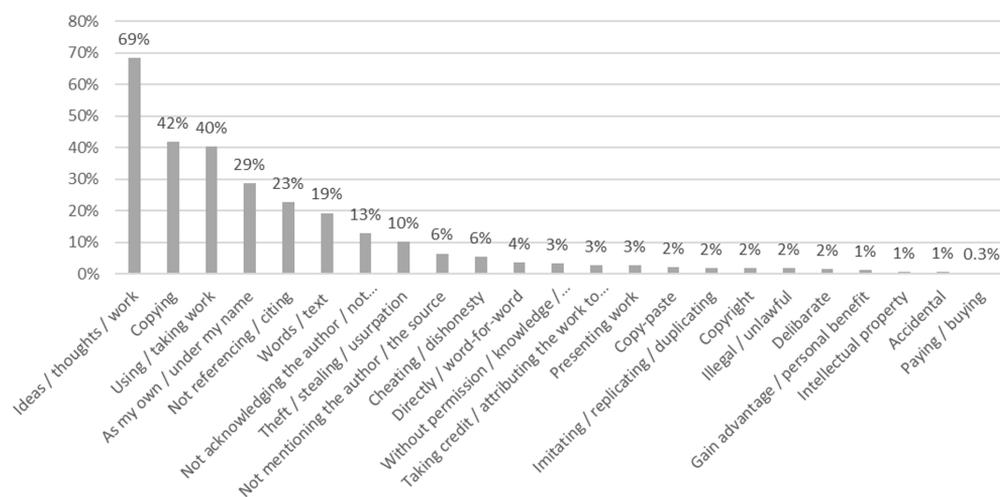


Figure 10. Question 1—Results for the United Kingdom

13% talked about “not acknowledging the author” and 6% mentioned that plagiarism involves “cheating” and “dishonesty” (which placed the UK at number 1). Interestingly, only 1% discussed “intellectual property” (which was the lowest result among the nine countries). On the other hand, although small (0.3%), but at the same time the highest number of participants talked about cases of “buying” the work. The United Kingdom was also the only country where respondents characterised plagiarism as “unethical” (0.3%).

Participants from the United Kingdom presented good understanding of the plagiarism concept. Survey respondents used “milder” terminology, such as “copying” as well as “using / taking” rather than “stealing”. Talking about “lack of referencing” and “not acknowledging the author” students presented evident links with academic practice.

It is also important to remember that universities in the United Kingdom comprise of many international students who might come from countries where plagiarism issues are not recognised or discussed.

Question 15.a

Question:	Answers:
Assuming that 40% of a student's submission is from other sources and is copied word for word into the student's work with no quotations, indicate your judgement on plagiarism (<i>by ticking one of the boxes</i>) and answer as to whether a penalty should be applied in each case (<i>by ticking YES or NO</i>)	<ol style="list-style-type: none"> 1. This is serious plagiarism 2. This case is plagiarism 3. Not sure about this case 4. This is definitely not plagiarism 5. Penalty applied? YES 6. Penalty applied? NO

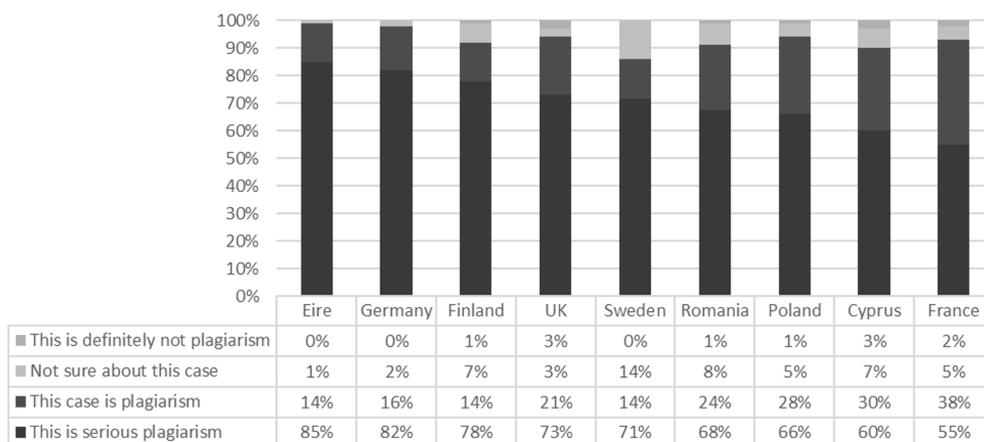


Figure 11. Question 15.a—results

This scenario was a case of serious plagiarism and was rather clear and easy to assess for the students. Most of the participants agreed that this is a serious case of plagiarism (71% of Total 27) or that it was plagiarism (22% of Total 27) and that the penalty should be applied (90% of Total 27).

Figure below shows graphical representation of the results.

Question 15.b

Question:	Answers:
Assuming that 40% of a student's submission is from other sources and is copied word for word into the student's work with no quotations, has correct references but no in text citation, indicate your judgement on plagiarism (<i>by ticking one of the boxes</i>) and answer as to whether a penalty should be applied in each case (<i>by ticking YES or NO</i>)	<ol style="list-style-type: none"> 1. This is serious plagiarism 2. This case is plagiarism 3. Not sure about this case 4. This is definitely not plagiarism 5. Penalty applied? YES 6. Penalty applied? NO

Most of the students correctly judged the scenario recognising it as a case of plagiarism (54% of Total 27), but there was also a substantial proportion of students who were not sure (26% of Total 27). Participants were not necessarily convinced that the penalty should be applied (57% from Total 27 said yes to this question).

Interestingly, students from France were even more divided with 42% saying "this is plagiarism" and 43% saying "I'm not sure about this case". What is more, most of them (63%) decided that the penalty **should not** be applied.

Examining answers of participants from Sweden, although 71% agreed that this is a case of plagiarism, only 43% would apply the penalty.

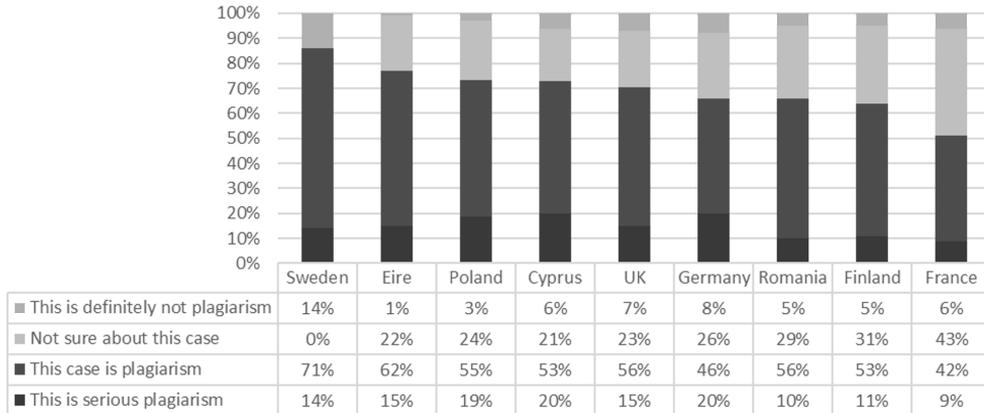


Figure 12. Question 15.b—results

Figure below shows graphical representation of the results.

Question 15.c

Question:	Answers:
Assuming that 40% of a student's submission is from other sources and is copied word for word into the student's work with no quotations, but has correct references and in text citations, indicate your judgement on plagiarism (<i>by ticking one of the boxes</i>) and answer as to whether a penalty should be applied in each case (<i>by ticking YES or NO</i>)	<ol style="list-style-type: none"> 1. This is serious plagiarism 2. This case is plagiarism 3. Not sure about this case 4. This is definitely not plagiarism 5. Penalty applied? YES 6. Penalty applied? NO

Although the scenario describes a case of plagiarism, students' answers were varied ranging from "this is plagiarism" (32% of Total 27), through "I'm not sure about this case" (36% of Total 27) to "this is definitely not plagiarism" (25% of Total 27). Interestingly, relatively small percentages of participants from Poland (16%), Romania (14%) and Sweden (14%) decided that this was not a case of plagiarism. Most of the participants (74% of Total 27) suggested that a penalty should not be applied.

Figure below shows graphical representation of the results.

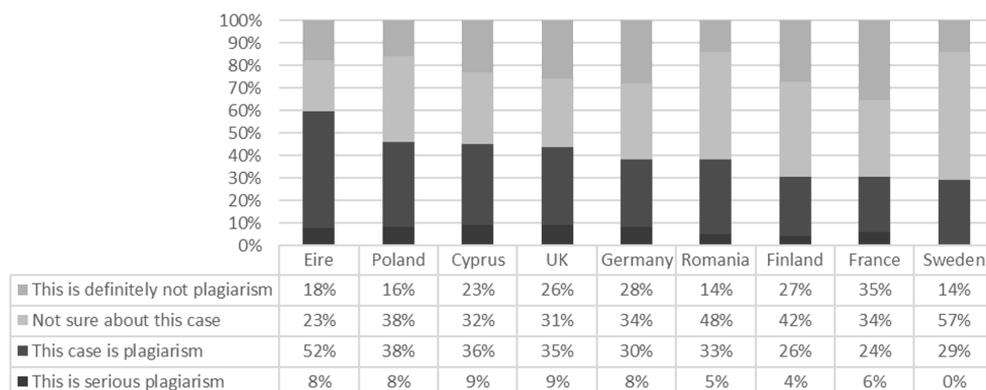


Figure 13. Question 15.c—results

Question 15.d

Question:	Answers:
Assuming that 40% of a student's submission is from other sources and is copied into the student's work with some words changed, with no quotations, references or in text citations, indicate your judgement on plagiarism (<i>by ticking one of the boxes</i>) and answer as to whether a penalty should be applied in each case (<i>by ticking YES or NO</i>)	<ol style="list-style-type: none"> 1. This is serious plagiarism 2. This case is plagiarism 3. Not sure about this case 4. This is definitely not plagiarism 5. Penalty applied? YES 6. Penalty applied? NO

Large proportion of students correctly recognised this scenario as a case of plagiarism (41% of Total 27, 39% of Group 9), but many were not sure how to categorise it (29% of Total 27, 35% of Group 9). Interestingly, 20% of participants from Germany decided this is “not a case of plagiarism”. On the other hand, 35% of participants from Eire recognised it as a “serious plagiarism”.

Figure below shows graphical representation of the results.

On the subject of penalty, opinions were mixed with the majority of respondents in Cyprus (64%), Eire (70%), Finland (62%), Germany (56%), Sweden (57%) and the UK (62%) opting for awarding a penalty and those from France (55%), Poland (62%) and Romania (62%) opting against it.

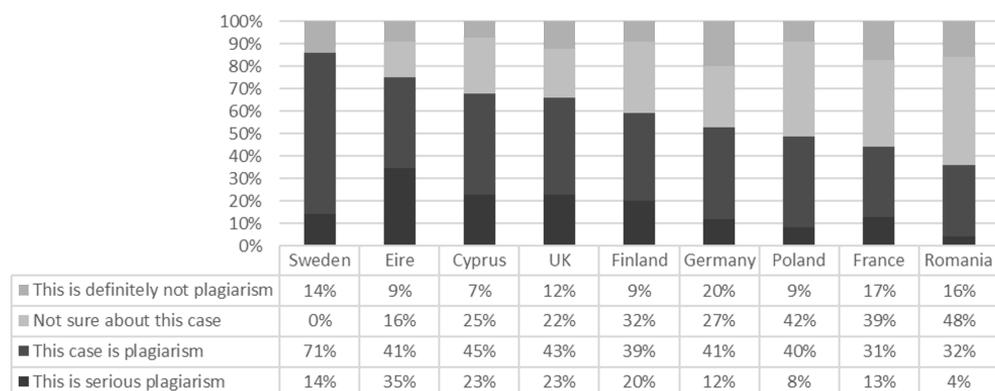


Figure 14. Question 15.d—results

Question 15.e

Question:	Answers:
Assuming that 40% of a student's submission is from other sources and is copied into the student's work with some words changed, with no quotations, has correct references, but no in text citations, indicate your judgement on plagiarism (<i>by ticking one of the boxes</i>) and answer as to whether a penalty should be applied in each case (<i>by ticking YES or NO</i>)	<ol style="list-style-type: none"> 1. This is serious plagiarism 2. This case is plagiarism 3. Not sure about this case 4. This is definitely not plagiarism 5. Penalty applied? YES 6. Penalty applied? NO

For this scenario, large percentage of students were not sure how to judge this case (45% of Total 27, 48% of Group 9), but there was still a group of students that recognised it as an example of plagiarism (32% for Total 27, 30% for Group 9). Most of the participants would not apply any penalty.

Slightly stronger opinion was presented by the participants from Eire—46% decided that “this is plagiarism” and 53% would apply the penalty.

A significant proportion of participants from France (29%), Germany (22%) and Poland (21%) chose the option “this is definitely not plagiarism”.

Figure below shows graphical representation of the results.

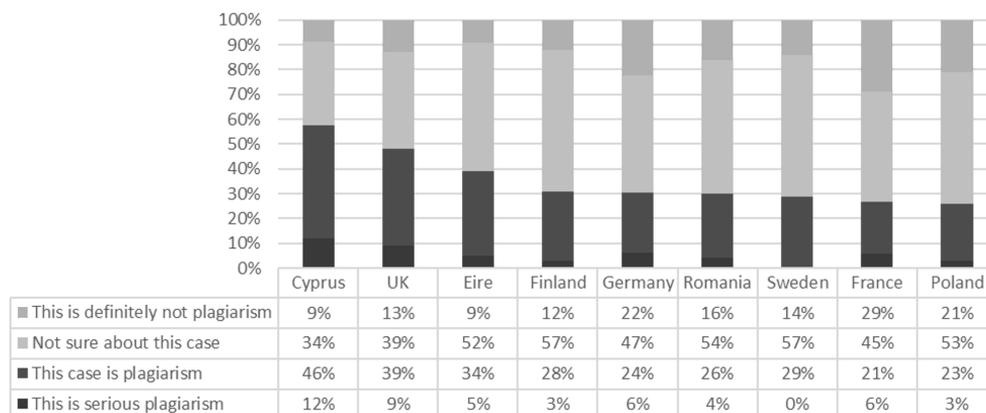


Figure 15. Question 15.e—results

Question 15.f

Question:	Answers:
Assuming that 40% of a student's submission is from other sources and is copied into the student's work with some words changed, with no quotations, but has correct references and in text citations, indicate your judgement on plagiarism (<i>by ticking one of the boxes</i>) and answer as to whether a penalty should be applied in each case (<i>by ticking YES or NO</i>)	<ol style="list-style-type: none"> 1. This is serious plagiarism 2. This case is plagiarism 3. Not sure about this case 4. This is definitely not plagiarism 5. Penalty applied? YES 6. Penalty applied? NO

Although this scenario also represents a case of poor academic practice, large group of participants (49% of Total 27, 41% of Group 9) did not consider this a case of plagiarism. Many students were unsure about the judgement (33% of Total 27, 38% of Group 9). Almost all the participants would not apply any penalty (90% of Total 27, 87% of Group 9).

Figure below shows graphical representation of the results.

To summarise, all scenarios described in questions 15.a to 15.f presented cases of plagiarism (more and less serious). Analysis showed that some instances of plagiarism were not recognised and acknowledged by the participants, which suggests that some students might commit academic misconduct without realising its inappropriateness.

4 Discussion

In order to understand students' perception of plagiarism, it is important to start with examining the concept of unintentional plagiarism which takes place when a student accidentally, through carelessness or lack of skill, uses another person's words without

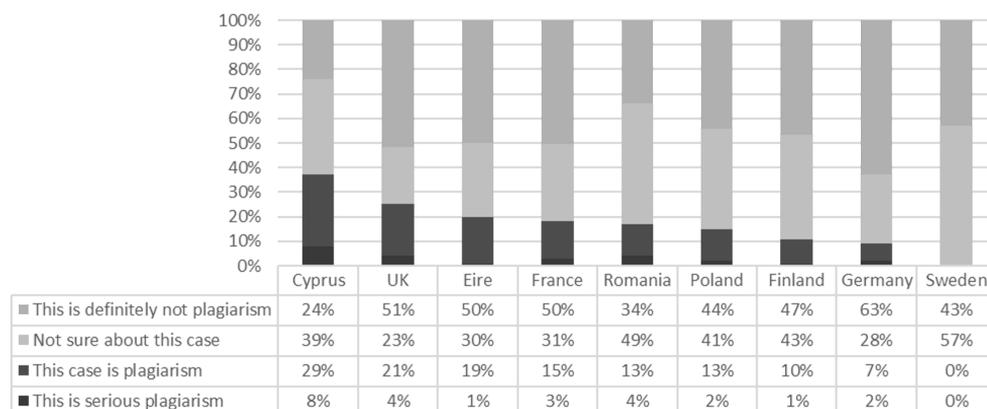


Figure 16. Question 15.f—results

acknowledging it (Gillet 2001). This may happen for many reasons starting from forgetting to include references, through difficulties with expressing another person's ideas in student's own words, to unawareness of the term plagiarism.

Analysing Survey Question 1, in 1971 out of 2103 cases (94%), it was possible to interpret definitions stated by the students as demonstrating understanding and presenting appropriate meaning of plagiarism. The words used the most often to describe plagiarism were categorised under the following themes: "ideas / thoughts / information / work" (54%), "copying" (43%), "using / taking" (29%), "as my own / under my name" (25%), "words / text" (25%), as well as "theft / stealing / usurpation / appropriation" (17%).

Although 94% of responses showed awareness and understanding of the term "plagiarism", it was important to analyse students "real" understanding of the concept, as suggested by Yusof (2009) the meanings of the term are often debatable. Questions 15.a to 15.f described six scenarios of poor academic practice and asked respondents to judge whether these are the cases of plagiarism or not. Interestingly, all the scenarios described cases of plagiarism (more and less serious), but students had difficulties with identifying them correctly.

The results proved that many students were often "unsure" what constitutes plagiarism or claimed that some scenarios are "definitely not cases of plagiarism". The biggest concerns were raised in the last question 15.f which presented situation where some referencing has been included in the copied work.

Questions 15.a to 15.f also asked if for each of the presented scenarios the penalty should be applied. Because all the scenarios described cases of plagiarism the correct answer would be the one which agrees with the penalty application. Once more participating students did not recognise the cases correctly and presented mixed opinions regarding appropriateness of penalties. Interestingly many participants did not feel inappropriate to copy 40% of the work from external sources and would not penalise such behaviour.

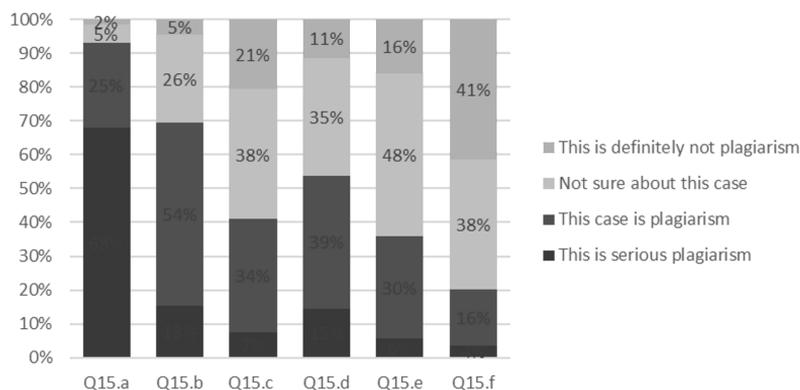


Figure 17. Comparison of Questions 15.a–15.f

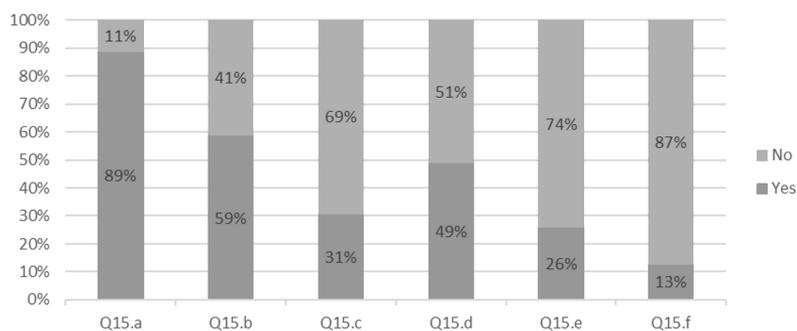


Figure 18. Comparison of Questions 15.a–15.f—Should the penalty be applied?

Differences between the nine analysed countries

Analysing countries individually the author observed substantial disparities in understanding plagiarism by different nationalities.

The country with the strictest sense of what constitutes plagiarism was Eire (Ireland), followed by Cyprus, the United Kingdom, Poland, Sweden and Finland. The countries where students struggled the most with appropriate identification of plagiarism cases were Romania, Germany and France (Note: this analysis was made based on the arithmetic mean of the responses calculated for each country and scenario).

When looking at the penalties, the most “strict” countries appeared to be Cyprus, Germany, the United Kingdom and Eire, followed by Romania, Finland and Sweden. Participants who were the least convinced about the penalty application were Poland and France (Note: these results were calculated basing on the total amount of positive answers to the penalty questions).

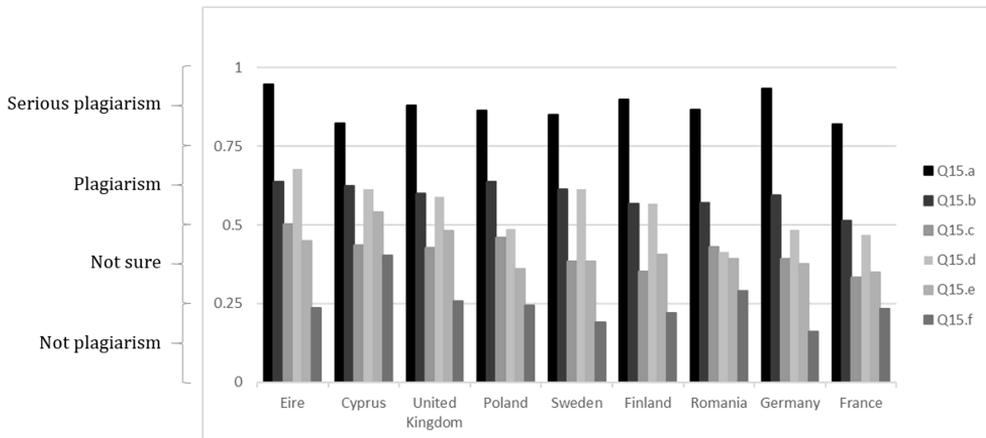


Figure 19. Country by country analysis of Questions 15.a–15.f

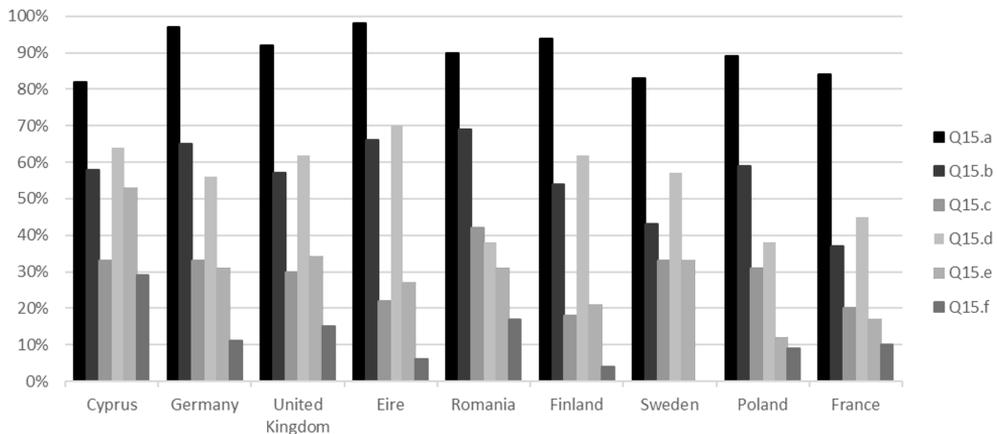


Figure 20. Country by country analysis of Questions 15.a–15.f—Should the penalty be applied?

5 Conclusions

This research exposed that plagiarism is a complex concept with unclear boundaries between appropriate and inappropriate behaviour. Results also showed that there are some cases of plagiarism which are not considered to be misconduct or, according to students, should not be penalised, therefore some students may treat them as perfectly acceptable. This confirms some reasons for “accidental” plagiarism (Gillet 2001) due to lack of understanding of rules and referencing standards.

Researchers suggest that the first step in tackling the problem should be to define the concept of plagiarism and to make sure that students are aware of its meaning. On the other hand, having a definition included in the university policy or checking

if students are familiar with the expression does not guarantee full understanding of the rules and recognising differences between acceptable and unacceptable practice. Carroll and Zetterling (2009: 15) believe that “telling students the rules is a useful first step, however is not sufficient to be able to assume they understand what is needed”.

What is more, plagiarism is not an easy to define concept and the existence of many, sometimes diverse definitions confuses academics as well as the students. Therefore, the biggest challenge is to make sure that students fully understand of what constitutes plagiarism which can then become a stepping stone towards learning how to avoid it. This means that universities need to start investing time and effort in educating students by offering them more training in academic writing, appropriate citation and referencing techniques, as well as avoidance of plagiarism. The concept of academic dishonesty should also be discussed in every module, assignment brief and anti-plagiarism campaigns. This should then increase students’ awareness and understanding and thus reduce incidents of accidental plagiarism.

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USING ELECTRONIC PLAGIARISM TOOLS TO TEACH UNIVERSITY STUDENTS TO AVOID PLAGIARISM

Christopher Rieber

Abstract: This paper explores the efficacy of using electronic plagiarism programs as a pedagogical tool to teach students how not to plagiarize at university. Faculty at the Stockholm School of Economics in Riga have launched a program that uses Turnitin Originality Check as a teaching tool to show students what plagiarism is and how it is detected. Students are allowed limited access to Originality Check to pre-check their work when they work in teams. Preliminary results show that students who have been exposed to the treatment may have a better understanding of plagiarism and how to avoid it. The paper describes both how Originality Check is deployed in teaching as well as under what conditions students are allowed access to the system.

Key words: Electronic Plagiarism Checking; Turnitin; Pedagogy; Student Training

1 Introduction

Electronic plagiarism detection services have made finding instances of language plagiarism easier for universities (Stowers and Hummel, 2005). While many higher education institutions deploy such software to check students work for language plagiarism, relatively few have taken the additional step of using the software to teach students about plagiarism and how to avoid it. The Stockholm School of Economics in Riga [SSE Riga] has launched a program that uses Turnitin Originality Check software as part of its introductory program to studying at the university level. In addition, students are allowed to use Originality Check to check drafts of papers they write in groups. This paper describes SSE Riga's plagiarism prevention program in detail with a focus on how we deploy Originality Check to teach students what plagiarism is and how to avoid it. Some preliminary results of the program are also offered.

SSE Riga is a small, private university in Riga, Latvia that offers a three-year bachelor's degree in economics and business as well as a two-year EMBA program. This paper focuses exclusively on the undergraduate population. Students from the Baltic States comprise roughly 80% of the population, with Latvia representing between 60–65% of the student body. Approximately 20% of the student population comes from such non-EU nations as Georgia, Ukraine, Belarus, Moldova, and Russia (SSE Riga, 2017). All courses are held in English and all written assignments are written in English as well. While not all courses include a significant written component, many courses require writing reports or research papers. Every student or pair of students must write a bachelor's thesis in order to graduate.

SSE Riga defines language plagiarism as “copying words or ideas from someone else without giving credit; changing words but copying the sentence structure of a source without giving credit; not citing quotes, paraphrased ideas, summaries, photographs, images, maps or websites used for research”. In practice, students are expected to paraphrase responsibly wherever possible with an in-text reference, and use quotation marks and an in-text reference (including page numbers, when available) when quoting

a source directly. Responsible paraphrasing is generally defined as leaving fewer than four words of the original sentence. This definition was agreed on by members of the SSE Riga English Department and the administration. Mandatory English language courses teach students to paraphrase to SSE Riga standards. Particular attention is paid to synonym replacement in the original text and the copying of artful language that students writing in a second language would find difficult to use on their own. Small matches are also considered plagiarism if the language is unique. Lists, formulas, and common definitions from the particular course are not considered plagiarism. SSE Riga differentiates between cases of language plagiarism and cases of sloppy referencing. Students are taught to paraphrase to SSE Riga standards as a part of the mandatory English curriculum. Penalties for language plagiarism range from being put on a watch-list for a light, first offense to being expelled from the university.

SSE Riga faculty demonstrate Turnitin Originality Check as a part of the study skills curriculum that each incoming student receives upon matriculation. The Study Skills course attempts to acculturate students to university life by introducing them to standards and skills that differ from those used in secondary school. In addition to learning about plagiarism, students are introduced to reading academic articles, notetaking, and presentation skills. The module that includes the discussion on plagiarism also introduces the concept of authoritative academic resources and teaches the students how to properly reference those sources. Students receive the message that using such sources as Wikipedia is not appropriate for university-level work, so they need to learn to identify authoritative information for their research and then reference it properly.

The plagiarism presentation leverages the power of Originality Check both to demonstrate which practices violate SSE Riga plagiarism standards and also how easy it is to spot infractions. Many students are under the mistaken impression that plagiarism can be hidden from plagiarism checking software and the demonstration of how SSE Riga uses originality check disabuses them of that notion. The presentation also provides examples directly from Originality Check where the students are called upon to make judgements about whether samples of text meet the SSE Riga definition of plagiarism.

The presentation also teaches students how to operate the software and interpret Originality Check reports. Students must discern between acceptable text in their paper that would be highlighted by the software and instances of plagiarism. Reference lists, lists of organizations, and properly formed and referenced quotes are all examples of text that will be highlighted by Originality Check that students can safely ignore. Teaching students how to read the plagiarism reports accurately is crucial, given the students' propensity for believing that everything Originality Check highlights is an instance of plagiarism. Students are also advised concerning under what circumstances they will gain access to the software.

2 Literature Review

One of the biggest challenges for SSE Riga faculty is teaching about plagiarism in an international environment where students may have different definitions of what

amounts to plagiarism. In addition, students may have been exposed to different education systems that may or may not have emphasized the importance of intellectual property. Amsberry (2009) cites the relative paucity of articles addressing the connection between plagiarism and what she terms “international” students. Some of the possible reasons she enumerates for plagiarism among international students include students subscribing to a culturally-driven belief that texts are held in common (Amsberry, 2009; Mundava and Chaudhri, 2007). Students from certain cultures may copy other’s work to show respect for the original author (Hayes and Introna, 2005). More recent studies such as the one performed by Datig and Russell (2015) cast doubt on the assertion that international students do not understand Western intellectual property standards. The literature suggests a shifting landscape for understanding the impact of culture on plagiarism. While earlier studies suggest a large role for culture in students’ understanding of plagiarism, later studies allow that international students may be catching up and catching on to the rules of Western academic practice.

In addition to cultural differences, language proficiency has also been cited as an influence on plagiarism among international students. Howard’s (1995) term “patchwriting” captures the idea that ESL students are not confident in their ability to properly paraphrase and therefore attempt to preserve the structure of the original text, substituting only synonyms in strategic instances. Hayes and Introna (2005) as well as Sunderland-Smith (2005) also point out that copying text can be viewed as an important component of language learning.

No matter what causes students to plagiarize, universities are compelled to do their best to detect plagiarism and address instances of plagiarism as they occur. It is an open question as to whether students’ awareness of electronic plagiarism detection systems alters their behavior. Two studies carried out at California State University, Northridge (Youmans, 2011) challenge the assumption that students will plagiarize less if they are aware that their work will be checked using Turnitin or a similar tool. Warn (2015), predicts that plagiarism checking software actually increases instances of bad paraphrasing or “patchwriting”. Other researchers have maintained that there should be a positive correlation between students’ awareness of plagiarism checking software and lower incidences of intentional plagiarism (Kraemer, 2008, Heckler, Rice, and Bryan, 2013). Youmans asserts that plagiarism checking software has limited use as a deterrent to plagiarism, and should be deployed exclusively as a detection device (2011, p. 760). The program at SSE Riga challenges that claim, using Turnitin software in a dual role as both a teaching tool and a means of detecting plagiarism. This study is a first step toward measuring the efficacy of that idea.

Other studies have described using Turnitin as a part of a larger pedagogical effort to combat plagiarism. Kraemer (2008) describes showing students a plagiarism detecting tool (including how it was programmed) in the context of an engineering curriculum. Whittle and Murdoch-Eaton (2008) briefly describe allowing first-year medical students to access Turnitin to pre-check an assignment, but do not go on to describe how the students were taught to use the system. Vivian Rolfe (2011) compared two groups of undergraduate students, one of which was given a tutorial on academic writing and referencing only, the other of which received enhanced training that included how to read Turnitin Originality Reports. Rolfe compared the instances of

plagiarism between the two groups and found no significant difference. The students in Rolfe's study, however, reported a positive experience while using the software. Judy Cohen (2010) surveyed students and faculty after the students had been given training using Originality Check. Faculty reported that the program did reduce instances of plagiarism, while the students reported that over 80% of them felt confident they were proficient in using Originality Check (p.7). While Rolfe and Cohen both cite a training program for students using Originality Check, the content of the training programs is not discussed. The SSE Riga program specifically uses output from Originality Check to show students examples that violate the school's standards, as well as to help them avoid false positives. It is also worth noting that previous studies have focused on how individual students understand and use Originality Check, while SSE Riga restricts usage of the system to group projects.

3 Material and Methods

3.1 *Description of the program:*

SSE Riga faculty introduce new students to the concept of plagiarism and how to avoid it during a week-long course that prepares students for academic life at university. The module that includes information on plagiarism runs for 90 minutes and also introduces students to searching for authoritative resources in library databases and referencing those sources according to APA style. Students are asked to focus their attention on when it is necessary to reference. They are taught to differentiate between content and language plagiarism. Styles of in-text referencing, including the use of signal phrases and how such phrases alter the form of the in-text reference are also discussed. Strong emphasis is placed on paraphrasing and the need to paraphrase responsibly. Students are also shown how to properly write references and format a reference list at the end of their papers. Throughout, the focus remains on academic honesty and using references, including using reference lists in others' work as a guide to finding articles to read for their own research.

In the second half of the module, the discussion shifts to plagiarism and plagiarism detection. The discussion has three functions: first, it establishes the penalties for language plagiarism at SSE Riga. Second, students learn how to use Originality Check and under what circumstances they are allowed access to the system, and third, how to effectively read and interpret Originality Reports. In addition the English language faculty teach students how to properly paraphrase. Lecture slides and presentations concerning paraphrasing and plagiarism are maintained on the English Department's Moodle page.

The penalties for language plagiarism at SSE Riga range from being placed on a watch list for a light first infraction to expulsion from the university. Students who are caught with any level of plagiarism must meet with faculty to discuss their work. Students are shown the Originality Report of their paper and are allowed to ask questions. There is an appeals process if students believe they have been treated unfairly.

SSE Riga students may access Turnitin Originality Check when they work on written assignments in groups of more than two. We reason that individual and pair work

should not qualify for pre-checking given that the curriculum of the Study Skills Program as well as the mandatory English language courses adequately defines language plagiarism and demonstrates how to avoid it. Each student who successfully completes these courses should have the tools to write and reference responsibly, making plagiarism solely an issue of academic honesty. Group work, however, introduces the possibility that a bad actor might plagiarize while the rest of the group is unaware. SSE Riga plagiarism standards are stringent enough that it would be unreasonable to expect honest group members to detect small instances of plagiarism without the aid of an electronic tool. If plagiarism is detected in a group assignment where students had access to Originality Check, all group members are sanctioned equally.

Students are trained to use the system according to SSE Riga parameters. As of this writing, Turnitin Originality Check does not function efficiently in a group-work environment, so the process is complex. For group-work assignments where students are allowed to check their own papers, each group receives a unique username and password that is good for that course only. Students are also given a specific time window during which they may use the system. Generally, students are given two days before an assignment is due to perform a plagiarism check. Each group is allowed only one check of each assignment. The reasoning here is to prevent students from incrementally improving paraphrasing using multiple passes in the system. Students are not allowed to ask faculty to interpret Originality Reports on their behalf. However, staff are available to manage technical problems with Turnitin should they arise.

In order for student use of Originality Check to be effective, students must understand how to properly interpret Originality Reports. Students often have negative reactions to seeing output from Turnitin and assume the worst (Chew, Ding, and Rowell, 2015). Teaching how to read Originality Reports also provides an opportunity to demonstrate SSE Riga's plagiarism standards in the format in which plagiarism checking actually happens. Much of the controversy surrounding allowing students access to plagiarism software revolves around students' ability to correctly interpret such results. SSE Riga takes the view that not only can students understand and use the reports when properly trained, but the reports themselves are a pedagogical tool that aid students' understanding of how to avoid plagiarism.

Students make several mistaken assumptions when reading plagiarism reports. The first is to mistake the total percentage of content that matches other sources in the utility's database with the level of plagiarism in the paper. SSE Riga's training instructs students to disregard this number unless it is extremely high (90%), which would indicate a duplicate paper in the database. Students also tend to believe that anything that Originality Check highlights is an instance of plagiarism (Betts, Bostock, Elder, and Truman, 2012). Students in the Study Skills program are trained to ignore common "false positives," which include: reference lists, lists of organization names, common definitions from their course material, formulas, commonly used prepositional phrases, and scattered common word groups with no intrinsic meaning in the paper. The students are given several examples of output from Originality Check and are asked to decide whether or not the examples constitute plagiarism and why. The examples are varied to demonstrate several types of plagiarism, including copy-paste and poor paraphrasing, as well as several false positives.

After checking eligible assignments for plagiarism, students upload their work to the SSE Riga Moodle platform. From there, the assignments are checked using Turnitin by SSE Riga faculty. Plagiarism checking is centralized at SSE Riga, with staff dedicated to checking all of the papers to ensure consistency. When there is a question about whether or not a particular instance amounts to plagiarism, the English language faculty is consulted and a decision is reached among faculty members. Individual students or student groups who have plagiarized are invited to a meeting with faculty and/or the Rector to discuss infractions and sanctions.

3.2 *The Survey*

The first survey instrument was administered to incoming first-year students before they had been through any training to avoid plagiarism. We used the first survey as an attempt to establish incoming students' awareness of intellectual property issues in general and of plagiarism in particular. The first survey instrument was administered to 112 incoming students. The questions often refer to their secondary school experiences. The second survey was administered during the first mandatory course of the second year of study to the same group of students, in an attempt to measure whether students' attitudes toward plagiarism had changed. The second survey was administered to 94 second-year students. Many of the questions on the second survey refer directly to how plagiarism is dealt with at SSE Riga and one refers to having access to the Turnitin system specifically. The survey is meant to measure the confidence students gain by being trained to use Turnitin. Owing to the large number of factors that might influence a student's decision to actually plagiarise and the absence of a control group, no attempt was made to correlate the number of plagiarism cases with the presence or absence of the plagiarism training

3.3 *The Interviews*

Approximately 20% of the first year class of students ($n = 24$) who were administered the first survey instrument also participated in informal semi-structured interviews about their views on plagiarism. Interviews were conducted as a part of the academic advising program at SSE Riga, which pairs each first-year student with a faculty adviser. Students were asked about their understanding of the importance of avoiding plagiarism. Students were also asked if they understood both SSE Riga standards for plagiarism and penalties for violating those standards. The purpose of the interviews was to gain a deeper understanding of what the students had understood from the Study Skills curriculum.

4 **Results**

4.1 *Results of the Surveys*

The survey of first year students who had not yet been through the Turnitin training shows that while students entered university with a vague conceptual understanding of plagiarism, they were not sure about the limits of how much text could be used without

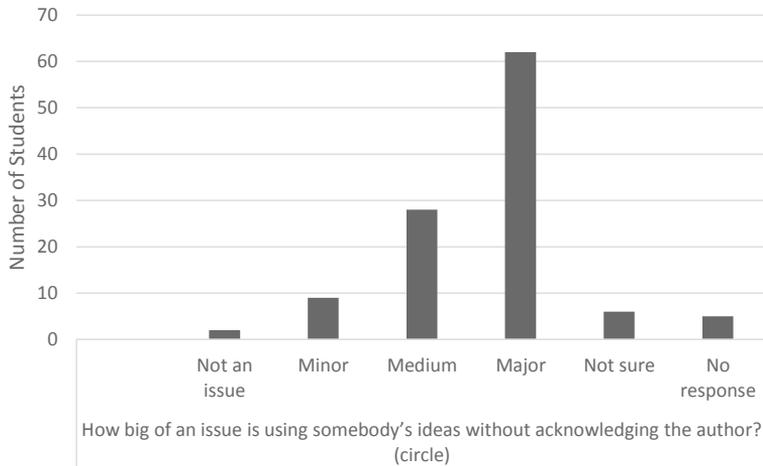


Figure 1

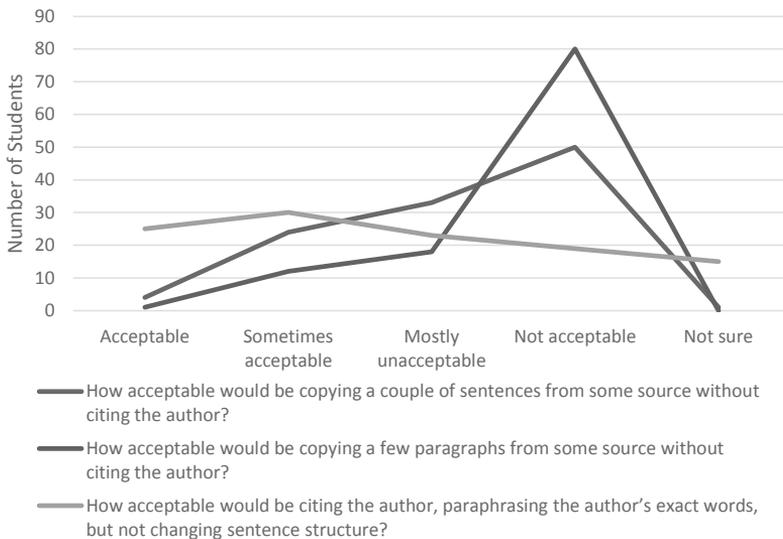


Figure 2

attribution or of proper practices for referencing borrowed text. The distribution of the answer to “How big of an issue is using somebody’s ideas without acknowledging the author?” shows that over 50% of students surveyed viewed plagiarism as a “major problem” writ large, (see fig. 1), but when asked to delineate what level of borrowing constituted an act of plagiarism, students were less sure (fig. 2).

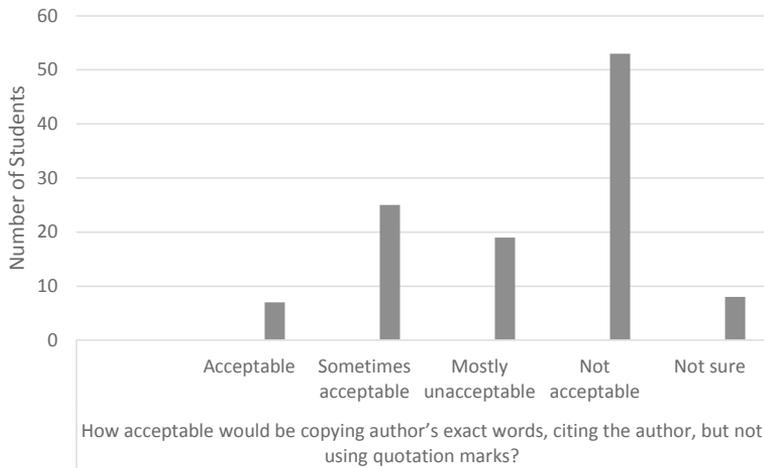


Figure 3

Approximately 50% of students answered that directly quoting from an author without using quotation marks (but with an in-text citation) constituted plagiarism (fig. 3).

Over 90% of the second-year students surveyed answered positively to the question whether or not their referencing had improved since they began SSE Riga. While approximately 60% of the respondents claimed that they altered their behavior owing to a heightened sense of moral integrity and a greater understanding of the rules, a significant number reported that they changed their behavior because of SSE Riga's sanctions against plagiarism.

When asked specifically whether using Turnitin influenced their behavior, responses were mixed. While the most frequently chosen response indicated that Turnitin did not have an effect, the combined positive responses outweighed negative or "no effect" responses (fig. 4).

When 2nd year students were asked whether plagiarism was a major issue, fewer responded that the issue was serious than they had the previous year (fig. 5).

However, when asked whether a couple of copied sentences constituted an act of plagiarism, approximately 13% more answered yes (fig. 6).

4.2 Interview Results

Twenty four 1st year students were interviewed about their experiences with Turnitin as a part of the academic advising process. The interviews took place several weeks after the Turnitin training had taken place. When asked if they understood what constituted plagiarism in the context of SSE Riga, 17 out of 24 responded that they believed they understood under what circumstances proper referencing and quotation marks were necessary. For the students who claimed to be comfortable with the standards, the interview script pressed them to provide examples. Five students responded with

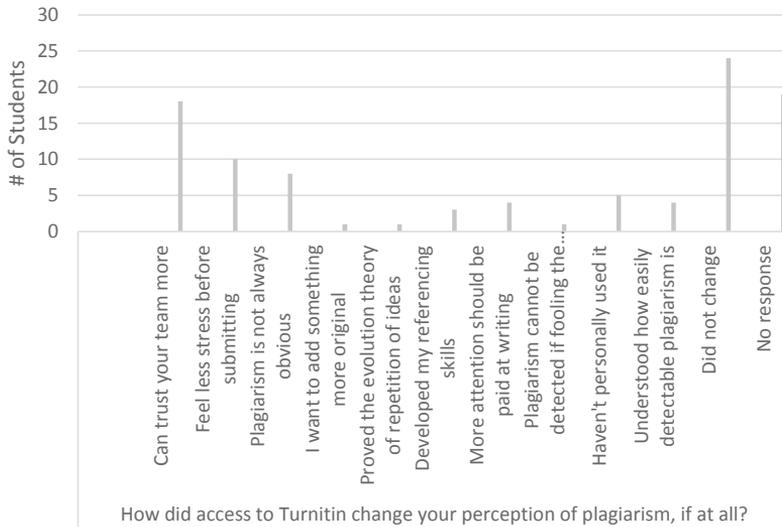


Figure 4

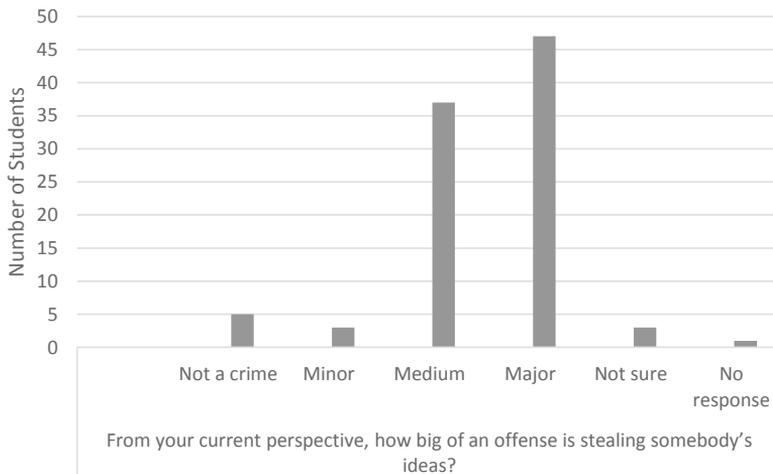


Figure 5

concrete examples (some referred to versions of an assignment they had handy), while four others spoke more generally about the referencing process. Eight students demurred or did not respond when asked for specific examples.

Students were asked how confident they were about avoiding plagiarism in their work. In spite of the fact that the majority claimed to have understood SSE Riga standards, 19 out of 24 hesitated when asked directly if they could apply those standards correctly. When asked why they felt that way, students pointed to the newness of

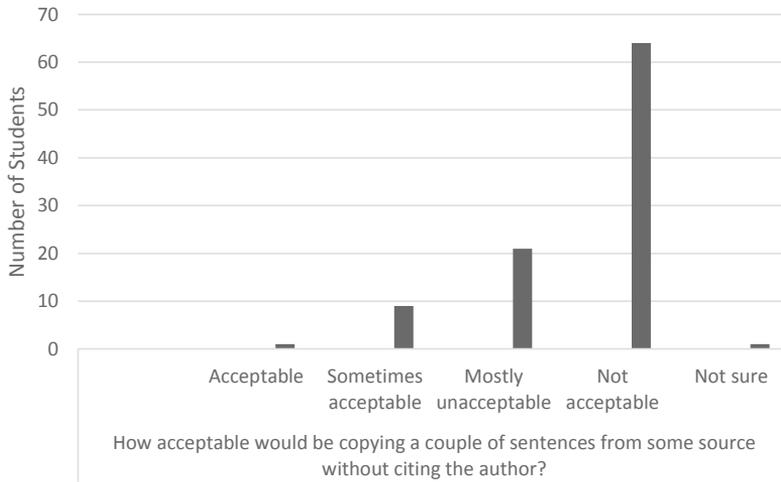


Figure 6

the APA referencing system. Lack of experience with the process was also a frequent response. Only 5 respondents were fully confident of being able to avoid plagiarism after the treatment.

Students were asked if they had any questions regarding Turnitin, referencing, or standards and penalties for plagiarism at SSE Riga. Two students asked about Turnitin's ability to translate text from another language. One student asked how often the sanctions for plagiarism were actually applied. Twenty one students did not have questions.

5 Discussion

The survey results presented several ambiguities, particularly when comparing the answers of the students in their second year with those they gave as they entered SSE Riga. While it is encouraging to notice that a larger percentage of respondents answered that small amounts of plagiarized text were problematic, fewer students in their second year responded that plagiarism was important in general. When asked specifically about the effect of the Turnitin training, students' answers were equivocal at best. The most popular answer was that the training had no effect. This finding appears to support Rolfe's (2011) contention that Turnitin training does not have a significant effect on their propensity to plagiarise. A significant minority, however, reported that having access to Turnitin for group work allowed them to trust their team more. More data is necessary to determine both the effectiveness of the program and whether the ambiguities of the students' responses are truly representative or an artifact of small sample size.

The results of the informal interview process suggest that students' exposure to the treatment heightened their awareness of plagiarism standards. In addition, students

indicated that they felt more empowered to proof their own writing for infractions. Finally, students appeared to be less afraid of the checking process and more confident about their ability to write properly once they understood how it worked.

Students responded particularly well during the training to the use of actual examples from the Originality Check system that illustrated what types of cases constituted plagiarism and which ones did not. The examples of Originality Reports were particularly effective in demonstrating how easy it is to spot patchworking, particularly when the students were shown the original text with the original wording included. The students' responses appear to confirm Cohen's finding (2010) that students gained confidence as a result of learning how to use the plagiarism checking software. Students were able to point out such strategies as deliberate misspellings and grammatical errors, awkward synonym replacement, and simple additions to text when prompted by the instructor.

Using examples of output from Originality Check also demystified the checking process. In the informal interviews students indicated that they were unaware of how plagiarism was checked until the system was demonstrated. Many expressed surprise that the system was able to pick up small matches and spelling alterations. Displaying the system's features also demonstrated that plagiarized text appeared in multiple sources in the Turnitin database. Demonstrating this feature allowed the instructor to emphasize the point that it is unnecessary to show that a student copy/pasted text from any particular website, but rather that the text is available in general.

One of the biggest barriers to allowing students access to the Originality Check system is training the students to ignore output from the system that is not plagiarism. The preliminary interviews demonstrated that students in the program succeeded in identifying false positives and had a general sense of what output from the system could be ignored. These instances included well-formed quotations within quotation marks and accompanied by an in-text reference, lists, and scattered, highlighted words within a paragraph that had no meaningful content. Students persist in asking whether the aggregate percentage displayed by Originality Check is a problem, however, indicating that they do not yet adequately understand that the total amount of text found has no bearing on whether or not specific instances in the text amount to plagiarism.

While students were generally successful identifying false positives generated by the Originality Check system, some conflated plagiarism problems with poor referencing. When shown an example of language plagiarism during the training, some students responded that "there should have been a reference," although the language in the selection came in its entirety from another source. Such errors may indicate conceptual confusion between what constitutes content plagiarism on the one hand and language plagiarism on the other. If students believe that referencing a source obviates the need to properly paraphrase or use quotation marks around text from another source, then further emphasis on the distinction between the two types of plagiarism is indicated.

While the preliminary results are promising, they must be seen in a wider context of changes to the academic program at SSE Riga. The addition of plagiarism training did not occur in a vacuum. Stricter penalties for plagiarism accompanied the training program. It is certainly possible that students' motivation for avoiding plagiarism is a response to clearly spelled out penalties for infractions. In fact, the plagiarism training

course makes a point of spelling out these penalties and some of the questions that students ask as a part of the course and in subsequent interviews are specifically about how penalties will be applied.

Further research should be aimed at better understanding the specific effect of plagiarism prevention training using such resources as Turnitin Originality Check. One method of doing so would involve a longitudinal study of a single cohort as they progress through a university's curriculum in order to measure the extent to which students' use of the system improves both their understanding of what plagiarism is and their ability to spot problems and fix them. A longitudinal study would address more than just the efficacy of the training provided upon matriculation.

A second angle would be to better understand students' conceptions of plagiarism as they enter the program, before they have been exposed to any treatment. While many students were able to loosely define plagiarism when asked to do so during the training, others were unaware that plagiarism was problematic or that it would be checked at an academic institution. Still others confused content and language plagiarism, believing that language plagiarism would be justified as long as a citation accompanied the text. Students also interpreted proper paraphrasing very broadly. Taking a more detailed baseline of students' understanding of plagiarism and their attitude toward it, perhaps as early as the admissions process, would be a useful tool for establishing how much training is needed in proper referencing, plagiarism prevention, and English language paraphrasing skills.

It would be interesting to compare the efficacy of competing plagiarism checking platforms as pedagogical tools, both from the students' standpoint and the instructors'. While Turnitin Originality Check offers a powerful suite of tools for detecting plagiarism, it requires significant investment both to train students to properly use the system and to interpret the results. Competitors may offer systems that are visually less ambiguous and that organize information in ways that students find less alarming and easier to read. In addition, Turnitin currently lacks efficient means to accommodate group projects, which creates significant administrative overhead to make plagiarism self-checking in groups possible.

Using electronic tools to demonstrate plagiarism checking should be seen as part of a larger suite of strategies deployed to aid plagiarism prevention, along with language instruction, information search, and proper referencing. Our preliminary research demonstrates a possible amelioration of students' attitudes toward plagiarizing and their ability to spot plagiarism using Turnitin Originality Check. By tracking cohorts throughout their careers at SSE Riga we hope to gain a clearer picture of how allowing access to plagiarism checking tools affects students attitudes toward academic writing.

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PLAGIARISM IN THE DISSERTATIONS AND SCIENTIFIC PUBLICATIONS IN RUSSIA

Andrei Rostovtsev

Abstract: Dissernet is a voluntary organization of Russian scientists and other citizens devoted to detecting and documenting research misconduct, mostly in form of plagiarism in the dissertations. During four years of running of the project, more than 6500 extensively problematic dissertations were identified and made public. Since 2016, the Dissernet has started the Journal Project. The aim of the Journal Project is to investigate misconduct in Russian scientific journals: plagiarism, duplicate publications, gifted and stolen authorship, fake peer-reviews and other violations. By now significant research misconduct in almost 3,000 of 100,000 journal papers was identified. The Dissernet is making an attempt to reconstruct a landscape of the academic fraud over the country. The project has attracted a broad attention of the Russian media and became very popular in the academic society in Russia. Unfortunately, the official governmental bodies consider the project as a dangerous threat to the state.

Key words: Dissernet; plagiarism; dissertations; predatory journals

1 Introduction

The awarding of fake academic degrees to politicians, businessmen, doctors in clinics, professors in universities, and teachers in schools, that is, to all those who wish to use their new academic titles to step onto a faster career route, is widespread in Russia. Fake academic titles are awarded throughout the country. This business is based on the mass scale manufacture of problematic dissertations and scientific publications. Plagiarism is the easiest and fastest way to construct academic texts and this works perfectly well if the scholar attestation system is corrupted. Quite often the work involved in producing a new thesis is reduced to changing a title page of an old one, and submitting a new scientific paper is reduced to changing authorship for an earlier text and rephrasing the title. In early 2013, experts, researchers, and journalists came together to establish the organisation called Dissernet in Russia (Dissernet, 2017). It is a free association aimed at countering fraud and trickery in academia, particularly at the stage of defending dissertations and awarding PhD. By February 2017 Dissernet activists had identified over 6000 falsified dissertations and more than 2000 publications in scientific journals.

It is worth mentioning that the very meaning of plagiarism here is somewhat different from the original meaning of the term 'plagiarism' (from *plagium*—which literally means 'theft' in Latin), an intentional and unlawful incorporation of other people's texts or ideas into one's own text or research paper. Yet in Russia, most of the authors under scrutiny by Dissernet have never really done research; they have, most probably, never written a single page of their theses or publications and might have never read them or even seen them at all. Such 'scientific' works are usually nothing else but a mere compilation of other people's texts. This includes large-scale plagiarism, when tens or even hundreds pages of text are stolen from other authors as a large single block, including figures, tables, references, and typographical errors. Such large text

blocks are easy to identify automatically and this speeds up the checking of problematic texts enormously.

2 Material and Methods

The method used by the Dissernet makes an advantage of index files produced by the public search engines (such as Google or Yandex). First the text under study is split by the machine into many phrases. Then the phrases are submitted automatically one by one to the search engine and the resulting statistics are analyzed by an algorithm such that the most frequent found text sources are identified on each page of the studied text. In addition to the detection of thousands of fraudulent dissertations, the software is the main result of a unique technology developed by Dissernet association. In Russia, along with the dissertation a so-called *avtoreferat* must be made publically available before the Ph.D. defense. The *avtoreferat* consists of a shortened dissertation content (usually 20–30 pages) reporting on the main research results. Importantly, the texts of the *avtoreferats* are indexed by public search engines, while the dissertations itself are not usually indexed. But if the dissertation contains large fragments of plagiarized text, as described above, its *avtoreferat* would contain these text fragments as well. In case these fragments come from another earlier dissertation its corresponding *avtoreferat* provides the evidence for plagiarism. The specific Dissernet software is able to pick up the *avtoreferats* one by one and look for textual coincidences within the whole publicly available corpus of Russian digitized texts, including texts of other *avtoreferats*. This program runs 24 hours a day and 7 days a week. Thus a few hundred thousands dissertations have been automatically checked. Furthermore, Dissernet takes advantage of the common practice of a chain-like fraudulent dissertation production. As soon as a rampant plagiarism is detected in one dissertation, it is very likely to be detected as well in other dissertations defended by the same dissertation council or with the same supervisor.

Similarly the Dissernet software works with the texts of papers published in the open access Russian scientific journals. Typically more than one hundred of the latest available papers are downloaded for each journal title. By now about thousand journal titles have been checked (corresponding to approximately 100 000 papers) resulting in almost 3000 papers with serious academic misconduct identified.

3 Results and Discussion

3.1 Plagiarism in dissertations

The collected statistics over 6500 dissertations with large-scale plagiarism identified allow several important conclusions to be made.

- Most of the problematic dissertations (38%) are produced in economics. Other popular fields are pedagogy (19%) and law (13%), followed by medical sciences, political sciences, engineering, and social sciences. Fake dissertations are rare in the area of natural sciences. Such distribution is symptomatic as it represents the Russia's major everyday problem areas: economy, law, education, etc..

- Since the Dissernet deals with large-scale plagiarism, only the tip of the iceberg is seen. An average rate of fake dissertations identified by the Dissernet varies from three to five per cent in problematic fields and much lower in natural sciences.
- The collected data show that forgery in the academic sphere in Russia is by no means just some fringe phenomenon but an integral part of Russian science. Geographically speaking, problematic dissertations are mass-produced primarily in Moscow—Russia's political and business capital, and in Saint Petersburg rather than somewhere on the outskirts of the country. Other cities and towns fall behind.
- Almost all problematic dissertations in Russia turned out to be produced in the universities. Forgery in academic scientific centres also existing but it is relatively rare phenomenon. Interestingly, the scientific outcome from the academic scientific centres as measured bibliometrically based on the well-known international databases largely overweight one from the universities.

There are few important sociological observations to be made. The academic fraud is abundant where the scientific outcome is miserable. In order to illustrate this axiom one plots a relative contribution to the international corpus of scientific papers indexed by SCOPUS versus the fraction of fake dissertations identified by the Dissernet for different scientific areas. For the natural sciences there is a handful of plagiarized theses only while the relative contribution to the world first class papers rises up to 5%, which is the top record for Russian science. On the other end of the plot are social and humanitarian sciences with thousands fake dissertations and hardly visible scientific contribution less than 0,5% or so. The gap is partially filled by medical and engineering sciences, see Figure 1. As a conclusion, the academic fraud is abundant where an expert scientific community is weekend or missing at all.

As was mentioned above an average probability to find large scale plagiarism in a dissertation is at the rate of few per cent only. Now it is interesting to ask how this rate changes when one selects certain social groups. The Dissernet association has studied several sociological groups: directors of Moscow schools, rectors of Russian universities, heads of regional governments and the deputies of the Parliament. Surprisingly, the rates in these sociological groups is much higher than the average one. In numbers it reads as about 15, 20, 30 and 40% correspondingly. The higher social responsibility or higher social influence of the group studied the easier the representatives of this group go for falsifications or lower their reputational niveau in average. Such trend illustrates a negative sociological selection at work.

3.2 *Plagiarism in scientific papers*

The major problem with many Russian scientific publications is the weakness of the peer review institution. In some journals, the peer review process is only declared but actually does not exist at all. As our experience shows, such journals are an easy target for authors wishing to publish fraudulent papers. The authors' goal is to inflate their publishing activity. Sometimes they send the same text to more than ten journals, just changing a title of the publication for each journal.

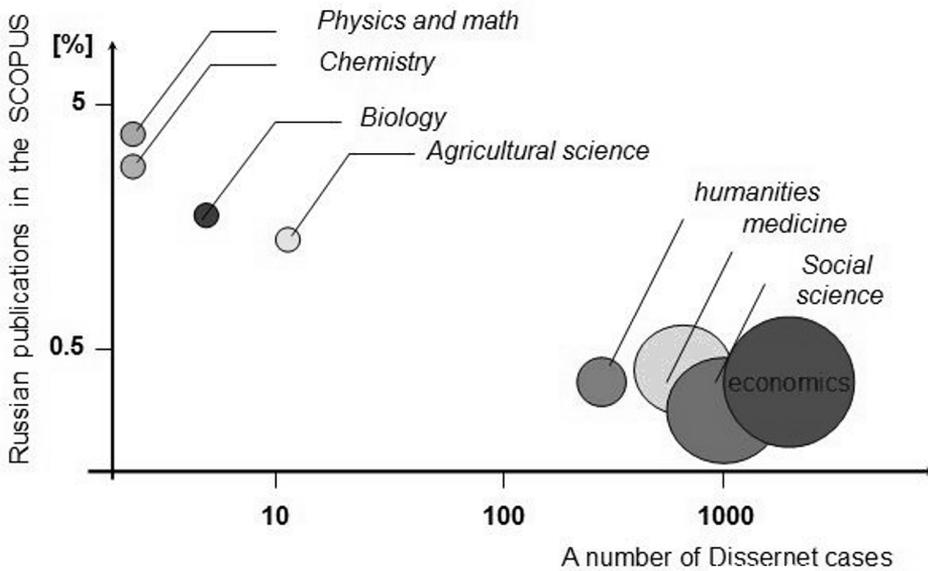


Figure 1. A fraction of Russian papers in SCOPUS as function of a number of problematic dissertations for different scientific fields

The Russian open access journals were tested by selecting at least a hundred of the most recent publications for each of about one thousand journals. In the case that more than half of the text of the paper (article A) is identical to the text of some other earlier work (mainly from one single source and not necessarily from the same journal—article B), then this article A is classified depending on its authorship:

- if the composition of the authors of the paper A does not overlap even partly with the composition of authors of the article B, this case belongs to the category of publications with identified plagiarism in the text. Here we are deliberately talking about the large-scale text coincidences in articles A and B;
- if the composition of the authors of the paper A fully coincides with the composition of the authors of the article B, this case belongs to the category of duplicate publication, where authors suggest the same text often with different title to various editors;
- finally, the intermediate case, when the composition of the authors of the article A and article B partially overlap. This case belongs to the fictitious co-authorship when the place in the author list for one reason or another is offered to third parties who had nothing to do with the original manuscript.

All three of the above-described cases are different kinds of incorrect publication practices and at the same time—different sorts of plagiarism. Statistical analysis of one thousand of cases of incorrect publication practices in Russian scientific journals have shown that large-scale plagiarism and multiple publications occur with approximately

equal probability (38% and 37%, respectively), while the problematic authorship is found in 25% of cases. These results are in a broad agreement with the statistics of publications retraction causes in Western scientific journals.

A detailed analysis of Russian scientific journals which systematically violate ethical standards allows to roughly divide them into three categories.

- The first and perhaps currently the most important category is the so-called “predatory” journals. The very term “predatory” journal have been coined by librarian and professor at the University of Colorado Jeffrey Beall (Beall, 2012). Predatory journals are characterized by an unusually large number of short publications on a wide range of scientific specialties, the rapid growth in the number of publications over time, lack of influential scientists in the editorial Board, short guaranteed period of peer review and unreasonable minimization of editorial and publishing costs. Over the last few years the number of publications in such journals in Russia has increased by almost an order of magnitude. At the same time the dynamics of the traditional publications in university journals shows a steady decline in the number of publications over time. It must be stressed that this decline occurs when the total number of publications in Russian scientific periodicals is growing from year to year. This apparent paradox is explained by the powerful outflow of authors from traditional journals into predatory journals that are increasingly occupying the publication space. Indeed, to publish a manuscript in predatory journal is incomparably easy and fast. In fact, the predatory journals exploit the modern model of Gold Open Access for pure commercial purposes.
- The second category consists of weak, traditional academic journals in which the review procedure exists only nominally. As already noted, in recent years, with the flourishing business of the predatory journals the weak traditional magazines constantly lose authors and exhibit a rapid decrease in the number of publications over time. Some of these magazines cease to exist. Magazines in this category differ from the predatory journals by non-aggressive policies used to attract authors and highly compact geographical location of authors and members of editorial boards.
- Finally, the third category includes magazines, which are a part of the “factories” for mass production of fake dissertations discussed above. In Russia in order to defend theses one is obliged to publish several scientific papers on the subject. Thus the commercial offer of ready to use fake dissertations must include several publications in scientific journals. Partly the members of the dissertation councils at the universities are incorporated to the editorial boards of such journals.

Such a catastrophic situation with Russian scientific periodicals is the result of a serious weakening of the level of expertise in Russian scientific community as a whole, on the one hand, and, on the other hand, high formal bibliometric requirements by the Ministry of education and science applicable to the publication activity of Russian scientists and university staff.

4 Conclusion

This study of misconduct, mostly in form of plagiarism, in Russian dissertations and scientific journal papers is based on rich statistics collected by the voluntary Dissernet association. It helped to reconstruct and visualize a landscape of falsifications in academic world in Russia. The results of this work are important not only for identification of major players on the corrupted market of fake academic degrees, but serve for consolidation of scientific community in the country. The project has attracted a broad attention of the Russian media and became very popular in the academic society in Russia. Unfortunately, the official governmental bodies consider the project as a dangerous threat to the state.

Acknowledgements

Author is very grateful to all colleagues who contributed to the work of the Dissernet association.

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SYNOPSIS

INTERTEXTUALITY RECONSIDERED

Erik Borg

Abstract: All language is intertextual; as Bakhtin wrote, “the word in language is half someone else’s” (1981). In formal contexts, though, how we demarcate and identify other people’s texts shifts over time. Expectations, tools and ways with texts change, and, while the academy resists change, it may come nevertheless. On the one hand, inchoate intertextual practices are reshaping how texts are created and regarded: “curate” has become the buzzword for the assemblage of new texts. On the other hand, citation practices have become increasingly codified, with reference systems (e.g., APA, MLA) haring after new networked sources. Bibliometric indicators seem poised to overwhelm other ways of evaluating academic texts, while Turnitin and other plagiarism detection software have altered the meaning of “plagiarism” from the unacknowledged use of other’s words or ideas to the inappropriate use of a string of characters. At the same moment that the academy emphasises, both through student assessment and professional appraisal, the importance of overt citation, new forms of (particularly) multimodal communication blur the line between creating and “retelling in one’s own words.” This paper will analyse some of the changes in literacy practices that make plagiarism an increasingly fraught concept, and consider how we might move forward from here.

Key words: Intertextuality, curation, citation practices

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TO WHOM BELONGS THE IDEA? DISCUSSING PLAGIARISM AT UNIVERSITIES FROM THE PERSPECTIVE OF OWNERSHIP

Petra Hauptfeld-Göllner, Natascha Miljkovic

Abstract: At universities plagiarism is perceived as a serious academic misconduct. “I was not aware that I have to cite every idea” is a comment often uttered by students. Seemingly there is a discrepancy between living in a world of 24/7 access to information and being clear on how to use and re-own a foreign idea.

But are the students to blame? Media and marketing often do not draw a clear distinction between the owner of an idea and the person who made it famous; moreover the owner and the marketer are mutually dependent (e. g. Steve Jobs and Steve Wozniak) or the use of ideas is an integral part of a certain field of work. When Bob Dylan cites lines of a Shakespeare poem in his songs, is this considered plagiarism? This led us to the assumption that in general the use of foreign ideas comes naturally and depends on its function due to the context.

The presentation elaborates on text examples of writers and poets demonstrating the tight demarcation line between the creative use of an idea (text, verses) and what is called “plagiarism”; furthermore we will analyse examples of various stages of re-owning of texts (intertextuality) by students and highlight how universities could confront students with the concept of ownership and proper use of foreign ideas within a certain context more consciously.

Key words: ownership, digitalisation, plagiarism, academic misconduct, awareness, prevention

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SOURCES OF (UN)ETHICAL BEHAVIOUR OF STUDENTS

Inga Gaižauskaitė

Abstract: This presentation discusses possible sources of (un)ethical behaviour of students. It is based on the findings of internal academic ethics research conducted in one of the main social science universities in Lithuania. This was the first attempt to investigate academic ethics at the university level in Lithuania. Therefore, the findings are primarily relevant for mapping key challenges and fostering research at the context of the country as well as placing the case of Lithuania among other European countries as a further step of investigation. Qualitative research (conducted during 2016) involved three groups of research participants: bachelor and master level students (7 focus group discussions), doctoral students (6 in-depth interviews), and lecturers (academic personnel) (15 in-depth interviews). The research aimed at covering areas of study process and scientific performance. This presentation focuses on study process and two forms of unethical behaviour—cheating in examination (cribbing) and plagiarism. They were discussed as the main forms of unethical behaviour experienced in the study process by bachelor and master level students as well as lecturers. The aim of the presentation is to reveal potential sources that stimulate students to involve into unethical behaviour or vice versa to refrain from it. Understanding these sources is substantial for shaping environment that discourages unethical behaviour of students and motivates the ethical one. The sources of (un)ethical behaviour revealed in the research relate to the culture and practices of the university (e. g. roles of lecturers; ambiance of students' group; forms of examination, etc.) and beyond it (e. g. general culture in the society; shaping of values, attitudes and practices before entering the university; labour market, etc.). Students stress the role of lecturers in preventing unethical behaviour whereas lecturers emphasize university level support in framing students' behaviour. However, both highlight that clear, transparent and consistently applied procedures of awareness raising, control and sanctions would be highly efficient. Rich qualitative evidence will be presented to elaborate these conclusions.

Key words: Cheating; plagiarism; students; lecturers; university

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ACADEMIC INTEGRITY AND PLAGIARISM IN POLAND

Andrzej Kurkiewicz

Abstract: The presentation will start with describing the institutions responsible for safeguarding academic integrity and implementing good practice in Poland's higher education.

The evolution of the system for ensuring academic integrity will then be presented, taking into account the modifications introduced by the reforms of 2014 and 2016, when the Law on Higher Education was amended to reflect a greater emphasis placed on ensuring that high ethical standards in academic work are upheld.

The presentation will then provide a detailed account of the disciplinary procedures currently in place in higher education, describing the roles played in them by the relevant entities.

The presentation will go on to deliver some statistical data regarding the incidence of plagiarism, based on the cases considered from 2009 till 2015 by the Disciplinary Committee of the General Council for Science and Higher Education.

The presentation will conclude with an account of the current efforts at discouraging plagiarism. This will focus on the ongoing expansion of the central electronic repository of theses, which is overseen by the minister for science and higher education, as well as the creation of a common antiplagiarism system, an on-line service that higher education institutions will be able to use to verify the originality of submitted theses.

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THE ORGANISATIONAL AND TECHNICAL ASPECTS OF ESTABLISHING PLAGIARISM DETECTION PROCESSES IN THE SLOVENIAN OPEN ACCESS INFRASTRUCTURE

Milan Ojsteršek, Goran Hrovat

Abstract: The Slovenian open access infrastructure consists of Slovenian universities repositories, a repository for research organisations, a repository for standalone faculties and a national portal (<http://openscience.si/>) that aggregates content from the repositories and other Slovenian archives (dLib.si, videolectures.NET, digital library of Ministry of Defence, Social Science data archive, ScieVie repository...). The national portal provides a common search engine, recommendation of similar publications, and similar text detection. During the setting up of national open access infrastructure rules and processes for mandatory submissions of electronic theses, dissertations, research publications and research data were defined. One of features is the use of software for plagiarism detection during processes of submitting electronic theses, dissertations and research publications. The paper will present technical characteristics of the plagiarism detection system used in the national open access infrastructure. We will also describe established processes for awareness, prevention and detection of plagiarised documents. Finally we will present chronologically organised data about the similarity of documents, which are included in our infrastructure.

Key words: plagiarism detection, national open access infrastructure

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MAKING SENSE OF PROSOCIAL EXPLANATIONS FOR VIOLATIONS OF ACADEMIC INTEGRITY

Kate Rowbotham, Christine Coulter

Abstract: In academic programs that foster and teach collaboration and its importance in work and life, there can be mismatched perceptions of what constitutes a violation of academic integrity. Where students believe that they are engaging in prosocial behaviours by helping their classmates, the institutional perspective is that students are engaging in facilitation by enabling another student's departure from academic integrity (whether through sharing their own assignment or making other information (e.g. the content of an exam) available to other students). These mismatched perceptions present specific challenges for institutions: managing perceptions of unfair punishment of what are perceived to be desirable behaviours, fostering a student culture that encourages prosocial behaviours in certain contexts but not in others, and educating students about appropriate collaboration and where the line gets drawn between collaboration and facilitation. Our work reviews students' prosocial motivations in academic integrity issues by highlighting distinct case studies that illuminate the institutional impact of these mismatched perceptions. This work allows for a better understanding of students' perspectives relating to the challenges that emerge when trying to manage these multi-faceted situations, which, in turn, allows for a more robust institutional response. We focus specifically on a business school context, where collaboration is explicitly built into the curriculum through coursework (as well as through courses in managing teamwork and collaboration), and present recommendations for how to allow collaboration to flourish without negative implications for academic integrity.

Key words: prosocial behaviours, perceptions

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COMPREHENSIVE FRAMEWORK FOR FOSTERING RESPONSIBLE RESEARCH: LITHUANIA

Loreta Tauginiene

Abstract: Particular concern about academic ethics in higher education and research institutions in Lithuania was addressed in 2009 by the national decision to establish an Office of Ombudsman for Academic Ethics and Procedures. Since then, the ombudsman, alongside other state institutions, has been empowered to implement national higher education and research policy by developing national policies towards responsible research. Hence, the practice on major mechanisms supporting national goals related to responsible research will be provided in three parts—national and institutional structures to raise awareness on research (mis)conduct; regulatory pitfalls; experiences on the collaboration with journal editors and publishers. This presentation related to the framework on fostering responsible research in Lithuania will allow having a look at a country with young democratic processes but still as an example for other countries that introduce new regulations with the purpose to embed or improve ethical rules.

Key words: responsible research; government; university

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WORKSHOPS

DIVERGENT THINKING, DIVERSE PRACTICES, AND UNIFIED INTEGRITY

Faith Dillon-Lee, Alexandra Pitt, Gemma Wilkinson

Abstract: In this workshop we ask participants to explore conceptual differences of understanding that underpin divergent practices related to academic integrity and misconduct issues, and to consider the difficult balance of respecting diversity but unifying integrity.

We argue that there is considerable divergent thinking in the field and that insufficient attention is given over to either unifying understanding or exploring inherent diversity across the disciplines and how this pertains to practice. While universities undoubtedly have carefully considered policies, we argue that how different Higher Education practitioners interpret core concepts frequently results in a somewhat confused and piecemeal approach, which disadvantages students. In essence, prevention through teaching practices is somewhat neglected in favour of detection and where prevention of misconduct through teaching and learning practices are foregrounded there is a lack of consistency which undermines integrity on the part of institutions but also neglect of diversity.

In this workshop, participants will be asked to engage in discussions where different concepts such as integrity, misconduct, plagiarism, ownership, and voice are subject to scrutiny and then applied to different scenarios in teaching and learning policies and practices at the University. We will share research findings from our own practice to inform this further and then engage in a series of activities where signature pedagogies of different disciplines are considered along with the implications for processes and procedures in dealing with Higher Education academic integrity and misconduct issues. The balance between diversity and unity will be discussed throughout.

Participants will hopefully gain insight into the complexity of balancing unity and diversity both in classroom practice and broader mechanisms. They will also reflect on how they themselves perceive existing practices for their discipline and how this relates to other disciplines and existing policies, and finally articulate implications for practice.

Key words: Diversity; integrity; Unity; Practice; signature pedagogies

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USING A STRUCTURED AND ROBUST METHOD OF ENQUIRY IN THE INVESTIGATION OF ACADEMIC DISHONESTY

Christopher Haycock

Abstract: The use of comparison software in the prevention and detection of academic misconduct is a valuable tool but it only goes so far in being able to confidently make a formal finding of dishonesty or cheating. As institutions of learning we have a two-fold responsibility: we must ensure all those moving through our institutions are adequately educated and trained in the techniques needed to perform academic roles in whichever field we work in, and secondly we have to protect the authenticity and trustworthiness of our research findings. A high similarity index on its own is not necessarily conclusive evidence of academic misconduct. Within the whole investigative process, there needs to be human judgement brought to bear on the allegation and further information needs to be acquired. An allegation of plagiarism or other academic misconduct is a serious charge to make, the stakes are high so, we; as those charged with investigating such allegations, must ensure that our methods are fair yet robust. It is of immense benefit to our institutions, for both pedagogic and reputational reasons, for us to be able to distinguish between those who simply need more guidance and training on how to reference, review and research, and those who are culpable of deliberately passing off the work of others or false results.

As misconduct investigators, we need to ensure our methods are fair, robust, transparent and audit-able. The interview methods introduced in this workshop have been shown to elicit better quality information about the circumstances under investigation (Memon and Bull (1991)) and to reduce the likelihood of false confession to serious offences (Gudjonsson 2003). This workshop is based on the PEACE interview model currently used in all criminal Justice interviews in England and Wales. This is a flexible way of ensuring we meet our objectives of being fair yet robust in or enquiries. The PEACE model was developed in the early 1990s as a response to criticism of the police interview methods of the time, the PEACE approach was based on best practice derived from communication, memory and conversation-management research. This model is very different from the common representation of interview, or interrogation, one might see on TV. This is a fact-finding process where the objective is to discover what has occurred, rather than to confirm any suspicion of guilt from the outset. Our objective is to identify the innocent mistake and address those needs, and to provide any information pertaining to guilt to our respective decision makers or committees. In this 90 minute workshop we will focus on the benefits of a structured, objective-driven interview methodology. We will consider the benefits of incorporating such a process into the misconduct investigation policy and practice how to develop a sound investigative interview approach to allegations of academic misconduct. Our aim is to highlight best practice and apply it to academic conduct interviews. Some of the issues we will consider are, planning and preparation for the interview, questioning and question types, question strategies and Interview objectives. During the workshop, delegates will be guided through a number of activities designed to draw into focus the benefits of conducting investigative interviews with people accused of committing academic misconduct. There will be ample time for questions and discussion of current, specific interview issues. Chris Haycock has over 20 years of interview experience and is a Senior Fellow of the Higher Education Academy, a Senior Lecturer and Course Director at Coventry University and a Faculty Academic Conduct

Officer. He teaches investigative interviewing at both undergraduate and postgraduate levels. Chris graduated with an honours degree in Law before training as a Barrister at the Inns of Court School of Law in London. He spent 11 years as a Police Officer in the UK, conducting innumerable investigative interviews, and his last role before leaving the Police was as a National Law and General Duties Trainer where he trained police officers, inter alia, in the art of investigative interviewing. Chris is currently working on a project to deliver better interview training both within and beyond the UK criminal justice system.

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Key words: Investigation, Interview, academic dishonesty

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TACKLING THE TARIFF: ALIGNING BEST PRACTICES AND AIMING FOR EQUITY

Evangeline Litsa Mourelatos

Abstract: The UK developed Plagiarism Reference Tariff (2010) stands as a notable practice to appraise student integrity breaches for discipline purposes. International adoption by the tariff's creators may or may not have foreseen the application of the tool to address other types of AI breaches, but broader applications were soon evident and have recently been put into effect in institutions internationally.

Originally shared at the ICAI New Mexico conference 2016, this workshop presents the case of a unique institution (a southern Mediterranean hybrid of US and UK educational philosophies and systems) and its adoption of a tariff based on the UK Plagiarism Tariff model to determine penalties for various AI violations. Except for being an interactive session in delivery—offering the aims and purposes of such an instrument—workshop activities comprise having participants use the instrument to overview and evaluate varied AI case studies, including new ones since the original presentation. Questions probed: how would such an instrument play out at participants' institutions? To what degree would it facilitate or challenge decision-making processes?

Key words: plagiarism, tariff, disciplinary committees, integrity, equity

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THREE STRIKES AND YOU'RE OUT?

Brian Schumacher

Abstract: If you are an Administrator in your program, (Associate Dean, Investigating Dean, Dean of Students, etc.) you may have seen an increase in allegations of academic misconduct. You may sense that this is not unique to your campus; ease of access to material, desperate students, advances in technology and a number of other reasons have enabled this.

As the Administrator you are aware of your process to accept, then investigate the allegation and adjudicate the result. Regardless of whether this is a process that you inherited or created, if you are like the workshop facilitator, you are curious if there is a better process. One that will ensure consistency, compassion, fairness but also work to reduce occurrences (and perhaps more importantly, recurrences) of academic misconduct.

The workshop will display the academic misconduct investigation process utilized by one program (an undergraduate Business School in Canada) and expose it to criticism and praise in the attempt to arrive at a structure that achieves better outcomes.

Walking through the process we will explore communication strategies and the academic integrity process from allegation to appeal with an eye to finding a better path. Is it possible to have a process and outcome that does more than identify and punish offenders? Is it possible that there is a process that dissuades students from misconduct in the first place or should we be satisfied with a process designed to ensure that confirmed offenders are less likely to repeat?

Key words: academic integrity, communication strategies

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DETECTING PLAGIARISM AND CONTRACT CHEATING: NEW ACADEMIC INTEGRITY CHALLENGES

Rui Sousa-Silva

Abstract: In recent years, cases of academic and non-academic plagiarism, scientific integrity and misconduct have attracted general attention worldwide. Despite the recent technical and methodological developments in the field, detecting some instances of plagiarism (e.g. paraphrase- and translation-based plagiarism) and contract cheating remains a challenge. Since essay mills claim to sell plagiarism-free essays whose detection is missed by ordinary plagiarism detection software, new detection methods are required. This paper addresses academic and scientific misconduct detection, by proposing a forensic linguistic analysis of student plagiarised texts to identify shifts in the writing style of the author that may be indicative of third party authorship. Since, for ethical reasons, no purchased essays could be used, the method was tested using a set of naturally-occurring student plagiarised texts from different academic fields that are part of the CorRUPT corpus (own Corpus of Reused and Plagiarised Texts). The promising results of the analysis of text statistics (e.g. word/ sentence/ paragraph length, type-token ratio, and lexical richness) and structural features (e.g. typography, orthography, morphology, syntax, and word order) show how ghost writing can be unveiled using methods of forensic authorship and plagiarism analysis. The paper concludes by discussing the relevance of combining more traditional and more experimental methods to detect translation-based plagiarism, and by identifying innovative applications of the methods showcased.

Key words: Plagiarism, translingual plagiarism, contract cheating, essay mills, academic integrity, forensic linguistics

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WORKING PAPERS

PLAGIARISM IN PH.D. THESES. A CASE STUDY OF MILITARY UNIVERSITIES IN ROMANIA

Emilia Sercan

Abstract: This article evaluates the plagiarism of the Ph.D. theses in military universities, where a high level of violation of academic ethics was discovered.

During the Communist system, Romania had a very restrictive regime of doctoral studies. The post-communist transition triggered a race to set up new doctoral schools while the number of doctoral students skyrocketed.

The Romanian military universities set up doctoral domains—unique in the world—such as Military Science, Public Order, and Intelligence, by extending the right to offer “scientific” degrees.

The Ph.D. titles in Military Science became very attractive for many social or professional categories such as politicians, civil servants, prosecutors, judges, police officers, servicemen. A Ph.D. in military or intelligence studies became a “wild card” to be promoted as general, secretary of state or minister.

We argue that the closed system of military universities allowed the development of a parallel doctoral system with the civilian one, with the support of the political class, but also of the civilian and military leadership of the security and defense structures.

We will hereby assess the level of plagiarism in military universities—for example, 14.63% of the Ph.D. theses from the National Intelligence Academy within the Romanian Intelligent Service are plagiarized—and its causes.

The latest rules of transparency and the new IT tools were factors that favored the investigation to prove that plagiarism in the military academies is a large scale phenomenon rather than a hazard discovery.

Key words: plagiarism, doctoral studies, military studies, plagiarism in Ph.D. theses, Romania, military universities

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POSTERS

AWARENESS CONCERNING PLAGIARISM IN CASE OF FIRST YEAR MEDICAL STUDENTS

Rodica M. Dragotoiu, Alexandru Gugu

Abstract: The aim of the study was to picture students' self-awareness about plagiarism. Although largely debated in the media, plagiarism is not a curricular subject, so teachers decide if demanding or not ethically correct essays. After completing a 12 year school-system high-school graduates are admitted to the Medical and Pharmacy University Carol Davila depending on their mark at a written, strictly selective examination. 89 first year medical students of the Medical and Pharmacy University Carol Davila answered a questionnaire after composing an essay on a subject of genetics. The questions asked them to specify whether or not they were creative and original in their work, to state on a five point type scale the degree in which they copied, to explain their opinion on totally vs partially plagiarizing a paper and to motivate their action. When asked to write their own opinion in the essay and before answering the questionnaire, plagiarism was never mentioned, so that students could express an unbiased view on the subject. Answers like: "I did not plagiarize, because I inspired myself only from the internet", or that such an action was justified when the subject was considered uninteresting, or that there was too little time to write it, or lack of inspiration or creativity, proved that many students were unaware of the significance of plagiarism. 30% of the questioned students recognized they plagiarized, near to what Scanlon and Neumann reported in 2002 (24.5%). Besides watching the scientific development of the Romanian students, all teachers have to also improve the awareness about plagiarism. A follow-up study could document students' advancement and evolved understanding on the importance of trusting to show their own ideas and work to the world.

Key words: plagiarism, student awareness

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ACADEMIC INTEGRITY THROUGH RESTORATIVE JUSTICE

Sharon Dzik

Abstract: Academic Integrity Matters (AIM) is a program at the University of Minnesota-Twin Cities that uses restorative justice principles to help students to learn about and understand the impact of scholastic dishonesty. The poster will describe the process for this program, the process for adjudicating scholastic dishonesty at the University of Minnesota, and principles of restorative justice.

Academic Integrity Matters (AIM) is a program offered to students who have been accused of scholastic dishonesty and accept responsibility for violating the Student Conduct Code. Students are eligible to participate if they have not had prior incidents of scholastic dishonesty and are not subject to additional sanctions such as probation, suspension, or expulsion. This program provides a greater understanding of academic integrity and an opportunity to repair the harm caused by scholastic dishonesty through participation in a community meeting.

During the community meeting, a group of student participants share with a group of community members (students, faculty, and staff) what happened with regard to scholastic dishonesty. The student participants and community members each discuss the impact of the scholastic dishonesty and then agree on an educational opportunity the student can participate in to demonstrate understanding of academic integrity.

To complete this program students who have accepted responsibility for violating the Student Conduct Code attend a 2-hour community meeting and complete agreed upon educational experiences determined by the community participants at the meeting. Upon successful completion of the educational agreement, student records will become “non-disciplinary.” This process is confidential and information about participants is not be shared. Participants only share their first name or a pseudonym during the community meeting.

Here are just a few of the responses from AIM students when asked this question:

What was your most significant take-away from participating in the AIM program?

The professors and instructors want to help you.

Dishonesty impacts [the] entire UMN community.

The impact that cheating has on faculty and instructors

There are so many useful resources in the university.

That everything will be okay and I can try to move on.

That even though academic dishonesty may not be an intent, that mistakes can happen that qualify as dishonesty.

That this impacts everyone and every facet of the University and there is a process to move forward and learn from this situation instead of being stigmatized by it.

Learn this accident and keep it mind to remind me in the future, I will put this incident behind me.

Key words: Academic Integrity

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AN INNOVATIVE APPROACH TO DECISION MAKING IN CASES OF SUSPECTED ACADEMIC MISCONDUCT

John Paul Foxe, Andrea Ridgley

Abstract: The mission of the Academic Integrity Office (AIO) at Ryerson University office is to provide education and support to the Ryerson community with respect to academic integrity. The AIO, which is a neutral office, has developed a new and innovative evidence based (Cellier, Krenkel, 2014) approach to assist faculty in decision-making in suspected cases of academic misconduct. Ryerson's Academic Integrity policy mandates that faculty register all suspicions of academic misconduct through the AIO. Faculty can then choose to pursue the suspicion in one of three ways. They can:

- Hold a facilitated discussion with the student with the assistance of a neutral facilitator, provided by the AIO;
- Hold a non-facilitated discussion with the student;
- Assign the case to another faculty member who acts as a Designated Decision Maker (DDM). These DDMs have been trained by the AIO to act in the role of the pursuing faculty member. In this poster we outline the decision making process at Ryerson including a discussion of the merits of each approach.

Reference

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Key words: academic integrity, decision making

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ACADEMIC MISCONDUCT IN BACHELOR DEGREE PROGRAMS—AN EMPIRICAL INSIGHT INTO CURRENT STUDENTS' ETHICAL BEHAVIOR

Barbara Lämmlein, Roland Schimmel

Abstract: Today, academic misconduct and plagiarism are on the spot as never before in Germany. Way beyond academia, such issues became common currency through media. Spectacular cases of scientists who fake data and prominent politicians who plagiarise are repeatedly in the news. In the field of universities, and especially within universities of applied sciences, the problem of methodologically incorrect and deliberately deceptive performing students is in the foreground. Even though examination boards and students develop a growing awareness of these problems, the number of objectionable papers does not decrease.

The present research approach is based upon the assumption that the majority of academic misconduct in the sense of plagiarism or non-consideration of academic citing standards cannot be ascribed to wilfully and knowingly inadequate behaviour of the examined students. To a great degree this research supposes that there is a gap between the awareness of students and their actual behaviour.

In order to highlight selected factors that may influence the quality of scientific papers, three perspectives were analyzed, by following the research question Are bachelor degree students' awareness and position about plagiarism congruent when writing a scientific paper for class?

Research Method: 1. Quantitative, standardized questionnaire—generate data about bachelor degree students' personal awareness of plagiarism and reasons for plagiarism in higher education (303 questionnaires/faculty business and law). 2. Quantitative content analysis—analyze term papers (43 term papers/ faculty business and law). 3. Compare and contrast findings with personal observations and experiences of two professors.

This research approach explores a small cut-out of the entire issue and tries to find out how successful communication is at the moment. In the case of deficient findings, improvement suggestions could be deduced, and more detailed empirical research conducted.

Key words: Misconduct, bachelor degree programs, students' ethical behavior

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**SECTION II
NATIONAL AND LOCAL PROJECTS ABOUT ACADEMIC
INTEGRITY**

FULL PAPERS

EXPLORING ISSUES CHALLENGING ACADEMIC INTEGRITY IN SOUTH EAST EUROPE

Irene Glendinning, Tomáš Foltýnek, Dita Dlabolová, Dana Linkeschová, Thomas Lancaster

Abstract: This paper reports on the South-East European Project on Policies for Academic Integrity (SEPPAI) research study on academic integrity in higher education, which was conducted in Europe in late 2016. The study was funded by the Council of Europe. The data collection methods and results build upon the success of the Impact of Policies for Plagiarism in Higher Education across Europe (IPPHEAE). Conducted between 2010–2013, IPPHEAE explored how higher education institutions (HEIs) in 27 European Union member states were managing student plagiarism and academic misconduct.

The SEPPAI research covers six further countries in south-east Europe: Albania, Bosnia and Herzegovina, Croatia, The former Yugoslav Republic of Macedonia, Montenegro and Serbia. A mixed method research approach was adopted, utilising on-line questionnaires, student focus groups and interviews with senior managers and national policy advisers. Visits to the region to collect data also afforded the research team the opportunity to offer workshops to students and teachers surrounding aspects of academic integrity.

This paper draws on the full research report (SEPPAI 2017) created for the Council of Europe to present key findings and insights. Central to this is the use of Academic Integrity Maturity Model (AIMM) evaluation tool to analyse the data and provide profiles of the countries participating in the research. Parallels are drawn throughout with the IPPHEAE research. The full report provides further details of the research findings and makes specific observations and recommendations appropriate to each country in the study.

Key words: Academic integrity; plagiarism; ethics; higher education; teacher; student; South Eastern Europe

1 Introduction and Objectives

The South-East European Project on Policies for Academic Integrity (SEPPAI) was commissioned by the Council of Europe as part of their Pan-European programme of initiatives on Ethics, Transparency and Integrity in Education (ETINED). SEPPAI is the first of a series of regional studies to investigate how the higher education sector in parts of Europe are managing threats to academic integrity identified through recent research in different parts of the world (Bretag & Mahmud 2014, Lancaster & Clarke 2016, Daniel 2016, Transparency International 2013).

An earlier study of 27 EU member states, Impact of Policies for Plagiarism in Higher Education Across Europe (IPPHEAE) conducted in 2010–2013 by some of the same team, provided the starting point and initial resources for the new study (Glendinning 2013, 2016, IPPHEAE 2013–15).

In undertaking this research the team aimed to: identify and analyse policies and practices used in South-Eastern Europe regarding academic integrity in general; identify gaps and challenges, examples of effective practice and success stories that could be widely shared; sketch preliminary guidelines based on positive examples to serve as a reference basis for promoting capacity-building in higher education institutions and/or peer-learning to counter different forms of academic misconduct and plagiarism.

The study focused on delivering the following:

- a) Analysis of replies to questionnaires addressed to staff and students in higher education institutions;
- b) Review, analysis and synthesis of existing documentation on policies for academic integrity;
- c) Lessons learnt on factors of success or failure regarding policies put in place by the institutions to foster academic integrity;
- d) Presentation of concrete approaches adopted by universities to address the challenges;
- e) Recommendations for actions based on good practices examples on how to bridge identified gaps.

The scope of the study encompassed exploring the impact of strategies, policies and procedures for maintaining academic integrity at all levels of higher education in Albania (AL), Bosnia and Herzegovina (BA), Croatia (HR), The former Yugoslav Republic of Macedonia (MK), Montenegro (ME) and Serbia (RS).

A more detailed analysis of the research is available in the project report (SEEPPAI 2017). Some of the text in this paper is extracted from or based on that from the full report.

2 Methodology

2.1 Research approach

The IPPHEAE survey methods were reviewed and revised in the light of the new research conditions and requirements. The decision was taken to adopt a mixed methods approach to collecting evidence from the region: on-line questionnaires, student focus groups, interviews and analysis of documentary evidence. It was anticipated that this approach, together with visits to the region, would maximise the opportunities to capture useful and good quality evidence. All research complied with Coventry University's ethical approval requirements. Participation in the research was on a voluntary basis.

In keeping with the successful survey for IPPHEAE, separate on-line questionnaires were created for students, academic teaching staff and senior managers. In addition to the English versions, student and teacher questionnaires were translated into the local languages used by people in the six countries of the study. The senior management questionnaire was made available in English.

Table 1
 SEEPPAI—Summary of questionnaire responses in different languages

	AL	BA	HR	MK	ME	RS	Other country	Total
Responses from teachers	30	27	81	9	9	99	0	255
Responses from students	56	64	171	18	11	136	4	460
Responses from managers	1	4	4	1	0	5	0	15
Total Questionnaire Responses	87	95	256	28	20	240	4	730

To capture more in-depth information about institutional and national strategies, a set of open questions were designed for senior managers in HEIs and people with knowledge about national policies and initiatives. These were intended to be presented as face-to-face semi-structured interviews during visits to each country.

Student focus groups were planned to gain a deep understanding of students' perceptions on academic integrity, to supplement the mainly quantitative responses captured through questionnaires.

English was the language used in communications during interviews and focus groups, however where needed local contacts kindly served as language translators to ensure clarity and accuracy of responses.

2.2 Data collection

Primary contacts for the research included people from the region who were involved in ETINED and the Council of Europe and a wide range of institutional contacts of members of the project team. In addition, the project team attempted to contact all institutions in the region by email or telephone with a request for them to participate in the survey. The people who expressed interest were asked to disseminate the request for participation to their own contacts in the region. However, disappointingly, only a minority of the individuals and institutions contacted agreed to contribute to the project.

Several higher education institutions in the study region expressed interest in the research and generously hosted and supported visits by SEEPPAI team members. In total over 50 HEIs participated in some way in the study and visits were arranged to 17 HEIs. The bulk of survey responses came from the on-line questionnaires, with a total of 730 responses altogether, as summarised in Table 1. A total of 69 activities were recorded during the visits to the six countries, including 13 student focus groups, 17 interviews and 15 workshops.

During the visits to a range of different HEIs in each of the six countries, team members had opportunities to engage directly with many students, academics and HEI managers. In addition to the interviews and focus groups, team members provided presentations and ran workshops to audiences including a broad range of stakeholders about previous research and good practice in strategies for academic integrity in higher education.

A less formal approach to generating useful knowledge for this study was achieved by means of discussions with stakeholders during visits to the six countries. Sometimes

the discussions resulted from workshops or presentations provided by the researchers for students or teachers. Occasionally insights about local policies and practices were captured in a more social context, typically during a shared mealtime.

2.3 *Data analysis*

The quantitative data from the on-line questionnaires was statistically analysed. Results were both tabulated and presented graphically. Transcripts were made of the qualitative data collected from the on-line questionnaires and collected using audio recording and note-taking during the visits. Where necessary the responses were translated into English with support from colleagues in the region. Thematic analysis allowed comparisons of mixed responses from students, teachers and managers, which provided the means to triangulate and make sense of the results.

The full report (SEEPPAI 2017) provides details of the findings from the research and makes observations and recommendations appropriate to each country in the study. Some key points from the study are summarised in the remainder of the paper.

3 Key Findings from the SEEPPAI Research

3.1 *National perspectives*

Examples of effective practice identified across the region were included in the project report (SEEPPAI 2017). Some national initiatives were noted, such as the Ministry of Education of The former Yugoslav Republic of Macedonia requiring doctoral and master's theses to be submitted to a national archive and checked for originality. But generally, education ministries and accreditation and quality agencies in the region do not provide strong guidance or oversight for policies relating to academic integrity.

Similarly to the findings from other countries in Europe, collusion and sharing of assessed individual work appears to be considered acceptable in the region. Responses suggest this is perceived as a way for students to support their peers and enhance their understanding.

It was relatively common for training to be provided for students in academic writing, use of sources and ethical practices, but almost all respondents agreed ("strongly agree" or "agree" on five point scale) there should be much more information and education for both students and teachers about all aspects of academic integrity. This was confirmed by questions in the survey exploring the concept of plagiarism, which showed that many students, and a few of the teacher participants, had a poor understanding of how to make use of academic sources.

3.2 *Pedagogic practices in higher education in South East Europe*

In the region being studied, there seems to be a strong culture of academic autonomy in higher education, with oversight and monitoring of academic decisions uncommon. For example, routine independent second marking and moderation of assessment and grading are not common. This has implications for transparency, consistency and quality assurance in general.

Table 2

Percentage of respondents who agreed or strongly agreed that their institution has policies and procedures for dealing with different forms of cheating

Agreement that “my institution has policies and procedures for dealing with . . .”	teachers	students	managers
Plagiarism	51%	60%	73%
Academic Dishonesty	55%	59%	94%
Exam cheating	75%	71%	94%
Ghost writing	51%	45%	73%

When asked about teaching, learning and assessment, senior managers provided a range of different responses. They suggested that, in their institutions, students are encouraged to engage in critical thinking and are given various types of practical and challenging assessment. However, responses from students (in focus groups and from responses to open questions in the questionnaire), gave the impression that teaching is largely by rote learning, assessed mainly by formal examinations. The predominant higher educational culture in the region that emerged from the survey is a didactical approach to teaching and learning, with critical thinking and innovation not encouraged in many faculties and institutions.

There were some exceptions: for example, highly practical studio-based creative classes in architecture at an HEI faculty in The former Yugoslav Republic of Macedonia, small class sizes with oral examinations in Bosnia and Herzegovina and evidence of requirements for critical thinking in language and teacher training in an HEI in Albania. Other atypical South Eastern European HEIs were distinguished through close associations or accreditation from other countries, such as USA or UK. Such institutions often adopted practices from their partner’s institution, such as student honesty pledges, uncommon in Europe but often found in USA, and codes of practice in common with their international partners.

3.3 Policies related to academic integrity on a national and institutional level

When deans, vice-deans or teachers at higher education institutions were asked about the policies concerning plagiarism and academic integrity, they typically mentioned codes of ethics and ethical committees, normally concerning master’s level and above. A few universities in Croatia, Bosnia-Herzegovina and Albania adopted their ethical rules from western universities.

All the questionnaires included questions asking whether respondents’ institutions have policies for dealing with plagiarism, academic dishonesty, exam cheating and contract cheating in the form of ghost-written work.

The senior managers’ responses in Table 2 suggest that most institutions have a range of policies to counter different forms of academic misconduct, even if their communication methods to students and teachers could be improved. However little evidence emerged of rigour or consistency in implementation of policies for managing academic misconduct, particularly at bachelor and taught master’s levels.

The evidence collected in SEEPPAI comparing observed student cheating with preventative measures, suggests that there is very appreciation of methods for discouraging or “designing out” academic misconduct (Morris 2011, Carroll 2005, Culwin & Lancaster 2001, Bretag & Mahmud 2014). Most of the responses to questions on “prevention strategies” from teachers and managers were passively dependent on students understanding institutional policies (typically available on the web site or course handbook). Occasionally text-matching software was proposed as a deterrent, but this did not appear to be widely used.

There does not appear to be an adequate response in many institutions towards deterring serious forms of academic misconduct, identified as prevalent across the region. Cheating in examinations was said to be common, with inadequate invigilation. Third parties, remotely providing answers through hidden earpieces, were said to be readily available to hire. In some cases, examination seating arrangements meant that students could not avoid seeing how their peers had answered the questions. Problems were further exasperated with the reuse of examination papers, with students able to access questions and answers in advance. Similarly, written assessments were often reused, leading to assessment submissions not always reflecting the candidate’s own achievements.

Contract cheating is recognised as a global phenomenon (Lancaster & Clarke 2016, Clarke & Lancaster 2006), that is difficult to detect, prove and eradicate. As a deliberate and premeditated act of fraudulent behaviour, it represents a serious breach of academic integrity. In the SEEPPAI region, contract cheating was reported to be very common, with companies advertising affordable services on campus. The use of such ghost-writing services provoked lively discussion with students, teachers and managers. It was of some concern to find that submitting ghost-written work appeared to be seen, by both teachers and students, as no more serious than other forms of plagiarism.

In one student focus group and in several free-format comments from students, it appeared that students (and some academic teachers) viewed exam cheating as a game of outwitting the invigilators. There was also evidence presented that obvious cheating was sometimes ignored, with invigilation proving to be very casual, or with the staff present seeming to not want to catch students cheating. On the positive side, some institutions are looking at measures designed to reduce examination cheating.

3.4 Student and teacher perceptions of plagiarism scenarios

One key part of the survey for IPPHEAE was designed to establish how well respondents understood the concept of plagiarism and capture their views on whether different forms of plagiarism should be penalised. A question, where students and teachers were given several scenarios and had to judge the severity of the cases, provides useful information about the culture and perceptions of plagiarism. Examples of the results from these scenarios, merging together the results from 27 EU countries from IPPHEAE and the six countries from SEEPPAI, are shown in Figures 1 and 2. The SEEPPAI results fall within the previous scale, suggesting that perceptions closely align.

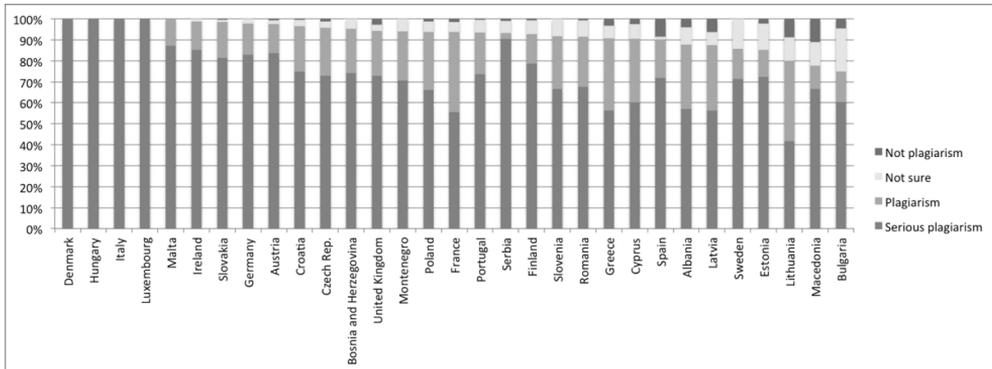


Figure 1. Students' perception of plagiarism in different European countries. 40% copied, word for word with no quotations, references or in-text citations

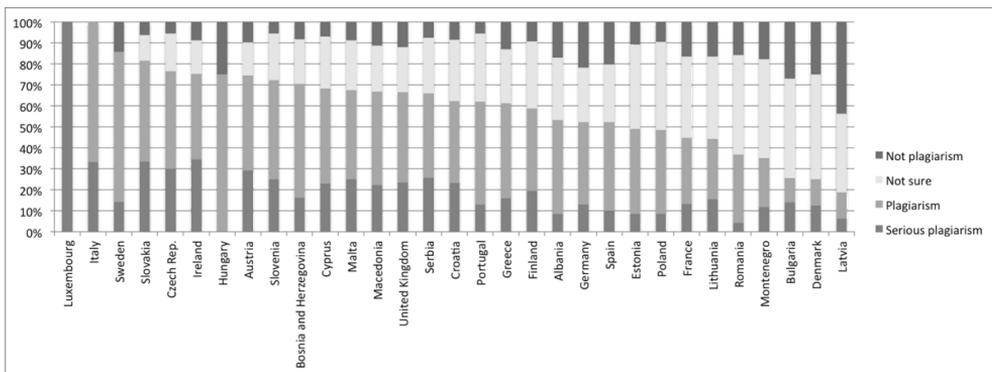


Figure 2. Students' perception of plagiarism in different European countries. 40% copied, some words changed, no quotations, references or in-text citations

Figure 2 shows the scenario where students copied 40% of their work without citation, but attempted to change some of it. 39.38% of students in the new study thought that this was not plagiarism. This figure compares with 38.58% of students across the 27 EU countries in the original study and suggests that some students have a poor grasp of source use and referencing.

Responses from teachers to the same question revealed a slightly more positive pattern in understanding, but still raise concerns. A poor understanding was apparent in a total of 11.6% of teacher respondents in the new study, compared to 17.3% of the teachers in the IPPHEAE study on 27 EU countries.

3.5 Evidence from teachers and students on skills, knowledge and training

Students in the online questionnaire were asked at what stage in their educational development they became aware of plagiarism and when they learned to cite and reference. These results are summarised in Figures 3 and 4.

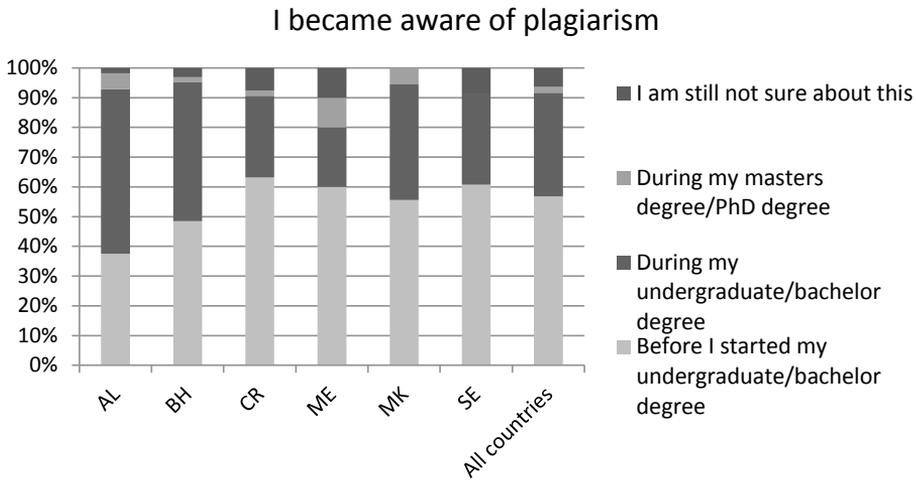


Figure 3. Students' responses on how they had become aware of plagiarism

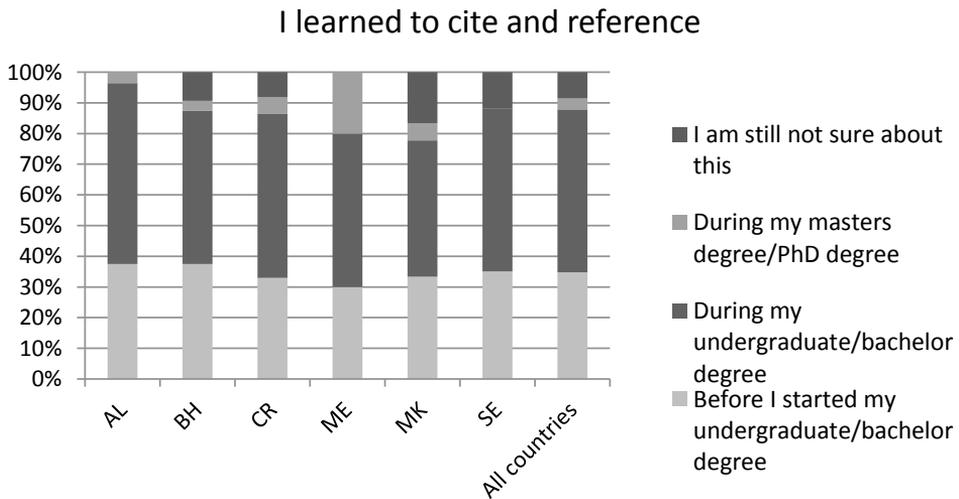


Figure 4. Students' responses on how they had learned to cite and reference

Under 40% of students in every country said they learned how to cite and reference before they started their undergraduate/bachelor degree. In general, 53% students learned this during the undergraduate/bachelor studies, showing similar results for all six countries.

Most students in focus groups were familiar with such terms as *plagiarism*, *auto-plagiarism* or *ghost-writing* and some said they were referring to experience gained in high school.

Students and teachers were surveyed about what sources of information made them aware of the seriousness of plagiarism and academic dishonesty and the consequences. Although there was overlap in the responses from teachers and students, an interesting distinction was that teachers assumed students learned from their teachers, from web sites, written sources, workshops and lectures, but students said they were also influenced by other students, social media and family and friends.

In general, students and teachers involved in the research agreed that there should be more education on “avoidance of plagiarism and academic dishonesty” in universities. In total 82.9% of student questionnaire respondents agreed (“strongly agree” or “agree” on five point scale) they would like to have more training and 87.2% of teacher respondents agreed that students should have more training. Perhaps more significantly, 80.3% of teacher respondents agreed that there should be more training for teachers on the same subjects.

To support this last finding, the question “Please provide suggestions for reducing student cheating” generated well over 600 open responses. Thematic analysis of this quantitative data from students, teachers and managers revealed that over 40% of the suggestions related to provision of more education, information and training.

3.6 *Relaxed attitudes to cheating*

Although the full SEEPPAI report (SEEPPAI 2017) identifies many further pockets of good practice, it also notes that these are both incomplete and inconsistently applied. Transparency International’s (TI) influential research (2013, 2015) demonstrates that corruption is a problem affecting all six countries in this study. Such corruption is said to extend beyond education to Government level. To make sustained change will require wider cultural shifts, alongside the financial support needed to resource improvements in quality and integrity within education.

Notable issues were raised by students in several focus groups relating to a wider culture of cheating that had permeated through to HEIs. In one such example, students were known to pay bribes to teachers in return of preferential assessment grades.

A culture encouraging relaxed attitudes to cheating was notable in discussions with both students and staff. Examples were given of where tutors would turn a blind eye to cheating, although some teachers were known by students to be much stricter. Where university processes did exist, there was a consensus across both staff and students that these were often not followed, with staff making their own judgement over appropriate penalties. Student respondents also suggested that teachers could make more effort to discourage students from cheating and that further support and understanding of measures designed to prevent cheating would be useful.

4 **Comparison Between South-Eastern Europe and EU Countries**

4.1 *Analysis using the Academic Integrity Maturity Model (AIMM)*

As a means of summarising and comparing the findings for each of the six countries, the Academic Integrity Maturity Model (AIMM) has been applied to the survey data collected. The results are shown in Figures 5 and 6. The AIMM tool was designed to

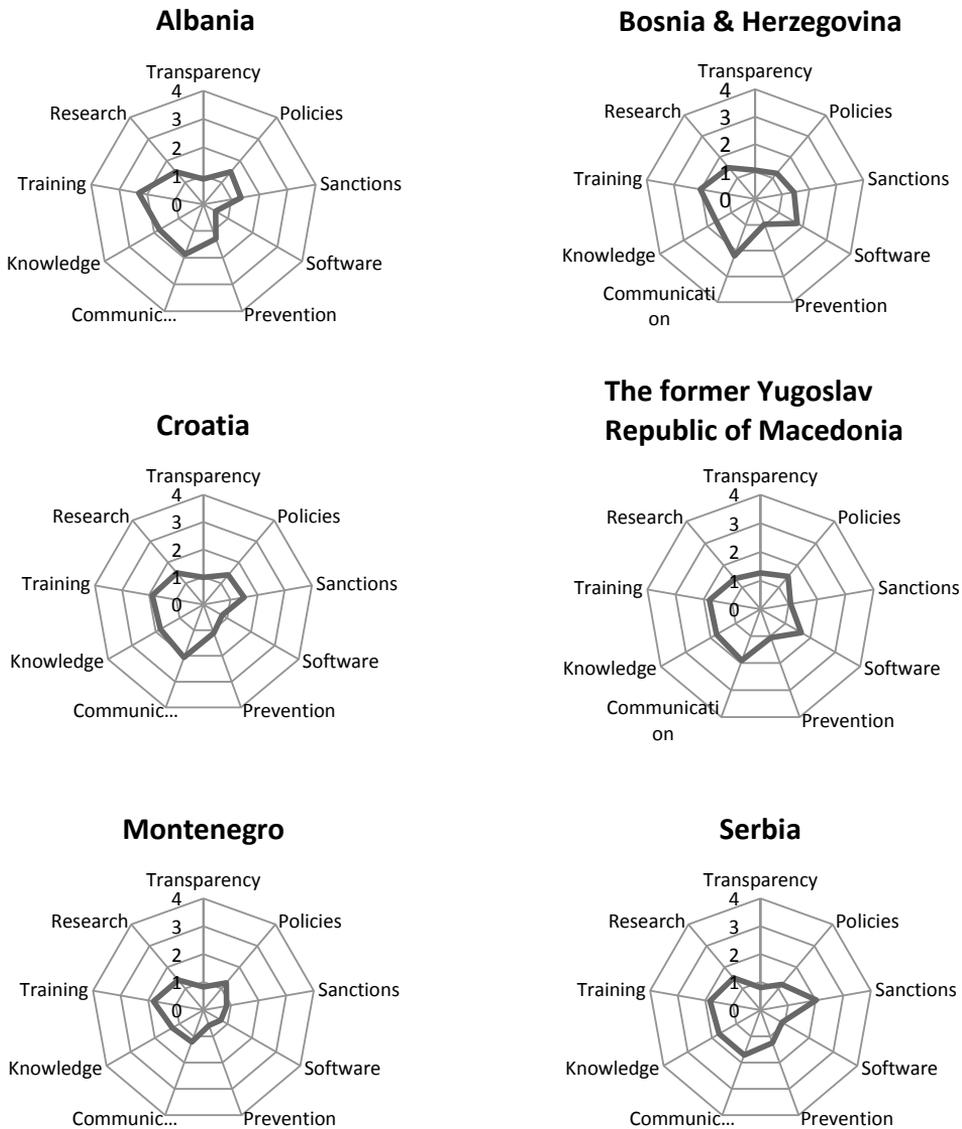


Figure 5. AIMM—Comparison of strengths and weaknesses of policies in the six countries

measure maturity of policies and processes based on the survey responses (Glendinning 2013).

The radar charts in Figure 5 depict the scores (out of 4) for the nine AIMM categories for each country. The same data is shown as a stacked bar chart in figure 10. All six countries show relative strength in training provision with scores between 1.8 and 2.3 out of a possible maximum score of 4. Use of software varies between countries, with BA

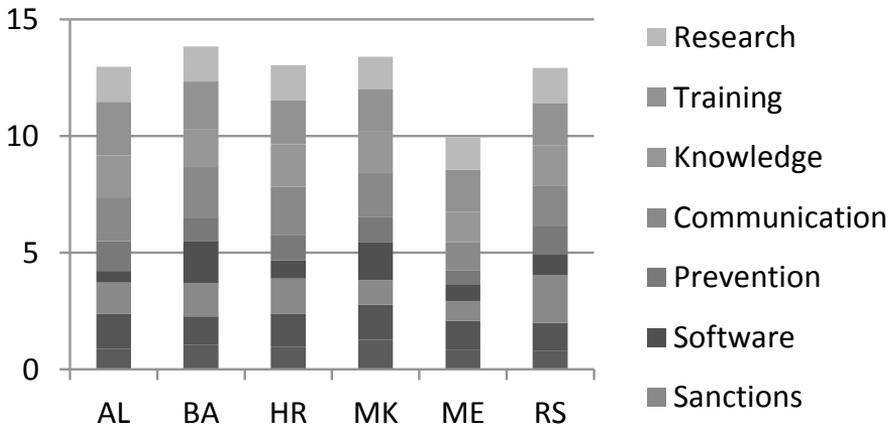


Figure 6. AIMM results for the six countries

scoring the highest (1.77) and MK second (1.64), but with very low scores in the other countries. Even where available the software use is generally restricted to detection of plagiarism rather than the more mature application of formative learning and development seen in some EU countries. Two other categories that scored reasonably well in most of these countries are communication and knowledge, which provides optimism for success in future developments. Transparency was found to be weak in all six countries.

4.2 Comparison of SEEPPAI and IPPHAEA results under AIMM

It must be noted that the survey questions used for IPPHEAE were updated and reformatted for this survey, which allowed data from more questions to be included in the AIMM analysis for SEEPPAI. However it is of interest to make a comparison between results for the two projects.

The AIMM results provide a useful guide to what is happening in each country and help to prioritise where attention is needed most. It also needs to be acknowledged that self-selection of institutions for participation combined with low volumes of data for a minority of countries in both IPPHEAE and SEEPPAI mean that the results from both projects cannot be considered representative of the full picture in every country. Further, the IPPHEAE data was collected 4–5 years ago, therefore the datasets are not contemporaneous.

When the IPPHEAE AIMM results are merged with the SEEPPAI results, all 6 SE Europe countries lie in the middle to lower part of the table for maturity. Taken as part of a ranking of all 33 countries, the SEEPPAI countries were ranked as follows:

- Bosnia & Herzegovina 14th
- The former Yugoslav Republic of Macedonia 18th

- Croatia 19th
- Albania 21st
- Serbia 24th
- Montenegro 32nd

Taking into account differences in the two datasets, it is notable that new results are comparable with those captured for the 27 EU countries in the IPPHEAE survey.

5 Conclusions and Recommendations

5.1 Recommendations to national governments and quality agencies

National governments, through their education ministries and accreditation and quality agencies, should proactively provide oversight for and guidance in strengthening policies and procedures for academic integrity in higher education institutions as a crucial component of quality assurance. Accreditation and quality agencies should monitor the quality of education provided by both public and private higher education institutions. Research and development in academic integrity policies and systems should be encouraged through the provision of small grant funding.

National governments should consider engaging with software companies providing text matching software to negotiate an affordable nation-wide license. Ministries of education in the region should facilitate communications between institutions within the country and across national borders. This will enable others to learn from positive experiences and share ideas for effective ways to counter academic malpractice.

5.2 Recommendations to institutions

To address the disparity in policies and practices across different faculties in HEIs, institutional leaders should **initiate an internal review of local policies and practices** with a view to establishing an institution-wide working group that will coordinate the development and implementation of common institutional strategy, policies and systems for academic integrity. Institutions should **develop standard set of sanctions** for plagiarism, exam cheating, ghost writing and other forms of academic dishonesty. These sanctions must be **known** by students and followed fairly in each case. **Supervision and oversight arrangements** for formal examinations should be strengthened as a means of discouraging cheating, by increasing the number of invigilators and clarifying and strengthening their responsibilities.

Training should be provided for academic staff, thesis supervisors and invigilators. Potentially institutions within one area could organise **shared seminars and workshops**. Each institution should take responsibility to ensure that students at all levels are suitably informed and progressively educated **on matters of honesty and integrity, academic writing and use of sources**. This information should be provided as early as possible, preferably in the first semester. Institutions need to **develop guidelines** for students, academic teachers and decision-takers about issues relating to academic integrity. Institutions also need to **put guidelines to practice** and enforce the rules defined.

Where it is possible to **acquire software tools** for aiding the detection of plagiarism and collusion between students, the institution needs to develop clear policies for how the tools should be deployed and guidelines for the interpretation and use of the outputs. The institution should take **all measures possible** to deter cheating in whatever form it may take, including plagiarism, contract cheating, the use of essay mills and examination cheating.

Regarding pedagogical practices, the institution should **discourage rote learning by aspiring to provision** up-to-date learning experiences at all levels of study, where critical thinking is valued and teaching, learning and assessment are rewarding and inspirational. The institution should **mobilise representatives of the student community** as valued partners in the challenge to reduce all forms of student cheating. The institution should consider establishing **procedures for “whistleblowing”** to allow the reporting of cases of academic misconduct, particularly from students.

5.3 *Recommendations to individuals*

Academic staff must **take responsibility** for their own conduct as role models for the next generation of professionals. They should **commit to integrity**: fairness, consistency, honesty, transparency **in both their professional and private lives**.

Academic staff should ensure that all students they are teaching or supervising are aware of the value and importance of learning and scholarship and motivated to maximise their attainment. **Continuing Professional Development (CPD)** should be a requirement for all academic staff. This allows them to keep up to date with their subject, educational developments, pedagogical practices and institutional policies. Academic staff should ensure that **all suspected cases** of academic misconduct **are handled per the institutional policies and procedures**. Such procedures ensure fairness and consistency for all students.

5.4 *Conclusion*

SEEPPAI has identified many examples of good practice where individual teachers are trying to enact change across the region. Compared to many EU states previously surveyed for IPPHEAE, research proactively addressing academic misconduct is already happening in the region (ACSN SEE 2015, Harjrulla 2015, Zhivkoviki 2016, Re@WBC Project).

Despite such good practice, the journey towards reform in the SEEPPAI countries is going to be long and difficult. However many of the academic contacts established by the SEEPPAI team members showed appreciation of where the problems lie and the challenges delaying the reform of educational practices and policies.

Where progress has been made, a cost-effective way to begin development would be for this information to be widely shared. As suggested by many participants, it would help to provide lessons for students on academic writing and avoiding plagiarism much earlier in education, preferably before students start university. Academic teachers are needed here to set a good example. There is also a need to convince and motivate institutional leaders and managers to act.

Finally, the significance of studies of this type is that identifying the challenges can help to bring about change. Academia has the capacity to influence the overall culture of a country by educating the next generation of leaders of industry, commerce and government. By changing the values and aspirations of young people, academia can help to cut the cycle of corruption.

Acknowledgements

The SEEPPAI project was funded by the Council of Europe's European Platform on Ethics, Transparency and Integrity in Education. The SEEPPAI team is grateful to all visited institutions for their kind and hospitable welcomes and to all participating institutions for sharing the questionnaires among their students and employees. The authors would like to thank Ms. T. Kapet and Mr. B. Calhoun who were part of the research team and significantly helped during the data collection.

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PARALLEL UNIVERSES: CHEATING AT THE UNIVERSITY. COMPARING LECTURERS' AND STUDENTS' UNDERSTANDING OF STUDENT CHEATING

Gábor Király, Zsuzsanna Géring, Nicholas Chandler, Péter Miskolczi, Yvette Lovas, Kinga Kovács, Sára Csillag

Abstract: Anecdotal evidence coming from everyday discussions with Hungarian lecturers points to the fact that student cheating is prevalent in Hungarian business higher education. This seemingly widespread (and often collectively practiced) student activity can not only cast a shadow on the validity of the degrees issued by Hungarian business schools, but also raises concerns about the long-term effects of cheating in terms of the operation of higher education in general. Based on semi-structured interviews conducted with students and lecturers of a Hungarian business school, in this paper we aim to map the attributions of these key stakeholders in relation to the specific causes and effects of cheating. The aims of the paper are twofold. Firstly, to provide a detailed account of the main causes and effects appearing in the social scientific discourse. Therefore, the paper provides a short literature review summarising the most important studies dealing with the causal factors of cheating published between 1990 and 2016 (based on a search in JSTOR and EBSCO). The paper's second aim is to compare these features of the relevant literature with so-called 'practice'. In order to do so, under the umbrella of an ongoing research project, we conducted 15 semi-structured interviews with key stakeholder groups in higher education, namely with lecturers and students in a Hungarian business school. As far as data analysis is concerned, the process has three stages. As a first step, we map the causal connections identified by the interviewees, or—to utilise the social-psychological terminology—we highlight their attributions in relation to cheating. Then, we visualise these attributions by drawing causal diagrams, which illustrate the perceived causes and effects of cheating. Lastly, we compare two diagrams—one based on students' and one based on lecturers' answers—reflecting on both their similarities and differences. In the final part of the paper, we compare the key findings of the literature review with the experiences and perceptions of the key stakeholders regarding both causes and the short and long-term effects of cheating. Moreover, we connect the results to the wider social and political context, especially focusing on Hungarian values and beliefs.

Key words: student cheating; unethical behaviour; moral reasoning; attributions; causal loop diagrams; literature review

1 Introduction

Some scholars, such as Davis et al. (1992) and Lang (2013), point to the fact that student cheating is prevalent in higher education institutions. This widespread (and often collectively practiced) student activity not only casts a shadow on the validity of the degrees issued, but also raises concerns about the long-term effects of cheating in terms of the operation of these institutions. In this fashion, cheating not only has immediate and short term effects on lecturers and other students, but might also have

long term effects on the workforce as these students enter the labour market. These issues are particularly relevant in Hungary and other Central European Countries (CEE) where student cheating seems to be more rampant compared to Scandinavian countries (Orosz and Farkas, 2011) and people in general are more likely to believe that it is not possible to get wealthy from 'honest' work (Tóth, 2009; Csepeli and Prazsák 2011).

Apart from cultural values and practices, students learning economics or business studies are quite interesting as a group in itself since it seems that they are more likely to focus on their self-interest in game theory experiments (Frank, Gilovich and Regan, 1993). These results might have implications which transcend present concerns since today's business students could become business leaders in the future, in other words, unethical behaviour of business students of today might be linked to unethical business practices of tomorrow. In relation to this, as scandals of recent decades demonstrate, the unethical behaviour of business organisations (Pitesa, 2015) can cause considerable economic losses for a large number of people and might affect society as a whole (Sridharan, Dickes and Caines 2002; Ariely, 2009). Therefore, the question of cheating is especially sensitive given how future members of the business world see and justify unethical practices in achieving their goals.

In relation to these questions, this paper's central theme is the attributions of key stakeholders in relation to the specific causes and effects of cheating. We call these causal inferences 'attributions' (Heider, 1958; Malle, 2011) in order to emphasise that the paper does not try to reveal real causal connections but to show the causal network around the issue of cheating as these groups perceive it. Even if these attributions can only be regarded as perceived, actors form arguments, ponder about possible strategies and decide on their course of action based on these presupposed causes and effects. In other words, perceived causal inferences, that is, attributions have real world consequences as expectations, affective reactions or behaviours (Kelley and Michela, 1980).

The aims of the paper are twofold. Firstly, it attempts to provide a detailed account of the main causes and effects of cheating as they appear in the social scientific discourse. The second aim is to compare these features of the relevant literature with so-called 'practice'. In order to do so, under the umbrella of an ongoing research project, we conducted 15 semi-structured interviews with key stakeholder groups in higher education, namely with lecturers and students in a Hungarian business school.

Based on these aims, the structure of the paper is as follows: the first section provides a short literature review summarising the most important studies dealing with the causal factors of cheating published between 1990 and 2016 (based on a search in the digital libraries of JSTOR and EBSCO). Then, the results section maps and describes the causal connections identified by the interviewees in relation to cheating by drawing causal loop diagrams. Finally, the discussion section connects the results to the main conclusions drawn from the literature review and to the wider social and political context, especially focusing on Hungarian values and beliefs.

2 Literature review

The relevant literature concerning academic cheating goes back to Bowers (1964), who conducted the first research of academic cheating in higher education. Since his influential work, many aspects of the phenomenon were examined. The main questions were addressed to describe mainly who cheats, why students cheat and, to a limited extent, how students cheat (see for example the edited work of Anderman & Murdock, 2007). As a basis of our research, a literature review was conducted using the databases of EBSCO Academic Search Complete and JSTOR. The keyword was ‘student cheating’ and the time criterion was between 1990 and 2016. The list of results was narrowed to articles where the whole text was available. Within these limitations, 127 articles were found to be relevant to our research. In the following literature review, we have used the articles which deal with the causal aspect of academic dishonesty on a personal, situational and cultural level.

The engagement in academic dishonesty in relation to personal characteristics is a well-researched question of the field. The different characterising dimensions of students who engaged in cheating behaviour have been researched such as age (Newstead, Franklyn-Stokes and Armstead, 1996; Smith, Nolan and Dai, 1998) and gender (Ward and Beck, 1990), with controversial results. Sheard and Dick (2012) also report that the reasons can be personal, situational or simply traced back to characteristic traits. Their paper points to several important factors in relation to cheating, such as a lack of time and the need to avoid failure. Identifying these relating factors could help teachers reduce various types of cheating.

To enhance our understanding of the process of engagement in dishonest acts, other factors such as motivation and self-efficacy should be taken into account. Further distinctions are made between different types of motivations such as intrinsic (mastery) goals, extrinsic and performance goals. Authors examined these fields with the following main questions: “What is my purpose?”, “Can I do this task?”, and “What are the costs associated with cheating?” (Murdock-Anderman, 2006). According to Jordan (2001), intrinsic goals influence the engagement of academic dishonesty in a negative way, while other factors like witnessing peers’ cheating behaviour correlate with it positively. With higher levels of self-efficacy, students are less likely to cheat (Murdock-Anderman, 2006). This result appears in Umaru’s (2013) study conducted in Niger State, too. He found that teachers and other school employees should encourage students; otherwise they tend to feel less self-efficacy in an academic environment. Umaru (2013) identifies other factors which affect students’ views on cheating, such as the pressure to achieve good grades, not having enough time for (or spending enough time on) school work and parents’ lack of reproach in connection with their children’s cheating activities. Jones (2011) aimed to identify the main reasons behind cheating. She concluded that generally students wish for good or better grades, however due to difficulties with understanding course materials or time limitations, they tended to cheat. Küçüktepe’s (2014) results are similar: the qualitative study conducted in Turkey found that 26% of respondents not only cheated when they had no idea about the question at all, but also when they were dubious about the answer. In some cases, they felt compelled to look at someone else’s test.

Besides the personal factors, the situational and interpersonal causes also influence engagement in dishonesty. Orosz and Farkas (2011) researched basic factors which influence students' cheating behaviour. They found that situational and interpersonal factors such as the conduct of peers and the willingness of peers to cooperate also increased the likelihood of engagement in dishonesty. McCabe, Butterfield and Trevino (2006) also found that the perception of peers' cheating had the strongest impact on the likelihood of one's own cheating, but the fear of being reported by other students also had a strong (negative) effect. Palazzo et al. (2010) examined why physics students copy homework from the web or other students. According to them, there is a positive correlation between this kind of academic dishonesty and tight deadlines. Other influential factors were found to be the level of difficulty and a lack of interest. On the other hand, Jordan (2001) states that the best predictor of cheating probability is the lack of strict institutional policy and a permissive system. Gallant and Drinan (2006) also claim that a solution may be found in organisational aspects. In a comparative study, they collected a lot of potential reasons behind cheating. The essence of their findings is that academic integrity and coherence need to be communicated to the students with the consequence that violations of the rules would occur less frequently.

Cultural norms and expectations can also incite students to cheat. Institutional norms such as honour codes can affect cheating as well. McCabe et al. (2003) suggest that honour codes support academic integrity which reflects on the faculty members, the likelihood of cheating decreases as opposed to students where no honour code was introduced. However, national cultural norms can affect cheating behaviour. Magnus et al.'s (2002) overview on tolerance towards cheating examined the cultural backgrounds of Russia, the US, the Netherlands and Israel. The values of populations differ across nations. The most important distinctive factors are whether competition is part of the educational system and the attitude towards officials (such as civil servants, police officers and teachers). If competition is an intrinsic element in the system (like in the US), cheating is regarded as the application of unfair means. Moreover, if officials are regarded with hostility and suspicion (like in Russia) because of the role they played in the past in a totalitarian regime, cheating is more likely to be tolerated and the act of reporting on others is considered morally unacceptable.

Generaux and McCleod (1995) surveyed 365 college students (equally boys and girls) from entirely different courses and programmes about their learning and cheating practices. The questionnaire consisted of 21 items to be evaluated by the respondents on how each statement would influence engagement in cheating behaviour. Causes were identified by each category: social norms; personal preferences; pressure of peers; and obviously, situational forces. However, the authors focussed mostly on whether cheating was planned or spontaneous. Planned cheating depends primarily on the college environment, such as course workload, instructor concern for students, punishment for cheating, fairness of exams, and so on. Unplanned cheating mostly depends on situational factors, like exam seating or teacher's vigilance. As the results suggest, the phenomenon of academic dishonesty occurs on a multi-dimensional level including personal, situational, interpersonal and cultural levels.

These findings are relevant to our research in several ways. Firstly, it is important that several years or decades of research cannot conclusively determine the individual

characteristics of those who tend to cheat. Nevertheless, personal attributes such as self-efficacy and motivation seem to play important roles in student cheating. So, individual characteristics can be important, yet they are not fixed personality traits or socio-demographic attributes, but tend to change with the situation. This leads us to situational factors, such as deadlines, the perception of peers and institutional norms, which seem to be highly relevant as far as the decisions about cheating are concerned. Moreover, cultural norms and belief systems provide frames for giving interpretations to cheating—since these frames tend to differ significantly—as do the moral judgments on different forms of cheating. As the reader will see in the results and discussion section, elements of all three dimensions are represented in the attributions of the stakeholder groups.

3 Methodological considerations

In order to explore the causes behind academic cheating by students, we made interviews with representatives of two relevant stakeholder groups: lecturers and students. For the analysis we applied causal loop diagrams to delineate the main causal effects regarding the perceived level of cheating. In the following section we describe our sample and give a short summary of causal loop diagrams as an analytical tool.

3.1 Sampling

In order to identify the main causes and effects regarding cheating, we made semi-structured interviews with members of two stakeholder groups. We applied a purposive sampling strategy to find interviewees for our research. As Devers and Frankel (2000) argue, this approach is utilised “to enhance the understanding of selected individuals or groups’ experience(s)” (Devers and Frankel 2000: 264). Therefore, the main aim is to select “information rich cases (...) that provide the greatest insight into the research question” (Devers and Frankel, 2000: 264). We will briefly demonstrate the main principles we took into consideration.

We took into account for the sample selection that according to some previous research (Frank, Gilovich and Regan, 1993), business students have special perspectives on cheating. Thus we chose a business school for the first phase of the research. Even though the school has more than one business faculty, we decided to involve lecturers and students only from one of them. The reasons behind this decision lay in our future plans, as this faculty is the most similar to other business faculties at other Hungarian universities, where we would like to continue our research for further comparison.

As for the selection of lecturers, on the one hand, we tried to find those who have experience with different types of assessments and teaching forms, on the other hand, we attempted to compile a broad range based on the lecturers’ subjects. Our sample contains 9 lecturers at this point, who came from finance, entrepreneurship and human resources, language, and economics departments (3 men and 6 women). This sample of lecturers had no connection to the students involved in the research project.

In the case of the students, we had to consider two issues. Firstly, students might not be comfortable reporting on the topic of cheating to teachers. Secondly, we tried to find students who are embedded in the social network of students, assuming that they have

many connections with other students, and therefore they heard more about student life in general and even cheating in particular. Based on those premises the student interviews were made by student members of our research group, and they contacted student organisations operating at the faculty. Nevertheless, it has to be mentioned that finding students who openly speak about cheating was very difficult. Although before the project our experience was that many students speak about cheating practices quite openly in everyday conversations even with teachers, the possibility to speak about it in what seemed to them an “official” setting was quite frightening. After the first round of rejections, we started to utilise a diverse set of approaches (asking for help from student assistants at departments and from students with whom we have personal relationships) for finding willing interview subjects. With this approach, we were able to conduct interviews with 6 students (4 women and 2 men).

3.2 *Research ethics*

As for research ethics, our research has been authorised by the Vice-Rector for Scientific Affairs at the higher education institution where the study was conducted. It is worth mentioning that the student members of the research group are students in a different institution, therefore conflicts of interest do not arise. Procedures for the interviews were clearly explained to the interviewees before the interview and the researchers asked for their permissions to record the interviews. Both the explanations and their consents given are recorded at the beginning of each interview. Confidentiality was also a key concern during the research process. All results are presented anonymously so research subject cannot be identified. Moreover, the interview recordings can only be accessed by members of our research group (in a password protected common folder) and are not stored on university based computers or networks.

3.3 *Causal loop diagrams*

In order to make our findings more understandable, we visualised them in the form of causal loop diagrams (CLDs). This special type of diagram originates within the methodology of system dynamics, a school of systems modelling developed by Jay W. Forrester at MIT in the 1960s (see Forrester, 1971). In this way we can see multiple-step causal chains, or, indeed, causal loops in which the chain returns to its point of origin. The emergent properties of systems eventually arise as the outcome of several causal factors, while the high number of linkages helps us understand the dynamic nature of the systems (Sterman, 2000: 12–18; Sherwood, 2002: 12–16).

Causal loop diagrams are made up of variables and the causal connections between them. Normally, they constitute the first step towards a quantitative simulation model, and therefore have to conform to a number of ‘rules of the genre’. First, variables have to be named in such a way that both an increase and decrease in their levels are intelligible. Causal arrows point from the cause towards the effect and have a single sign. A positive sign (+) means that—provided that everything else in the system is constant—the effect changes in the same direction as the cause, i.e. if the amount of the cause increases, that of the effect also does; while if the amount of the cause decreases, that of the effect will do so too (compared to what it would have been in

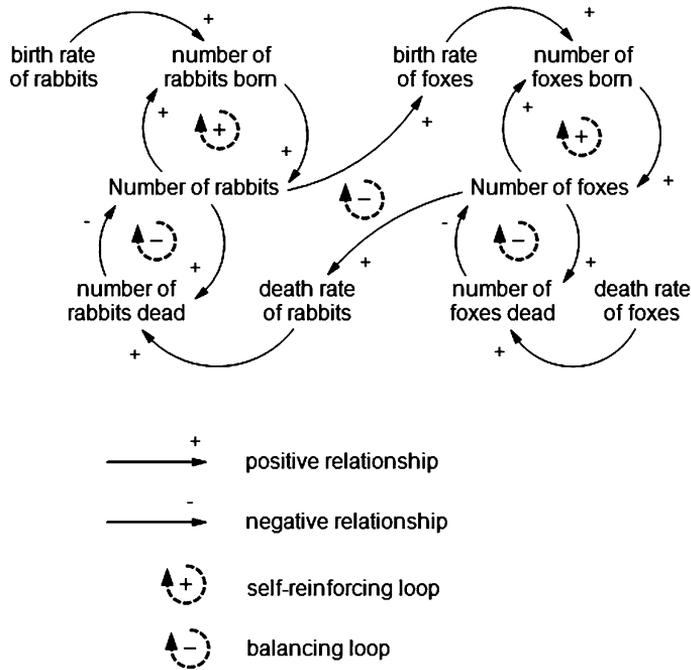


Figure 1. Example of a causal loop diagram (product of the authors)

the absence of any change). A negative connection (–) means that cause and effect go “in opposite directions”: when the cause increases, the effect will decrease; when the cause decreases, the effect will increase. These relationships can form two types of causal loops: self-reinforcing ones, in which the initial change runs through the system so that it returns to reinforce its initial impulse (think of examples of ‘vicious’ and ‘virtuous’ circles from life); and balancing ones, where the initial change runs through the system and returns to ‘mitigate’ itself (think of a predator and prey relationship, where populations of animals mutually control each other) (Sterman, 2000: 138–153).

Figure 1 shows an illustrative example of a CLD.¹

¹Technically, the number of births and deaths of animals in a population is the product of the number of the whole population and the corresponding birth or death rates. That is why, for example, ‘rabbits born’ is positively influenced by ‘Number of rabbits’: the bigger the population, the more babies are born, given that the birth rate remains constant in the meantime. Therefore, the number of births and deaths of animals are in self-reinforcing and balancing relationships with population size, respectively (as indicated on the diagram). Whether the total number of each population goes up or down will be a result of these two processes. Additionally, there is a balancing mechanism between the number of the two populations: the loop should be read as “the more rabbits there are, the higher the birth rate of foxes (i.e. caused by better availability of food in the form of rabbits), and the bigger the fox population becomes. As there are more foxes, the death rate of rabbits (because of predation) increases, leading to a lower total number of rabbits”—a prime example of a balancing loop, where the initial change (“the more rabbits there are...”) returned to mitigate itself (“...a lower total number”).

CLDs show mental representations by various individuals or groups (Sherwood, 2002: 188–200). Our method in drawing up CLDs on student cheating was to take interviews as descriptions of the world—whenever the interviewee spoke of factors that influenced cheating in some way, we created a variable and a causal connection to represent it. Thus a statement such as “if there are more people taking the exam together, it is easier to hide and cheat” was transcribed with the help of the variable “number of people taking the exam”, in a positive relationship with “perceived level of cheating”, the arrow itself representing the mechanism of ‘it being easy to hide’. (We could have created a variable for “difficulty of hiding”, but this level of detail was not necessary this time. Also, we would emphasise that we did indeed operate with perceived levels of cheating, since the systems we described involved the perceptions of students and lecturers. We took the ‘true’ level of cheating to be practically unknowable.) Since our goal was to represent the perceptions of our interviewees, the boundary of the system was determined by what they explicitly said: we did not add causal factors of our own. Even the linkages shown are purely those of the interviewees, we only represented the connections they made explicit or strongly alluded to.

4 Results

Based on the previously mentioned method, we were able to construct two causal loop diagrams. One of them is based on the interviews with the lecturers, while the other is based on the student interviews. First we will introduce the maps, and then provide a brief comparison.

4.1 Lecturers’ map

As shown in Figure 2, many issues emerged regarding the causes of student cheating in the interviews with the selected lecturers: we could identify 38 items connected to the perceived level of cheating by lecturers. A discussion concerning all of the items individually is beyond the scope and length of this paper; therefore, in the following section we will summarise the main fields detectable in the CLDs.

If we look at the causes and effects regarding the level of cheating mentioned by the lecturers, we may point to five main fields: institutional elements; external effects (i.e. factors at the social level); assessment and teaching practice; personal and group characteristics of students; and personal characteristics of lecturers. Naturally, these fields overlap with each other; therefore, there are variables which are at the intersection of these areas (details later). Nonetheless, by identifying these main fields and their contents, we could delineate the major forces concerning student cheating, as lecturers perceive them. Furthermore, CLD-type visualisation helps to understand the connections and effect mechanisms between these fields in relation to student cheating.

One of the fields identified above was that of **the institutional elements**. This refers to the conditions in which the lecturers are working in a given higher educational institution. Some of these conditions relate closely to cheating, like ‘harshness of sanctions’, ‘clarity of the institutional regulations’ and ‘degree of the lecturer’s possibility to control’. Other ones are more general characteristics of the institution,

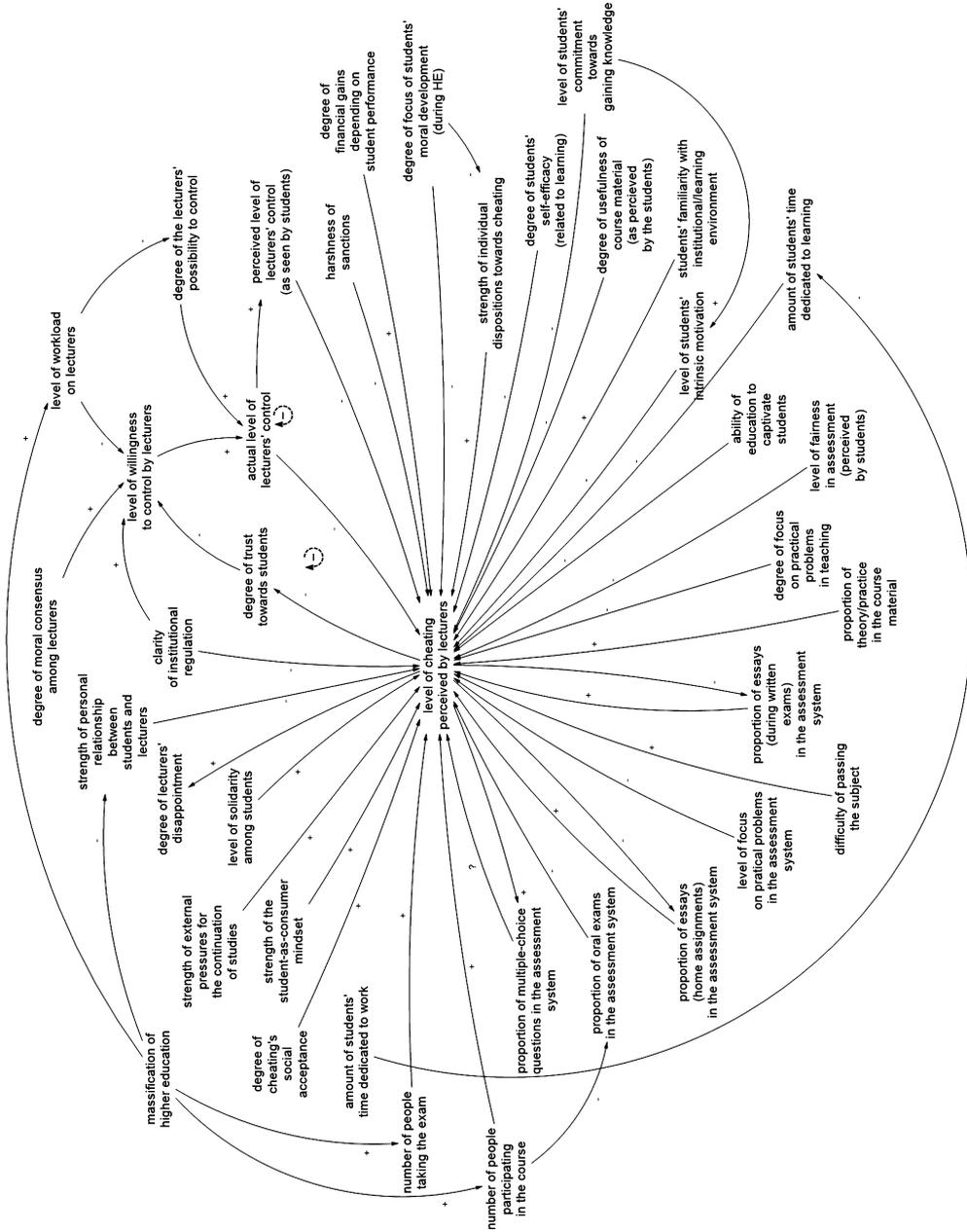


Figure 2. Causal loop diagram based on lecturer interviews

which nonetheless affect the (perceived) level of cheating, like ‘degree of financial gains depending on student performances’, ‘level of workload on lecturers’ and ‘degree of focus on students’ moral development (during HE)’. Two of these variables have only an indirect effect on the level of cheating through other variables. That is, the ‘level of workload on lecturers’ affects the ‘level of willingness to control’ and the ‘degree of the lecturers’ possibility to control’. Moreover, these affected variables are also connected to the level of cheating by other variables, like the ‘actual level of lecturers’ control’ and the ‘perceived level of lecturers’ control (as seen by students)’. Because the latter variables also belong to other fields, these connections designate interactions between different fields as well.

Regarding **the external effects** mentioned by the interviewees, we could see that lecturers addressed the social context as part of the causes of student cheating. ‘Degree of cheating’s social acceptance’ is an illustrative example. The ‘strength of external pressures for the continuation of studies’ was mentioned in the sense of some kind of social norm or practice to get a degree, as well as the pressure stemming from the high expectations from the parents.

“There are too many students here who are not interested in what they are studying. They are studying because their parents asked them to do [it], and so they don’t feel motivated to learn. They do not feel that they need what they learn here later because they do not want to work in this field” (Lecturer5, woman).

Another teacher also emphasised that students come to the university because they feel that this is what they have to do, this is the expected behaviour:

“...I really don’t want to generalise here, because this is not true for all of them, but with many of the regular [i.e. ‘daytime’, as opposed to distance learning] students I see that this is just how it goes. So they finished high school and then either because this is what they saw at home or because this is what the parents expect or anything, they have to come and graduate in this school [i.e. the university]” (Lecturer8, woman).

We categorised ‘the strength of the student-as-consumer mind-set’ variable as an external effect, because it reflects a changing attitude concerning the higher educational sector, not just the given institution. The variable ‘amount of students’ time dedicated to work’ could be regarded in the intersection of the external effects and the personal characteristics of students, because in some cases the students need to work due to financial difficulties based on their social background, while in other cases it is only to gain more practice and possibilities to move forward in the labour market, or just to earn some ‘pocket money’. There is another overlap that should be mentioned, namely the point where the social and the institutional frames meet. In our case, it is the item called the ‘massification of higher education’. This massification is a global phenomenon (dealing with it falls beyond the scope of our study), and reflects the strategy of the given institution regarding the number of students. We found in our study that this particular variable appears only as some kind of ‘contextual’ item, which does not have a direct effect on cheating, but exerts its influence through other intermediate variables.

The third field contains items connected to **the assessment and teaching practices**. Although these could be regarded as institutional characteristics, they were

so explicitly mentioned and connected to the perceived level of student cheating by the lecturers that we grouped them into a separate field of its own. As Figure 2 shows, all of the different assessment types (multiple-choice questions, oral exams, home assignments, and essays) were addressed by the lecturers, but with different and sometimes ambiguous effects. Only the oral exams have a clear role: if their proportion is higher in the overall assessment system, then, according to the lecturers, the level of cheating would be lower. Some of the lecturers said that using more multiple-choice questions in the assessment system brings down the level of cheating, while others were of the opinion that it leads to higher levels of cheating (this kind of ambiguity is indicated with a question mark on the map). This ambiguity is demonstrated by the words of two interviewees who have different viewpoints:

“Of course, every exam period and every exam situation can be regarded as a kind of feedback; and how I do the exams, yes [I have changed my approach]. For example, in the past, I have mostly used essay questions and smaller definitions. . . , that is, I asked shorter essay type of questions which tried to grasp the thinking of the students. (. . .) In this situation, I have met with much more intense cheat sheet usage, which is also frustrating for me. So this is not a good experience and based on this, I have changed to the utilisation of multiple-choice questions in exams” (Lecturer2, woman).

Contrary to this, another teacher saw the utilisation of multiple-choice questions as something which leads to higher levels of cheating:

“Actually, an all-multiple-choice too, while we are at examinations, I think the type with only multiple choice questions leads rather to how you can cheat, that is . . . in that case, the thinking goes, how could we obtain the questions. . . [laughs] complete with answers. [laughs] And in these cases, I’m smiling at . . . it happened to me also at the beginning of my career, that some students got hold of the test sheet. . . I actually saw that they had them, and I told my colleague that it was out there, this test. There was nothing to do at that time because it had already been photocopied, everything was set, the exam was due the next day, or maybe even on that day, I don’t know exactly how I found this thing . . . or saw this thing from afar. And . . . they learned the answers by heart but [they learnt them] wrong. So actually. . . [laughs] even in this case, they learn them, but they do not learn the actual answers to the questions, but only A-B-C, which code comes after which, but then you shake up the order and . . . then that’s trouble” (Lecturer8, woman).

As for the role of essays (either as home assignments or during written exams), our interviewees voiced starkly different opinions. There is an explicit feedback effect. According to some of our interviewees’ experiences, utilising essays in assessment and grading resulted in a higher level of cheating (plagiarism in the case of home assignments). Therefore, they changed their assessment approach to other forms, like instead of giving home assignments to students, they have to take exams and/or in the case of exams, they replaced the essay questions with multiple-choice questions.

Another aspect of this field is the level of ‘practicality’, both in the case of exams and of teaching. In both cases the higher ‘the level of focus on practical problems’, the lower the level of cheating will be, according to the lecturers. It is the same with the ‘ability of education to captivate students’ and the ‘level of fairness in assessment (perceived by students)’. On the other hand, the ‘difficulty of passing the subject’ and ‘the proportion of theory/practice in the course material’ raise the level of cheating.

It should be mentioned that there are two variables which have a direct (and positive) effect on cheating: 'number of people taking the exam' and 'number of people participating in the course'. Both of them (the high number of them) were mentioned by the lecturers as one of the dominant causes of high level of student cheating, but we placed them at the intersection of the institutional field and the assessment and teaching field. The reason for this is that the (high) number of students is a result of decisions and the strategy of the given institution, yet at the same time, it is also affected by teaching and assessment practices.

Our interviewees addressed causes which could be classified as **personal and group characteristics of students**. As they said, greater 'strength of individual disposition towards cheating' and higher 'students' familiarity with institutional/learning environment' could lead to a higher level of cheating. One of the lecturers talked about the tendency to cheat as a stable personality trait:

"Yes, simply somebody is like that because of his/her personal character, that is, it is not basically that I simply have not prepared for this exam and I use a cheat sheet. Instead, it seems that s/he attempts to cut corners in every life domain. ...that it is a general character trait in many cases" (Lecturer3, man).

On the contrary, the raising of 'degree of students' self-efficacy', or 'degree of students' intrinsic motivation' bring a lower level of cheating, just as a higher 'amount of students' time dedicated to learning' or the 'degree of students' commitment towards gaining knowledge' (these two are connected, too). There are two variables which belong to this field, although they are somewhat different. Both the 'perceived level of lecturers' control' and the 'degree of usefulness of course material' are attributes connected to the students, but refer to their perceived picture of the institutional features. Another interesting variable is the 'level of solidarity between students', which can be regarded more as a group characteristic than an individual one, and has a positive effect on the level of cheating.

"I notice that some people don't cheat themselves but they feel awkward if they don't help others. Perhaps it is a good student and I can see how they arrange themselves for a ZH [midterm written exam] that this person should sit in the middle. (...) This person is a kind of disseminator of information. A nice person and when they ask them I am sure that they could not say no. Because then they are a bad sport. And nobody can afford to be a bad sport" (Lecturer6, woman).

Last but not least, the fifth identifiable field is about **the personal characteristics of the lecturers** themselves. One part of the related items addresses the question of control ('level of willingness to control' and 'actual level of lecturers' control'), the other part refers to the emotional effects of students' cheating ('degree of lecturers' disappointment' and 'degree of trust towards students'). We should emphasise that this emotional effect was mentioned by most of the interviewees, as the consequence of student cheating. One of the interviewees put it this way:

"I find [cheating] outrageous at an emotional level that is for sure. The emotional involvement is more intense in this case. And it is also a bit of a disappointment that (...) the student did not understand why it would be better for her/him if s/he didn't do it that way and would invest some energy instead. Evidently, I also prepare for my

classes and I would like to see the result of my investment in that I see that the student prepares and understands [the material], and not that s/he attempts to gain advantage by cheating" (Lecturer2, woman).

Furthermore, this is the only field where feedback loops emerged, and they are connected to this emotional effect. Namely, raising the 'level of cheating' leads to a lower 'degree of trust towards students'. This moves the 'level of willingness to control by lecturers' in the reverse direction, i.e. it will rise (further). This, in turn, leads to a higher 'actual level of lecturers' control', with the consequence of a lower 'level of cheating'. Hence, this is a self-restraining loop, which will mitigate the effect of the starting variable (here, the level of cheating).

Additionally, another feedback loop could be detected, because the 'actual level of lecturers' control' has a positive effect on the 'perceived level of lecturers control' (as seen by students), which will decrease the 'level of cheating'. This means that this feedback loop is a self-restraining loop as well.

4.2 *Students' map*

The causal loop diagram based on the interviews with students can be seen in Figure 3. It has a large number of variables; the students mentioned 38 different items in connection with the level of cheating perceived by them. The structure of the map is very similar to the lecturers' CLD; the five main fields can be also detected in this picture, although with slightly different content and proportions (based on the variable number). Therefore, in the following section we will outline the basic characteristics of the institutional elements, external effects, assessment and teaching practice, the personal characteristics of lecturers and personal and group characteristics of students. (The comparison of the two maps is discussed in the next subsection.)

The identified **institutional elements** in the students' interviews on the one hand referred to the rules and sanctions of cheating ('harshness of sanctions'), on the other hand to the financial aspects of learning ('degree of financial gains depending on student performance', 'revenue of university') and lastly, to the lecturers' workload ('level of workload on lecturers').

The **external effects** include the 'strength of external pressure for the continuation of studies', the 'degree of cheating's social acceptance' and the 'amount of students' time dedicated to work'. This last variable partly belongs to the personal characteristics of students, but in some cases it has external reasons behind it (namely, financial difficulties of students and/or the pressure of the student loan can be regarded as social issues not individual ones). At the intersection of the institutional and external (here social) fields connected to cheating lies the 'massification of higher education' phenomenon. This link was explicitly stated by some of the interviewees, highlighting the inevitability of massification since the 'revenue of the university' is dependent on the number of students.

"But it is not cheating that should be changed first and foremost, because till they let so many uninterested students enter... In my opinion, that should be changed, not to admit so many of them since this also hinders those who really want to learn. So, for example, they register to the courses, which would really be better... and the teacher

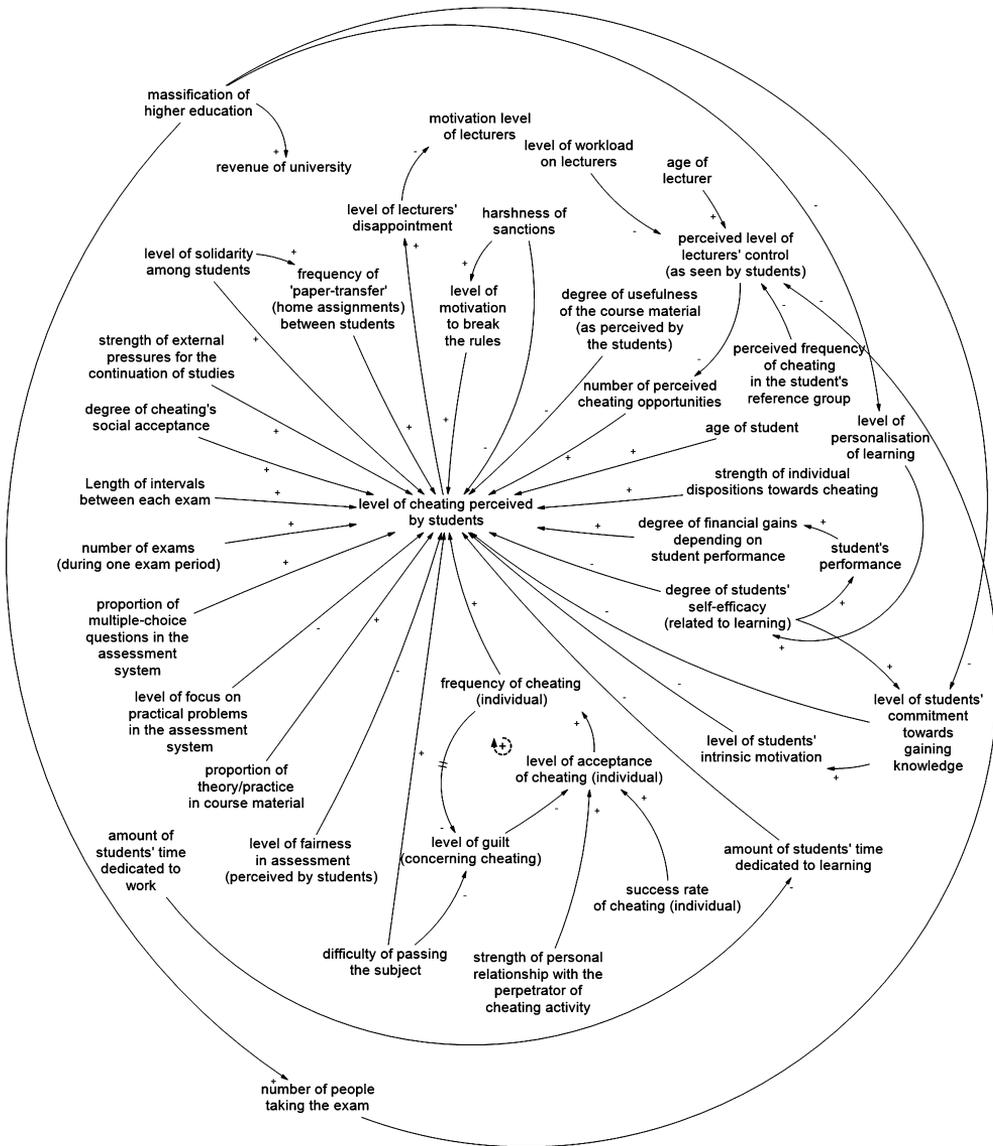


Figure 3. Causal loop diagram based on student-interviews

is better, and then they do not participate in classes no matter what, and they fail the classes anyway. That was very annoying for me in the first [few] years. (...) But then, the possibility of admitting less students. . . that they will not do anyway since there is not enough money” (Student₁, woman).

In the case of the **assessment and teaching practice**, student interviewees’ mostly ignored the possible effects of the different types of exams (only the ‘proportion of multiple-choice questions in the assessment system’ was mentioned), and emphasised the characteristics of the exam period instead, that is, the ‘length of intervals between each exam’ and the ‘number of exams during one exam period’.

“We have to keep a lot of things in mind and we only have exams in general. And this means that it is possible that we have, let’s say, three of them on one day because at the department they put all their exams on one day. And you cannot learn for three exams, in my opinion, in a way that you memorise all the tiny details. Especially, if it is not a practice-oriented but a theoretical course. And then they are based on each other and it is very easy to get confused. So, I think they cheat—because of that, this can be the reason, that you have to know a lot of different things and then there is a lot of stuff which is useless. And, so, these things together. . .” (Student₃, woman).

The higher level of practicality—both in terms of assessment practices and course material—arose in the interviews as an item which could mitigate cheating. Similarly, ‘fairness in assessment (perceived by students)’ is also in a negative relationship with cheating. They also mentioned the ‘difficulty of passing the subject’ as an important aspect. This not only raises the perceived level of cheating, but is also connected to the ‘level of guilt’ (more details about this connection later). The ‘number of people taking the exam’ is at the intersection of institutional elements and assessment practice, because it depends on the lecturer’s choice regarding different assessment forms as well as on the available institutional setting (e.g. group sizes, computer rooms, rooms available for exams etc.).

As for the **personal characteristics of lecturers**, the students talked about the perceived emotional effects of cheating on the teachers, what they named as a growing ‘level of lecturers’ disappointment’ owing to an increased cheating level. Furthermore, they take one more step in connecting this disappointment to the lowering ‘motivation level of lecturers’. One of the students also sees this at home:

“I think they are emotionally affected by it. My father, mother are university teachers, or lecturers. . . I usually talk with my mother and my mother is very much affected by it in a negative way. They always think. . . They believe that it has something to do with them: I did not teach the class material well enough, I am a piece of s**t and they look into themselves. . .” (Student₃, woman).

The ‘age of lecturers’ was introduced as another personal trait of lecturers, which is linked only indirectly to the level of cheating through the variable of the ‘perceived level of lecturers’ control’ (which belongs to the next field, details below). The ‘level of personalisation of learning’ is based partly on the given teacher’s own viewpoint and personality, and partly on the institutional settings, like the number of courses. Therefore, it is at the intersection of these two fields.

Almost half of the variables identified in student interviews could be labelled as the **personal and group characteristics of students**. According to our interviewees, the

higher the 'age of student', the higher the level of cheating is, similarly the 'strength of individual dispositions towards cheating' also affects cheating in a positive manner. The 'amount of students' time dedicated to learning', and the 'level of students' intrinsic motivation' mitigates the level of cheating. The same effect can be seen with a growing 'level of students' commitment towards gaining knowledge'. Furthermore, it is connected to the previously mentioned 'level of students' intrinsic motivation' variable. Therefore, it also has an indirect moderating influence on cheating level (increasing commitment means growing intrinsic motivation, which leads to a lower level of cheating).

As our interviewees reported, the 'degree of students' self-efficacy (related to learning)' has controversial effects. Some of the students mentioned that lower self-confidence leads to a higher level of cheating, even if the given student learnt for the given exam. However, some of the interviewees said that a higher level of self-efficacy means higher performance, which is connected to the degree of financial gains. However, financial incentive, namely, the higher degree of financial gains leads to higher levels of cheating. That is, a higher degree of self-efficacy could mitigate the level of cheating, as well as possibly lead to a higher level of cheating through interaction with financial incentives depending on student performance. This suggests that cheating is present at both ends of the student performance spectrum. In other words, high achievers also cheat in certain circumstances as the following excerpt demonstrates:

"This really annoys me: when somebody got scholarships because of this. For example, it happened last year that it only depended on one subject that I reach 4 [grade point average²] and my performance was also quite good the previous semester. So, I would have been able to apply for the 'republican' [Fellowship granted by the Republic], in my opinion, with a fair chance, but I was not able to apply because of one subject. And one of my friends was just there who receives the 'republican' every year; she has got it every time so far. . . So, she told me that this was her last subject and this must be a 5 but she would use a cheat sheet no matter what. In the end, she cheated, she got a 5 and she won [the fellowship], and this a bit annoying in this case. . . But, at the end of the day, I also could cheat. . . So it does not bother me that much. . ." (Student5, woman).

According to the students, the 'perceived level of lecturers' control' is determined by the 'age of lecturer' and the 'level of workload on lecturers'. It is not connected directly to the level of cheating, but through the 'number of perceived cheating opportunities', which is in a negative relationship with the perceived level of control. Another factor that is in a negative relationship with cheating is the higher 'degree of usefulness of the course material (as perceived by the students)'.

There are group characteristics which affect the level of cheating, such as the 'perceived frequency of cheating in the student's reference group', the 'level of solidarity among students', or the 'frequency of 'paper-transfer' (home assignments between students)'. At an individual level, the stronger the 'personal relationship with the perpetrator of cheating activity', the higher the 'level of acceptance of cheating'. Moreover, the growing individual 'success rate of cheating' has the same result on the acceptability of cheating.

²In Hungary, a grade 1 is a fail, 2 is satisfactory, 3 is average, 4 is good and a 5 grade is outstanding.

Table 1

Number of variables in the main fields and in the intersections mentioned by lecturers and students

LECTURERS	Fields	STUDENTS
number of variables in the field		number of variables in the field
6	institutional elements	4
3	external effects	2
10	assessment and teaching practice	7
4	personal characteristics of lecturers	3
9	personal and group characteristics of students	18
6	intersections	4
38	SUM	38

There is a feedback loop in the map which shows that some of the students are aware of the paradoxical effect that the more one cheats ('frequency of cheating') the less likely it is that s/he will feel any remorse about it ('level of guilt'). This, in turn, raises the level of acceptance, which affects positively the 'frequency of cheating'. Therefore, here we can see a reinforcing mechanism with a delaying effect (between 'frequency of cheating' and 'level of guilt'). It is worth mentioning that some students also mentioned that the level of guilt in relation to cheating depends on the difficulty of the subject: if the subject is easy (so no great effort is needed to pass it), then the level of guilt is higher.

4.3 *Comparison of the maps*

Even these short descriptions of the two stakeholder groups' CLDs might draw attention to some interesting similarities and differences between them. In the following subsection, without aiming for a detailed analysis, we would like to highlight some interesting features of the maps.

Although the number of identifiable variables in the interviews was exactly the same in the two groups, and the main thematic fields are similar, the proportions of these fields are quite different (see Table 1).

As shown on the lecturers' map, they mentioned more institutional elements and reflected more on the effects of different assessment and teaching practices. At the same time, the students elaborated on their personal and group characteristics as causes and effects connected to the perceived level of cheating. These are understandable differences, because people in general are more familiar with the special characteristics of their groups and—in case of the lecturers—with their jobs.

Naturally, there are similar phenomena recognised by both the lecturers and the students, like the massification of higher education, and in connection with it, the

number of people at the exams. In addition, both groups identified the time dedicated to work or to gain knowledge as important factors, as well as the effects of some assessment forms and the degree of practicality both in assessments and in courses. Further factors named by both groups were the effect of sanctions and the possible financial gains connected to cheating. It was interesting that both lecturers and students mentioned the emotional toll of cheating on lecturers (disappointment, lost motivation). Another similarity was that both groups emphasised cheating's social acceptance as a variable exacerbating the situation regarding the level of cheating.

Despite these similar thoughts, there are detectable differences between the two groups regarding the causes and effects of cheating. One interesting thing is that the age of the lecturer as an important factor only arose among the students. Furthermore, only they named the level of fairness as an important cause. In line with this, as was mentioned before, students reflected more on the personal characteristics of students, therefore variables like level of guilt, or willingness to cheat, or personal success at cheating came up only in student interviews. Accordingly, the lecturers had more sophisticated and reflective opinions about the level of willingness to control and about the assessment and teaching practices. Even if these opinions were sometimes contradictory, as could be seen in the role of essays in the level of cheating, the importance of these factors in relation to cheating were clear. Contrary to this, regarding the assessment forms, students downplayed the importance of the different assessment types. Instead, they placed more emphasis on the characteristics of the exam period (number of exams, their distributions within the exam period).

Lastly, we would like to mention differences between specific variables, namely the content of external pressure and of personalisation in the two groups. In the case of students, the external pressure stems from the expectations and requirements of the parents, while lecturers rather referred to the social 'norm' of getting a university degree. As for personalisation, its meaning for the lecturers was tied more to the idea of mentor-student relationships, as well as more personal discussions between lecturers and students. However, students mentioned personalisation as a special form of learning, in which course-material, teaching style and assessment are all customised to the needs and skills of the given student.

5 Discussion

Having presented the key results of our study, this section of the paper will reflect on how these results can be connected to previous research findings as well as the wider organisational and socio-cultural environment in which cheating practices are embedded. In order to do so, firstly, we systematically compare our findings with the results discussed in the literature review section of the paper. Secondly, we attempt to delineate those Hungarian organisational and socio-cultural characteristics which shed new light on the attributions revealed by the study. Lastly, we draw some methodological conclusions and propose possible future research avenues.

So, as far as the literature is concerned, research distinguishes between planned and unplanned cheating (Generaux and McCleod 1995). The reasons behind cheating vary according to which of these two is in place. Our findings also detected a certain degree

of opportunism, which the literature relates to unplanned cheating. According to the students' causal loop diagram, the attribution that the number of perceived cheating opportunities was perceived as caused by the level of lecturer's control is indicative of potential unplanned cheating. Both students and lecturers saw the number of people taking the exam as related to the level of perceived cheating. The unplanned elements that we have found confirm the claims in the literature that unplanned cheating by and large depends on situational factors. However, the reasons for planned cheating by far outweighed the unplanned elements, according to our results.

Studies (Gallant and Drinan, 2006; Jordan, 2011) also indicated that permissive systems and a lack of strict rules and sanctions were reasons for student cheating. Our findings confirm this institutional aspect of controlling cheating, but also on the personal level, the level of control is a particularly thought-provoking issue. Our lecturers' CLD indicated a complex attribution relating to lecturers' control. The lecturers' degree of trust towards students affected the level of lecturers' willingness to control, which in turn affected the actual level of lecturers' control. However, the actual level of control was not the final factor in the attribution affecting the level of cheating, as the students' perceived level of lecturers' control, whether realistic or not, also affected the propensity for cheating. This distinction gives us a new understanding of lecturers' control. Whilst a lecturer may appear in control to a majority of students, if for some reason a handful of students perceive the lecturer as not in control, they are perceived to have a higher proclivity to cheat.

We also found in the literature that there were two controversial characteristics for students who engaged in cheating behaviour: age and gender. Our findings were also somewhat inconclusive: the lecturers did not mention age as affecting the level of cheating, whereas the students did. The study referred to in our literature review (Smith, Nolan and Dai, 1998) involved a study of a cross sectional sample of students, with the average age of the respondent group of 23.1 years. Our sample did not specifically target a cross sectional sample or older students, who may be more aware of the differences between the cheating behaviour of older and younger students, and thus the age factor. It certainly would be a possible future direction for our work to compare the differing motivations for cheating in terms of goals, expectations and costs for final year and first year students.

The attribution involving the massification of higher education figured on both our student and lecturer CLDs. The students' CLD indicated that massification led to attributions in two directions. The first relates to unplanned cheating. As mentioned earlier, a higher number of students lead to more opportunities to cheat during the exam. The second relates to planned cheating: massification affects the level of personalisation, which in turn affects self-efficacy; and massification also affects students' commitment to gaining knowledge and level of intrinsic motivation. Thus, massification affects factors in close connection with both planned and unplanned cheating. Compared to this, the lecturers' attribution concerning massification was more complex, but it also affects variables connected to planned and unplanned forms of cheating. From a practical point of view, the fact that massification is perceived to be a key underlying cause of both planned and unplanned cheating indicates a need to

reconsider the effectiveness of such a system or, at the very least, the need for smaller groups in an exam setting.

Our literature review found three categories behind reasons for cheating: personal; situational and cultural. The latter indicates differences across cultures in the literature. This begs the question of whether our findings are exemplifying norms, values and beliefs that are characteristic of Hungarian culture and, for lecturers, organisational culture.

As mentioned earlier, the issue of control came across as an important causal factor in both students' and lecturers' CLDs. If we look at control through cultural lenses, then on an organisational level, control and stability relate to the hierarchical culture type (Cameron and Quinn, 2008). Empirical research has found that this type of organisational culture is characteristic of higher education institutions in general (Trivellas and Gerdenidou, 2009), and the organisation at the focus of this study (Heidrich et al., 2016) in particular has been found to have a hierarchical culture. This seems to indicate a need for tight control, and conversely, the absence thereof may be perceived as a certain degree of weakness, leading to the perceived opportunity to cheat.

If we consider the students' perceived need to cheat, then the values and beliefs instilled in them as a part of Hungarian culture may affect that perception. When Varga (2008) reproduced Hofstede's (2005) results, many of the figures for cultural dimensions significantly changed, with one exception: uncertainty avoidance. Hungary has a high uncertainty avoidance³, whereby security is an important element in individual motivation. Our findings indicated that the difficulty of the topic and quantity of learning material were factors affecting the perceived level of cheating. If we combine these aspects, then students may see cheating as a form of security when facing seemingly insurmountable odds of failure. Although further research would be needed to make the link between high uncertainty avoidance and the tendency to cheat, a study has found a link between uncertainty avoidance and insider trading (Frijns, Gilbert and Tourani-Rad, 2011).

Apart from values which determine organisational culture and behaviour, it is worth mentioning that the social acceptance of cheating was a frequently mentioned factor by both students and teachers. This perceived connection is also backed up by studies. For example, Orosz and Farkas (2011) and Orosz and Roland-Lévy (2013) suggest that there is a strong connection between the perceived level of corruption of a given country and the level of collaboration in cheating. In connection with this, Tóth (2009) highlights that in Hungary a high percentage of people agree with the statement that honest work cannot lead to material wealth (82%), as well as with the statement that if one wants to thrive s/he has to break certain rules (75%) (Tóth, 2009: 48). These pessimistic outlooks are also verified by international data. Hungary and members of some of other CEE countries seem to be more tolerant of both active and passive forms of corruption than the rest of Europe (Tóth, 2009: 33). At the same time, Hungarians, compared to more than 50 countries studied (World Value Survey; 5th wave), are the most sceptical that economic cooperation can lead to mutual benefits,

³See: <https://geert-hofstede.com/hungary.html>

that is, economic life is viewed as a zero-sum-game where one has to trample on others to thrive (Tóth, 2009: 38). Still in relation to social factors, one interesting theme that came up during our interviews was the students' apparent unwillingness to take responsibility for their actions. They seemed to believe that the action of cheating was beyond their control, indicating that they do not see themselves as cheaters but simply as 'victims of circumstance' (see situational factors on the students' CLD). This might be related to a particular generation—Black and colleagues, for example, argue that millennials have been associated with a lack of personal accountability (Black et al., 2013). In line with this, based on Hungarian youth research data, Ságvári demonstrated that Hungarian youth are more tolerant of norm-breaking practices than the rest of society in general, and their parents' generation in particular. At the same time, they also have a more pessimistic view of Hungarian morals than other members of society (Ságvári, 2010). Furthermore, Csepeli and Prazsák (2011) argue that the proportion of those in society who do not take responsibility for their actions and rather passively suffer what happens around them (hence their label 'passives', compared to 'actors' and 'rebels') is one of the highest in Hungary among European countries. Which means it is yet to be seen if this 'lack of responsibility' is a specific trait of a particular generation or not, yet if so, it is certainly exacerbated by cultural factors and reflexes based on historical circumstances.

6 Conclusions

Although our study is exploratory in nature, and in line with its underlying aim, we believe it has raised some important questions, not only about the role of culture in cheating but also about how students' and lecturers' perceptions converge and diverge respectively. We would like to draw two general and one methodological conclusion in relation to our results.

Firstly, comparing the belief system of students and lecturers systematically, it is revealed that Hungarian students in this business school tend to see themselves as 'victims of circumstances' regarding their decisions about cheating. At the same time, lecturers seem to be more optimistic insofar as they mentioned several institutional and pedagogical factors which might affect the level of cheating. So, while students report having low self-efficacy and their locus of control tend to be external, lecturers seem to be more aware of different measures for mitigating cheating. In other words, they do not see themselves as powerless and having no tools to control the situation. Nevertheless, this difference in perspective might come from a hierarchical organisational culture in which students are at the end of the pecking order.

Secondly, both students and lecturers mentioned the emotional toll of cheating. This is interesting because our expectation was that students do not really care about or see the consequences of their actions. According to our results this is not the case, not that in the present circumstance this knowledge would make students hold back their cheating activities. The other side of the coin is that some students also report feelings of guilt in relation to cheating. While this is not a positive emotion and one that one wants to generate in students, Ariely (2009) emphasises that the need of seeing ourselves as nice and honest beings is a strong deterrent for being engaged in immoral

actions. The question is then of justification—what are the characteristics of those situations when students can cheat and still maintain a positive self-image (and vice versa, in what situations do these self-justification strategies not work), which leads us back to the questions of students' perceptions of fairness and self-efficacy. In sum, it seems that emotions play an important role in mitigating both students' and lecturers' actions and decisions, thus, understanding how different situational factors generate different emotional responses in the stakeholders involved is paramount.

As far the methodology of data analysis is concerned, we employed the use of CLDs as a means of facilitating our comprehension of the workings of cheating. The resulting causal chains and causal loops have certainly aided in the visualisation of key areas for our attention. It might be mentioned that turning interview data into CLDs was based on Vennix's (1996) suggestions regarding different forms of involving stakeholders in building a model. This approach allowed us to identify, visualise and thematise a large number of causal attributions based on the interviews. While this way the paper could certainly present a more comprehensive picture, some of the richness of the data is 'lost in translation' and fascinating discursive elements and strategies are flattened out and turned into variables. The results section attempted to balance this loss by also presenting interview excerpts from both students and lecturers. Another aspect where our diagrams can be improved to more fully represent the richness of the data is to distinguish between major and minor causes and effects based on how frequently interviewees' mentioned them. Some form of rating system, similar to that used in Lewin's (1951) forcefield analysis with each cause or effect being rated from 1 (weak) to 5 (strong) would certainly aid in visualising holistically the strength of each cause and its effect on the perceived level of cheating. We see these CLDs as a good starting point in creating models and simulating the knock-on effects of certain actions.

7 Limitations

Our study has some limitations due to biases of sampling both in the literature review and in the data collection stage. Firstly, our literature review was narrowed down to articles where the whole text was available, within two digital libraries. It is conceded that the expansion of these two elements might allow for richer findings, however from a practical standpoint our systematic narrowing down of the sources of literature allowed the study to be completed within the permitted time parameters, and still provide a sufficiently extensive review for our purposes.

Secondly, the number of lecturers and students that participated in this study were low as this is the initial explorative stage of our research. The CLDs are not designed to portray the amount of data received from interviews, so we would add that many of the interviews lasted over an hour and provided some rich data. Furthermore, we intend to extend our study to interviews at other Business schools in Hungary and then move to other institutions than just business schools. We also plan to obtain a greater cross-section of students by selecting our sample of students from a range of courses with varying demographics. Based on these diverse datasets and schools of thought (interviews, previous results on student cheating and dishonesty in general, theories of organisational change), one of our final goals is to build a complex system model

and offer points of intervention which can be presented to leaders of Hungarian higher education institutions and instigate change at an organisational level.

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SYNOPSIS

ACADEMIC INTEGRITY IN HIGHER EDUCATION: THE CASE OF A MEDIUM-SIZE COLLEGE IN THE GALILEE, ISRAEL

Jonathan Kasler, Meirav Hen, Adi Sharabi-Nov

Abstract: An important measure of the success of an academic institution is evaluation of its moral health. We therefore administered the Academic Integrity Survey (McCabe et al., 2002) to 384 students from different departments, and analyzed 24 disciplinary hearing files from the previous academic year and 25 appeals against disciplinary decisions.

Approximately 60% of the respondents believed that academic misconduct occurs at the college sometimes or often; 45% had witnessed such cases, but 98% had never reported them. Comparison of the disciplinary hearings revealed that the Arabic-speaking students were more likely than their Hebrew-speaking counterparts to react impulsively to charges and attribute their behavior to external causes, such as personal difficulties at home. In general, these students are younger and have less life experience outside their homes compared with the Hebrew speakers.

The findings suggest that prevention of academic misconduct should focus on specific at-risk populations. In our research, these included students who had not done national service, science faculty students, and Arabic-speaking students. The latter are part of a national minority that has been marginalized. They are welcomed in our institution but require services to foster appropriate study skills and self-belief. The paper offers an approach to identifying groups at risk for academic misconduct and understanding the underlying reasons for such risk. We also suggest possible directions for effective intervention.

Key words: academic misconduct, at risk population, moral health

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ANALYSIS OF GHOSTWRITING MARKET IN CZECHIA

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Abstract: Contract cheating is a huge problem in academia throughout the world. However, most of the research about this issue has been done in English speaking countries so far. This synopsis will present results of a study dealing with ghost-writing market in the Czech Republic.

The study examined how essay mills in Czechia operate and what are the differences between Czech and English speaking market. Qualitative data have been collected through interviews with ghost-writers and students who submitted ghost-written works. Quantitative data were gained through questionnaires for bachelor and master students. More than 1000 students from various universities responded to the survey; 8% of them admitted buying an essay from an essay mill. Questionnaire results will be compared with the number of visits made from the university campus network to contract cheating domains.

The analysis will be used to draft a set of recommendations and measures how to minimize this type of cheating and its impact to the society. Current progress of implementation of these measures at our university will be presented. Moreover, the possibility of generalization of the results to other countries with similar cultural context will be discussed.

Key words: ghostwriting, contract cheating, Czechia

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INVESTIGATING POLICIES FOR PLAGIARISM AND ACADEMIC INTEGRITY: THE CASE OF TURKEY

Salim Razi, Havva Sümeyra Pektaş

Abstract: Policies regarding academic integrity have been the concern of research projects such as South-East Europe Project on Policies for Academic Integrity (SEEPPAI) that aimed at revealing the perceptions of students, lecturers, and managers in the related higher education setting. SEEPPAI collected data by means of the questionnaire that deals with understanding the concept of plagiarism, incidents of academic misconduct, and approaches against academic dishonesty. Understanding plagiarism and academic integrity is culture bounded and as stated within the aims of European Network for Academic Integrity (ENAI), related infringements requires wider cooperation. Within this perspective, as a follow-up investigation on policies for student plagiarism and academic integrity, the present research aimed at revealing the perceptions of undergraduate and post-graduate students, lecturers, and managers at the English Language Teaching Department of Canakkale Onsekiz Mart University, Turkey. The data were collected by the SEEPPAI questionnaire in the fall semester of 2016–17 academic session. Comparing the results of this study with that of SEEPPAI will highlight any possible cultural similarities and differences regarding the issue and contribute to the development of standardized institutional and national policies against plagiarism in accordance with the aims of ENAI.

Key words: academic integrity; ENAI, SEEPPAI; student plagiarism; Turkey

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POSTERS

PLAGIARISM PREVENTION PROJECT

Ansgar Schäfer, Oliver Trevisiol

Abstract: The poster presents (1) the concept of a project for plagiarism prevention as well as its five spheres of activity—research, strategy, teaching and training, procedures, and information. It may inspire other participants to think about new fields of activities regarding plagiarism at their own institution. Also it provides an insight, how broad an effective strategy against plagiarism needs to be designed. One goal of the project was to develop material, which can be used by instructors, departments, and institutions. (2) In addition, a selection of results and materials, which have been developed by the project, will be presented: examples of educational materials are worksheets for the use in class, a playful test for students about their working habits, FAQs about plagiarism, an educational video clip; other examples are a proposal for a workflow for detecting and sanctioning plagiarism, or a more sophisticated declaration of authorship. Some of the materials will be “take away-materials” for the participants of the conference, others will be available via internet. All of them may be used under a Creative commons-license.

Key words: plagiarism prevention, research, teaching, detection

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SECTION III
INNOVATION IN USE OF E-TOOLS AND
TECHNOLOGIES FOR ADDRESSING PLAGIARISM

FULL PAPERS

USING CONCEPTS OF TEXT BASED PLAGIARISM DETECTION IN SOURCE CODE PLAGIARISM ANALYSIS

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Abstract: At the present time the plagiarism is a growing problem due to a lot of easily accessible resources, and many papers deal with this topic. Some of them describe the plagiarism in written texts, others in source codes.

The goal of this paper, despite clear concept contrasts, is to point out the similarity of these worlds. We will analyse the potential of reusing known algorithms developed for textual corpuses in the area of source code analysis. It is obvious that the algorithms cannot be simply taken and reused without any changes, since a source code cannot be considered a plain text from the lexical point of view. The transformations performed to detect plagiarism in text documents differ from those suitable for source code processing. A promising approach to analyse source codes seems to be the creation of abstract syntax trees. The similarity comparison among linear structures is then transformed into tree-based structures similarities searching. However, nowadays such techniques are used only in mutual comparison of two files with source codes. This paper brings a review of different methods used in the source code analysis process. We are at the beginning of our research and we outline the steps which will be necessary to take with the source code analysis process (compared to plain written texts processing), and identify the possible issues primarily concerning plagiarism detection within a large dataset of files containing source codes.

Key words: plagiarism, source code, big datasets

1 Introduction

We live in a time of easy and, in our part of the world also unlimited, access to all sorts of information. The internet makes it relatively simple for students to access materials from all over the world, helping them with their studies. Not surprisingly, this encourages students to copy the said materials to be used in their work. However, the problem of plagiarism does not concern academic environment only. It has been an increasingly serious issue in different areas, from the field of education (Hammond, 2004) or journalism (Vesely, 2015) to patent infringement in the commercial sector (Holbrook, 2014).

Paradoxically, there are studies coming from academic environment itself pointing out a recent gradual reduction of plagiarism (Curtis and Kravjar, 2015). It is these studies which show the importance of plagiarism detection systems. The mentioned studies have reported a decline in plagiarism since plagiarism detection systems were integrated. As the systems are gradually being improved, students are getting

increasingly worried about being exposed for plagiarism. The fear has been acting as a counterbalance to how easy it is to commit plagiarism nowadays. As long as the systems are able to keep up with the current time, the trend may keep continuing.

The main reason the systems have been succeeding is the fact they are used globally. Every anti-plagiarism system verifies the authenticity of a piece of work being checked within a certain database. Usually, the systems create their own databases. Nevertheless, there are also systems that do not create their own databases but they use internet search engines instead (Williams, 2014). There are advantages to both ways, therefore, they are often combined. If a system uses just its own database, then it is not able to detect plagiarism of the works that its database does not contain. But, on the contrary, the system database may contain works that for various reasons cannot be made public and available through browsers. This primarily concerns scientific works, which are often sources of plagiarism, yet they are rarely freely accessible to public and internet browsers. Among the systems successfully using the above mentioned combination, we can list ANTIPLAG used in Slovakia, or the world-known system Turnitin.

The situation in the area of detecting source code plagiarism is different, though. Currently, there is no complex system or service allowing for the detection of plagiarism on the global scale. Therefore, no relevant statistics documenting the rate of plagiarism in the area are available. Over time, various algorithms have been developed, whether for text documents or source codes. Despite this progress, the system called measure of software similarity (MOSS) by the University of Stanford, and the system JPlag from Germany belong to the most widely used systems. Both systems were established more than ten years ago, and they have been being developed ever since. From the viewpoint of their design, they find their application particularly in the field of detecting plagiarism in various courses. Using them globally is practically impossible.

If we want to achieve the same trend for source code plagiarism as the one that has been shaping up for text documents, we need to start introducing systems that would check the originality of source code in a similar scale the systems for text documents do. Our long-term goal is to design such a system using the knowledge in text documents anti-plagiarism. We believe that in spite of the differences between text documents and source codes, these two worlds resemble each other, and the knowledge in one area will, without any doubt, find application in the second one, too.

2 How document processing works

To begin with, let us point out the difference between processing text documents and source codes for the needs of anti-plagiarism algorithms. We can divide processing a document into several steps:

- transferring the document into plain text
- tokenization
- removing stop-words
- stemming and lemmatization
- representation of the document

With systems that process text documents, the input documents are often documents in various formats (pdf, docx...). Except for the text itself, the documents contain a lot of additional information. Transferring the document into text is followed by tokenization. It is supposed to divide the text into individual tokens. Afterwards, so called stop-words are removed sometimes. Stop-words are frequently used words which, since they often occur in general, do not bring relevant information in the course of the analysis. The most common example of such word in English is the word 'the', which every document contains. The next steps are stemming and lemmatization. They are both supposed to unify various word forms, e. g. 'car', 'cars', 'car's', 'cars' into 'car'. Stemming is a more simple approach, looking for the roots of words by means of cropping. Lemmatization uses the morphological analysis to determine the word which the word being analysed has been derived from. The last step is the representation of the document, which various models are used for (bag of words, vector models), or the document is represented by means of n-grams.

Processing source codes is very similar. The main difference between a source code and text lies in their structures. We can divide text into chapters, paragraphs, sentences and words. Compared to that, a source code structure is considerably diverse. And, unlike text wherein the meanings are hidden in individual words, it is this very structure that defines the meaning of a said code. Processing source codes consists of the following steps:

- tokenization
- purification
- representation of the source code

Since a source code is usually written as pure text without any formatting, in contrast to text documents no primary processing is necessary. Instead, tokenization is carried out immediately. Source code tokenization is more demanding than text tokenization. For simplicity, with text processing the term 'token' is understood as 'a word'. Therefore, in text tokenization the text gets divided into tokens and separators. With source codes, however, not individual words but sequences of characters with certain grammatical meanings within the given language are considered as tokens. Moreover, the tokenization output is not a list of the sequences. The sequences are replaced by relevant identifiers, on the basis of their meaning within the grammar of the language. For example, the expression `a = 5` may be processed into the tokens: *variable*, *assignment_operator*, *constant*. After tokenization, the source code needs to be represented in a particular way. Since we are dealing with tokens, it is possible to use the representations as they are used with text documents (bag of words, vector model...). But, as we have mentioned already, a large proportion of information on a source code is hidden in its structure. With the already mentioned representations the information gets lost. Not only is the structure important for the needs of analysis but it is used by programming languages themselves. In compiling, some programming languages made do with these tokens, which they more or less had translated 1:1 into an executable code. In the course of time, as programming languages were developing and their grammar was becoming more and more complicated, new ways of source code representation emerged. The basic one among them is syntactic tree. A syntactic

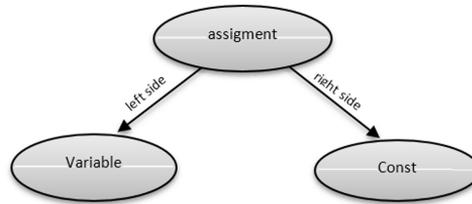


Figure 1. Syntax tree

tree is just tokens arranged into a tree, on the grounds of their structure derived from the language grammar. Figure 1 presents our example with the expression $a = 5$ shown in a simplified syntactic tree.

Very often the trees are used for program modification of source code, e. g. in development environments. This is mainly because they perfectly describe what is written in the source code. But if we need to analyse only the meaning of source code, and we do not care what syntax has been used to write it, then syntactic trees will not make our work easier. That is why, in addition to syntactic trees, also abstract syntactic trees (AST) are used. Like the name itself suggests, they are abstract, they describe the meaning of a given code independently on particular syntax. ASTs are usually constructed of syntactic trees. The main difference between a syntactic tree and an AST is that the syntactic tree describes syntax, and the AST describes the logical scheme of a program. Our simple expression $a = 5$ would not show us the difference between the syntactic tree and AST because it contains only the simple allocation operation. Let us present a different example – the expression $\text{sum}(1, 2)$. Let the expression represent a function call called `sum` and having two parameters.

Figure 2 shows the difference between a syntactic tree and an AST. The syntactic tree of this expression has two parts – an identifier and a list of parameters. The AST, to the contrary, represents the expression by means of the node function call and its relevant parameters. The AST is more simple, and it contains only relevant information on the source code logical structure. Its further advantage is also the fact that it is independent on the used programming language.

3 Document similarity measurement

So far, we have been describing only the way of processing documents, or source codes, respectively. To look for similarities among documents, one of the already mentioned representations is used as the basis. On the grounds of the representation being used, we can divide the methods into two main groups. In the first one, there are methods that use one of the statistical representation of the document (bag of words, vector model...). The advantage of these methods is that they work with a document representation which is usually considerably smaller than the original document is. The disadvantage is that the result of the comparison is only 'a number' that determines the distance among documents (Euclidean distance, Jaccard Coefficient...) (Huang, 2008). In the second group, we find the methods working with full document

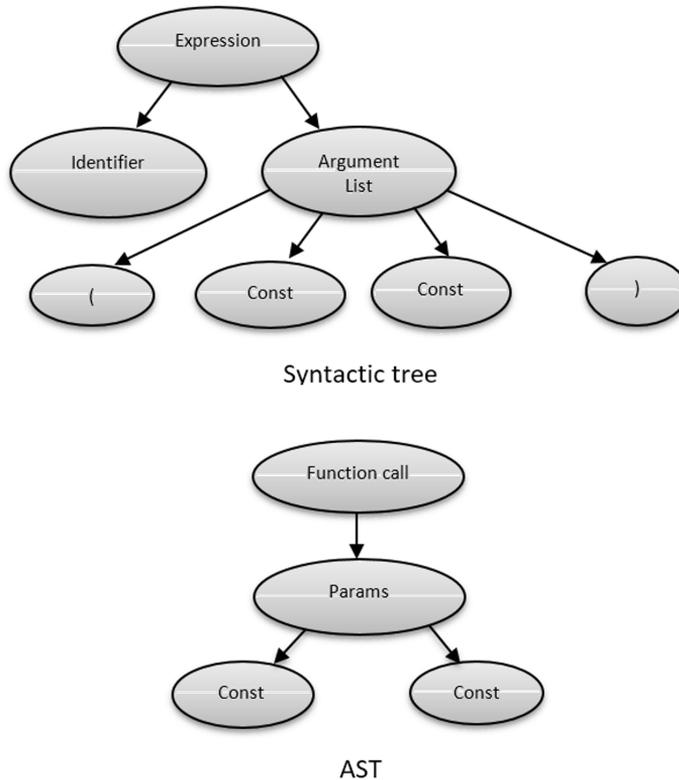


Figure 2. Difference between syntax tree and AST

representation (some n-grams based methods, syntactic trees). Their main advantage is that they can find particular matching parts. On the other hand, their disadvantage is being usually more demanding on memory and computation.

When anti-plagiarism systems are created, both groups get combined. First, by using a method from the first group, documents are clustered. The clustering usually reduces the number of documents to compare. Then a method from the second group is used to find particular similarities among the documents.

3.1 Common methods

There are a lot of works dealing with plagiarism and examining similarities in text documents or source codes. We can find descriptions of the methods used to determine documents similarities in the work *A Survey of Text Similarity Approaches* (Gomaa, 2013). In addition to the standard methods working with tokens, the authors deal with other methods, too. However, the methods do not make much sense in the context of source code because they use various corpuses designed for language research. With source code, there are also a few methods that are used. We can find their summary

and descriptions in the work *Source Code Plagiarism Detection 'SCPDet': A Review* (Gondaliya, 2013). Except for the individual methods, its authors describe also ready-to-use tools to detect plagiarism in source codes.

In the following part we describe some methods from each of the groups. We examine clustering and document matching methods, since every one of them possesses certain specific attributes.

3.2 Clustering

Classification algorithms used for text documents are not possible to apply directly to source code because the tokenization of text documents produces a diverse list of tokens (terms). With source code, the list is significantly truncated, since programming languages usually have limited numbers of tokens. Each larger piece of source code will contain almost all tokens available in the programming language. In addition to the standard source code tokenization, it is also possible to extract identifiers from the source code and to do the relevant analysis on them. Again, extracting the identifiers correctly and subsequently processing them is not simple, however, there have already been methods to do that (Carvalh, 2015).

The basic methods of documents clustering on the grounds of their mutual distances are also used in the case of text documents (Huang, 2008) in source codes (de Hoo, 2004), too. The mentioned works show that using euclidian distance is possible with texts, as well as with source codes. Fuzzy-based methods might be another example: they have been showing their potential with both, text documents (Trappey, 2009) and also source codes (Acampora, 2015). Currently, numbers of documents compared are remarkably large, and most methods come up against memory limits. Therefore, methods based on Latent dirichlet allocation (LDA) (Blei, 2003) have been used for text clustering. The same method has been proved to be applicable also for source code (Binkley, 2014), and, besides classification, it has been applied to other areas, too (Thomas, 2014).

3.3 Document matching

When finding identical parts, in the case of text documents we work with similarities on the level of characters or tokens. With source code it is with tokens or some of the already mentioned tree representations. The most known method used also with both, text documents (Noynaert, 2006) and source codes (Prechlet, 2000), is Running Karp-Rabin Matching and Greedy String Tiling (RKR-GST). It is based on searching for the longest common sub-string in both documents. For text documents, it uses document representation by means of individual characters. With source code, the code is represented by a string of tokens.

Another frequently used method, whether with text documents (Schleimer, 2004) or source codes (Bahmani, 2010), is winnowing. It uses so-called local fingerprinting. The basis of its algorithm is document representation by means of n-grams. The n-grams are subsequently used for the calculation of document fingerprint. Finally, similarities among the fingerprints are looked for.

The last group of methods we are going to mention are methods based on tree structures comparisons. They do not occur with text documents, however, with source code they are quite common. Although they can also use syntactic trees, it is AST they use most frequently. To compare tree structures, hashing is used. A hash is calculated for each AST node. The hash depends on the node itself, as well as on its descendants. This way we get a tree in which every node is able to describe its entire sub-tree by one value. When seeking similarities, we look among individual AST for nodes with similar hashes. The advantage of this approach is primarily the fact that a hash calculation may be adjusted to be able to detect commonly used transformations (Tao, 2013).

4 Summary

As we have demonstrated above, the interconnection between the world of text documents and the world of source code is possible to be achieved successfully. A lot of algorithms utilized in the two individual worlds share a common base. What they differ in is particularly the way they process the input file. The analysis that follows may be even identical. This, however, does not mean that using an algorithm created for text will achieve equally good results with source code, too.

Despite that, currently there is not a system possible to be used to analyse source code plagiarism on a larger scale. On the other hand, there are a few such systems for texts. Algorithms that would be able to do that for source code are known (Burrows, 2007). The problem is no system has been using them so far. In addition, we also consider their principle as problematic, since they use methods utilized with text documents. Nevertheless, the latest researches indicate that AST has been more efficient in this respect (Tao, 2013).

How to build a system for global detection of source code plagiarism

There are several possible directions to take when creating such a system. The first of them is building the system on the basis of already existing solutions, which would make the whole problem more simple. The second one is designing a new algorithm which would use the latest knowledge of source code plagiarism detection. Using AST as the basis for such algorithm has a few advantages. The first of them is, of course, efficiency. Then they are further possibilities of using the algorithms. One of them might be also effective detection of structures within large datasets.

On the grounds of the current knowledge we know that such system needs to consist of several parts:

- input data processing
- indexation
- similarities detection
- resulting similarity calculation

We consider the four parts as necessary for the system to work correctly and efficiently. Dealing with input data processing does not make much sense any more. Currently, there are plenty of tools¹ that can extract tokens from source codes or

¹ANTLR - <http://www.antlr.org>

create AST directly. The process we have described in the part 'How document processing works' includes all important steps of the input source code processing: source code purifying – removing comments, spaces. Tokenization provides source code standardisation. Subsequently, the standardized code is transformed into AST form. An interesting issue is the identification of irrelevant code parts. Each source code contains certain parts that we can find in almost all other source codes. With text documents, the problem is solved by means of stop-words. A similar principle will have to be applied also with source codes.

Another step to take will be the indexation of the already processed source code. Tokens indexation algorithms exist, and they seem to be efficient enough (Burrows, 2007). As far as tree structures indexation is concerned, it might be a bit more complicated. There are various document databases, graph and object databases. Nevertheless, the question remains if they could be used for the case at all, and, if so, to what extent. Current algorithms using AST, which we have described in this article, use tree hashing and not direct comparisons of two tree structures. Therefore, the index will not necessarily have to describe a tree structure but it will be possible to fragment it into a relational structure and to use some of the relational databases.

Besides the indexation, how to use the index for searching is equally important. The way has to be based on the indexation being used, with the goal of using the index as efficiently as possible. With detecting similarities within a large dataset, pre-processing is also important. By pre-processing we mean reducing the amount of work aimed at the verification of source code. For pre-processing it is possible to use some of clustering methods (Aggarwal, 2014) which help us reduce the set being searched relatively quickly.

The last part is the final calculation of similarities among the detected works. Again, there are several ways to calculate similarities between two source codes, and it is crucial to select the right one. The similarity coefficient should express the percentage rate of the coincidence among the individual works. Last but not least, we also have to consider the modifications carried out. Even though they do not change the meaning of the code, they change the entry form. Therefore, the calculation should take them into consideration to a certain extent.

5 Future work

We believe the basis of plagiarism detection systems within source codes is not in currently used algorithms but in algorithms based on AST, which have shown their advantages quite clearly. Nowadays, comparing documents representations by means of tokens has been managed very effectively. Despite that, we have decided to work with AST. Current algorithms will not be of much help because they are not suitable for working with tree structures. That is why we would like to keep examining the possibilities of tree structures indexation, and subsequent searching in the indexes. We are confident it is the right path source code plagiarism detection should be taking. In addition to anti-plagiarism systems, we believe the method can be also used for the analysis of vast transportation systems, such as KANGO, GTN, VIS (Tavač, 2014). The

systems share a lot of common elements, and analysing them might help us extend them further

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DETECTING CONTRACT CHEATING VIA STYLOMETRIC METHODS

Patrick Juola

Abstract: Detecting plagiarism automatically (by computer) is in some cases a relatively easy string matching problem; a sufficiently long shared string is strong evidence of copy/paste plagiarism. The problem can be harder with contract plagiarism, as two independent authors are unlikely to phrase ideas in exactly the same way.

In this paper, we discuss how stylometry, the scientific study and measurement of writing style, can be used to address contract plagiarism. We first discuss the theory of stylometry: at its core, stylometry practice identifies habitual patterns of language specific to an individual and attempts to find these patterns in other, disputed, works to determine if those works are by the same author. We discuss several methods that have been empirically established to work, and several case studies where they have been applied.

Finally, we show how these methods have been instantiated into software systems that are capable of dealing with contract plagiarism. By confirming uniformity of authorship across a student's course or even entire academic career, we can identify contract plagiarism as an anomaly and thereby deal appropriately with it.

Key words: Stylometry; authorship attribution, stylometry, stylometrics, plagiarism detection; text classification; authorship analysis

1 Introduction

Plagiarism, the act of taking another's work and passing it off as your own, has almost certainly been with us since the dawn of artwork and written language. For as long as there has been art and artists, there have been people who have put their name to it incorrectly.

The previous paragraph was copied verbatim from a Web page entitled "The World's First 'Plagiarism' Case," published by Johnathan Bailey at <http://www.plagiarismtoday.com/2011/10/04/the-world's-first-plagiarism-case>. As this paragraph is being written, hundreds or thousands of students across the world are probably doing exactly that, reproducing verbatim the words that someone else has written as part of their papers, while hundreds or thousands of teachers may or may not know what is going on – and may or may not be able to do something about it.

Fortunately, tools like Turnitin and other automated plagiarism detectors make it relatively easy for the teachers. Simply searching Google for the phrase "the dawn of artwork and written language" turns up one and only one instance of that phrase, in that same web page. Detecting this type of "copy/paste" plagiarism is relatively easy. A more sophisticated student, however, could simply pay someone else to write an original paper, which would be turned in under the student's name. In theory, this paper is not copied, and will therefore not be found by Turnitin or by Google. This type of plagiarism is therefore much more difficult for our hapless teachers to detect.

This paper describes the science of stylometry, the detection and analysis of writing style, and discusses how the writing style of an individual person can be identified and

distinguished from others' styles. We then demonstrate practical methods to apply this to solve the so-called "contract plagiarism" problem.

We should also note that, although this paper discusses plagiarism primarily as an academic problem, it has broader implications. In 2017, Ghana's new President Nana Akufo-Addo was found (Glum, 2017) to have plagiarized the speeches of two former US presidents (Clinton and George W. Bush). In 2016, Melania Trump delivered a speech at a political convention with large sections plagiarized from an earlier speech by first lady Michelle Obama. Several German ministers have been found to have plagiarized their Ph.D. theses (and some have resigned in consequence). Accurately detecting plagiarism, then, can be important not just on a personal level, but can even have international implications.

2 Background

2.1 *Types of plagiarism*

Plagiarism is of sufficient interest to the educational establishment that many colleges and universities offer formal guidance about what plagiarism is (and how to avoid it). Many of these schools, have found it helpful to distinguish between different types of plagiarism. For example, the instance of plagiarism illustrated in the introduction is an example of what is sometimes called "direct plagiarism," "direct copying," or simply "copy/paste plagiarism." This is among the most obvious and the easiest to detect, because the work is obviously a word-for-word copy of the source. If the source can be found, the copying is obvious.

More subtly, a student may combine phrases from several sources or make minor changes, such as "thesaurus plagiarism", where a student will substitute synonyms for words used by the original author but retain the overall idea (and often even the syntax). This type of plagiarism can be more difficult to detect via simple pattern matching, but the use of semantic analysis (Soori, et al., 2016) can still find matches automatically. If the source can be found, the copying can be identified by more subtle similarities.

The most difficult type of plagiarism to detect, however, is one where the source cannot be found because the "original" is not a publicly available document or a document to which the teacher/judge has access. A typical example of this is so-called "contract plagiarism" or "contract cheating," where a student simply pays another person to write the assignment. This other person could be anything from another student to a professional paper mill (of which examples are left to the reader's search engine). Ideally, such a written-to-order paper will itself be original work and bear no more than typical similarity to any other paper on the same subject; the vocabulary, sentence structure, argument formation, and such, will be that of the actual author. But because this paper has never before been published, there are no sources to compare against for a suspiciously high degree of similarity.

At the same time, however, the paper will also not show the vocabulary, sentence structure, etc. of the ostensible author, the student who submitted the paper for grading. An examination of the writing style will show, not suspiciously high similarity, but a suspiciously low similarity to other work that is actually by that person. Informally, a

teacher may become suspicious, for example, when a submitted paper is substantially more sophisticated than a typical paper at the level of the class, or when the submitted paper includes material that has not been part of the class. A teacher might also become suspicious when a paper submitted to an American university contains numerous examples of Commonwealth English (for example, “colour” or “centre”). More formally, the application of stylometry, the quantitative study of writing style, may be able to show that two papers were written by different people.

2.2 *Linguistic approaches to stylometry*

The question of authorship has been around as long as there have been authors; disputes about authorship go back to classic times. Forensic linguists have attempted to put the process of resolving these disputes on a firmer basis by establishing sensible procedures to address such questions.

The basic theory of stylometry is fairly simple. Language does not fully constrain how any given idea can be expressed, leaving writers free to choose among many different near-synonymous ways to say what they want. McMenamín (2011) expresses it well:

At any given moment, a writer picks and chooses just those elements of language that will best communicate what he/she wants to say. The writer’s “choice” of available alternate forms is often determined by external conditions and then becomes the unconscious result of habitually using one form instead of another. Individuality in writing style results from a given writer’s own unique set of habitual linguistic choices.

Coulthard (2013) formulates it in a similar way:

The underlying linguistic theory is that all speaker/writers of a given language have their own personal form of that language, technically labeled an idiolect. A speaker/writer’s idiolect will manifest itself in distinctive and cumulatively unique rule-governed choices for encoding meaning linguistically in the written and spoken communications they produce. For example, in the case of vocabulary, every speaker/writer has a very large learned and stored set of words built up over many years. Such sets may differ slightly or considerably from the word sets that all other speaker/writers have similarly built up, in terms both of stored individual items in their passive vocabulary and, more importantly, in terms of their preferences for selecting and then combining these individual items in the production of texts.

Examples of such choices would include word-by-word choices between Commonwealth and US words (does one park the car on the pavement by the ironmonger, or on the sidewalk near the hardware store?), but also can include apparently personal choices without any obvious sociolinguistic meaning. The variation between “near” and “by” in the previous sentence is one example of such; for another example, consider the position of a fork in a typical table setting (Fig. 1).

Is the fork “to” the left of the plate, “on” the left of the plate, or “at” the left of the plate? Is it on the “left” of the plate, on the “left side” of the plate, or perhaps “on the left hand” of the plate? It should be apparent that there are many ways to describe the same fork and that individuals may make highly individual choices even on such a simple matter.

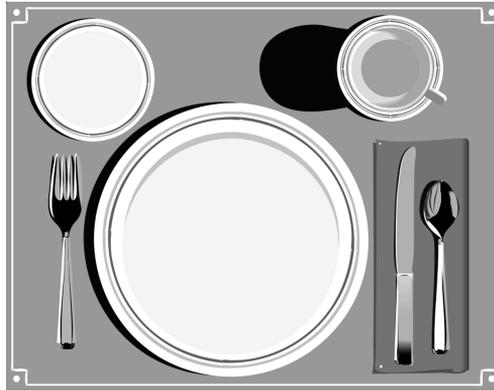


Figure 1. Typical table setting

McMenamin's report in the *Ceglia v. Zuckerberg* case (McMenamin, 2011) provides an illustration. In this report, he analyzed a set of disputed email messages and found that there were many small differences between the undisputed writings of the ostensible author (Zuckerberg) and the email in question. For example, among the features were the use of apostrophes, the expression of suspension points (aka ellipsis markers), the spelling of "backend" as a single word (as opposed to "back-end" or "back end"), the use of the single word "cannot" (instead of "can not"), capitalization of the word "Internet", the use of "Sorry" as a sentence-opener, and the presence or absence of run-on sentences. While none of these differences are necessarily key to the ideas expressed (in fact, "cannot" vs. "can not" are as close to synonymous as this author can imagine), the cumulative effect is that the author of the email made different choices from Zuckerberg. As the questioned email differed significantly from other email of known Zuckerberg authorship, he concluded that the authors were "probably" different.

This observation is, in fact, the converse of a traditional rule-of-thumb regarding textual matches (Coulthard, 2004): if there are exact matches of more than five words, then the passages are likely copied (more formally, they are likely to share a common origin, possibly copied, or possibly a well-known set phrase such as a proverb or common quotation). The reason for this is simply that there are so many ways in which one might vary the expression of the same idea that it is unlikely that one could write more than five (in English) words before being provided with a choice and a chance to choose differently from other authors.

As a demonstration, consider the following two passages. These are the abridged but otherwise unmodified writings of, respectively, a 29-year old male from New England with an advanced degree ("Z") and an 11-year old female middle school student from the Pacific Northwest ("B"). These people have not met and are not even aware of each other, but both were asked (independently) to "write and email instructions about how

to make a ‘PB&J’.¹ Indeed, they didn’t even use the same technology to write the email (Z’s was written using a smart phone, hence the increased error rate).

Z:

Take table **knife** out of drawer place on counter

Take out *two slices of bread* reseal bag put back in fridge

Open **peanut butter** heavily *apply to bottom slice of bread* wipe off **knife** on top **slice of bread**

Open *jam* *apply liberally to bottom slice of bread* clean **knife on top slice of bread**

Connect bottom and top slices of bread to form sandwich

B:

1. *gather* all supplies – **knife**, spoon, *2 pieces of bread*, **peanut butter**, and *jelly*

2. **take knife** and *spread peanut butter on one piece of bread*

3. **take** spoon and *stir jelly*

4. *spread jelly on other piece of bread* using spoon

5. *put the 2 pieces of bread together* with the **peanut butter and jelly** on the inside

The task was clearly understood; both B and Z produced a recognizable procedure for making such a sandwich. However, there are notable lexical differences between these accounts (e.g., B uses “jelly”, or in one case “jell”; Z uses “jam”) and also procedural differences (B uses a spoon to access the jam and places it on a different slice of bread from the peanut butter, both unlike Z; B numbers her steps and Z does not). B does not capitalize steps. Indeed, Z barely uses the extremely common word “and”! In the transcript above, words in **boldface** are common between the two accounts, while words in *italics* are directly analogous to one another (e.g. “spread,” “apply”; “put the 2 pieces of bread together,” “Connect bottom and top slices of bread”) and express the same concept. (We discount here obvious typographic errors such as “bf” for “of” or “jell” for “jelly”.)

Of the 54 words in B’s account, only 10 are not highlighted at all; more than three-quarters of the account are conceptually duplicated between the two versions. (Of those 54 words, 18 are in fact completely duplicated, such as “of bread.”) However, note that no six word sequence – in fact, no three word sequence – is exactly duplicated between the two authors, representing the different choices described by McMenamin and Coulthard.

2.3 *Nontraditional approaches to stylometry*

While this approach has been shown in numerous instances to be helpful, it suffers from a major problem in the modern world in that it is time-consuming and expertise-dependent. It is not practical to hire enough experts to do this kind of detailed analysis of all the papers generated at a large university. However, it may be possible to substitute statistical analysis for at least some of the literary and linguistic expertise. For example, by compiling a list of keywords and their frequencies, one can calculate frequency distributions (using ordinary statistical methods such as *t*-tests) to

¹For readers unfamiliar with the term, a “PB&J” is an American sandwich, made with ground peanuts (“peanut butter”) and fruit spread (“jelly” or “jam”). American toddlers practically live on them.

determine, first, whether two authors differ in their use of that keyword, and second, whether the word usage pattern is more typical of the first author than the second. This method was applied by Mosteller and Wallace (1961) in a now-classic study of *The Federalist Papers*. This study looked at distribution of hundreds of specific words found in undisputed writings by the various candidate authors and found, for example, that Alexander Hamilton never used the word “whilst” and that James Madison never used the word “while.” They further observed that the questioned writings, the ones of less certain authorship, also never used the word “while” (and used “whilst” throughout). This, of course, suggests that the questioned writings were by Madison, not Hamilton. Similarly, they found that Hamilton never used the word “by” more frequently than 13 words per thousand, while Madison never used it less than 5 per thousand and often as much as 19 per thousand. A document with 14 instances of “by” per thousand words, then, is presumptively by Madison.

A more visual approach was used by Binongo (2003) in his studies of the Oz books. Most of the Oz books were written by one of two people: L. Frank Baum, the author of *The Wonderful Wizard of Oz* and its first eleven sequels, and Ruth Plumly Thompson, who took over the series after Baum’s death. The authorship of the 13th book (*The Royal Book of Oz*) is not clear.

Binongo broke each book into reasonably small segments, and analyzed the frequencies of the fifty most common words in the undisputed works (by either author). This gave him fifty numbers for each fragment, which let him put these fragments into a fifty-dimensional vector space. Using a statistical technique called “principal component analysis” (PCA), he reduced this space to two dimensions while showing which fragments were close to which other fragments. The resulting diagram is reproduced here as Figure 1.

In Figure 2, the black dots represent (fragments of) works by Baum, while the white circles represent Thompson’s work. Plotted on the same scale are white hearts, representing the fragments of the disputed work (*The Royal Book*), and black clubs, representing Baum’s final work (*Glinda of Oz*). As can clearly be seen, all of Baum’s work, including *Glinda*, are found on the right side of the figure, while all of Thompson’s work plus the disputed *Royal Book* are on the left. Based on this, Binongo concluded (p. 13) that the first principal component “clearly separates” the two authors, and that this constituted (p. 16) “objective, independent evidence [...] that the book was written in Thompson’s pen.” He was further able to show (by inspecting factor loadings) that Thompson had (p. 14) a ‘tendency to use words indicating position – “up”, “down”, “on”, “over”, “out”, and “back” – more frequently than Baum. An examination of the raw data reveals that, for these words, Thompson’s average rates of usage are about twice as Baum’s. Baum, on the other hand, prefers “which” and “that”. Moreover, he has a greater propensity for negative words: “but”, “not”, and “no”. If this kind of analysis were done on a student’s work during a term, would anyone hold significant doubt that a significant part of the work was not the student’s own?

There are many additional ways to perform this task. Indeed, in recent years, the PAN series of conferences (Juola, 2012X; Juola & Stamatatos, 2013X; Stamatatos, *et al.*, 2014X) has taken to running competitive shared-task evaluations to evaluate how newly

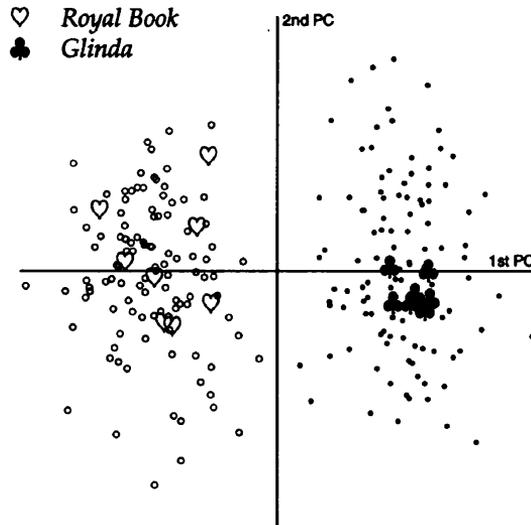


Figure 2. Differences between Baum and Thompson visualized via PCA (from Binongo, 2003)

proposed methods perform and what level of accuracy can be obtained under various conditions (e.g., which language, which genre, how much data is available).

3 Some Case Studies

Juola (2015) describes four additional case studies. Using the JGAAP system (as described in the following section), he was able to show the following:

- a) For example, in 1827, an 18-year-old Edgar Allan Poe was trying to start a writing career, but was hampered by creditors. He did manage to publish two of his poems, but only under the initials of Henry (William Henry Leonard Poe), his brother. In the same newspaper and the same year, 'Henry' also published three short stories. A comparison of Henry's own writing with other writings by Edgar as well as several other contemporary authors showed the closest similarity to Edgar, strongly suggesting that these were, in fact, the earliest examples of Edgar Allan Poe's published prose.
- b) In US Immigration Court, a person was seeking asylum. His claim was based on a set of anonymous newspaper articles he had (or claimed to have) written, critical of his home government. He was able to offer as supporting evidence a set of other articles, published under his own name. A comparison of writing styles showed that it was, in fact, highly likely that he was also the author of the anonymous works, and he was granted asylum.
- c) In 2013, *The Cuckoo's Calling* was published, ostensibly by a first-time author named Robert Galbraith. An analysis of writing style, commissioned by the Sunday

Times, showed that Galbraith wrote very similarly to J.K. Rowling, the author of the *Harry Potter* series, similarly enough that they were probably the same author. Ms. Rowling herself later admitted that she was, in fact, the author of *Cuckoo*.

- d) Bitcoin, the secure Internet currency, is based on a set of standards, protocols, and software written by a person using the name Satoshi Nakamoto. No actual person has been identified as the author of these documents, but in 2014, *Newsweek* magazine identified a certain Dorian Satoshi Nakamoto as the author, a charge Mr. Nakamoto almost immediately denied. An analysis commissioned by *Forbes* magazine confirmed that the writings of Dorian were different from those of “Satoshi”. To this day, the actual identity of Satoshi remains unknown.

Clearly, the ability to determine if two documents are by the same author (a question that Koppel *et al.* (2012) has called “the fundamental question in authorship attribution”) is an important question with wide-ranging application.

4 A System for Detecting Contract Plagiarism

Juola, *et al.* (2006) [see also (Juola, 2009a)] describe a system developed for general-purpose authorship analysis, focusing on selecting the most likely candidate from a set of suggested authors. This system, called JGAAP (“Java Graphical Authorship Attribution Program”) proposes a pipelined architecture with several stages. The first stage is “canonicization,” preprocessing the relevant documents to put them into “canonical” form. In the second stage, features or “events” are extracted from each document, and tabulated, for example into a histogram of feature frequencies. Finally, these extracted features are analyzed, comparing a questioned document to every known (training) example from every candidate author. One simple comparison, for example, would be to calculate the similarity of the unknown document’s histogram as compared to each candidate author’s histogram; the author with the most similar histogram is the most likely author.

As a simple example of how JGAAP might perform a replication of the Oz experiment: After preprocessing (for example, removing front and back matter, page numbers, and so forth) the system could break all documents down into “words,” extract the “fifty most common” words from the entire set, and then tabulate histograms as Binongo did. Using the ordinary distance formula, the “closest” document to the *Royal Book* could easily be identified. When/if this document turns out to be authored by Thompson, we have evidence of Thompson’s authorship of the *Royal Book* itself.

Juola (2015) extended this to the protocol used in the problems described in section 4. He identified three key underlying assumptions. First, he assumed that authorship attribution technology works (at least, “better than chance”), an empirical assumption nevertheless supported by numerous studies (Juola, 2009b, 2012a; Vescovi, 2011) and NIST-style competitive evaluations (Juola, 2004, 2012b; Juola & Stamatatos, 2013; Stamatatos, *et al.*, 2014). Second, he assumed that (as with the JGAAP system), a computer can be programmed to produce a rank-ordering of the authors from most likely to least. Again, many such programs exist, including JGAAP itself. A third assumption is that there are many relatively accurate analysis methods available,

and hence mixture-of-experts ensemble classification is practical; again, this is well-supported in the existing literature.

The proposed protocol uses multiple analyses of the two documents in question as well as an *ad-hoc* “distractor” corpus collected from similar writings (e.g., in the Rowling case, the distractor corpus was a collection of similar, non-Rowling-authored detective novels; the Bitcoin distractor corpus contained documents by others who had been proposed as a Bitcoin author). If the most similar document to the first questioned document was *consistently* (across multiple analyses) the second questioned document (and not one of the distractors), one can conclude that the two documents are by the same person. By contrast, if this does not appear, and particularly if the second document is not often linked closely to the first, one can conclude different authors.

This protocol has been instantiated (Juola, 2016) into a software product, called Envelope, currently available as software-as-a-service (company omitted). Envelope focuses specifically on Email written in English and has been shown to be able to successfully make this determination in controlled testing. Although Envelope focuses on English, the general approach has been proven useful in a wide variety of languages and genres, and an appropriate system could easily be built for any desired application, such as for the analysis of German-language or French-language term papers.

The application to classroom teaching is fairly straightforward. Over the course of a typical semester, students will presumably be submitting several papers to the teacher, and thus a teacher will rather quickly have a collection of multiple papers from multiple authors, all of a relatively homogenous genre. The most recent paper by a student can be compared to see whether the writing style is more similar to earlier work by that same student, or (using the rest of the class as a distractor set), more similar to that of another student. Note that finding that Thomas’ paper is closer to William’s work than to Thomas’ other work does not indicate that William wrote this paper, or even that William has engaged in any inappropriate acts, but it does suggest that whoever wrote the paper Thomas submitted does not write in Thomas’ style (and writes more like William).

5 Discussion

Envelope or an Envelope-like system could easily be used to resolve issues of suspected contract plagiarism with relatively little time or effort. In the event that plagiarism is suspected, or even as a routine precaution, student work could be compared with other work by the same student. In the event that there are two documents by two different authors, at least one of those documents must, *ipso facto*, be by a different author and hence plagiarized. A key advantage of this approach is that, unlike detection-by-search-engine, there is no need to find the source document and it will work even if the source document is not publicly available.

One potential objection to this approach is that the first document is “free,” in the sense that there is nothing to compare with. While true, because it is also possible to compare across multiple courses and multiple school years, the effect of this can be expected to be minimal. Similarly, if a student consistently uses the same author to

write all of the assignments, there will only be one author, but most paper mills cannot guarantee the long-term availability of any single author.

A more serious issue is the possibility of a false positive; a document incorrectly identified (for whatever reason) as by a different author. This is a serious possibility, but it should be able to be addressed by the same notions of due process and fair procedures that characterize other suspected plagiarism cases. There is a common notion that computers are somehow error-free, but this notion must be resisted, and evidence of plagiarism generated algorithmically by a computer should be treated with the same respectful skepticism as accusations made by a human expert reader.

Unfortunately, the evidence used by a computer is often hard for humans to understand and interpret; for example, using negative words like “but” and “not” too often may not be obvious to a human reader – using character clusters like “fro” or “nd” too often are even harder to interpret. Many of the most accurate methods of analysis do not lend themselves to easy human analysis. While research continues into accurate but human readable algorithms, it is important to bear in mind that false positives exist in stylometry as in any other science.

6 Conclusions

Among the types of plagiarism, “contract plagiarism” can be the hardest to detect. Much research has focused on finding the source document, but if I have ghost-written something to order for someone else to submit under their own name, the source document may exist only on my hard drive. The science of stylometry may still be able to detect the plagiarized work, however. Like everyone else, we all have a unique authorial style. If a personal authorial style can be detected in the ghost-written work, and distinguished from the submitter’s own style as evidenced in other works, the act of plagiarism becomes obvious.

This task can be performed automatically by a computer with relatively high accuracy. Computers provide several advantages; they can handle large volumes of work quickly, and are in some ways more objective and accurate than humans. At the same time, they are (as always) restricted by the limitations of their programming and a lack of common sense.

Unfortunately, as with any automatic analysis, false positive errors (as well as false negative errors) are a concern. Total elimination of errors is impractical, but also unnecessary. Action taken on the basis of a finding of plagiarism should only be taken in accordance with well-established due process and should involve human examination as well. False negatives (failure to detect actual plagiarism) is also a concern. Research continues into improved stylometric technologies, including better accuracy, better accessibilities to human decision makers, and a better understanding of the nature of writing style.

Despite these limitations, stylometry is an important and relatively mature technology that can be usefully applied to address a key problem in education as well as in the broader world.

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PAN-EUROPEAN REPOSITORY OF THESES AND DISSERTATIONS AND PAN-EUROPEAN PLAGIARISM DETECTION

Julius Kravjar

The unprecedented changes in the global environment are influencing the role and mode of operation of tertiary education systems all over the world. The importance of knowledge and innovation as drivers of progress is growing. Knowledge is the most important asset of modern society. The ability of a society to generate, adapt and apply knowledge is critical for sustainable economic growth and improved living standards (Salmi, 2015). The skill to analyse and to interpret data (textual data too) is a key factor in building and using knowledge, within both research and business.

“The combination of increased computing power, diminishing prices of hardware and software, [improvement] of wireless and satellite technologies, and reduced telecommunication costs has removed the space and time barriers.” Several new trends in the tertiary education landscape were identified and one of them is the growing impact of open science, big data and open education resources. To successfully fulfill “educational, research, and informational functions in the 21st century, tertiary education [institutions] need to be able to respond effectively to changing education and training needs, adapt to a rapidly shifting tertiary education landscape and adopt more flexible modes of organization and operation” (World Bank, 2002).

Technological advances and reduced costs bring many opportunities and challenges for the future development of higher education. Pan-European Repository of Theses and Dissertations as a rich base for the pan-European plagiarism detection could be one of these challenges in the era of Open Access, Open Data and Open Science.

The aim of the paper is to draw attention to the issues relating to storage of and access to theses and dissertations and their originality check on the EU level in the context of open science, and to provoke further discussions on these issues.

Open Science, Open Data, Open Access

The open access initiative began in 1990s. Open Access is a model for online publishing of scholarly peer reviewed journals, made possible by the Internet (Laakso, 2011). Online publishing becomes a standard. Gradually, open access extended to other areas – to open data and open science – and became a high priority of European institutions.

A broader definition of open access is given by Ramjou, (2016). She understands open access as free on-line access to peer-reviewed scientific publications, access to research data and re-use of research data.

There is a number of open science definitions. Dutch Techcentre of Life Sciences (2016) offers this definition:

Open Science: an umbrella term for a technology and data driven systemic change in how researchers work, collaborate, share ideas, disseminate and reuse results, by

adopting the core values that knowledge should be reusable, modifiable and redistributable. One fundamental requirement for Open Science is that all research data and the associated tools and services should be findable, accessible, interoperable and reusable.

More general definition with less details is offered by C. Ramjou, (2016): “Open science is the transformation and opening up of science, research and innovation through information and communication technologies.”

Mons (2016) stresses the need for new approaches to the scientific data openness to support knowledge generation. “Up to 90% of all data in the world has been generated in the last two years.” Scientific data is in dire need of openness, better handling, careful management, machine actionability and sheer re-use. He sees openness as an enormous opportunity, not a threat but a tool that will help to overcome the paradigms of the last century.

The transition to the Open Science System is supported by EU research and innovation programme Horizon 2020. “The European Commission has taken a big step towards open science in Europe. All projects receiving Horizon 2020 funding are required to make sure that any peer-reviewed journal article they publish is openly accessible, free of charge.” (Open Access in Horizon 2020, 2016)

Open Science, Open Data and Open Access have massive support by all high level European institutions. Council of Europe in the document Council Conclusions on the Transition Towards an Open Science System (2016) accents different dimensions of an Open Science System:

Open access to scientific publications and optimal reuse of research data are of utmost importance for the development of open science. The Open Science Policy Platform established by the European Commission aims at supporting the further development of the European Open Science Policy and promoting the uptake by stakeholders of best practices, including issues such as adapting reward and evaluation systems, alternative models for open access publishing and management of research data (including archiving), altmetrics, guiding principles for optimal reuse of research data, development and use of standards, and other aspects of open science such as fostering research integrity and developing citizen science.

Unnecessary legal, organisational and financial barriers to access results of publicly funded research should be removed as much as possible and appropriate in order to attain optimal knowledge sharing, taking into account when necessary the need for exploitation of results. It is an imperative to remove barriers, and to take the necessary steps for successful implementation in all scientific domains, including specific measures for disciplines where obstacles hinder its progress.

We perceive the initiatives Open Access, Open Data and Open Science as a “big picture” that should be transformed into the real life. In this context, the “smaller picture” could include issues relating to the storage of and access to higher education theses and dissertations and their originality check on the EU level, and their potential implementation in everyday life of the academic community.

Searching for Plagiarism Policies

In addition to open science, open data and open access, we wanted to find a further backing for the Pan-European Repository of Theses and Dissertations and Pan-European Plagiarism Detection. We conducted research concerning plagiarism policies in the EU.

The EU supports projects dealing with plagiarism policies and student plagiarism. An example could be the IPPHEAE project (“Impact of policies for plagiarism in higher education across Europe”, 2013). The project team investigated policies and procedures in place in higher education institutions across Europe for detecting and preventing student plagiarism. In the light of this project, it is a surprise that the websites of the European Commission contain little information on the EU’s plagiarism policies. We found that there is generally too little information about plagiarism.

Firstly, we pay attention to the DG Education, Youth, Sport and Culture. The Policies tab of the site <http://ec.europa.eu/education/> includes Strategic framework and Higher education. There is no mention of plagiarism.

We continued with the resources at the website http://ec.europa.eu/education/library_en where we were interested in two document categories: EU policy and Higher education. In both categories, we worked with EU policy documents. The terms plagiarism and plagiarism policy were absent in these documents.

Further, we continued on the EC level. In the document Digital Futures – A Journey into 2050 Visions and Policy Challenges (2014), plagiarism is mentioned once: “How do we cope with unintended and undesirable effects of pervasive digitization of society such as media addictions, IPR and authenticity, counterfeiting, plagiarism, life history theft? How do we build trust in both artists and audiences?”

There are two documents about intellectual property rights (A Single Market for intellectual property rights, Enhancing the enforcement of intellectual property rights in the internal market) but there is nothing about plagiarism. The document Annual report to the Discharge Authority on internal audits carried out in 2014 states that an IT tool aimed at detecting double funding and plagiarism will be used across all Commission Research Services, striking the right balance between coverage of the riskiest projects and cost of controls. The relevant internal procedures to integrate plagiarism detection into current practices should be developed. In the document Implementation of the Commission Anti-Fraud Strategy (CAFS), plagiarism is mentioned as an internal issue in EC work¹. Plagiarism is also mentioned in Research ethics and on Horizon 2020 website Ethics (“. . .avoiding fabrication, falsification, plagiarism or other research misconduct”). In the The OLAF report 2015², there is the only sentence about plagiarism:

Examples include the delivery of the same piece of research to several funding authorities within or beyond EU borders, plagiarism – the copying of research which has already been undertaken by others, and the deliberate gross disrespect of the conditions of financial assistance.

¹There is mentioned that the system URKUND will be used by several DGs for plagiarism check. But there is no information about the transparency of URKUND selection.

²OLAF is European Anti-Fraud Office

Something New on the Horizon?

There are 28 member states of the EU. Higher education institutions in every member state produce different kinds of theses and dissertations every year. Are they all accessible from one website on a national level? No, they are not. Are there all accessible on the EU level? No, they are not. The member states deal with plagiarism like isolated islands. There is advanced and matured technology, but what about parliaments, governments and the public on the national and EU level?

Are the issues relating to the storage of and access to theses and dissertations and their originality check on the EU level irrelevant and unimportant? According to Fact Sheets on the European Union, there are 13 common policies in the EU. The 13th policy is the Culture, Education and Sport. One of the subpolicies is the Higher Education. There is no common policy on storage of and access to theses and dissertations and on plagiarism.

Open access to all EU theses and dissertation from one website could benefit the academic, research, scientific and business community.

The initiatives Open Science, Open Data and Open Access could be a fertile ground for the unborn Pan-European Repository of Theses and Dissertations. Who or what could be the trigger for the Pan-European Repository of Theses and Dissertations and Pan-European Plagiarism Detection initiatives? The best trigger would be if the member states and the European Commission too would identify this need. The value of the Pan-European Repository of Theses and Dissertations project would be higher if it would be followed up by the Pan-European Plagiarism Detection project. These two projects should be closely linked.

Prerequisites

What could be the prerequisites that would support the Pan-European Repository of Theses and Dissertations and Pan-European Plagiarism Detection projects?

- The bottom-up and top-down will;
- Legislative framework;
- Clearly defined need;
- Appointing the responsible institution/institutions for:
 - Mapping and analysing the present state of theses and dissertations collection and issues related to various Acts (Copyright Act, Higher Education Act, Libraries Act, ...);
 - Preparation of recommendations;
 - Definition of system requirements;
 - Procurement;
 - Implementation;
 - Operation;
 - Maintenance;
 - Further development;

- Preparation of General Methodological Guidelines concerning requisites of theses and dissertations, their bibliographic registration, originality check, storage and access; and
- Well-defined infrastructures (human, legislative, organisational, financial, technical and technological).

It is based on our experience with the nationwide central repository and the plagiarism detection system (Kravjar, 2015; Kravjar, Noge 2013; Kravjar, 2013; Kravjar, 2012).

The Basic Features of the Pan-European Repository of Theses and Dissertations

1. Collection of theses and dissertations, metadata from all EU member states to the central repository according to uniform collection methodology.
2. The uniform collection methodology will define the minimal set of documents and metadata.
3. Access to documents stored in the central repository will be as open as possible and as closed as necessary.
4. The user will have the option to view the selected documents
 - (a) in the original language;
 - (b) in the English language; and
 - (c) in the language of his/her choice (in one of the official languages of the EU).

The last feature to view the selected documents in the language of his/her choice (in one of the official languages of the EU) could be very demanding. The feature to view the selected documents in the original language and in English may be sufficient.

The Basic Features of the Pan-European Plagiarism Detection System

1. Every document entering the central repository will be checked for originality by the plagiarism detection system against the central repository and other sources.
2. The system is able to detect cross-language plagiarism.
3. Outputs:
 - (a) Originality protocol that indicates:
 - i. the global similarity percentage of the checked document in comparison to the central repository and other sources;
 - ii. the similarity percentage of the checked document to the documents in which similarity was found;
 - iii. the text of the thesis/dissertation that is similar to other documents;
 - (b) Reports;
 - (c) Statistics.

The value of the system will be higher if higher education institutions delivered feedback to the system if:

- the thesis/dissertation has acceptable similarity index;
- the thesis/dissertation is suspected from plagiarism (unacceptable similarity index);
- in case the thesis/dissertation is suspected from plagiarism (unacceptable similarity index), the relevant higher education institution will inform the system about the measures taken.

Conclusion

The aim of the paper is to draw attention to the issues relating to storage of and access to theses and dissertations and their originality check on the EU level and to provoke further discussions that could generate new insights into these issues.

Our research showed an unexpected result: there is no plagiarism policy concerning higher education on the EU level. Plagiarism is a “serious disease” that has to be treated on a family level, school level, national level and the European level too.

The existence of the European higher education plagiarism policy could significantly contribute to the fight against plagiarism and could be one of the mainstays. The backing for the Pan-European Repository of Theses and Dissertations and Pan-European Plagiarism Detection is open science, open data, open access and other necessary and important factors are bottom-up and top-down will, clearly defined needs and a regulatory framework.

What could transform the present situation into the operation of the Pan-European Repository of Theses and Dissertations and Pan-European Plagiarism Detection? Concerted and tenacious actions by the higher education sector across all EU Member States towards the European Commission. The legislation on the EU level could speed up the whole process markedly. “Where there’s a will, there’s a way”³.

According to Blessinger (2017)

Knowledge creation together with the means to disseminate that knowledge via improved learning platforms has created unprecedented opportunities for lifelong learning. Higher education systems, as centres of knowledge consumption and production, and as engines of economic growth and social development, have taken on new importance in this continually emerging global knowledge society.

The Pan-European Repository of Theses and Dissertations and Pan-European Plagiarism Detection have the real potential:

- to contribute to knowledge dissemination (all theses and dissertation from all EU member states will be accessible for the academic community and the public from one place);
- to raise awareness of plagiarism in an unprecedented way.

Other pan-European benefits (based on Slovak experience with a nationwide central repository of theses and dissertations and a nationwide plagiarism detection system) could include: increased responsibility of students and teachers, greater student autonomy in the creation of papers, improvement in the quality of papers, a higher

³<http://www.phrasemix.com/phrases/where-theres-a-will-theres-a-way>

level of citations, contributions to improvements in education, better understanding and application of academic ethics, copyright and intellectual property rights (Kravjar, Noge, 2013).

In Slovakia, we have 7 years of experience with the operation of a nationwide central repository of theses and dissertations and a nationwide plagiarism detection system. In April 2010, “the SK ANTIPLAG system (a central repository of theses and dissertations, a plagiarism detection system, a comparative corpus, local repositories of theses and dissertations) started routine operation after a preparatory phase. The use of SK ANTIPLAG is mandatory for all Slovak higher education institutions operating under the Slovak legal order.” (Kravjar, 2015). It is an example of an unparalleled and unprecedented implementation of such a system on a national level that has no predecessor, it is a unique implementation worldwide (Kravjar, 2015).

The implementation of the SK ANTIPLAG system significantly raised awareness of plagiarism among students: “The responses from Slovak students demonstrated the highest level of understanding about plagiarism within the whole Europe.” (Plagiarism Policies in Slovakia, 2013). More information about SK ANTIPLAG can be found in the conference paper of Kravjar (2015).

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SYNOPSIS

FOUNDATION FOR ACADEMIC SUCCESS: ACADEMIC INTEGRITY

Alice Schmidt Hanbidge, Amanda McKenzie

Abstract: With the persistence of cases of student cheating in higher education, significant efforts undertaken by institutions encourage students to participate in learning about academic integrity (Boehm, Justice and Weeks, 2009; Carroll, 2007; Ludeman, 2005). It is crucial for educators to determine the most effective ways to deter student plagiarism. Most universities rely on instructors to cover this information; however, variation exists in the consistency and quality in the delivery of this information. Academic integrity (AI) resources and policies posted across post-secondary institution websites tend to be non-interactive and difficult to locate. Academic misconduct is on the rise despite these well-intentioned efforts (Dee and Jacob, 2012); this formed the basis for us to develop a mobile solution that benefits and supports students for any time anywhere AI learning.

This paper describes the research project development, administration, and assessment processes of the Foundations for Academic Success (FAS); our academic integrity mobile learning tool for undergraduate university students. Mobile learning (m-learning) entails using mobile devices to deliver learning materials with integrated strategies to allow access to knowledge from anywhere at any time (Ally, 2004). M-learning or “education on the go,” through devices such as phones and tablets, expands the boundaries of anytime, anywhere learning (Wu et al., 2012).

A mixed-method (quantitative and qualitative) non-experimental research methodology includes both pre- and post-tests, student questionnaires, interviews and tool testing. Best strategies are explored, from a student user perspective, by students who provide feedback about accessing and learning this information with mobile technology (m-learning). Given that technology is rapidly changing the way that information is delivered and processed, the transfer of knowledge about academic integrity needs to keep pace with the best and most innovative ways to educate students.

The new FAS tool provides information about institutional academic expectations for students in advance of the first day of classes well before they set foot on campus. Specifically, this tool educates students about the values of “honesty, trust, respect, responsibility, fairness and courage”, which form the basis of academic integrity as set out in “The Fundamental Values of Academic Integrity” (1999, p. 4). By providing visually stimulating multi-media interactive content as well as gamification in our mobile application, it appeals to students’ desire to engage with content rather than being passive recipients. Six interactive academic integrity modules make information readily available via mobile phone or portable tablet without the limitations of on-campus classroom sites or learning management systems. Each module depicts challenging case scenarios involving diverse student life challenges, such as peer pressures, time constraints and cultural differences.

As strong advocates of mobile learning, our intention is to enhance effective student academic integrity m-learning experiences while augmenting their educational interactions. Increasing student’s knowledge about academic integrity presents a unique opportunity to encourage the

best strategies for maximizing anywhere, anytime m-learning. Moreover, the academic integrity content in this mobile application extends beyond its utility for our own university as the core values of academic integrity apply nationally and internationally. Hence, this open-access mobile application has the potential for wide adoption across post-secondary colleges and universities.

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Key words: Academic integrity; mobile learning; m-learning; plagiarism; academic success; core values

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WORKSHOPS

HOW REFERENCE MANAGEMENT PROGRAMS CAN HELP TO REDUCE PLAGIARISM BY MISTAKE

Patrick Hilt

Abstract: What are the main problems a student or scholar faces when writing a class assignment, a paper, a thesis, or a book?

- 1) Find relevant sources for the topic.
- 2) Extract relevant information from the sources discovered.
- 3) Write down original ideas on the topic
- 4) Process the extracted information and the original ideas into knowledge
- 5) Recover the extracted information, the original ideas and the processed knowledge at the moment of writing.
- 6) Always add the correct source when inserting a quotation or an idea by someone else.
- 7) Print the bibliography in the required style.

Most scholars and aspiring scholars need to develop advanced extraction and recovery techniques to

- a) not forget what they found
- b) quickly recover their own original ideas
- c) quickly recover the exact place in the original source for further investigation
- d) quickly recover and insert the correct citation if needed

This is a problem every scholar faces, and for this reason, scholars have developed techniques over the past centuries that help them to keep on top of their research.

After a quick look at how the index card technique helps with the research process, we will look at how reference management programs have developed new features to support the whole research process. We will closely investigate how these tools help to reduce plagiarism by mistake.

Key words: reference management program; index-card-technique; plagiarism by mistake; Bibliographix; Mendeley; Zotero; Citavi; Docear; Qiqqa

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FOUNDATIONS FOR ACADEMIC SUCCESS

Alice Schmidt Hanbidge, Amanda McKenzie

Abstract: Academic integrity (AI) is essential in post-secondary education yet insufficient time is spent teaching and practicing its concepts. Talks at orientation, lectures in the first class, and notations in the course syllabus have been used to assist first year students with the academic transition to university, but these have not been very effective at increasing students' level of academic integrity. The intent of an AI mobile learning application (or “app”) is to provide students with information about expectations—thereby acculturating them to institution's values and academic rules in advance of the first day of classes in order to support their continued success.

Program proposal

During this 90-minute session, the presenters will introduce the notion of a mobile AI application and explain the benefits of adopting such an e-learning tool. The simplified educational content will be demonstrated which illustrate the novel ways in which it is presented to engage students and enhance their understanding of integrity. A number of learning scenarios and activities are built into the app., as well as review sections and brief tests to gauge understanding. Participants will have the opportunity to test drive the mobile application and explore the tool from a student's perspective. The content in this mobile AI app is applicable across post-secondary institutions and can easily be tailored to an institution's unique brand and/or needs. Upon successful completion of the AI mobile application, each student is awarded a certificate of completion as well as a customized badge that can be added to her/his e-portfolio as well as LinkedIn and Facebook.

Key words: Academic integrity; mobile learning; plagiarism; academic success; core values

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CHALLENGES MET AT FORMER USSR COUNTRIES IN COMBAT OF ACADEMIC PLAGIARISM

Oleksandr Striamets, Ali Takhmazov

Abstract: Since the beginning of the development of modern information technology, a problem of academic plagiarism has become more and more acute. Even though, it is the old problem, it has reached a new scale. It becomes increasingly easier for students to use available and fast ways of writing scientific papers. Unfortunately, “Copy-paste” is a common practice that students widely use in various kinds of paper works writing. The problem of plagiarism—is a global one, that occurs with increasing frequency in modern society, and which should be eliminated from the outset of personality formation, which goes into scientific field. In this article, we will discuss the problems of modern education related to the use of plagiarism by students and “pseudo” scientists, suggestions of solutions with the help of procedures and usage of software to detect plagiarism, using the example of USSR countries and Plagiat.pl’s company experience. We are going to present Plagiat.pl solutions for higher educational institutions of USSR countries, and bases of the efficient functioning of antiplagiarism system on the national level.

Key words: Plagiarism, information technologies, USSR countries

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POSTERS

A NEW APPROACH FOR PLAGIARISM AVOIDANCE AND DETECTION IN MOODLE'S LANGUAGE-RELATED COURSE ASSIGNMENTS

Ella Akkerman

Abstract: In recent years, there's been a marked increase in the usage of Wikipedia and other online sources in coursework completion by students. In light of this, the problem of plagiarism is brought to a fore. However, it is known that independent, timely and assiduous solution of coursework promotes better understanding of the course material, and also improves writing and critical thinking skills. This is especially true for low scoring and aged students.

Due to the above, we propose a new approach for avoiding and detecting plagiarism, which incorporates two steps: a) preventing plagiarism by utilizing Moodle's built-in capabilities; b) control and monitoring cases of plagiarism and their grading, by using non-commercial Moodle plug-ins (PlagScan, CrotPro, Moss, VPL).

It should be noted that the above-mentioned technique is universal and could be implemented in any Moodle-based language-related course, notably foreign languages and programming that are offered to all entry-level students, in many disciplines.

The efficacy of this method is confirmed by the results of final exams, as well as student surveys of a particular course and their comparison with outcomes of previous years, when such an approach had not been inculcated.

Key words: Moodle, Moodle plug-ins, PlagScan, CrotPro, Moss, VPL

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**SECTION IV
CONTRACT CHEATING INCLUDING GHOST-WRITING
AND ESSAY MILLS**

FULL PAPERS

RETHINKING ASSESSMENT BY EXAMINATION IN THE AGE OF CONTRACT CHEATING

Thomas Lancaster, Robert Clarke

Abstract: In this age of contract cheating, where students are paying and using third parties to complete their work, there are many educators who are advocating a return to assessment through tests and examinations. The standard argument is usually that the level of examination security is such that the student alone is being tested and that an external body cannot be used to provide unacknowledged support for this process. Some academics seem to have the view that the traditional type of assessment by examination is valued by employers more than coursework. However, opponents of assessment through examination note the restrictive form of this type of assessment, that many examination papers focus mainly on recall and memory and that examinations provide little opportunity for students to develop extended arguments and portfolio pieces. Assessment through examination does not seem to be the sole solution to contract cheating.

This paper builds on previous work, mostly published in the form of presentations and blog posts, that looks at the methods of contract cheating that have been used in an examination setting. It includes examples of student contract cheating requests used in an examination scenario, including several taken from a collection of over 30,000 contract cheating requests developed by contract cheating detectives during their investigative process. Examples covered demonstrate susceptibilities in the way that many examinations are set and invigilated. These are vulnerabilities that leave exams open to external cheating and which need to be closed. An issue is particularly noted with examinations taken online and outside of a traditional supervised environment. Even within an invigilated examination, external support can be provided through new technologies, including smartwatches, cameras and earpieces. These allow a student to communicate to someone hired through a contract cheating process and operating outside of an examination room.

The paper argues that assessment needs to continue to evolve to ensure that this is secure, fit for purpose and ensures that a student who is cheating cannot receive a qualification that they do not deserve. It is stated that the use of mixed modalities of assessment is necessary to ensure academic integrity and authentic assessment now needs to be at the forefront of this process. Practical considerations for academics setting examinations are discussed in the paper to ensure that good practice is fed back into the classroom.

Key words: Contract cheating; examinations; student cheating; academic integrity

1 The Challenge of Contract Cheating

The research into contract cheating, the behaviour where a student uses a third party to have work completed for them, or attempts to use such a third party, has primarily focused on the solicitation of coursework in the form of essays, reports

and other written assessments. In this age of contract cheating, a sizeable industry of companies and individuals preparing work for students has been shown to exist (Hersey & Lancaster 2015). This industry aggressively markets their writing and assignment production services to students. Indications suggest that contract cheating is a profitable endeavour for all of those involved with the process (Lancaster 2016). Contract cheating also represents a serious breach of academic integrity.

Student requests to have work completed for them through a contract cheating process are not generally observable by researchers. The first research specifically naming contract cheating as a behaviour looked at requests posted by students on a freelancing website (Clarke & Lancaster 2006). This research discovered a group of students habitually buying their work and therefore bypassing the learning that they would be expected to complete as part of the assessment process. Studies in the economics discipline have shown that students are willing to commit contract cheating where they feel that the rewards outweigh the risks (Rigby et al 2011). Indications are that external workers can be hired to create work for students that is completed quickly and for a low price (Clarke & Lancaster 2013, Wallace & Newton 2014).

Studies looking at larger number of assignments purchased from such contract cheating services have suggested that work capable of obtaining high marks can be purchased (Lines 2016). Despite this observation, quality is not always of a consistently good standard. Such quality can vary from one company to another. Even within the same company, quality can vary between writers and assignments.

A longitudinal investigation of contract cheating services suggests that the student body is becoming increasingly savvy when making requests to have their work completed (Lancaster & Clarke 2016a). For instance, students may use essay mill websites where the assessments requested are only shown to registered and approved writers. The use of private providers means that contract cheating detectives, those people actively searching online for requests to outsource student work, cannot report these cheating attempts to others.

Directly detecting contract cheating has been a long-standing battle for academics. Pre-Internet discussions of the risks associated with essay mills date back to at least the 1970s (Stavisky 1973). They identified the concerns that academics had about the sector back then. In the modern world, students are finding new ways to solicit original work and evade detection. Students can make offline arrangements with writers, for instance through family members or the contacts of their peer group. Students may also find willing writers in the form of private tutors who are known to be sympathetic to the needs of struggling students. Perhaps because of these challenges, the literature on contract cheating seems to be moving away from a focus on detection. Many academics are now advocating alternatives to detection, including exploring academic integrity issues with students as a positive and beneficial part of their identity.

A related area in the age of contract cheating looks at how such academic misconduct can be discouraged. Preventative measures design to make contract cheating more difficult have been widely explored in the literature (Lancaster & Clarke 2007, Lancaster & Clarke 2016a, O'Malley & Roberts 2012). Many preventative suggestions focus on assessment redesign, including a move away from the traditional essays which contract cheating service providers seem to base their staffing and marketing around. Some

alternative assessment types for consideration include work simulations, authentic assessments, presentations, class debates and tutor discussions. These types of assessments meet a wider recommendation that has been encouraged in the literature to ensure that students can be shown to have been actively involved throughout the production of their assessed work.

The use of examinations to make contract cheating more difficult has also been previously suggested, although this approach is not without its own challenges (Lancaster 2014). Proponents to examinations may argue that these are more of a test of a student's memory than their subject ability. In areas where students need to develop a portfolio of completed work to assist with their future employability, for instance computing, examinations do not afford students that opportunity. Examinations are traditionally themselves susceptible to student cheating, for instance where a student conceals notes before an examination and looks at them during the examination. Further, and as this paper will affirm, a whole industry has been established that enables students to cheat using technology. Such technology includes new and novel ways of using the services offered by contract cheating providers

This paper primarily uses a case study approach, providing examples of where students have requested help for their examinations and tests online, or where individuals and companies have advertised and provided such help. Since such cheating represents a situation where a student attempts to solicit a third party to help them obtain an undue advantage over their peers, this can be considered a form of contract cheating. The definitions used for contract cheating do appear to vary across the literature, but this definition is in keeping with the overall flavour of how this phrase is used and applied.

As with all work based on contract cheating, there are inherent challenges with how thoroughly this subject can be researched and presented. There is much scope for a comprehensive study of contract cheating and how frequently this happens when examinations are used as a form of assessment. Such a study would be difficult as researchers and detectives working in this area are limited by the information that is directly observable. Since there appears to be much successful contract cheating that tutors are never aware about, this cannot be directly reported in this paper. Instead, the cases selected are intended to give a flavour of examination oriented contract cheating and to help tutors to consider if their assessment process makes them susceptible to students receiving marks and academic qualifications that they do not deserve.

This paper builds on ideas related to contract cheating in examinations that have been presented at conferences, but not formally published. Slide sets are available from those presentations (Clarke & Lancaster 2016a, Lancaster & Clarke 2016b), as are screencast videos produced to bring the ideas to a wider audience (Clarke & Lancaster 2016b, Lancaster & Clarke 2016c). The paper extends on those previous presentations by more formally considering the different contract cheating behaviours that can be observed during examinations. It also provides new illustrative examples of such cheating that have been observed online.

2 Contract Cheating Requests That Have Been Observed Online

2.1 *The types of contract cheating requests that can be observed*

Since contract cheating services are difficult to detect, when used well, it will likely never be possible to present a formal quantitative analysis of this type of cheating. Despite this challenge, much can be gleaned about the possible behaviour of students by looking at the marketing methods that contract cheating services are using online, along with the associated advertisements.

This section of the paper looks specifically at two main categories of contract cheating that are relevant to examinations. These categories are:

- Requests made by students for them to hire a third party to directly take their examination or to provide direct assistance during this process
- Third parties offering to complete an examination as if they were a student or to provide that student with substantial support for the examination taking process. Offers to provide this assistance can be found posted on their own websites, on classified sites, or through offline medium such as on university noticeboards

The second category of examples is further subdivided to identify three main types of help offered by third party sites. All these types of help may constitute contract cheating when these services are misused. These three types of help are:

- Direct offers made by third parties to act as a conduit while they take an examination, either through directly replacing the student in the examination, or by communicating the information that the student needs to provide their answers to them
- Offers made by third parties to prepare students to take examinations in a manner which may give them an unfair advantage over other candidates
- Technology sold or hired to students by third parties to provide the student with an advantage during their examinations. Such technology may be directly linked to an external third party providing a student with support

This section illustrates the wider threats to educational standards posed by these types of cheating through a range of examples.

2.2 *Requests by students to hire a third party to complete an examination or test for them*

In some cases, it appears that students actively set out to look for ways to cheat during examinations. Table 1 shows a set of illustrative examples of the type of requests made by students online. In each case, an illustrative fragment of text is also included. The wording used by students has not been changed and errors are based on those appearing in the original requests. In some of the examples, the wording has been constructed by the students. In others, the student has taken the assignment details provided by a tutor and has posted those.

Many of the examples in Table 1 are taken from an agency website, connecting those people requiring tasks to be completed with freelancers looking for such work. These

Table 1

Examples of observed requests for contract cheating in examinations posted online

Observed Location	Example Text of Request
Classified site (craigslist.org)	"I need someone to take CPA Ethics test for me Local CPA candidate has no time to study; will PAY you to take the ethics exam for me!"
Classified site (craigslist.org)	"looking for students who are willing to take a intro to physics exam for me it it fairly simple. I will be willing to pay you \$170-\$2,000 if you can and maybe a little bonus if I get a good grade!!"
Agency website (freelancer.com)	"I study MSc Management and Finance and I have 2 referrals which are Accounting&Economics and Operation. Therefore, I have to re-work both exams as an assignment to achieve an overall pass at commendation"
Agency website (freelancer.com)	"There will be exam on The Medieval History during 2 hour and half, I need an academic essay about the topic that instructor will provide. I need to essay in 2 hours."
Agency website (freelancer.com)	"Mathematics Exam You should have whats App or skype or facebook to help me Integration Calculus Infinity Here is final exam past papers"
Agency website (freelancer.com)	"This is a take home exam. Your work should be your own. Do NOT consult members of the class in writing your exam."
Agency website (freelancer.com)	Exam on operation management "4) From there, you can click 'assignments' and then 'take a test' I am looking to have weeks 1,2,3,4,5 exams being completed. Like I said in the initial post, if these work out I may be interested in paying additional to have some quizzes completed."
Agency website (freelancer.com)	"Numerical Reasoning Test for a Job Entry These numerical reasoning tests contain questions that test your knowledge of Ratios, Percentage Increase/Decrease, Cost and Sales Analysis, Rates and Trends, and Currency Conversions."

examples form part of a wider collection of over 30,000 contract cheating requests by students collected by the one of the authors during their role as a contract cheating detective.

The examples show some students who appear to be directly looking for a third party to replace them in an examination hall. Other examples concern students looking

for help with tests that are taken online. These examples demonstrate that there are students who are planning to cheat in advance, having a third party on standby and ready to supply work at the exact time of an examination.

The cases presented also demonstrate a situation where a student has arranged an online chat connection to receive help during an examination. It is unclear if this examination was taken on a computer, where the student would have had to have a chat window running without this being spotted by an invigilator. Alternatively, the student may have used a separate device, such as a mobile phone, to undertake these online chat discussions.

Coursework style assessments have been previously shown to be susceptible to contract cheating and this observation continues to appear to hold true based on the examples shown in Table 1. In one case, a student is asked to redo a failed examination in their own time and without supervision. In a second case, a student is given a “take-home examination”, essentially an unsupervised examination taken over a period of several days.

A further trend is identified with a candidate for a job looking for assistance with a test taken during the selection process. This demonstrates that cheating is not reserved to the classroom and extends into other areas of life. Similar requests have been previously observed for other functional types of tests, for instance both practical and theoretical driving tests, as well as for English language certifications often needed as the criteria for a non-native speaker to enter university study.

In all the examples in Table 1 taken from the agency website, the students making the request received multiple offers of help. They also exchanged money for the service being offered. In the absence of further information, it appears likely that their attempt to cheat was successful.

2.3 Third party offers to compete tests and examinations for students

Although one group of students appears to actively advertising for people to help them cheat, there are many more advertisements offering cheating services for those students who are otherwise more passive in their approach. The advertising of such services is of concern. These may also encourage students who would not otherwise have considered cheating to do so.

Table 2 shows examples of the types of third party offers that have been made to students. These have been collected from classified sites and from sites set up specifically to help students have entire courses completed for them without such cheating being detected.

The offers identified in Table 2 suggest that courses taken entirely online are particularly susceptible to cheating. Many of these online courses still seem to want to use tests as assessment methods even though there is no physical invigilator present to check that students do not cheat.

There are companies that offer remote invigilation services to support online assessment. The way in which these services work varies, but some claim to monitor a student through their webcam, for instance. Based on the offers in Table 2, such remote invigilation services appear to still be susceptible to contract cheating.

Table 2

Examples of observed offers of contract cheating for examinations posted online

Observed Location	Example Text of Offer
Classified site (craigslist.org)	“No time for online quizzes and tests. You don’t have time to complete your online quizzes and tests? We can complete your quizzes and tests. Just send us login access either question on email and we will help you with all your quizzes and tests for all subjects.”
Classified site (craigslist.org)	“I TAKE THE STANDARDIZED TEST FOR YOU. **Any Subjects: math economics accounting statistics”
Web site service (noneedtostudy.com)	“We have the best tutors (ones who have without a doubt taken the test you want taken many, many times).”
Web site service (onlineclasstutors.com)	“Our anti-proctor solutions cover a wide variety of features, from countering IP based geo-location to browser fingerprinting and more.”

Previous research has found that it can be easy to beat the protection offered by examinations taken with Bring Your Own Devices (Dawson 2016). It appears likely that similar techniques would also work for online tests, with very little in the way of sophisticated technical knowledge required. Indeed, one of the companies listed in Table 2 advertises that they have methods available to defeat the protection offered by remote invigilation services.

Although the examples in Table 2 focus on offers to help with online tests, there are also mechanisms through which a student can hire a third party to physically take their place during an in-person examination.

For instance, one media source discusses an impersonator for hire who it is said has been paid to sit multiple in-person examinations at universities in Australia (Potaka & Huang 2015). Similar stories are sprinkled throughout the international media. This suggests that the techniques being used within education to verify the identity of candidates are not sufficient. In some cases, it appears that no such verification takes place at all.

2.4 *Third party offers to prepare students for examinations and tests in a manner that may constitute assistance beyond that which is acceptable*

The literature on contract cheating in essays and written assessments has identified a grey line between contract cheating services and those private tutors and proof readers who state that they will take a draft completed by a student, then they will edit and improve upon this. It is always unclear how much work remains from a student using one of those services that is their own and what volume has been contributed by the hired support.

A similar question of academic integrity also exists for students electing to take advantage of the online services offering test and examination support. An example of the exam support services offered by a well-known UK essay writing service (ukessays.com) is indicative of services that are widely available and is summarised in Table 3.

Table 3

Examples of exam support services offered by an online service

Type of Exam	Example of Advertising
Seen exam	“Seen exams are a special type of exam where you are given the question in advance—you must prepare an answer and learn it. When the exam comes around, you must reproduce your answer and demonstrate that you understand the question in full. With our ‘seen exam’ option, you’ll receive a fully written exam answer.”
Exam Notes	“Just tell us the topic or area which your exam is about, how you would like your notes to be delivered (e.g., bullet points, brief sentences, short summaries) and if you require references in the notes. We’ll then find a qualified writer in your subject area to produce high-quality written notes to aid in your exam preparation.”
Exam Answer	“Just provide our expert with your question(s), choose the style of answer you require and whether or not you need references, and we’ll show you how to ace the exam!”

Within the set of services suggested by the essay writing firm and shown in Table 3, seen exams are clearly of concern. Such examinations allow a candidate to pay for, receive, rote learn and regurgitate the answer to an examination question, thus bypassing the learning process entirely.

Other services offered appear to be taking advantage of the inherent weaknesses in the ways in which many examinations are structured, where certain questions are repeated on a cyclic basis, or very similar questions are sometimes used in a mock examination and a real examination. Although this is a grey area, requesting notes or answers could be said to be providing an unfair advantage to those students with money to spend.

For a service specialising in contract cheating, offering examination support appears to be a clever marketing move. The company acquires a new customer who they can then promote their main essay writing support towards. In a similar move to how the services offered by some proof readers operate, it may be worth considering if the analogy of a “gateway drug” is appropriate for essay mills that are offering examination help services.

2.5 Third party offers to directly support students during an examination or to supply technology designed to allow students to acquire such support

An alarming method of contract cheating has been observed whereby students can hire a third party to verbally provide answers to them during an examination (Glendinning et al 2017). Students in South East Europe have revealed that adverts for services offering to help them cheat during examinations are common and that they believe that other students use such technologies.

In such cases, a typical method of operation is as follows. The student makes a payment to hire a mini earpiece, which is concealed within their ear during an examination. A third party, situated outside the examination room, communicates with the student through the hidden earpiece. The student then transcribes the answers given onto their examination script. It is not clear how the third party finds out what questions they are providing help for, but a variety of cheating technologies have been previously observed to allow such communication, including hidden cameras and microphones.

Since a student is directly paying a third party to provide answers to them during examinations, this can be considered a further example of contract cheating.

The use of earpieces is just one example of the types of cheating technologies available by students to hire or purchase to help them with examinations. The use of cheating technologies is clearly not acceptable, although there is a wider question to be addressed by the academic community regarding where this constitutes contract cheating and where this represents other types of academic misconduct.

Figure 1 shows examples of technologies offered using the search term “cheat exam” on a popular online marketplace (ebay.com) in March 2017. These were selected as illustrative of the range of products available out of 207 results obtained for the search term.

Adverts to supply concealed earpieces dominate the 207 results obtained during the search. These earpieces appear either as individual items or as part of packages that also include extended transmitters. Companies offering earpieces also appear to be making substantial numbers of sales, with the product shown in Figure 1 having 81 reported customers from one advert alone.

Other technologies available for students to purchase that have been widely reported include hidden cameras, for instance as concealed in buttonholes or pens, as well as smartwatches and devices that look like calculators but on which solutions can be stored. Some smartwatches are specifically sold as “cheating watches” with screens that appear blank unless special glasses are worn. A variety of transmission devices are available to extend the reach of earpieces, microphones and cameras for when mobile phones are banned, concealed in apparent credit cards, pens and even customised underwear.

The majority of the products presented in Figure 1 appear to have relied on advances in technology for their development. Some cheating devices offered are more simplistic in design. For instance, would-be cheats can purchase a pen with a roll-out paper section of which notes can be written or printed in tiny fonts and concealed. This suggests that there is a continued need for a close watchful eye on students during the invigilation of examinations.

For many of the technologies shown, including the mini earpieces, there are also offers listed on the site to sell the products in bulk. One advert offers 100 earpieces items shipped as a single order. It appears likely that mini earpieces are being regularly used in examinations, but are very rarely detected.

It also bears noting these examples show the products available on only one site. Similar items are available worldwide on other similar sites, including through major

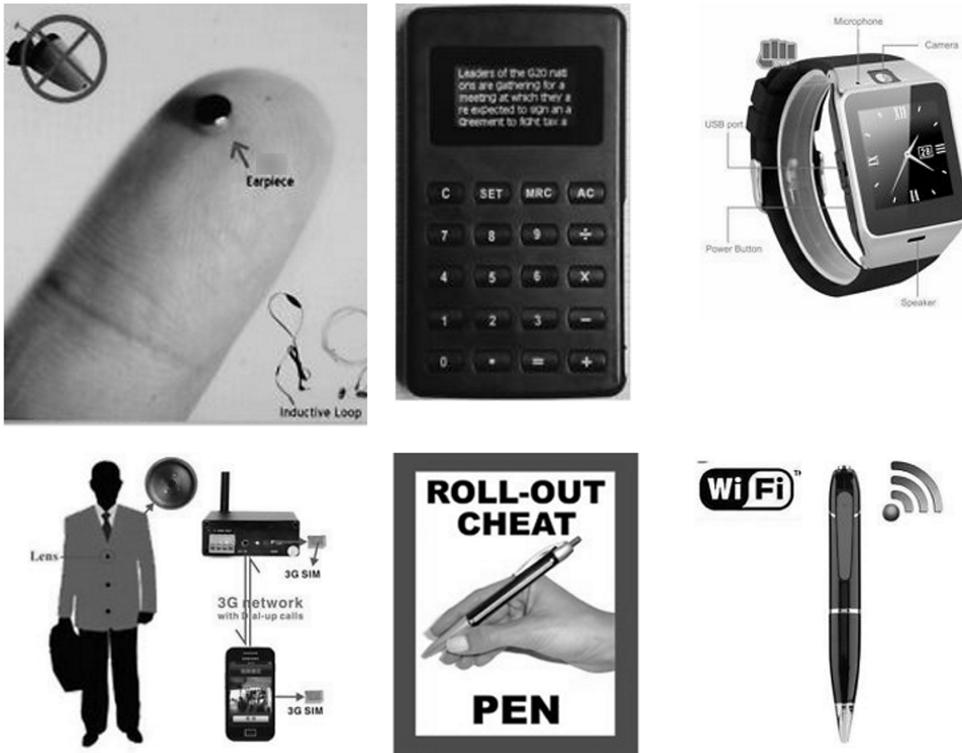


Figure 1. Examples of exam cheating technology available for purchase on a popular online marketplace

players in the e-commerce trade. There are also specialist manufacturers working on and advertising their own advances in cheating technologies.

The following quote, pulled from one such site manufacturing cheating equipment, attests to this continuing challenge:

“Our engineers are working hard to develop a camera that helps you cheat on tests. The camera will be available soon.”

3 Further Considerations and Recommendations

This paper has raised issues regarding the security of examination processes in respect of the modern world in which some students engage with contract cheating.

There are several examination formats that appear to be particularly susceptible to academic misconduct, including:

- Unsupervised paper-based examinations (taken in an educational environment)
- Unsupervised paper-based examinations (taken outside an educational environment—these include assessments such as take-home examinations)
- Unsupervised electronic examinations (taken in an educational environment)

- Unsupervised electronic examinations (taken outside an educational environment)
- Supervised examinations (taken in an education environment, assessed using electronic medium)
- Examinations for which questions are made available to students in advance in order that they can prepare

This listing of formats is neither intended to be complete, nor comprehensive. Some of the formats listed may overlap.

Observations suggest that careful training of tutors is needed regarding how they can assess which types of examinations are most appropriate for students and how high quality examination questions can be set. These papers need to be fair and thorough enough to allow students to demonstrate differential levels of knowledge and ability. They also need to avoid the formulaic question style as well as the reuse of questions which makes them susceptible to learned solutions.

Care needs to be taken to avoid examinations that are really coursework assignments in a disguised format. Take-home examinations are one such example. Some proponents of take-home examinations have suggested that setting a coursework with a short time-period for completion may not allow students enough time to commit contract cheating. Such an approach has been disproved elsewhere in the literature. It has been demonstrated that contract cheating agency sites are able to support requests made at short notice (Wallace & Newton 2014). They also have the capacity to fulfil these requests many times over. More traditional essay mills also advertise short turnarounds times, often on the same day, albeit at an inflated price. Setting an assessment with a short timeframe for completion simply disadvantages those students who would wish to reflect more on the assessment and deliver work to a higher academic standard.

The identity of candidates taking examinations needs to be carefully verified. This means that more than a cursory look at identification is needed. Checks may need to go beyond simple verification of photographs, to include fingerprint scanning or iris scanning. Examinations without invigilation should not be considered culturally acceptable. They are simply providing students with the temptation to cheat.

Issues also exist where examinations are taken using a computer and close monitoring of student identity and their use of the computer is not undertaken. There are particular risks that have to be considered here for courses that are taught entirely online. Here, there are services advertised that promise to impersonate students from the course start to end. There are also challenges in a computer lab, where students who are not carefully monitored can directly communicate with the outside world. It may that close scrutiny and recording of student screens is needed. This alone is not sufficient. Invigilation in the traditional style is still needed, watching students carefully and focusing on their movements and any unusual behaviours that they are indicating.

Wider studies are needed to consider the effect of technology on examination cheating. Measures do need to be in place regarding the appropriate items that are allowed to be taken into an examination room. Some universities now require students to place watches in plastic bags. There is also a movement to supply students with pens, calculators and other necessary equipment during an examination rather than

to allow them to bring in their own equipment. It will be difficult to ever find a complete solution that reduces all possible types of cheating, even if examinations represent a partial solution. Since there appear to be academic integrity issues with all types of assessment, this gives some credence to the idea that a varied diet of student assessment is needed.

The professional accreditation world has good practice to offer regarding how to set secure and differential examinations that are taken on a computer under supervised conditions. Examples are available of the questions for these examinations are set through a carefully verified process, with randomised questions continually graded for difficulty and to decide how many marks they should award based on the performance of a whole cohort of candidates (Murphy 2014). Higher education does now seem to be considering the future employability of its students as a much more integral part of course design that it used to do. This means that exposing students to the style of examinations that they may be required to take as a professional could also be of more widespread use.

Other stakeholders may need to be considered as part of the wider efforts to prevent contract cheating. The argument has also been put forward that essay mills and contract cheating services are the enablers of fraudulent activities (Draper et al 2017). Attempts are being made worldwide to address contract cheating through legal frameworks, all with varying levels of success. The question does need to be asked if a similar approach, based around a tight legal framework, can be developed. Action could then be taken against those companies and individuals who are helping students to cheat in examinations.

There have been positive moves towards working with students as partners to prevent contract cheating. A series of contract cheating awareness events have taken place internationally. Many students have expressed their disgust that this type of cheating happens. A similar student movement to enforce the need for useful and balanced assessments and clearly defined examinations may be another step that is worth considering.

Finally, a cautionary note. The world of contract cheating and examinations is not just reserved to students. As part of their observations of agency sites, the authors have observed several requests posted by tutors. One memorable example saw a tutor ask people to bid to compile a new examination paper for them. They also provided examples of what the style of the examination paper should look like. Since a payment was made, it appears likely that this examination paper was successfully delivered and a new academic contact made. It is not known how the final examination paper turned out, or if it was used in a real or mock examination setting.

The case presented of a tutor themselves using a contract cheating service ties in well with the examples of requests and offers scattered through this paper. This all showcases the need for tutors to lead academic integrity by example. The fact that many examinations are so open for students to cheat on and for third parties to answer questions reinforces the need for tutors to reconsider the formulaic nature of many examination papers. In this age of contract cheating, poor examination paper practices are an area which companies have demonstrated time and again that they are both willing and able to exploit.

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SYNOPSIS

CONTRACT CHEATING: A CONSIDERATION OF SOCIAL LEARNING, ORGANIZATIONAL CITIZENSHIP AND GLOBAL DIMENSIONS

Trudy Somers

Abstract: The global epidemic of contract cheating in higher education remains cause for concern. In terms of academic integrity violation, contract cheating goes beyond plagiarism (the use of uncited work) to deliberate purchase of another's work to submit as one's own. Contract cheating is difficult to detect (text-matching services are often ineffective) or to prevent (efforts include severe penalties or required periodic updates on long papers). The negative consequences of "successful" contract cheating extend beyond the student, to the institution, and to the larger academic community.

Therefore it is appropriate to consider facets of Bandura's social cognitive theory as cause and/or consequence. Self-efficacy, the opinion of a person to succeed at a specific task, has been studied for relationship to contract cheating. Results have been contradictory. The scope of inquiry could be extended to the organization with an OCB (organizational citizenship behavior) perspective. The larger community may be examined with Hofstede's global cultural dimensions. There is some work on the relationship between cultural dimensions or OCB and self-efficacy, but none to date has included a study of contract cheating.

This paper presents a framework to examine contract cheating that includes Bandura's work, Hofstede's global cultural dimensions, and OCB concepts. Best practices for detection, remediation, and prevention of academic dishonesty are considered in the context of this framework.

Key words: contract cheating; Bandura; OCB; Hofstede

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CONTRACT CHEATING: WHAT DO STUDENT ADVOCATES THINK?

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Abstract: In the Australian context, contract cheating has been the topic of media outrage and regulator investigations (TEQSA, 2015), and has led to students being expelled from university (Jacks, 2016) and degrees being revoked from students. To date, a number of voices have entered the discussion on contract cheating, in addition to the media: students—largely through self-reported studies (Carrell, 2008; Cheung, Wu and Huang, 2016; McCabe & Trevino, 1997); academic researchers and ghostwriters (Sivasubramaniam, 2016; Tomar, 2012). However, one voice is missing from the overall picture: that of student advocates, or student representatives. These people advise, support and sometimes accompany students through academic hearings. As advocates need to find out what happened, they are more likely to gain a clearer understanding of students' motives to cheat and how they went about it. Additionally, student advocates see the consequences of outcomes and the human cost involved.

In this paper, we outline the experiences of 40 student advocates representing 21 universities around Australia. We thematically analysed the 80 pages of data using N*vivo coding. Advocates suggest a range of reasons for students engaging in contract cheating including time-poor, perceptions of others engaging in it and fear of failure. They also suggested a number of solutions at the individual subject level, the program level and the university level. A number of their suggestions have been implemented at Deakin University in order to reduce contract cheating.

Key words: contract cheating, student advocates, reasons for contract cheating, assessment, university policy

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WORKSHOPS

LEGAL APPROACHES TO TACKLING ESSAY MILLS AND 'CONTRACT CHEATING'

Michael Draper, Phil Newton

Abstract: Many strategies have been adopted or proposed to address the use of Essay Mills and other 'contract cheating' services by students. There have been calls for the use of legal mechanisms as one lever to change behaviour. This was recently advocated by the UK regulator of Higher Education, the Quality Assurance Agency, following the meeting of an expert forum which included one of the presenters. The report's conclusion had been independently arrived at by the other presenter.

In our article published in the International Journal for Educational Integrity we address the use of legal approaches. The aim of this workshop is to consider further the legal and extra-legal approaches to the problem of contract cheating and to explore the issues and solutions arising from cross border jurisdictions. It is not uncommon for an essay mill company to be registered in one country contracting out work to writers domiciled in another with the student customer placing their order from yet another country. Solutions will be found in co-ordinated national and international action.

Key words: contract cheating, plagiarism, fraud, essay mill, law

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WORKING PAPERS

NAIROBI SHADOW ACADEMY: A STUDY OF CONTRACT CHEATERS (ACADEMIC WRITERS) IN KENYA

Chloe Walker

Abstract: In Kenya, labour market trends for university students and recent graduates are bleak as youth employment stands at 35%. To help counteract this, the Kenyan government has promoted digital labour as a viable employment option, particularly for young people. One form of labour which has become popular is contract cheating, or 'academic writing' as it is commonly known in the country. Estimates suggest there may be upward of 20,000 writers in Kenya, however, little is known about their lives, views, motivations or writing processes.

This study addresses this gap in knowledge. It comprises a mixed method design, combining elements of a traditional ethnographic approach, with digital methodologies. Over 200 writers were surveyed using an online survey, and more than 20 were interviewed using Whatsapp chat, Skype and face-to-face interviews. The writers were recruited via snowball sampling, as well as through Facebook and Instagram advertisements. The study is particularly interested in the ways in which their livelihoods are intertwined in this 'blind-spot' of global education, the new digital labour economy and youth unemployment in Kenya.

Preliminary findings indicate a demographic profile of young university students or recent graduates, with primarily economic motivations for writing such that ethical questions were largely overlooked. Further, academic writing was generally perceived as a transitory form of employment which served as a supplement or temporary substitute for formal employment. Moreover, the writers reported using mainly 'patchwork' processes for their writing, and research comprised basic Google searches for keywords relating to the assignment.

This paper gives much needed insight into the 'supply' end of contract cheating. It offers an opportunity to understand the industry through the eyes of the Kenyan writers who help facilitate this trade.

Key words: contract cheating, plagiarism, academic writing, digital labour, digital economy, Kenya, youth unemployment, higher education

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SECTION V
INTERNATIONALISATION, STUDENT MOBILITY AND
ACADEMIC INTEGRITY

FULL PAPERS

EXPLORING ACADEMIC INTEGRITY THROUGH THE LENS OF CRITICAL THEORY: MAINLAND CHINESE STUDENTS' EPISTEMOLOGICAL ADAPTATION TO STUDYING ON UK MASTER'S PROGRAMMES

Stephen Gow

Abstract: The influence of China is looming large on global higher education. Chinese universities are beginning to break the Anglophone dominance of university rankings; there has been a vast increase in academic publications; and nearly 1 million Chinese students studying abroad. In all cases, questions of academic integrity, especially surrounding the concept of plagiarism, are prominent in the Anglophone discourse on Chinese learners and scholars. The UK provides a suitable case study for exploring this issue, as Mainland Chinese students (MCMS) make up over a quarter of all taught postgraduates there. This study uses focus group analysis of MCMS to explore the concept of academic integrity for this unique group of students in their transition to studying in the UK in terms of epistemological reflection (Baxter-Magolda, 1992) and communicative rationality (Habermas, 1981). It seeks to understand the reasons for the stereotype of the Chinese learner in the context of academic integrity. The findings show that the dominant monological examination focus in Chinese education has a serious impact on the epistemological development necessary for dialogic academic discourse, providing a connection between the development of criticality and understanding of plagiarism. The lens of Habermas's critical theory ties this connection to the use of reason and discourse in higher education. Consequently, the study provides a critical reflection on the influence of political ideology and economic imperatives on the lifeworld of universities. It highlights the impact of internationalisation, marketization and instrumentalisation of learning in the University as a communicative space. The findings are highly significant and transferable for considerations of academic integrity in international higher education.

Key words: Academic Integrity; China; UK; Higher Education; Epistemological Development; Critical Theory; Jurgen Habermas; Plagiarism; Critical Thinking

1 Introduction

The internationalisation of higher education, idealistically, is an opportunity to benefit from the synthesis of global perspectives on knowledge. Every year millions of students leave their home countries for a new experience studying abroad, and the majority have truly life changing experiences. A significant proportion of this migration has seen students from the global south seek education in more advanced, particularly Anglophone countries. The experiences of international students, and of the institutions at which they study, have been the focus of numerous studies. These

studies have exposed the reality of international education process that is fraught with numerous challenges, such as: intercultural understanding, post-colonial discourses, stereotyping, contrastive rhetorical styles and differing academics norms. One of the manifestations of these challenges is the discourse on academic integrity, and one of the emerging key players in international higher education is China.

This paper represents one of the theoretical approaches used in a larger research project aimed at understanding why Mainland Chinese students struggle with the norms of academic integrity in international higher education. By using a case study of Mainland Chinese Masters students in the UK, this paper explores the issue of academic integrity in internationalised higher education through the lens of J rgen Habermas's *Theory of Communicative Action*. Analysis of qualitative focus group data using Habermas's theory, building on analysis of the data using Baxter-Magolda's *Epistemological Reflection Model*, indicates that the students are transitioning between education systems with different epistemological approaches which are embedded in the power relations of the distinct cultures. However, both education systems are under increasing pressure and are resultantly corrupted by the influence of marketization in the increasingly competitive world of internationalised higher education, manifesting itself in threats to academic integrity.

2 Literature

2.1 *Integrity in the era of the internet and internationalisation*

The combined issues of academic integrity and the Chinese learner provide a window into the key transition faced by international academia in the 21st century. Research on academic integrity since the turn of the century has been placed in a context of significant cultural change in higher education. The first is the shift into the post-Gutenberg remix culture of the internet, which has had significant technological and social effects on society (Lessig, 2008). In broader society, the impact has translated into the overwhelming access to information and social connections which are straining the notions of copyright and even truth, such as the recent prominence of *alternative facts* and *post-truth society* (Peters, 2017). For academic writing and research, the concepts of authorship and plagiarism have been seriously challenged by the internet and the shift to computer based word processing (Becker, 1986; Howard & Davies, 2009; Sutherland-Smith, 2008).

While cheating has always been an issue in education across cultures, the internet era has seen significant technological and cultural shifts which have transformed educational approaches to ensuring integrity (Harp & Taietz, 1965; Park, 2003; Suen & Yu, 2006). In higher education contexts dependent on academic writing as the main form of assessment, the copy and paste function in combination with access to an overwhelming plethora of online resources of varying validity have changed the way scholars interact with and construct texts (Howard, 2007). Not only that, but the creation of text matching software, such as Turnitin, has meant that not only is copy and pasting more easy to detect but tracing the composition of texts (Lyon, Barrett, & Malcolm, 2006), particularly by novice and non-native speaking scholars

has become more complex (Pecorari, 2008; Sutherland-Smith, 2008). This has blurred the distinction between original authorship and deliberate plagiarism (Howard, 1995; Pecorari, 2003), providing significant challenges for the teaching and assessment of academic writing.

The impact of the internet since the turn of the 21st century has run parallel to the processes of marketisation, massification and internationalisation of higher education. In the post-war period there has been a significant increase in participation in higher education around the globe (Delanty, 2001; McLean, 2006). Further challenges for academic integrity have resulted from influx of students from diverse, non-traditional backgrounds through processes of internationalisation and widening participation. As Schweisfurth and Gu (2009) note, universities have had to undertake a transformative approach to diversity in order to integrate “an international/intercultural dimension into the teaching, research and service functions of academic institutions” (p.464). While the opening of higher education to diverse groups has been commended, increased marketisation has drawn criticism for portraying students as customers arousing fears that this approach could have an impact on academic integrity due to increasing instrumentality of the student body (Guilbault, 2016, p. 137).

In the UK these trends of internationalization and marketisation have been interconnected. Since the early 80's, initiatives by Conservative and Labour governments to marketise and internationalise British HE have significantly altered the university landscape. These initiatives include: The Prime Minister's initiatives (PM1 1999 & PM2 2006), the 2001 target to widen participation in HE to over 50% place grants since 1998, with radical fee increases in 2012 (Brown & Carasso, 2013; McGettigan, 2013). The expansion of University participation is, therefore straddles seemingly contradictory purposes: the widening of participation aimed at a better educated public and an internationally diverse student body enriching the knowledge economy, versus the view of higher education as a business in an increasingly competitive global market (Brown & Carasso, 2013). As Jiang (2008) highlights, the latter approach is prevailing as “the internationalisation of HE has led to a ‘bums on seat’ approach to attract considerable private income from international students to compensate for the reduction in public funding under neoliberal state policies” (p.464). The result has been an increasing reliance of UK and other Anglophone institutions on students from Mainland China, where the rising middle class has significant income combined with a strong cultural respect for education (Hegarty, 2014; Martin, 2017).

2.2 *Chinese students in International Higher Education*

There are currently over half a million students from Mainland China studying abroad. This is the most significant student migration since the 1860s, when over 10,000 US scholars went on *educational pilgrimages* to Germany in search of the self-cultivation and the secrets of innovation (Brubacher & Rudy, 1997; Werner, 2013). The American students returning from Germany were able to lay the groundwork for the strength of US academia as it became a global superpower. In 1999, privately funded students from China were allowed to seek education abroad, ever since there has been a steady increase in students taking this opportunity with the majority going to Anglophone

countries. The UK is one destination favored by Chinese students due to its historic brand of prestigious education and comparatively cheap tuition fees. In 2015–16 alone, 91,215 Chinese students studied in the UK and this *majority minority* represent close to a quarter of all taught postgraduates in the UK (HEFCE, 2016; UKCISA, 2017). The effect on UKHE of this vast influx of Chinese students has been reflected in the literature and the approach of institutions to help accommodate international students (Carroll & Ryan, 2005; Ryan & Louie, 2007). This process of internationalisation and the transitional issues of the students have been magnified as this process has coincided with the cultural flux caused by marketisation and the impact of the internet.

Chinese learners have entered international education on a vast scale causing a culture shock which has resulted in regrettably simplistic stereotypes, paradoxes and unanswered questions for academic integrity (Kember, 2016). The first paradox is the historical significance of China's long tradition of education with the atrophy of scientific endeavour and rise of corruption at a time when Europe was experiencing Enlightenment (De Saeger, 2008). This view places the Chinese Confucian tradition of education, particularly the practices of rote learning from set texts, as a hindrance to China becoming a modern nation. The second paradox concerns the Chinese learner who on the one hand are seen as hard working, respectful students but on the other, lack independence, critical thinking and have a tendency for plagiarism (Watkins & Biggs, 1996; Smith & Zhou, 2009). The common stereotype, often cited by academic staff confronted by Chinese students is that plagiarism is acceptable in Confucian culture, which is an unhelpful oversimplification at best, erroneous at worst and widely derided (Flowerdew, 2015; Liu, 2005; Ryan & Louie, 2007; Saravanamuthu & Tinker, 2008; Tian & Low, 2011; Tweed & Lehman, 2002). This Confucian stereotype is also paradoxical as China was the world's leading economy and extremely advanced society for thousands of years under the Confucian tradition (Elman, 2009; Needham & Ronan, 1995).

In order to understand Chinese students in the 21st century, one must not rely on Confucian stereotypes but must look at modern China. Development of higher education has been a major goal for the PRC since reform and opening up in 1978, with particular attention paid by Chinese and international scholars to academic writing and the concept of plagiarism in this process. The first rhetorical studies penned by scholars in the 1980's focused on Chinese learners of English emerged as Chinese universities attempted to catch up with international scientific developments (Hayhoe, 1996). These studies highlighted a lack of L1 (Chinese) writing practice in Chinese education (Mohan & Lo, 1985) and use of imitative learning styles as key factors in English writing development (Matalene, 1985). In the mid-nineties, the debate moved to the concept of plagiarism in a postcolonial discourse on English language learning particularly from the perspective of Anglophone scholars in Hong Kong in anticipation of the 1997 handover (Deckert, 1993; 1994; Pennycook, 1994, 1996). These numbers have been steadily increasing ever since and Chinese learners have continued to be singled for issues with plagiarism (Bloch, 2012).

The effect on anglophone institutions of this vast influx of Chinese students has been reflected in the literature and the approach of institutions to help accommodate international students (Ryan & Louie, 2007). Discussions of the concept of plagia-

ism, of cultural difference and learning deficits have given way to a developmental discourse aimed at accommodating students from varying educational backgrounds into internationalised institutions (Carroll & Ryan, 2005; Flowerdew & Li, 2007). In the UK, researchers, such as Qing Gu, have looked beyond plagiarism (Gu & Brooks, 2008) at the success of Chinese students in acclimating to the different educational expectations. Durkin (2007) found that students use a “middle-way” between eastern and western approaches to learning in order to adapt to educational expectations while retaining their cultural identity. However, despite the success of Chinese students and scholars, the stereotype of the passive Chinese learner (Smith & Zhou, 2009) still persists particularly in media stories which commonly cite Chinese students as disproportionately represented in the misconduct statistics (Cheung, Wu, & Huang, 2016; Mostrous & Kenber, 2016; Qi, 2015). As Kaposi and Dell (2012) have highlighted, this is not helped by moralist and proceduralist approaches to plagiarism which often ignore the complex intertextual development that students must undergo in order to succeed. This indicates that the accommodation of Chinese and other international learners is an ongoing process in UK higher education.

In terms of internationalisation, the experiences of Chinese students abroad are also significant and correlate with the perspective of Chinese higher education. The initial research in the eighties regarding lack of essay writing and rote learning by students due to the pressures of high stakes testing are coming full circle in China. These debates include discussion of the concept of plagiarism and academic integrity in relation to Chinese learners, academics and institutions in China (Yi, 2011). Research in the past five years in Chinese universities by Guangwei Hu and Jun Lei, and also Yongan Li, highlight a lack of research-based writing practice resulting in a limited understanding of plagiarism and attribution by undergraduate students (Hu & Lei, 2012), postgraduate researchers (Li, 2012), and Chinese ESOL lecturers (Hu & Lei, 2016/2; Lei & Hu, 2014). These authors suggest studying Anglo-American citation and publication practices can help Chinese students and lecturers in Chinese universities to reflect on the process of knowledge acquisition. Bearing in mind the recent studies on this issue in China and internationally, as Flowerdew (2015) has noted, the relationship of academic integrity and culture is by no means closed and could benefit from qualitative research.

3 Empirical Approach and initial findings

3.1 *Research aims and questions*

The overarching aim is to understand why Mainland Chinese students struggle with the norms of academic integrity in international higher education. It aims to achieve this through a case study of Mainland Chinese Masters students’ (MCMS) perceptions of their adaptation to studying in UK higher education. It explores how these perceptions correspond to the discourse of Chinese learners and academic integrity using qualitative analysis. This paper concentrates on the analysis of the qualitative data through the lens of Habermas’s *Theory of Communicative Action*.

3.2 *Focus groups & Interviews: Sample and questions*

This research project is formed upon the empirical base of a qualitative study which uses thematic analysis of focus groups and interviews with Mainland Chinese participants. Mainland Chinese participants are distinct from the broader category of the Chinese learner, which includes people from Taiwan, Hong Kong, and Singapore. This is due to the distinct educational background and socio-political climate in the People's Republic of China (Zeng, 2016). The participants were either in the process of completing a taught Social Science Masters degree in the UK (with the exception of one computer scientist), or had recently returned to China after graduating. Masters students were specifically chosen as they make up the majority of Chinese students in the UK, where 1 year Masters programmes accentuate the transitional issues faced by students.

Eight focus groups were carried out in the 2012/13 and 2013/14 academic years in the UK and a further three focus groups and three interviews were carried out in China in May 2016. In this process a total of 25 distinct participants were asked to discuss adapting to research practices and the concept of academic integrity in the UK from their educational experience in China. The focus group schedule was structured in a probing manner which would encourage bonding between the homogenous participants and lead to in-depth discussion (Liamputtong, 2011; Krueger, 2002). The group began with a surface conversation of the challenges faced living in the UK and then delved deeper into the adaptation to academic research and writing skills. Once a rapport was developed amongst the group, the issue of academic integrity either naturally arose or was elicited by the moderator. This included the discussion of citation, paraphrasing and plagiarism, and also the use of Turnitin, proof-readers and essay writing services.

The focus group schedule produced multiple themes of discussion for in-depth inductive thematic analysis of the participants' views (Boyatzis, 1998). The large quantity of rich data was transcribed for analysis. Transcription is "a key phase of data analysis within interpretative qualitative methodology" (Bird, 2005, p. 227) and helps to review the focus groups, write memos and develop initial coding. A simple orthographic transcription, with small indicators for laughing or overlapping responses, was necessary to capture the data for thematic analysis. After initial pen and paper coding identified 6 key surface themes, the transcripts were uploaded into the Nvivo qualitative data analysis software for in-depth analysis. The 6 initial themes were stored and highlighted as nodes in an easily manageable and navigable format (Bazeley & Richards, 2000). This enabled analysis to move deeper into the data, beneath the words and phrases, to the latent meanings of the participants (Braun & Clarke, 2006).

3.3 *Baxter Magolda's Epistemological Reflection Model*

The initial findings of the study, related to the epistemological development of the participants using Baxter-Magolda's *Epistemological Reflection Model* (ERM). The ERM is the result of Baxter Magolda's longitudinal study of US college students over a period of 16 years (Baxter Magolda, 1994). This simple model of epistemological development provides a useful framework to assess the focus group data. The ERM is effective

Table 1

Epistemological Reflection Model

Ways of knowing	Description
Absolute Knowing	Knowledge should be acquired. It is quantifiable, inflexible, and unquestionable and comes from higher authorities.
Transitional Knowing	Starting to understand knowledge as a process. Less certain of the absolute authority of facts.
Independent Knowing	Open-minded approach to knowledge as uncertain. People have the right to hold different perspectives.
Contextual Knowing	Context defines knowledge, admits the uncertainty and relativity of information. Uncommon among undergraduates

(Baxter Magolda, 1992)

in demonstrating the epistemological influence of assessment practice on students, regardless of their nationality.

The key finding of this first stage of analysis explored the participants' perceptions of their academic development charting a journey from "absolute knowing" to "independent" and "contextual" approaches to knowledge. From this perspective, a monologic, "right and wrong" examination background in China poses a significant epistemological obstacle to the understanding of plagiarism, citation and research. As Jude Carroll (2008) has highlighted, there is a significant transition for students to make from high stakes assessment to the dialogic, research-based essay assessment in the UK. The participants must not only deal with multiple, unfamiliar academic texts in a second language and then construct essays of thousands of words, they must also switch their approach to knowledge in line with the ERM model above. The participants reflect that this rapid transition from one set of expectations to another which leads to problems with the practicalities of academic writing, leading at worst to plagiarism, or low grades due to a descriptive approach and a lack of critical thinking. Baxter-Magolda's ERM was useful to analyse the perspectives of the Chinese students in the study, however it raised more questions about the differences between the education systems in China and the UK. Further reading lead to the work of Ruth Hayhoe (1989), who advocated using Jürgen Habermas's *Theory of Communicative Action* to "bring a new dimension to a study of international educational relations", particularly in order to understand China's integration into international research practices.

4 Habermas' Theory of Communicative Action

Jürgen Habermas is a German sociologist, philosopher and critical theorist who since the 1960s has been considered the leading light of the second generation of the Frankfurt School. Habermas emerged in the post-war period aiming to reassess the *Enlightenment* and the modern origins of the democratic tradition from the perspective of knowledge and how it is communicated (Terry, 1997). As Thomassen (2010)

highlights, this manifests itself in the red thread which runs through his work: the public use of reason. His work has been used in educational research, most notably by Mezirow (1997) in his *transformative learning theory* and McLean (2006) in her critical approach to University pedagogy. In his landmark work, the *Theory of Communicative Action* (1981), Habermas explores his main question: “how is social order possible?” (Finlayson, 2005). He achieves this through the analysis of how reason or rationality are used in modern society through particular actions in two distinct ontological spheres (*lifeworld* and *system*). This paper concentrates on the distinctions between the concepts of *communicative* and *instrumental* action, and between *lifeworld* and *system*. The research uses these concepts to explore the participants’ perceptions of their adaptations to academic integrity in the UK context.

4.1 *Lifeworld and System*

In simple terms *lifeworld* refers to a person’s culture, personality and integration into society (McLean, 2006). The *lifeworld* is an informal place of shared meanings and understandings. It is a complex web that unites a culture yet also provides space for individuals to exist through personality traits and social contexts. The *lifeworld* is an implicit place where the reproduction of culture is achieved through communicative action and discourse, in which participants partake in genuine communication to reach understanding, share knowledge and create social cohesion through reasoned consensus (Finlayson, 2005). In the *lifeworld*, validity of expression must be achieved in order to find mutual understanding; therefore statements must make a claim to truth, truthfulness and rightness. In other words, communication must have *integrity* for the *lifeworld* to be reproduced through mutual understanding or eventually social cohesion will break down. The significance of communicative action and discourse is that truth is an intersubjective consensus, rather than an objective fact, which is important for later considerations of academic writing and referencing.

The second ontological sphere, according to Habermas, is the *system*. As opposed to the *lifeworld*, which is orientated towards understanding, the *system* is formed by the economic and bureaucratic subsystems which are steered by the mediums of money and power. Where the *lifeworld* enables social integration through communicative action and discourse, the *system* is maintained through instrumental action orientated towards success. Habermas theorises that while traditional societies are contained within the *lifeworld*, post-traditional societies become too complex resulting in the uncoupling of money and power from the *lifeworld* into bureaucratic and economic sub-systems. The uncoupling of *system* serves a purpose to support the material reproduction in a more complex society because it relies on norm-free, impersonal, instrumental action which is able to achieve aims more efficiently than the *lifeworld* (Outhwaite, 1994).

4.2 *Colonisation of the system*

These two spheres exist in a “fragile equilibrium” where the *system* supports the complexities of post-traditional societies to assist where the *lifeworld* has become unable to successfully coordinate activities alone (Finlayson, 2005). There is, however,

the danger that the lifeworld may be *colonised* by the system, in that the imperatives of the systems “turn back destructively upon the lifeworld itself” (Jurgen Habermas, 1981, p. 189). Here Habermas is drawing on his Weberian roots and the fear of an iron cage of rationality in which an instrumental, means-to-an-end approach to reason results in people using the most effective method to achieve their goals. This is opposed to value-rational action aimed at using ethical means within societal norms to achieve goals (Ritzer, 2008). Thomassen (2010) provides a poignant example of the impact in UK higher education, when imperatives of the economic sub-system start to colonize the academic lifeworld:

Increasingly, the market logic is being rolled out across universities and education more generally. Universities must make money and the bottom line matters for their future. As a result, more and more things are measured in terms of time and outputs... Teaching and research increasingly look like the commercial production of goods to consumers... This also influences the relationship between students and professors. Whereas this relationship may have been communicative, it risks becoming increasingly strategic. . . (p. 77)

Thomassen is implying that once the student-staff relationship becomes strategic or instrumental, agents become more orientated towards a means-to-an-end approach to learning. If we consider the issue of academic integrity, particularly plagiarism and the use of contract essay writing companies, these can be understood as the impact of the colonisation of the academic lifeworld by instrumental action orientated towards success, regardless of ethical norms.

5 Findings: Colonisation of the Academic lifeworld

The findings from this research indicate that the combined impacts of the internet, massification, internationalisation and, especially, marketisation, are threatening to colonise the academic lifeworld. This has resulted in significant challenges to academic integrity. Students from Mainland China represent one of the most significant groups in this discourse as they are transitioning through academic lifeworlds in a state of flux. The focus groups and interviews created a communicative space to reach understanding and to explore their lifeworld, shedding light on the issue of academic integrity in their transition.

5.1 *The Chinese educational background*

As the participants are transitioning from China to the UK, their experience in Chinese education forms the *normative context* for the expectations of education. The focus groups produced a consensus on the impact of high stakes examination focus on their educational experiences, to the extent it has dominated their young lives. Due to the large population in China, the state has created the administration of examinations as a system to support the reproduction of the lifeworld. The system has been successful in:

- standardising education
- examining large numbers of students

- assuring integrity as students are in a closed exam
- providing equality of opportunity
- fairly rewarding hard working students
- achieving ideological orthodoxy and homogeneity

The success of this education system since the reopening of the universities in 1978 should not be overlooked. In this way, the system established by the government was orientated towards catching up with international academia and educating the population. The *National College Entrance Examination*, better known as the *Gaokao* (高考), is being held up as a success as Shanghai's schools top the PISA rankings for schools and Chinese universities are rising up the world rankings (OECD, 2015; THE, 2016). As Habermas warns, the system can become too successful, resulting in the colonisation of the lifeworld.

Examinations have deep roots in Chinese culture. The Imperial Examinations (*keju* / 科举) dominated education for centuries before it was abolished in 1911. One of the reasons it was abolished was what De Saegar (2008) describes as the *epistemological obstacles* which the examination placed in the way of China's development of a modern scientific approach. With the implementation of the *gaokao*, the modern equivalent of the *keju*, the domination of examinations and this epistemological obstacle is still in place, even at the majority of Chinese universities attended by the participants. The domination and efficiency of high stakes examinations as a mechanism for achieving orthodoxy, whether Confucian, Marxist or even of modern scientific knowledge, has drawbacks:

- students becoming focused on grades and success rather than understanding
- a loss of independent thinking due to monologic approach
- method of studying is individual, students learning the knowledge by rote from the set-texts
- students have limited discourse about how knowledge is created
- didactic approach of teachers
- results in lack of criticality and creativity
- results in indoctrination

The criticisms of the *keju* and modern examinations in China have similarities, however the historical comparisons are not appropriate in all cases. While the *keju* concentrated on the orthodoxy of Confucian texts it was in fact more essay based than the current system in China. As the ERM demonstrated above, the current exam regime encourages an absolute, monologic approach to knowledge by students, looking to learn the "right" answers in official textbooks. As a result the students take an instrumental rather than communicative approach to their studies, as illustrated by this exchange between two participants:

P₄ I think this is the problem, we don't need to read in China.

P₅ Yes, I cannot remember whether I've read something.

P₄ The teacher will not give us a reading list, we have a textbook, the reading is in the textbook, so do some preparation work, read chapter 1, then in class we will, the teacher

will explain chapter 1, then after you look back to chapter 1. The next class chapter 2. So we don't have extra reading.

This implies that they do not engage with texts in a communicative manner when studying for the examinations. This is a common reflection by the participants and indicates the orientation towards success rather than understanding in their studies.

A further issue which heightens the instrumental approach, is the immense pressure students are under. One of the participants described the pressure during Gaokao on students, particularly as in his province for nearly a million students taking the examination, there are only 30,000 top University places:

Because every year between my high school years, every year we have people commit suicide. That's true, I don't think foreigners can understand this. Or even other people, so it's really hard. It's not only the education problem but everything combined.

As Bregnaebank (2016) has highlighted, suicides are also a problem at China's top universities. The discussions with participants suggest the examination focus in combination with the pressures of rapid economic growth on the job market for graduates (Pang & Plucker, 2012), have resulted in bureaucratic and economic colonisation of the students' lifeworld. In Habermas's TCA, the colonisation of the lifeworld results in *systematically distorted communication*, which when taken to an extreme can lead to deception and disregarding of ethical norms as a result of a means-to-an-end approach (Gross, 2010). In recent years there have been well organised attempts to cheat in the Gaokao for example, resulting in arrests of offenders and police monitoring examination halls and schools during the exams (Campbell 2016). One of the reasons examinations are preferred over open assessments, even at university level, as stressed by one of the interviewee's who is now teaching in China, is that the pressure is so great students cannot be trusted to complete assessments unsupervised.

5.2 *Decision to study in the UK*

Due to the immense pressure on top university places in China, one option is to study abroad. It is currently more common for students to do this after they have completed an undergraduate degree in the China, however increasing numbers of Mainland Chinese students are completing the first degree or even high school qualifications internationally, particularly in the US (ICEF, 2015). As Gu (2016) has pointed out, Mainland Chinese students who study abroad only form a small percentage of the Chinese population and these fall into two distinct groups: the educational and socio-economic elite. A minority of these students are the educational elite on government scholarships, the majority are privately funded students from the middle class. The participants in this study were from the latter group and an overriding reason for studying abroad is to improve job prospects in the highly competitive job market and provide a *gap year* of sorts for travel.

It should be highlighted that the participants in the study demonstrated positive reasons for studying in the UK, such as an interest in British culture and the prestige education system. There were also instrumental factors. In particular a Masters degree in the UK is only 1 year, compared with 2–3 years in China or 2 years in

alternative locations abroad such as the US or Australia. There were participants who had failed the entrance requirements for studying in other countries, such as the US. Furthermore, the IELTS requirement to study in the UK, usually between 6 and 7, was deemed as relatively easy compared to the requirements for entry to Chinese Masters programmes. Finally, the choice of course was another factor chosen for instrumental reasons to maximise the opportunity for employment on return, rather than any specific specialism or interest in the topic.

5.3 *Transition to studying in the UK*

The transition to studying in the UK represents an epistemological shift for the students into an educational lifeworld based around communication. As Kvale (2007) stresses, the epistemological approach is embedded in and shapes the educational culture and assessment types. As academic writing is the main form of disseminating knowledge, this forms the main type of assessment, especially as the majority of participants were in the social sciences. They depict the challenge of having to write extended essays when they have limited experience of this assessment:

I think maybe we are just too focused on exams and if we, if we Chinese people, student I mean, are marked only on essays, I think we will make a big progress because I think she is quite right, we are quite lack of practice. We, I think the biggest word extent we write, I think is 250 to 300 words, I think the small essay. I think we are quite used to this pattern but when it comes to thousands of words of writing, we don't quite familiar with that. . . That's it, when it comes to the longer part, we cannot handle it.

While there is the quantitative difference in the essay length, the essays that students are composing are geared towards understanding based on discourse. In Habermas's TCA, discourse is the reflective form of communicative action, which is called upon when validity claims (truth) of shorter interactions (speech acts) are questioned leading to rational and critical discussion (Bohman & Rehg, 2014). Boucher (2014) clarifies the significance of this; “[r]ationality is seen as grounded in the intersubjective process of reaching agreement through dialogical justifications” (p.195). As noted earlier, this intersubjective consensus of truth is reflected in the process of academic writing and referencing. As the students are used to the instrumental approach, shifting to a communicative approach is a challenge not just in assessments but in the whole approach to study.

As Habermas emphasises universities should be “rooted with the lifeworld” (Habermas & Blazek, 1987, p.8), i.e. geared towards understanding and the reproduction of the lifeworld. In China, it appears that while the education system has been successful, the previous educational experience of the participants is not geared towards understanding but to the assimilation of orthodox knowledge. Consequently, the university lifeworld differs greatly; take the use of the library for example:

P₃ I think the key thing in China is that we have our textbook, textbook, so we don't need to borrow books from the library.

P₂ Yeah that's a good point.

P₃ Yeah, yeah, yeah, and in here, in the UK you don't have a textbook and mostly you borrow from the library, so the library research is better than the Chinese,

M *Ok, so do you think, do you think that affects the way you study then? Does it change the way you study?*

P₃ *Yeah, I love it, no textbook*

M *Really?*

P₃ *More freedom*

As the UK academic lifeworld is shaped around discourse, the university acts as a communicative space for scholars. This can be in the library (physical and online) with its multiple sources of knowledge; the seminar, where students can engage in discourse; the lecture, with its (hopefully) reasoned perspective on knowledge; or through the major form of assessment and dissemination, academic writing. The aim of this discourse is to share and test the validity of specialist, empirically tested knowledge. Ingram (1989) clarifies this process in the context of Habermas's theory: "Theoretical knowledge is born of the conversion of practical experience into propositional information for purposes of cultural transmission—a transition that presupposes an intermediate phase of understanding" (p. 117). The university provides the communicative lifeworld for the cultural transmission of knowledge and shapes the pedagogy of higher education.

The transition manifest itself in problems with academic integrity for practical and epistemological reasons. On the practical side, the participants describe adjusting to searching for sources, reading them, making notes, writing their essay and referencing appropriately. Searching for resources, assessing their validity, understanding the argument and then answering their own essay question is grounded in rational discourse and very different from the participants' experiences in China:

Also, the critical thinking and how to develop the argument, because if you want to develop the argument you need to read many books to get two sides of opinions, the pros and the cons. And then, cite other references to make a conclusion about what opinions you are supporting, you support and it is difficult because in China, for me, I did not do such things in my essay writing.

Referencing in particular highlights a seemingly simple, albeit annoying practical task. In a way it can be seen as where the bureaucratic system (libraries) has acted to help the communicative lifeworld through an administrative task which makes identifying sources used by other authors more efficient. This makes explicit the intersubjective nature of academic discourse.

On a deeper level than the practicalities of studying, the participants describe struggling with criticality, rather than integrity. This is due to the epistemological shift from a monologic approach, to a dialogic approach. Within the dialogic approach the students must develop rational accountability in order to achieve autonomy in the intersubjective process of reaching agreement, Cooke (Cooke, 1992) highlights the significance of this within Habermas's thought:

...communicative rationality, the autonomy of a person would be measured against her or his ability to support what she or he says with reasons, as well as against her or his willingness to enter into argumentation and against his or her openness to criticism. We might refer to this as autonomy in the sense of rational accountability (p. 279)

This is a key finding in terms of the stereotype of Mainland Chinese students' passivity, lack of criticality and reputation for plagiarism. It appears that in adapting

to the intersubjective, communicative lifeworld of the British university, they are undergoing a process of self-determination. This process is not easy, as illustrated by one participant:

*I just think why did I write this bulls**t, I think it's not that useful and it's also just like copying ideas from the famous scholars, and I was just rephrase a little bit, so I don't want to read my assignment.*

The common sentiment is that as students develop their own sense of self within the discourse, they at first struggle with questioning authority

P₂ *Yeah, your paraphrase and the, or they will think, they, she will say, you use too much reference and where's your own opinion "it's quite confusing about that!"*

P₃ *Yeah, I feel the same way.*

P₂ *It's like don't use your own opinion, you are not a professional. You are not a specialist.*

P₁ *They always say the article say, the article have. . .*

M *Yeah, so you're always just reporting*

P₂ *Yes, it's quite confusing about what should I do, should I use the reference or not, either too much or too less.*

P₃ *For me it's like (laughs), what is the point you know? We were asked to do, you know, read the books and make the references and at the same time we're not allowed to give your own opinion. What we do, it's more like a research, right? It's not really a piece of essay where you can build up your own argument.*

One of the participants stresses the communicative aspect of this process and the contrast with the approach he was used to in China:

*In the essay you don't have to be right, you don't have to be wrong, just like, you can **convincing the marker, the supervisor**, you can say it's right, it's wrong, but **you have to prove it by yourself**. In your, you have some reason, you have some idea to support your point, that will be ok but in my undergraduate study exams there is only one right answer. You have to answer this question like this then you can get your score and if it is different from this, it's zero, just like this.*

As Amy Allen (2013, p. 100) has pointed out, Habermas's theory is therefore "extremely useful for thinking through how subordinated individuals can achieve critical and reflective distance on the power relations to which they are subject." (p. 100)—in essence critical thinking. The implication for participants is that the development of an individual perspective on knowledge is vital to partake in the discourse on knowledge. The development of rational accountability therefore socialises the students in criticising authority in order to ensure validity but also to create new perspectives on knowledge. This implies that plagiarism by students from China may be less a case of the stealing of others' ideas and more the denial of self in the knowledge process.

5.4 *Reproduction and colonisation of the academic lifeworld*

The implications of transitioning to an academic lifeworld based on rational discourse from a monologic examination based education are more complex than simply writing essays. Although the participants reported the positive aspects of adapting the different educational context, many reported having issues with plagiarism and all struggled

with the concept of criticality. The research indicates that understanding of these issues is connected in the development of rational accountability and autonomy. In order for this to be reproduced, the university must maintain the normative context of the lifeworld. According to Brunkhurst (1996) “the normative social context must be internalized in process of socialization and become the core personal ego-identity in order to become effective for coordinating action. Habermas names the paradigm of the coordination of action by the life-world ‘social integration’” (pp. 101–102).

Social integration of such a large number of students from an instrumental and authoritarian educational background is a challenge to the reproduction of the lifeworld, and consequently academic integrity. The participants describe their surprise at the large number of Chinese students on their courses, and the difficulty of talking English and finding other nationalities to communicate with. Indeed, the participants reflect positively on their friendships with other international students to practice English and also discuss different perspectives on knowledge. The overwhelming sense, however, was that the ghettoisation of the students on courses with large numbers of Chinese students had a limiting impact on their development and opportunities for communication. This indicates the danger of treating international students as ‘cash cows’ to fill in for the reduction of public funds, as highlighted by Jiang (2008). While it is difficult to find hard evidence of this, the plagiarism issues faced by Chinese students could be an indication of systematically distorted communication as they struggle to transition to an internationalised higher education system which has been colonised by the imperative of the financial gain. In other words, the economic integrity of institutions becomes more important than academic integrity.

6 Conclusion

The academic lifeworld, therefore, is undergoing significant changes. The internet is without doubt having a huge impact on the approach to and evaluation of knowledge in society. The importance of the rational accountability and the validation of knowledge are more important than ever for social cohesion. It is apparent through this study that UK universities provide a context in which students learn advanced communicative competence and the ability to engage in discourse aimed at reaching an intersubjective consensus on truth. Mainland Chinese students are more than capable of adapting to studying in the UK but they must be given time, support and a communicative environment. Indeed, the Chinese government’s policy to attract returnee scholars from abroad and the impact of these scholars on reproducing the academic lifeworld is having success in China’s top universities. In this way, the returnee students are acting as cultural bridge for the academic lifeworld in China, however, this is not without its challenges in terms of academic freedom and integrity (Yi, 2011). The danger in the UK is that in trying to accommodate increasing numbers of Mainland Chinese students in the increasingly competitive marketised HE context, is that the lifeworld is colonised by economic and bureaucratic sub-system. The result of colonisation will be an increasingly instrumental approach from students and staff, where the communicative academic space is threatened. If the “fragile equilibrium” of the lifeworld is not maintained, there may be more challenges for academic integrity.

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Acknowledgments

The author would like to thank; all the participants in the study; my supervisors, particularly Dr. John Issitt, for feedback on and patience with the research; my wife, Sanna Eriksson for her patience; my father, Ian Gow for his feedback; Cecilia Lowe and Nigel Dandy for allowing me to dedicate time and attention to writing the paper, and funding my attendance at the conference; the conference organisers and reviewers for their feedback and support with the paper.

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STATUS OF ACADEMIC INTEGRITY IN PAKISTAN: AN OVERVIEW

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Abstract: It is believed that due credit should be given to the authors of new ideas, innovations and revolutionary inventions. Still, Plagiarism and cheating have become serious concerns with the exponential growth of ICTs around the globe. It is affecting scholarship in various ways. In Pakistan, at present, the campaign against plagiarism is at its infant stage. The current paper discusses the reasons for plagiarism and cheating explored by Pakistani researchers. Furthermore, it highlights the glimpses of an awareness campaign against academic dishonesty, with an insight into the challenges in this regard. The paper is an effort to suggest the way forward. Indigenous literature has been critically reviewed, and practical implications have been suggested. Some content in this paper draws on unpublished works by the authors.

Key words: Academic Integrity, Plagiarism, Pakistan

1 Introduction

Academic integrity is a commitment which enhances the fidelity of an intellectual output. It rests upon the values of honesty, trust, fairness, respect and responsibility while contributing towards the existing body of knowledge. Academic dishonesty limits critical ability, creativity, and self-contemplation of scholars. The Center for Academic Integrity Duke University, USA (1999) asserts on the need for academic integrity in the universities and higher education institutions as it provides a base for a vibrant and healthy academic culture, promotes the scientific progress and nurtures students by instilling in them the responsible citizenship. University of Illinois (2013) defines academic integrity as

“[H]onesty and responsibility in scholarship. Students and faculty alike must obey rules of honest scholarship, which means that all academic work should result from an individual’s own efforts. Intellectual contributions from others must be consistently and responsibly acknowledged. Academic work completed in any other way is fraudulent (University of Illinois, 2013).”

Plagiarism is a huge impediment in the way to attain academic integrity. Stevenson (2010) describes plagiarism as an unethical practice of unauthorized use of others work or if not then the close imitation of one’s work, idea or the language without due credit, representation or acknowledgment, as one’s own. Pennycook (1996) defines plagiarism as borrowing others’ words; text ownership, memory without due credit Plagiarism erodes trust and fairness in the process of generating an academic output and is akin to intellectual theft. Plagiarism is unethical and is an offense; an author must avoid it. “In most of the studies, the researchers discussed plagiarism and cheating as the main aspects of academic dishonesty. However, plagiarism has been considered an independent research area in most studies (Davis, 1993; Drake, 1941; Hinman, 2002; McCabe & Trevino, 1993)” (Soroya, 2016).

“A wide range of factors, which are causing lapses in academic integrity, has been found. The most generally quoted justifications given by the students for cheating include: time pressure to complete tasks, the apparent assistances of cheating, lack of knowledge of the course material and suitable approaches to quote the source, a whole culture which does not see cheating as a serious problem, the lack of motivation, lack of preparation, pressure of grade and material that is too difficult (Harding, Carpenter, Finelli, & Passow 2004)” (Soroya, 2016).

2 Status of Plagiarism and Cheating in Pakistan

After the transformation of University Grants Commission (UGC) to Higher Education Commission (HEC), Pakistan, the HEC has been more centered on innovative work through “offering impetuses to understudies getting confirmations in graduate and postgraduate projects in Pakistan and abroad. A considerable measure of awards, grants, and rewards are being given to understudies, analysts and staff for doing and distributing research (Higher Education Commission, 2013). The level of concentrate on research and grant, be that as it may, has been changing with the adjustments in needs of the occupant governments.”

Research in any field is dependent on getting access to readily available information, especially scholarly knowledge. As an individual or an organization, prompt access to most recent academic data has turned out to be urgent to keeping pace with the most recent patterns, developments and research in a specific field. “The HEC National Digital Library Program has contributed a considerable measure to the advancement of the exploration culture in Pakistan. This program made it workable for analysts openly and private segment advanced education foundations to get too exorbitant online diaries and databases utilizing a solitary stage. In the meantime, the online get to urged some of them to duplicate other’s work and distribute it as their own. HEC encourages critical thinking and is against any practice of unoriginality/cheating. With keen altering one can without much of a stretch by-pass programming identification. Curiously, Pakistani colleges’ worldwide positioning is not going up, despite the fact that, scholarly community has been encouraged and urged to deliver significant research” (Soroya, 2016).

Studies conducted at a local level clearly reported the conduct of plagiarism and cheating among the majority of the university students (Shirazi, Jafarey & Moazam, 2010; Ramzan, Munir, Siddique, & Asif, 2012; Nazir & Aslam, 2010; Soroya, 2014).

3 Why Authors Plagiarize?

There could be a number of reasons for which students involve in plagiarism and cheating. However, here are the few reasons which were reported at the national level.

First of all, Journals with fake editorial boards in different academic institutions are a big reason of producing plagiarized work. “Such cases were reported to high officials in the Higher Education Commission of Pakistan” (Daudpota, 2011). “People are engaged in the conduct of plagiarism knowingly and unknowingly. In 2010, Shirazi, Jafarey & Moazam conducted a research and found that medical students and faculty were

involved in plagiarism because they were not aware of the subject of plagiarism. The researchers argued that even those who have some knowledge of the subject admit having plagiarized their work at one time or another” (Soroya, Hashmi, & Soroya, 2016).

“Ramzan, Munir, Siddique, & Asif, (2012) highlighted another reason of this misconduct. They reported that ‘in Pakistani universities students were involved in plagiarism due to family and social pressures to get higher grades, as it is considered important for employment and status in Pakistani society. It was also revealed in the study that many students were unaware of the plagiarism policy of the university and that these policies are not visible, disseminated and posted to the extent that they are available to all university students’. The majority of the participants admitted that they intentionally plagiarize and the researchers concluded that in Pakistani institutions plagiarism is rising” (Soroya, Hashmi, & Soroya, 2016).

“Another important reason for doing cheating is explored by Nazir and Aslam (2010). They used a well-structured questionnaire and collected data from 958 students of undergraduate and graduate levels in different universities of Pakistan, and found that more than half of the students studied were involved in dishonest acts such as helping other students, copying homework assignments, exam papers, or graded project reports. These students believed that cheating and copying were not serious offenses and that there was no penalty for such behavior” (Soroya, 2016).

Recently, Soroya (2014) investigated “the level of Academic Integrity among students of Pakistani universities with the help of data gathered through a survey on the basis of statements covered two factors i.e. cheating and plagiarism”. It was a part of researcher’s doctoral dissertation. The researcher distributed 900 questionnaires and received back 818 using multilevel sampling strategy in universities of Pakistan. The findings clearly indicate that respondents reported their involvement in cheating. However, the results clarify that they were not involved in unpermitted cheating, but still, they were habitual of taking help from others even for their individual assignments. “Responding students showed their positive behavior towards cheating in Academic Integrity, however in the aspect of cheating the respondents have exhibited a lesser degree of hesitation as compared to plagiarism”. In an aspect of Plagiarism, it was found that students do plagiarize by not citing the resources properly, as the statements related to citation of information resources received a lesser degree of agreement as compare to other statements.

“It was revealed that the majority of the students have expressed that they have been positive towards Academic Integrity with respect to both cheating and plagiarism factors; however, it should be kept in mind that there is a reasonable percentage of respondents who admitted that they had indulged in plagiarism and cheating one way or the other” (Soroya, 2016).

The questionnaire was self-reporting and in such cases, the percentage clearly indicates that the number of students who are involved in cheating and plagiarism could not be ignored. It was found that in Academic Integrity, the majority of the students take plagiarism as more serious unethical behavior compared to cheating. The reason could be that Higher Education Commission had more focus was on awareness about plagiarism.

Rehman & Waheed (2014) reported that “time limits and relationship preferences lead students to accept an attitude of task completion, even by unfair means, such as academic misconduct. They also found that generally, students in earlier stages of research (age 21–25 years) were more involved in academic misconduct due to lack of knowledge of the research areas; consequently, they resorted to copying the contents of another author without giving the proper references and citations” (Rehman & Waheed as cited in Soroya, Hashmi, & Soroya, 2016).

Another important factor was explored by Soroya (2014) that the act of doing plagiarism and cheating has a significant relationship with the student teacher relationship. The researcher conducted a national-level study of graduate students and came up with the findings that the better relationship among the students and teachers leads to a better level of academic integrity. Thus it can be concluded that teachers can play important role in developing academic integrity among students.

4 Curbing Academic Dishonesty & Cheating

In Pakistan, the institutes and organizations are working to create awareness regarding the act of plagiarism and cheating, and to prevent the same from creating a good academic environment. First of all, the Higher Education Commission, Pakistan (HEC) quality assurance division has taken few steps in this regard (HEC Pakistan, n.d.). They published a “little book of plagiarism” to aware people that what actually is plagiarism and how they can avoid it. HEC devised a clear policy to prevent the plagiarism and even the self-plagiarism. The role of institutes and the nature of penalties for plagiarism has been clearly mentioned in that piece of paper i.e. Plagiarism Policy.

Furthermore, to regularize the procedures and to avoid unnecessary delays HEC has given “Time bound Standard Operating Procedures for Plagiarism Cases”. The HEC has also made it compulsory for all HEC recognized universities to use anti-plagiarism software for dissertations and research papers before publications, and the institute has been organizing workshops to train focal persons of all universities, furthermore, guidelines and training videos are also available on the official website of Higher Education Commission, Pakistan. A list of blacklisted faculty members also updated regularly. Suggestions/Queries/Complaints are received by HEC quality assurance division through an online form, which is another effort to improve the educational system.

The second remarkable effort has been carried out by Information Technology University, Lahore, where the principal researcher established the first National Centre for Academic Integrity (Facebook, n.d.). From this platform a series of awareness lectures/workshops has been organized for the students, researchers, faculty members, and the librarians. Different topics of academic integrity have been addressed in these lectures, and workshops including, how to write an article, avoid plagiarism, how to publish research ethically, use of citation management soft wares to avoid plagiarism and so on.

The third platform for creating awareness regarding academic integrity is Pakistan Librarians Welfare Organization (PLWO). The said organization has been conduction

training and seminars for writing research ethically, and for citing and referencing properly since 2011 (IJIMS, 2013).

5 Challenges

The first challenge which hampers academic integrity is the lack of awareness about plagiarism. Most of the scholars regard plagiarism as a technical problem and use online tools to judge the creativity of their work. They must have taught that plagiarism is not a technical issue; it's a behavioral problem. Online software tools only address the syntactical (text matching and grammatical) issues of the text, they do not account for the semantic dimension (creativity) of a submitted work. This creativity can only be judged by the naked eye by reading between the lines and ascertaining the self-contemplation and synthesis of ideas. The aim to avoid plagiarism is to develop a critical mass of scholars who could integrate their own ideas with the findings of other scholars, giving them due to credit, so to contribute to the existing body of knowledge in a responsible, honest and acceptable way. That's why academia and scholars are needed to be socialized and sensitized to respect the intellectual output of other authors and get respected for their own work.

The second big challenge is a lack of awareness about the use of the online text matching tools. There are a number of tools available online such as Turnitin, iThenticate, Viper etc. which facilitate authors to check the originality of their own work. In Pakistan, 'Turnitin' is officially recommended by Higher Education Commission (HEC) for this purpose. However, there are misconceptions about these online tools both among the students and teachers. It has been observed that many of the authors consider these online software tools suffice to counter plagiarism issues, without further evaluating the submitted work. They put over-reliance on the similarity score generated by these tools. It is the prime responsibility of universities and Degree Awarding Institutions (DAIs) to organize workshops and training sessions on academic integrity to dispel these misconceptions in the understanding of these online 'anti-plagiarism' tools. The authors need to be sensitized about the working and output report of 'Turnitin' and other tools. Making them sensitized about 'taken for granted' use of these online tools could prove helpful in establishing academic integrity.

Third, there is a misconception or sometimes inadvertent attitude towards these software tools. 'Turnitin' and other such software programs are often exaggerated as 'anti-plagiarism' tools; in fact, they do not detect plagiarism: rather they are just text-matching software programs which provide an "originality report" to what proportion of a submitted work matches with other sources. This originality score should not be taken as face value in the interrogation of submitted work. The same score on similarity index generated by two different software programs can have different plagiarism issues. Taking 'originality report' for granted can create serious issues. Often students cheat by employing 'unique' synonyms or grammatical techniques of 'active to passive voice' to show that their work is plagiarism-free. It is the duty of a teacher to interrogate the submitted work thoroughly and decide with the 'naked eye' whether or not, the work is original, claims made or ideas borrowed are cited properly and the write-up really enhances the skills of the student.

Moreover, 'Turnitin' and similar software tools flag subject jargons and common phrases, besides the work of original authors. A careful interrogation of such common-use phrases such as "the finding of the study infers. . .", or, "researchers contend that . . .", is necessary to decide whether and to what extent the work is plagiarized, as these phrases are inevitable and cannot be qualified as plagiarized. A careful post-evaluation of each flagged phrase must be done by the teachers to exclude these kinds of phrases and jargons from plagiarism.

6 Way Forward

To ensure academic integrity, different academic governing institutions, around the globe, have established various standards and issued guidelines for the authors. These guidelines not only protect the scholarly work of authors from unauthorized use but also intend to produce the necessary critical and analytical skills in scholars to help synthesize their own novel argument on the corpus of previous inquiries. Doing this enables them to carry out a rigorous and systematic approach towards problems.

Authors need to make understand that Turnitin and other online tools are not any yardsticks to determine the genuineness of a scholarly output; rather they are mere facilitators in ensuring the academic integrity. In Pakistan, the originality score generated by 'Turnitin' has so widely been taken for granted that in the recent years the quantity of research output has increased, however, their quality has worsened. This implicates that understanding of the tool is not sought properly which is hindering authors in achieving critical skills and creativity. Such a surge in substandard scholarly work can be attributed to a number of reasons, for instance, hastily academic promotion, job requirement or funding but there is no justification, in any case, of violating the academic integrity and ethics in the production of scholarly knowledge. Not having the proper understanding of these online text matching tools results in such kind of academic cheating.

Second 'Turnitin' is a commercially available tool like many others, which facilitates the students and teachers in their work; it's no way a decisive tool to establish the authenticity of a submitted work. Since plagiarism is a behavioral issue, authors need to consult the plagiarism policy of respective academic institutions to bring the creativity into their work. The aim of this is to create a critical mass of scholars who could address the local problems effectively and able to suggest viable solutions.

Adding to this, it is a big challenge for universities to afford the subscription fee of text matching software. Secondly, text matching software is not the solution, as there are numerous ways to bypass the text matching software. Although, gradually with the initiatives taken by different organizations and academic institutions an awareness campaign has been started, still it is required to take it on a serious note and to train the faculty members first as they can play an important role to develop a research culture and to modify the researchers' behavior accordingly. One reason explored by the researchers is family and social pressure, time pressure could be another reason. These could be removed by mutual cooperation and good student-teacher relationship. There is need to clarify the different aspects of academic integrity i.e. plagiarism and cheating.

It is essential that an awareness campaign is initiated for university teachers pertaining to Academic Integrity with special emphasis placed on plagiarism and cheating. Furthermore, the Higher Education Commission of Pakistan should in addition to its plagiarism policy add a policy with reference to avoiding academic cheating for the guidance of universities. It is recommended that every university should design an Academic Integrity policy in order to clarify the concept of academic ethics to students and faculty members so as to eradicate cheating and plagiarism. It is also recommended that every university should establish a center for Academic Integrity to implement the Academic Integrity policy and to deal with such cases. This center can also be part of the university library. In this regard, the first initiative has been taken at Information Technology University, Lahore where the principal researcher initiated first national center for academic integrity.

Federal Higher Education Commission, as well as universities, should add active programming of lectures, seminars, workshops, for the awareness of Academic Integrity and ensure avoidance of academic dishonesty.

In nutshell, it is more important to understand academic integrity, rather merely focusing upon the text-matching reports of these online tools. Honesty, fairness, and self-contemplation should be the ultimate yardstick for evaluation of the work. "Students and faculty alike must obey rules of honest scholarship, which means that all academic work should result from an individual's own efforts. Intellectual contributions from others must be consistently and responsibly acknowledged. Discrediting other's work in any way is fraudulent" (Soroya, Hashmi, & Soroya, 2016). A text-matching software is just a tool, a facilitator; it must be used carefully and not be taken its results for granted.

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SYNOPSIS

CULTURAL DIFFERENCES REGARDING EXPECTED UTILITIES AND COSTS OF PLAGIARISM—A COMPARISON OF HIGH-TRUST AND LOW-TRUST STUDENT SAMPLES

Eckhard Burkatzki, Joost Platje, Wolfgang Gerstlberger

Abstract: The outset assumption is that plagiarism can be understood as a variation of crime or opportunistic behaviour. Correspondingly it serves actors as an illegitimate or illegal, but nevertheless economical means to reach target ends. Adopting this thesis plagiarism seems not to be a crime of passion but of calculation, where actors compare utilities and costs. Against this background, the study asks for cultural variations regarding the perceived utilities and costs of plagiarism, focussing on the following questions: (1) Do students from student samples with a different level of generalized trust vary with respect to the average frequency of plagiarism? (2) Do students from student samples with a different level of generalized trust vary with respect to the on average perceived cost-utility structure of plagiarizing? (3) Is it possible to explain observed sample-specific differences in the average frequency to plagiarize by different sample-specific perceptions of the cost-utility-structure of plagiarizing? Survey data of students from universities in Poland, Germany and Denmark are used to answer these questions, whereby the Polish student sample represents a low-trust-, the German sample a medium-trust- and the Danish sample a high-trust sample. Methodically, the study is based on bivariate statistics, principle component analyses and multiple regression. Significant differences are found regarding both the frequency of plagiarism and the willingness to plagiarize between high-trust-, medium-trust- and low-trust samples. In the high-trust case perceived moral costs of plagiarizing activity provide stronger disincentives for committing plagiarism than possible external sanctions. Above this, a reverse effect of administrative sanctions within high-trust- and low-trust samples could be observed, with the remarkable recognition that in high-trust samples the threat of administrative sanctions does not prevent but provoke deviance. Evidence was found that differences in the aggregated frequency of plagiarism between different samples can be explained by the activity of utility-oriented actors under circumstances of a varying level of generalized trust influencing the perceived moral costs of plagiarism.

Key words: Plagiarism; opportunistic behavior; extended rational-choice approach; generalized trust; low-trust- and high-trust cultures

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INTEGRITY INSIGHTS FROM INDIA

Jo Hinchliffe, Amanda McKenzie

Abstract: In November 2016 two colleagues, Jo Hinchliffe from Simon Fraser University, and Amanda McKenzie from the University of Waterloo, embarked on an informal 16-day trip across India to visit prominent Indian universities and to explore how these institutions educate their students about academic integrity. We visited six universities (IIT-Bombay, Indian Institute of Management—Indore, IIT-Delhi, Jawaharlal Nehru University (JNU), IIT-Ropar, University of the Fraser Valley (UFV) Chandigarh campus, and one high school (Delhi Public School—Maruti Kunj, Gurgaon).

Some of the questions we asked were:

- How are your students taught the academic rules for writing?
- What do you consider to be academic dishonesty?
- Are they [your students] taught about academic integrity?
- Does your institution have an honour code or code of conduct?
- What would help students better transition into studies at Canadian universities?
- How should we educate students from India about academic integrity?

The intent of the trip was to uncover ways Canadian universities can better support Indian students with the transition into North American academia and how to best educate them about academic integrity.

This presentation will detail our visit and observations, and highlight the commonalities and the differences that were experienced. This session will provide some context about the educational system in India as well as potential ways that UK and North American universities could better support students from this country as they transition into Western academic culture. We will emphasize acculturation and the importance of context. We will promote the need for a global appreciation and encourage more post-secondary institutions to pursue such trips to experience learning abroad. Specific recommendations that universities could implement will also be discussed. Insights from this session will be inferential to other international students.

Presenters

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Key words: Academic integrity; acculturation; India; higher education; international students; academic success

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PATTERNS AND PREDICTORS OF ACADEMIC DISHONESTY IN ROMANIA AND MOLDOVA

Bob Ives

Abstract: More than 20 scholars from four countries have come together as a research team to study academic integrity in higher education. This presentation has four goals:

- To share results from two studies of more than 2400 university students in Romania and Moldova. These studies explored the patterns of plagiarism and cheating reported by these students, predictors of plagiarism and cheating, and reasons for engaging in plagiarism and cheating.
- To share current projects and future research plans for the group.
- To invite interested scholars to join our efforts.

Rationale: The Prime Minister of Romania relinquished his doctoral degree in December of 2014 amid accusations that he plagiarized substantial parts of his dissertation. The Prime Minister of Moldova resigned in the summer of 2015, amid reports that his high school and university diplomas were fraudulent. Both countries are members of the European Higher Education Area (Bologna Process), and Romania is also a member of the European Union. These memberships have put both countries under some pressure to reform their systems of higher education. Academic integrity is a part of these reform processes.

Method: Based on the content of 37 previous survey studies in other countries, we developed and validated a survey for university students that included three sections. One section solicited information about demographics characteristics of participants. A second section asked for participants experiences and attitudes regarding 22 academic behaviors that might be considered dishonest. The third section asked participants to rate the importance of 23 different possible reasons for engaging in these behaviors. Depending on the availability of appropriate technology and connectivity, surveys were either completed online or on paper by about 2400 university students in 11 universities in the two countries.

Results: Five interpretable factors accounted for about 55% of the variance in how often students engaged in the 22 behaviors. Three of these factors were identical when comparing the results from the two samples. These three factors were cheating on assignments, using unauthorized information on a test, and having the wrong person take a test. Behaviors that did not factor the same way in the two countries included plagiarism, not reporting the inappropriate behavior of others, using false data, making up false excuses to get extra time, and sabotaging the work of others. How acceptable students believed these behaviors were, and how often students saw other students engage in these behaviors independently explained significant variance in how often students engaged in these behaviors. The following predictors were not significantly related to how often students engaged in these behaviors: age, gender, institution, class, specialty, academic grades, and whether or not students are receiving scholarships, although these predictors have yielded significant results in other, smaller studies. We found no interpretable factors for students' ratings of the importance of the 23 reasons for engaging in these behaviors.

Conclusions: While more researchers have been raising concerns about academic integrity worldwide in recent years, this study addresses some concerns about the extant literature, including problems with representativeness of samples, and the comparability of results derived

from different instruments. These limitations point up the need for more multi-country studies, as well as meta-analyses. They also bring focus to the challenges of implementing interventions to reduce behaviors that conflict with academic integrity. In addition, this research is based on the work of a team of more than 20 scholars from four countries. We currently have two papers under review, and three others in development, along with plans for future projects. I will discuss the affordances and challenges of Getting Connected by creating, and coordinating a large international team of researchers.

Key words: cheating, plagiarism, Romania, Moldova, academic integrity, academic dishonesty

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PREDICTORS OF ACADEMIC DISHONESTY: A META-ANALYSIS

Bob Ives

Abstract: While many studies have tried to identify reliable predictors of academic misconduct, including cheating and plagiarism, the findings have often been inconsistent. For example, while many studies have found gender differences in how often students engage in academically dishonest behavior (AD), some have not (e.g. Kucuktepe 2011, Moberg 2008, Watson 2010). Some studies have found differences in AD based on student grade level or year in school (e.g. Kreuger 2014, Sendag 2012) but others have not (e.g. Kucuktepe 2011, Trushell 2013). We conducted a meta-analysis of the results of more than 50 studies to develop a broader understanding of the predictive value of nine possible predictors of AD that appear in the research. These predictors were, seeing or believing that others engage in AD, perceived acceptability of AD, gender, age, class/year in school, grade average, receiving financial aid, institution, and major/specialty. Each study involved self-reporting from post-secondary students, a measure of AD behavior, a measure of one or more of the predictors listed above, and enough statistical information to calculate an effect size measure. In this presentation, I will report results for each of the predictors, including mean and weighted mean effect sizes, as well as information about variability, and patterns in results related to study size, geographic region, and type of AD.

Key words: cheating, plagiarism, academic integrity, academic dishonesty, meta-analysis

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**PLAGIARISM ACROSS EUROPE AND BEYOND 2017
Conference Proceedings**

Irene Glendinning, Tomáš Foltýnek, Jiří Rybička (Eds.)

Published by Mendel University in Brno

Printed by MENDELU Publishing Centre

Typeset by Jiří Rybička

First edition

Brno 2017

168 pages, 180 pcs

ISBN 978-80-7509-493-3