Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Information Technologies

Master's Thesis

Study of Plagiarism and Plagiarism Detection Applications: Case study of Czech University

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DIPLOMA THESIS ASSIGNMENT

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Study of plagiarism and plagiarism detection applications: Case study of Czech University

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Objectives of thesis

The main objectives of this thesis is the study of plagiarism in universities on the example of a specific university (CULS), how it affects the performance of students during the academic year and the study of how effective are the plagiarism applications. The thesis will compare four anti-plagiarism systems. The goal will be to determine which software is the most efficient and cost-effective for the CULS and for education system in Czech Republic overall.

Methodology

As part of the diploma's practical part a case study will be conducted among students and teachers at CULS. Anti-plagiarism tools will be given special attention. The concepts of its operation and implementation will be represented via a questionnaire that will be used to do a comparative analysis of usage of all three applications using Multi-Decision Criteria Analysis. Those collected qualitative data (students' responses) will be transformed into quantitative data (statistics) to organise the information for analysis. The author will apply a weighted scoring system for evaluating the data and calculate a rating of each tool.

The proposed extent of the thesis

40-50 pages

Keywords

Plagiarism, behavior, applications, case study, undergraduate students

Recommended information sources

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Prague on 30. 03. 2023

Declaration

I declare that I have worked on my master's thesis titled "Study of plagiarism and plagiarism applications in universities" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

In Prague on 31.03.2023 _____

Study of Plagiarism and Plagiarism Applications in Universities

Abstract

The main objective of this diploma thesis lies in the analysis of the plagiarism phenomenon in a selected Czech University, where the author analyzes the attitude of students towards plagiarism, the attitude of teachers towards the same issue and ways of tackling similar issues. In the end, the author comes up with an evaluation of the most prominent and widely used plagiarism detection tools in the Czech Republic and chooses the best based on the personal evaluation and also evaluation of students and teachers.

For the methodology of the work, the author incorporates a large variety of quantitative and qualitative techniques. To be more specific, the author uses two questionnaires to capture essential data related to the attitude towards plagiarism, conducts a series of structured interviews with professors from a selected Czech University and consequently, conducts a multi-criteria decision analysis process according to the simple additive method, where the best application is selected.

In the conclusion, the author comes up to the realization that plagiarism is a serious problem in the selected institution, which becomes even more concerning as artificial intelligence programs are used more and more by students. Ultimately, the author suggests that the best plagiarism detection tool based on the evaluation from the MCDA analysis is Moodle CZU with the Turnitin plugin pre-installed.

Keywords: plagiarism, behavior, applications, case study, undergraduate students

Analýza plagiátu a anti plagiátorských aplikací na vysokých školách

Abstrakt

Hlavním cílem této diplomové práce je analýza fenoménu plagiátorství na vybrané české univerzitě, kde autor analyzuje postoj studentů k plagiátorství, postoj učitelů ke stejné problematice a způsoby řešení podobných problémů. V závěru autor přichází s hodnocením nejvýznamnějších a nejrozšířenějších nástrojů detekce plagiátů v České republice a vybírá to nejlepší na základě osobního hodnocení a také hodnocení studentů a učitelů.

Pro metodiku práce autor zahrnuje širokou škálu kvantitativních a kvalitativních technik. Přesněji řečeno, autor pomocí dvou dotazníků zachycuje základní údaje týkající se postoje k plagiátorství, vede sérii strukturovaných rozhovorů s profesory z vybrané české univerzity a následně provádí multikriteriální rozhodovací analýzu podle jednoduché aditivní metody, kde je vybrána nejlepší aplikace.

V závěru autor dospívá k poznání, že plagiátorství je ve vybrané instituci vážným problémem, který se stává ještě více znepokojujícím, protože programy umělé inteligence jsou stále více využívány studenty. Nakonec autor navrhuje, že nejlepším nástrojem pro detekci plagiátů založeným na vyhodnocení z analýzy VAV je Moodle CZU s nainstalovaným pluginem Turnitin.

Klíčová slova: plagiátorství, chování, aplikace, případová studie, vysokoškolští studenti

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1 Introduction

The issue of using plagiarized content in writings, assignments etc., is more crucial than it has ever been nowadays due to the fact that the amount of content and information available on the internet continues to grow on a daily basis. This issue is persistent among students enrolled in higher education institutions, as well as among teachers, who are nearly always confronted with it. And given the current circumstances, academic higher education institutions all over the world are facing an increasingly serious issue in the form of plagiarism (Park, 2003).

There is a wide variety of technical ways to detect plagiarism. The most straightforward approach is to use search engines, most commonly Google, and enter brief terms taken from the work that is being evaluated. On the other hand, this approach is quite difficult, as performing a complete review of all of the work in this approach takes more than an hour. Due to this reason, there are currently exist many types of applications that can evaluate the work of a student for cases of plagiarism. In this diploma thesis, the author will focus on three antiplagiarism tools of this kind that have a large number of users in the Czech Republic: Moodle CZU, Scribbr, Grammarly and Odevzdej.cz.

It will be possible to determine which of these tools is the most cost-effective and the least expensive by comparing these three programs and seeing which one comes out on top. In addition, with the assistance of these applications, it will be easy to monitor the trend of academic dishonesty among students and find some strategies and suggestions which suit the best for dealing with plagiarism.

2 Objectives and Methodology

2.1 Objectives

The main objectives of this thesis are the study of plagiarism in universities on the example of a specific university (Czech University of Life Sciences), how it affects students' performance during the academic year and the study of how effective the plagiarism applications are. In this thesis author will compare four different anti-plagiarism systems called "Moodle CZU", "Odevzdej.cz", "Scribbr", and "Grammarly". The goal will be to determine which software is the most efficient and cost-effective for the Czech University of Life Sciences and for the education system in the Czech Republic overall.

2.2 Methodology

A case study will be undertaken among Czech University of Life Sciences students and professors as part of the diploma's practical part. Three anti-plagiarism tools will be presented and examined in particular. The concepts underlying its operation and implementation will be represented by a questionnaire, which will be used to conduct a comparative analysis of all four applications' usage through Multi-Decision Criteria Analysis. To organize the data for analysis, the obtained qualitative data (student responses) will be transformed into quantitative data (statistics). The author will evaluate the data using a weighted scoring system and assign a rating to each tool.

To be more specific, the author incorporates the method of SAW for the calculation of the utility of each plagiarism tool. This method relies on the following formula:

$$S_i = \sum_{j=1}^{M} w_j r_{ij} \; for \; i = 1, 2, \ldots, N \tag{1}$$

With "w" standing for the importance of given criteria, "r" standing for normalized rating and "S" standing for the global utility of a given variant or the total score.

3 Literature Review

3.1 Plagiarism

3.1.1 Concept

The term "*plagiarism*" originates from the Latin word "Plagiarius," which translates to "kidnapper" and refers to an intentional appropriation of the authorship of another person's work in the fields of literature, science, art, invention, or innovation (in whole or in part). The concept is related to any action of stealing someone's piece of art, writing, etc., without further referencing the author. Undoubtedly, today, the impact of plagiarism towards the world has definitely changed since almost anything can be traced today. (Arlene Franklyn-Stokes, 1995)

However, this concept still seems to be occurring in particular domains of human activity. Evidently, the academic field appears to be the most vulnerable to this phenomenon since plagiarism techniques did not stop developing, but they actually go in the foot with other domains of human activities, and today, countless services offer people a chance to steal someone's work and avoid being caught red-handed. (Gipp, 2014)

3.1.2 Types of Plagiarism

3.1.2.1 Intentional or Unintentional

An intentional form of plagiarism in the academic domain occurs whenever a given author copies an entire section of the text, a paragraph, or an entire data set without citing the original author. In addition to this, it is believed that that individual has the intention of passing it off as their own work while still being aware that the activity he is doing is simply not entirely appropriate. Unintentional plagiarism occurs whenever an author is either unfamiliar with the researched question, or he is unaware of the ethics that apply to writing, or he is unable to cite sources properly, and as a result, produces articles that are identical to those that have already been published (Joob, 2018).

3.1.2.2 Direct Plagiarism

The most prevalent form of plagiarism is a style of writing known as "copy-cut-paste" or "word-to-word" writing. This sort of writing is a direct reproduction of the work of another author. Replicating complete words, paragraphs, tables, or even photographs without providing credit to the original author is one example of this form of plagiarism. Quite often, people with a command of various foreign languages exploit their abilities and simply take articles in one language, translate them into another and present the work to the world. (Jay N Shah, 2022)

3.1.2.3 Aggregate Plagiarism

This form of plagiarism refers to the practice of citing earlier articles without actually reading the bibliography or making use of its cross references. This includes not just replicating the work of another person but also providing proof of the source from which you obtained the work (Gardiner, 2023).

3.1.2.4 Mosaic or Patchwork Plagiarism

This type of plagiarism occurs when a new author takes the text of a previously published piece without giving credit to the original author by changing the sequence of the words or phrases, paraphrasing the sentences, or substituting the words with different words. Plagiarism that is done through patchwork is significantly more challenging to detect than traditional copy-and-paste plagiarism (Gardiner, 2023).

3.1.2.5 Self-Plagiarism

This phenomenon occurs when the author adds new research to an already published article, book, contributed chapter, or journal and then presents it as if it were completely new without crediting the original material or obtaining permission from the publisher who originally published it (Gardiner, 2023).

3.1.2.6 Ghost Writing

In this type of plagiarism, the primary contributor, who has created a piece of literature, art, or other invention, does not receive the appropriate appreciation, and instead,

credit is given to someone who has not contributed (Singh, 2016). This problem is especially severe and complicated to tackle as there are almost no real measures that can verify this aspect (Anekwe, 2010).

3.1.2.7 Collusional

Collusional plagiarism occurs when an author solicits the assistance of another individual who is an expert in a particular field or an organization that specializes in the writing of papers in order to write an article and afterwards claims that the article is his own work. (Roka, 2017)

3.1.3 Repercussions

Plagiarism usage among students in universities can outcome in various serious repercussions. The following are some of the probable repercussions that may be imposed on the student if they are found to have plagiarized another person's work:

- Obtaining a failing grade for a particular task and having no chance to improve your grade in any way.
- Obtaining an immediate failing grade for the whole term.
- Disciplinary hearing - the commission is going to request an explanation from the student regarding the usage of plagiarism in his work so that they can gain a better understanding of the further circumstances.
- Being given extra tasks to do, all of which are necessary to determine whether you have learned your lesson.
- Being expelled from the university.

But this is not the only repercussions that people are facing due to replication or copying someone else's work. Students at universities year by year are becoming accustomed to plagiarising everything and passing off the work of other people as their own while they are studying at universities. As a direct consequence of this, pupils grow unmotivated to complete even the most basic assignment. And as a direct outcome of this, the world ends up having specialists who have neither the skills nor the education necessary to do their jobs when they graduate from university (Kalani, 2013). It is quite challenging

for these individuals to come to any decisions on their own, to complete small tasks or to take responsibilities during a busy workflow. The majority of companies want their employees to have an education and be oriented in accordance with the program they studied while attending universities. These employers are unlikely to hire individuals with low levels of skill, which will generate a shortage of labour in the labour market. (The University of Melbourne, Australia, 2006)

3.1.4 Plagiarism Detection

In the past, the only method that could be utilized to identify cases of plagiarism was the ability or knowledge of the editor or reviewer to distinguish copies from the original. This was the only method that could be used. This requires not just an in-depth study of the previous research, but also a familiarity with the repeating topics and writing styles of a range of authors, as well as the capacity to cross-check these components. In today's technological landscape, there is a number of tools and online resources that can provide assistance in identifying instances of plagiarism. Checking for the occurrence of the word and text duplication can be done much easier with the assistance of computer programs (Dahl, 2007).

3.2 Anti-plagiarism

The phrase "anti-plagiarism" refers to a series of actions that are pointed at checking one's work or writings with the help of a special program or protocols that checks for borrowings from any Internet source in the text of a summary, term paper, diploma, or other work without properly citing them. According to the authors, this action is a traditional protocol that is delivered by the majority of educational institutions (Culwin, 2001)

Every minute, several dozen different works and a significant amount of information on a wide range of topics are being posted to the Internet. All of this once become available to the public and is accessible to all Internet users. The continuous exchange of information, it is copying, and use in works results in each new paper or thesis being partially or entirely borrowed and not original. And in order to make it unique, you may be required to rewrite the work completely. As an outcome of that, more and more new anti-plagiarism tools and

applications are being created around the world to detect plagiarism (Vij, 2009).

3.3 Anti-plagiarism Applications

For easier detection of plagiarism, a significant number of anti-plagiarism applications exist. Every software has its own mechanism for working with documents and how precisely plagiarism can be detected with these applications. The most popular of them around Europe are Scribbr and Grammarly, and in the Czech Republic most used plagiarism tools are Moodle and Odevzdej.cz. According to analyses from authors and academists, those applications are believed to be something that radically changed the way how matters stand in the domain of academics since now copyrights and generally publications are now being protected (Willinsky, 2002). In fact, they are being protected today not just by manual verification, but by a series of complex algorithms that has an extremely high effectivity, according to numerous reports and assessments (Shaver, 2014).

3.3.1 Scribbr

In the year 2012, Alumni Bas Swaen and Koen Driessen established the company that would later be known as Scribbr. Koen needed an English-speaking proof-reader for his thesis, so he started Scribbr. The program identifies anything from word-for-word matches to the substitution of synonyms. In addition to this, it provides access to a greater selection of source types, such as open- and restricted-access published papers, dissertations, theses, web pages, PDFs, and newspaper articles. The downloaded writings will be compared to the database, which includes over 8 million articles from more than 1,700 publishers and contains over 99.3 billion current and historical websites (Scribbr.com, 2022).

The plagiarism checker offered by Scribbr provides full support for a total of 20 different languages, among which are English, Spanish, German, Arabic, and Dutch. All the downloaded writings will not be made public. All works which were not uploaded through Scribbr for a plagiarism check will not be visible to any other plagiarism tools since they are not posted in any public register. If the free version of Scribbr indicates that there is a possibility of copying another author's work, then it is better to switch to premium so that

one has access to all of the features necessary to make sure that one's writing is original. The user interface of the application is indicated in Figure 1.

Figure 1, Scribbr interface
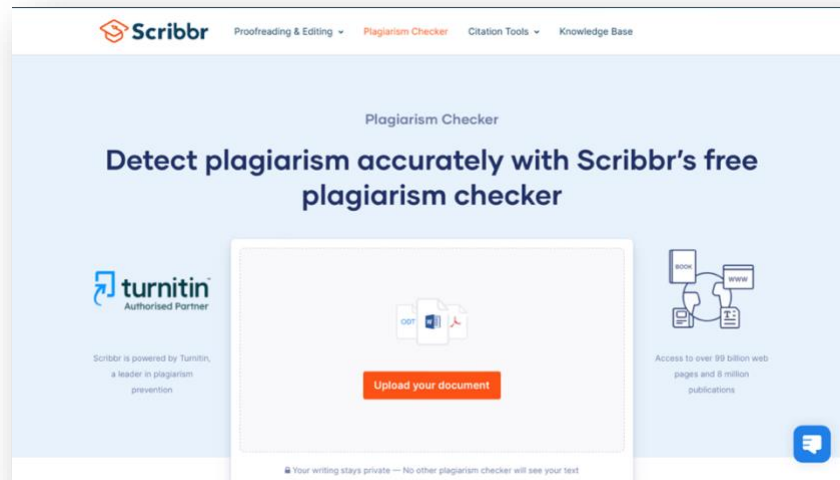
Source: Scribbr, 2022

Clearly, the website indicated in figure 1 – Scribbr is believed to have a good interface that really attracts people to the platform, according to reports and evaluations from experts. Figure 1 demonstrates that the Scribbr platform is powered by the Turnitin plugin, which can detect various types of plagiarism in uploaded papers. The figure given by the author above illustrates the window for documents' submission for the further control of similarity. Then, the author proceeds to the pricing of the platform, which is indicated in Figure 2.

Figure 2, Scribbr pricing

Source: Scribbr, 2022

3.3.2 Grammarly

Grammarly was initially established in 2009 by Max Lytvyn, Alex Shevchenko, and Dmytro Lider. It is a platform that is quite common among students attending universities. It is widely used by a significant number of educational institutions all around the world. Grammarly is not just an automatic proofreading tool but also a plagiarism checker that can accurately detect instances of plagiarism. It has a massive database that contains 16 billion pages available online (Grammarly.com, 2022).

This program includes a Microsoft Word plugin, which may be downloaded separately from the Grammarly website. After downloading and installing the plugin, it is feasible to check not only plagiarism appearance in your work, but also instances of grammatical errors, contextual misspelled words, redundancy, and poor sentence structure. In Figure 3, the author presents the interface of the platform.

Figure 3, Grammarly plugin installation
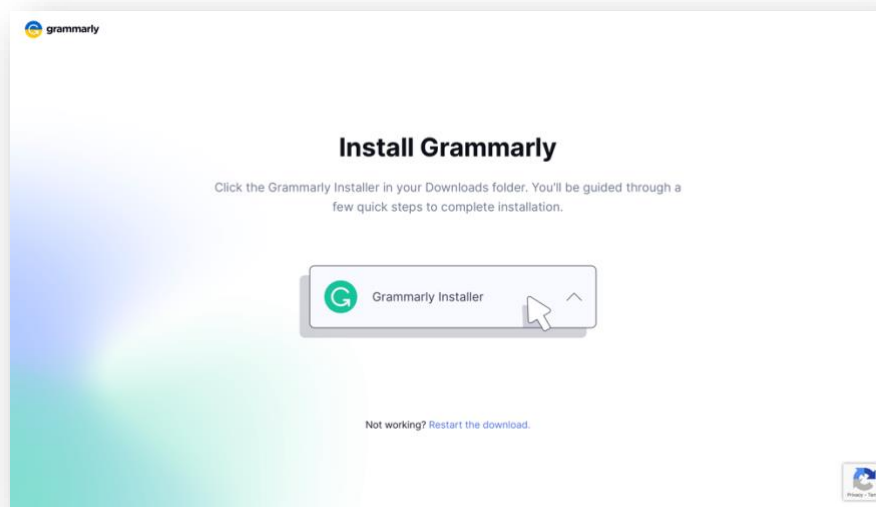
Source: Grammarly, 2022

Grammarly provides a comprehensive spell checker. By using the business edition of the software, one is able to not only add terms to a personalized dictionary but also develop an own style guide. Grammarly can identify awkward phrases, paragraphs, and sections by scanning them. Readability problems are identified based on the total number of words and the amount of time spent reading. Grammarly offers suggestions for word choice and rewrites depending on the author's chosen target audience and tone for an article, taking into account the writer's previous work. The writing helper in this software is driven by artificial intelligence (AI). This assistant basically reads through a piece of work and makes corrections and suggestions, which one can choose to implement or disregard with the click of a button. Grammarly provides a printable report. It is necessary to upgrade to the paid version of the product in business to obtain and use all of the tools that are included in the Grammarly interface.

Figure 4, Grammarly pricing
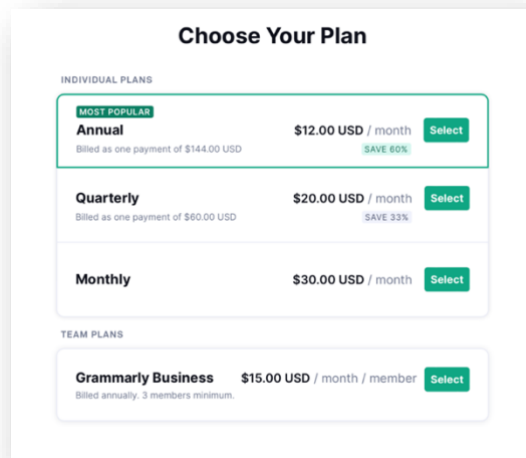
Source: Grammarly, 2022

3.3.3 Moodle System with Installed Plugin Turnitin

3.3.3.1 Moodle

Moodle 1.0 was made available to the public in August 2002. The system used in the Czech University of Life Sciences is an open-source website for students and teachers that can be used as an e-learning tool to provide users with online education. Undoubtedly, Czech University of Life Sciences is not the only university that adopted a similar kind of system – universities all over the world slowly integrate either Moodle or its analogues. Compared to the paperback age, when the overwhelming majority of processes were recorded on paper, multifunctional educational platforms offer their users a unique span of tools, including evaluation, communication, upload of files, dashboards for teachers and students at the same time, etc. In addition to all this, Moodle, along with the other platforms, recently integrated another advanced function – an antiplagiarism tool, which will be discussed later on in the following thesis in more detail (Moodle.org, 2022).

Figure 5, Moodle CZU interface
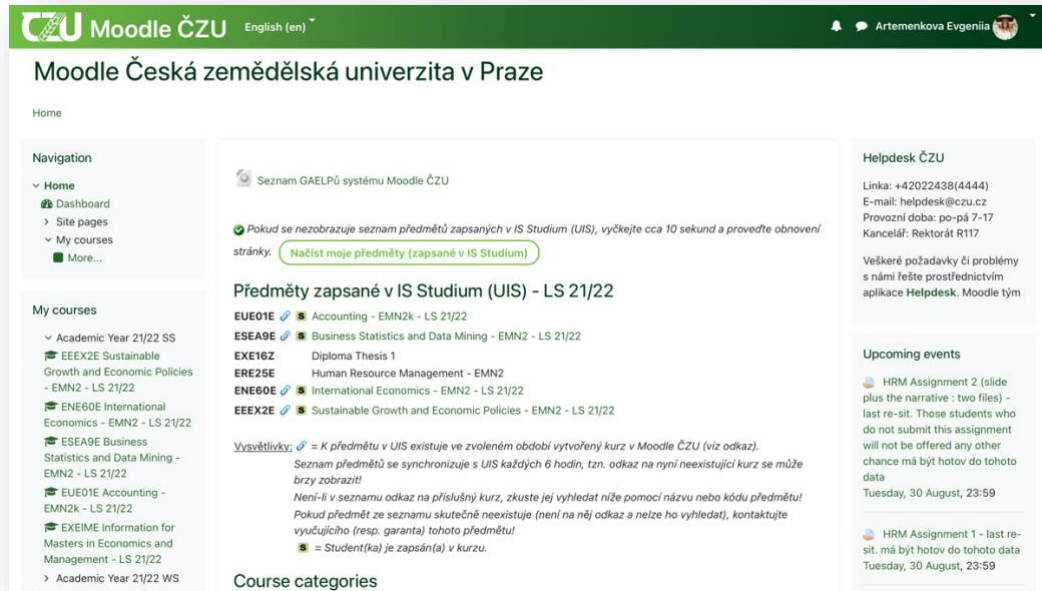
Source: Moodle CZU, 2022

In addition to the desktop version, the program also offers a dedicated application duplicating the set of original functions. It is available for downloading on practically all electronic gadgets and goes by the same name, "Moodle". It is also helpful to various educators in comprehending the study programs, course structures, and syllabus, which in fact, makes it easier for them to interact with online students. The main advantage of Moodle is that it allows learners to continue their studies even when they are abroad. Moodle is available at no cost. Martin Dougiamas is the one who came up with the idea for Moodle, and ever since its creation, the fundamental goal of Moodle has been to provide a suitable option for the e-learning tool and to make it easier for people to obtain online education and proceed with their degree.

This website and application are well-known for many colleges in a wide range of countries and have success not only in the Czech Republic but also throughout other countries. According to the available data, around 14 million users are currently enrolled in approximately 1.4 million different classes (Moodle.org, 2022). In figure 10, the author presents the current map of Moodle registration.

Figure 6, World map of Moodle users
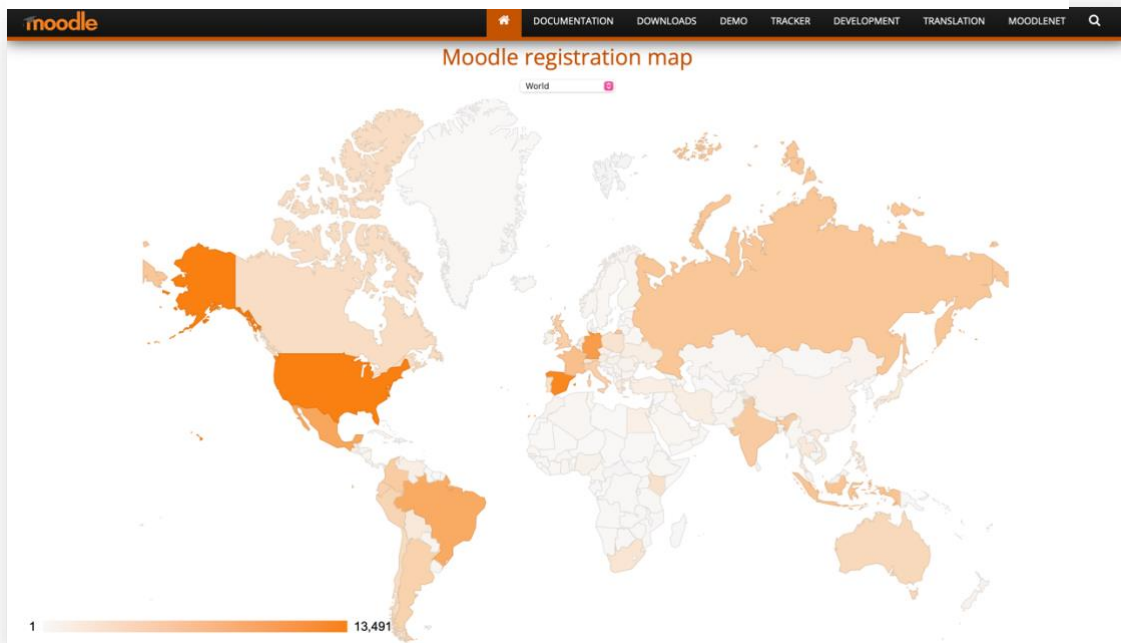
Source: Moodle, 2022

In addition to the map, the author also presents the statistics behind the map, which are available in figure 11.

Figure 7, Moodle registration statistics

Top 10 from 244 countries by registrations

Country	Registered sites
United States	13,491
Spain	12,632
Germany	10,190
Mexico	9,135
Brazil	8,637
France	6,202
Indonesia	5,750
Russian Federation	5,509
India	5,005
Colombia	4,994

Source: Moodle, 2022

Moodle has a built-in translation system called AMOS. AMOS is the primary storage location for Moodle strings and the history of those strings. Students from all around the world are able to access educational materials and course curriculum, as well as study online, thanks to this technology. It gathers translations, manages common translation operations, and prepares language packages that may be published on Moodle servers. Additionally, it monitors the insertion of English strings into Moodle's source code. AMOS now contains a total of 2,441,253 strings that have been translated and uploaded by members of the community (Moodle.org, 2022)

The information as assignments, scientific papers, and other research that are submitted to Moodle are generally checked by various anti-plagiarism tools apart from the one integrated directly into the platform. The one integrated into the website, however, comes pre-installed with 21 distinct plugins, with each having the potential to identify cases of plagiarism among students in assignments, essays, and other kinds of projects submitted by them to Moodle. Due to this, teachers are able to more accurately evaluate the pupils' level of knowledge and see with their own eyes if the teacher's knowledge is perceived by

students. After all, the age of technology did not only bring prosperity and facilitation of routine, but it also had a series of rather unpleasant repercussions generated by students towards professors. Undoubtedly, the astonishing pace of technological developed lead to the fact that students started using approaches which help them to avoid spending time.

3.3.3.2 Turnitin Plugin Installed in Moodle CZU

Turnitin is a tool that can detect instances of plagiarism. This tool was established in the year 1998 by the company named Turnitin, LLC (an affiliated company of Advance Publications), which is based in the United States, California. This instrument was developed for educators and educational institutions to prevent plagiarism occurrences among high schools and universities (Turnitin.com, 2022).

Figure 8, Turnitin official website page
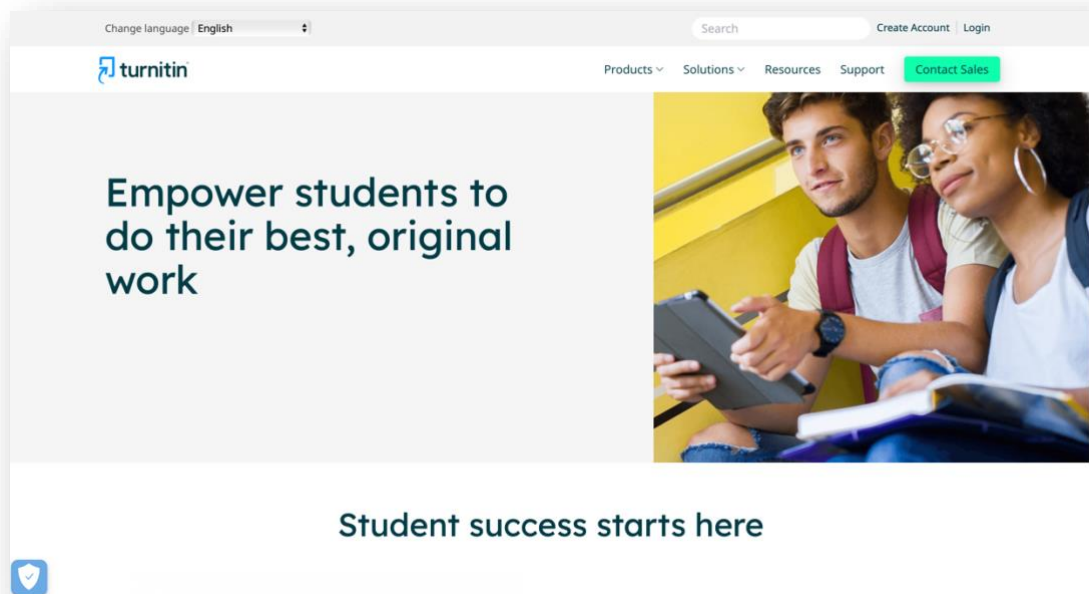
Source: Turnitin, 2022

Figure 9 illustrates the interface of Turnitin's official website. The service operates on a commercial basis and requires prior registration. Turnitin provides its services to a variety of companies, ranging from top management training companies, universities, higher schools, and ending with services that are based on a single-time log-in. This software is able to recognize plagiarism using a patented algorithm for comparing the works uploaded

to the system with the works that Turnitin has in its own database and several other large academic databases.

A great example of Turnitin and university cooperation is Moodle CZU. Turnitin plugin starting from the year 2023, is installed in Moodle CZU system too. Professors and teachers submit student papers to the website and can receive the results in a time period of one or two days, depending on the size of the file being uploaded into the system. If the submitted document has a small size, it will take even less time for Turnitin to check it for plagiarism occurrences.

3.3.4 Odevzdej.cz

Odevzdej.cz is a Czech website that checks student papers for instances of plagiarism. There are two options in this system for submitting your work for plagiarism detection online:

- Create a new account and verify it before uploading your work for verification.
- Log in to an existing account and do the same process.

Figure 9, Odevzdej.cz interface

Source: Odevzdej.cz, 2022

Unauthorized users from the home page Odevzdej.cz can compare any text document with files in the system without registering. The result will be forwarded to the supplied e-mail address. The file that was entered into the system without authorization will be erased from the database after five days or 120 hours. There is an advantage for authorized users - the work uploaded for plagiarism checking remains in the system, and the results of its investigation can be downloaded on computer at any time. The file can be uploaded from any computer in a format convertible to plain text (e.g. doc, docx, ODT, xls, ppt, txt, PDF, CSV, HTML), or enter the URL of the file (e.g. a page on the internet) and fill in the e-mail address to which the result is to be delivered. The email will be sent automatically after the file comparison is complete.

A similarity measure search algorithm is accessible in the system Odevzdej.cz, which better reveals paraphrased texts and also includes additional features, a more modern style, and a clearer way of displaying detected similarities. This algorithm focuses mostly on longer similar sections in texts, recognizing even a reasonably high degree of reformulation and paraphrasing of the same content. The algorithm does not seek out very brief similar parts of the text with only a few words in length. Such parts include frequently diverse, regularly used definitions, utilized multi-word technical words, mandatory declarations in final papers, and similar forms of content, the appearance of which does not imply plagiarism.

When displaying results, the new algorithm "skips" those discovered sources that do not provide any additional value above those already exhibited and do not appear in the list of discovered source documents since they are already duplicated. These "skipped" resources, however, can be accessed with a single click. Similarities are available immediately after creating a text version of the file. Similarities with particular source documents are now indicated in different colours, as opposed to simply being emphasized in red previously. The indicator at the beginning of the highlighted text section indicates how many source documents are identical to this text; by clicking on it, one may see which sources they are. By clicking on the selected source, the similarities with this source document will be highlighted.

The percentage of similarities detected does not determine whether or if the work is plagiarized; rather, it brings attention to specific suspicions. Each work must be evaluated separately, and the work or quotations must always be checked by a person, namely a professional in the subject. It may be especially crucial to consider what a similar portion of the text concretely conveys: whether it is a correctly quoted taken text in the overview section of the text or whether it is a key part of the work that the author claims to be his main contribution. (Odevzdej.cz, 2022)

3.4 Reasons of Academic Dishonesty

Students who face a tremendous workload in universities are sometimes tempted to practice dishonest academic behaviour for a number of different reasons (Šprajc, 2017). The following are some of the possible reasons:

- **Pressure**

Students may feel the pressure to perform well in their academic tasks, and they may resort to academic dishonesty as a means of achieving higher scores or preventing themselves from failing their classes.

- **Misunderstanding of the subject**

Students are more likely to participate in dishonest practices in the classroom if they do not have a clear comprehension of the subject matter that they are learning or if they are having difficulty completing their assignments.

- **Student congestion**

Students who are overburdened with other commitments, such as employment or family responsibilities, may be tempted to engage in academic dishonesty as a strategy to achieve deadlines because of the time constraints they face.

- **Absence of moral principles.**

Some students may not recognize academic dishonesty as a problem, or they may not fully appreciate the repercussions of their conduct. This may be due to a lack of ethical ideals.

- **Competition between classmates**

Students could feel pressured to adhere to the expectations of their peers, and as a result, they might engage in academic dishonesty in order to fit in with their classmates or avoid being excluded from their group (Colnerud, 2009).

3.5 Paraphrasing Tools

One of the main reasons students use paraphrasing tools is to avoid accidentally plagiarizing someone else's work. Paraphrasing tools can help students to rephrase text in their own words, which can be useful when writing a paper or completing a research project. Rewriting text can be time-consuming, and using a paraphrasing tool can help students to rephrase text quickly and easily without having to spend a lot of time doing it manually. Some students may use paraphrasing tools as a way to improve their writing skills. By using a paraphrasing tool to rephrase text, students can practice writing in different styles and learn how to convey ideas in their own words effectively. According to the report, these tools are becoming extremely popular among students and other professionals.

3.5.1 Quillbot

QuillBot is a paraphrasing tool that can help users to rewrite the text in their own words. It works by analyzing the input text and then using machine learning algorithms to generate a new version of the text that conveys the same meaning but uses different wording (Fitria, 2021).

To use QuillBot, users simply need to enter the text they want to paraphrase into the tool and then press the "Paraphrase" button. QuillBot will then generate a paraphrased version of the text, which the user can review and edit as needed. Users can also select specific words or phrases within the text and use QuillBot to paraphrase just those portions.

Figure 10, Quillbot interface
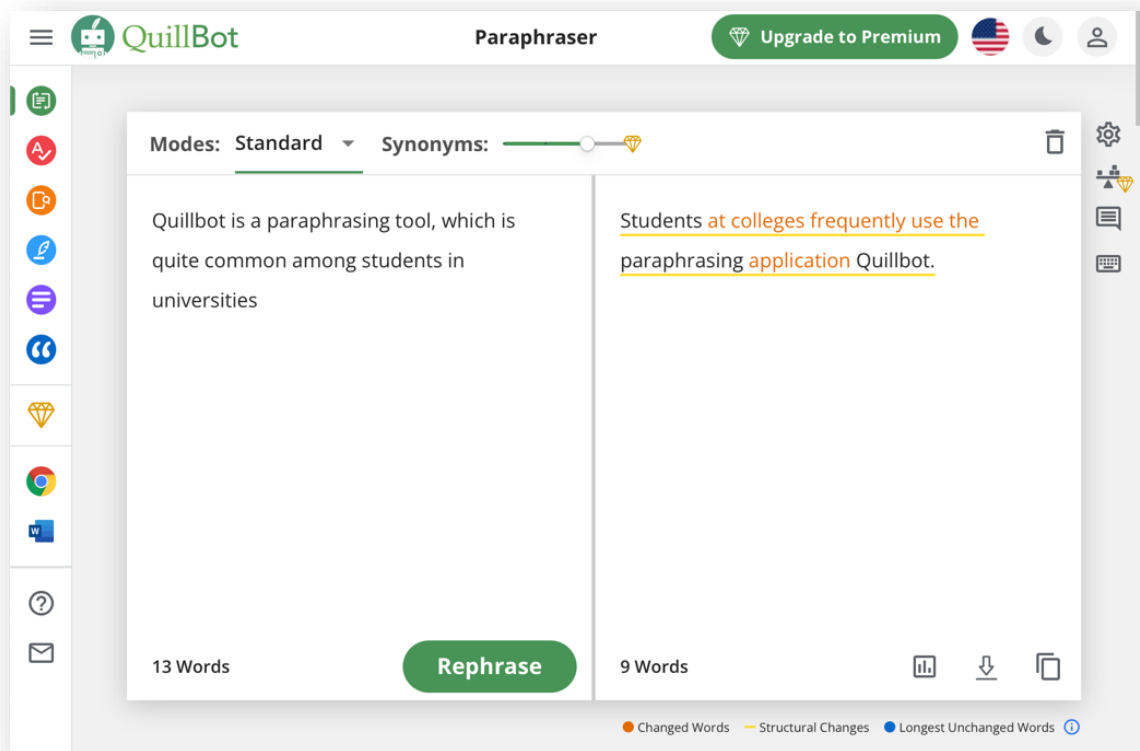
Source: Quillbot, 2022

The interface of the Quillbot paraphraser is illustrated in figure number 11. QuillBot was designed to be easy to use and can be a helpful tool for students, writers, and others who need to rephrase text for various purposes. However, it's important to note that paraphrasing tools like QuillBot cannot always produce high-quality paraphrases, and users should be prepared to review and revise the output as needed. Additionally, users should be careful to cite any sources used in their work properly and to avoid plagiarism.

3.5.2 Spinbot

Spinbot is a tool that can be used to rewrite or "spin" text automatically. It works by taking a piece of input text and using machine learning algorithms to generate one or more new versions of the text that convey the same meaning but use different wording (Wahle, 2022).

To use Spinbot, users simply need to enter the text they want to spin into the tool and then press the "Spin" button. Spinbot will then generate one or more spun versions of the

text, which the user can review and edit as needed. Users can also select specific words or phrases within the text and use Spinbot to spin just those portions.

Figure 11, Spinbot interface
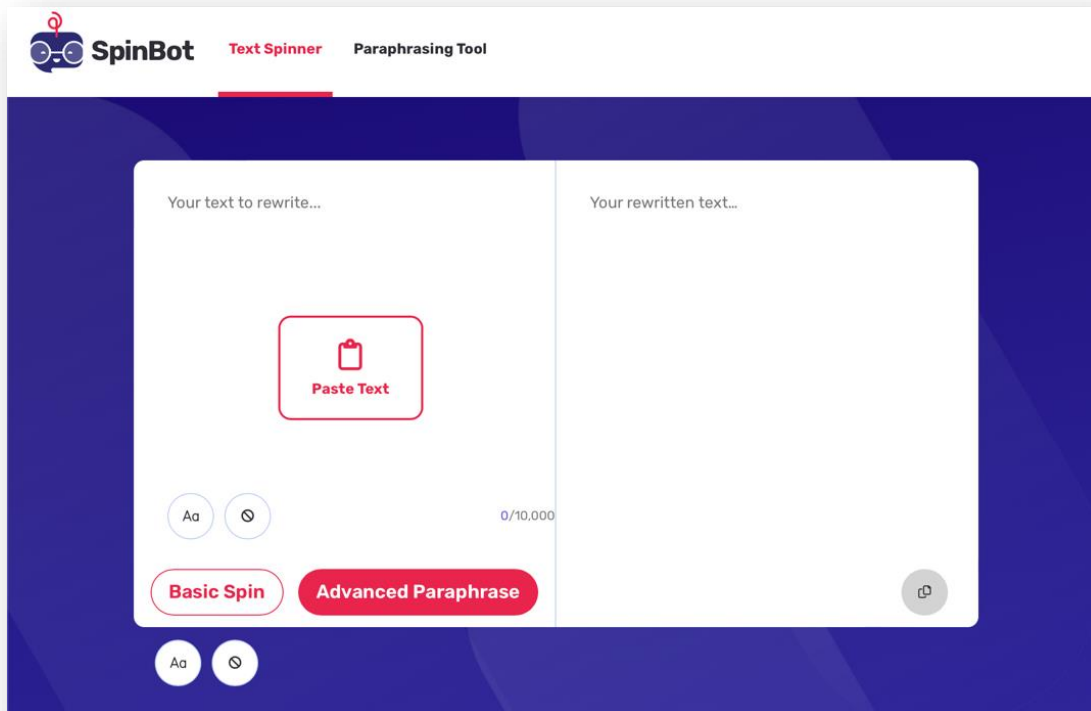
Source: Spinbot, 2022

The interface of the Spinbot paraphraser is illustrated in figure number 12. Spinbot is designed to be easy to use and can be a helpful tool for generating multiple versions of the same text quickly. However, it's important to note that spinning tools like Spinbot may not always produce high-quality results, and users should be prepared to review and revise the output as needed. Additionally, users should be careful to cite any sources used in their work properly and to avoid plagiarism.

3.6   Presence of the Problem

Plagiarism is being spread due to a decline in the level of corporate culture in higher education and an increase in commodification, where the "seller—client" relationship dominates, and diplomas are something that can be bought or obtained through any means

available, not just by demonstrating the knowledge and skills acquired at the university (East, 2006).

For colleges in Europe, which actively attract students from all over the world, a big part of this contingent's predisposition for plagiarism has become a unique problem.

Many of these students, who do not have a solid understanding of the language in educated programmes, frequently use some writings, which are already existed on the Internet writings as a template, and by that most of the time they are facing unconscious plagiarism.

People's cultural differences appear to play a significant role as well. The concept of copyright ownership of a text, in particular, is not legal sometimes in Western countries, although in many Eastern countries, paraphrase or "creative development" of other people's ideas is sometimes deemed totally appropriate. (Bent Preisler, 2011) The development of the Internet has contributed massively to the widespread prevalence of student plagiarism. Other variables, such as the increased workload of teachers and students, society's tolerance of deception as a way of acquiring a credential of education, and so on, create conditions for it. Teachers have different perspectives on how to tackle plagiarism. Some professors believe that paraphrasing or stealing material from other authors helps students understand and discover new information. Others believe that using someone else's research or papers in their work is completely unacceptable; each student's work should be unique in its own manner. The third group of teachers believes that it is necessary to concentrate on the effective structure of teaching so that students do not have questions and obtain all of the essential knowledge to write assignments, diplomas, and so on without referring to Internet sources.

The uncertainty of the definition of plagiarism allows a dishonest student to justify his behaviour by claiming that he did not copy the text to extract benefits, that there is a significant difference between his text and the original, that it is difficult to express a common thought in other expressions, or that the borrowed fragment is a quote, even if it occupies several pages in a row.

3.7 Acceptance and Rejection of Students' Work

Regarding the issue of plagiarism, it is critical for educational institutions to have well-defined norms and regulations in place for addressing situations in which there is a possibility of or is found to be plagiarism. When a student submits a paper, the professor that has been given that responsibility may look it through to evaluate whether or not it contains any material that has been plagiarized. If the teacher discovers that the paper was plagiarized, in fact, contains copied or stolen content, they will, in most cases, be given a choice between accepting or rejecting the paper. The choice of whether to accept a paper or not will be based on a number of different aspects, such as the extent of the plagiarized material and the student's history of committing plagiarism in the past (Berlinck, 2011).

If the paper is accepted, the student might have several consequences in some way, such as receiving a lower grade or being required to rewrite and submit the work again. These are only some of the potential outcomes. In case the student's paper is not accepted, it is possible that they will not be able to finish the course or that they will be asked to retake the course in order to graduate. In general, it is vital for higher academic institutions to have clear and fair procedures in place for resolving instances of plagiarism. This is crucial for two reasons: one is to preserve the integrity of the academic process, and the second is to promote academic honesty among students (McCabe 2001).

4 Practical Part

4.1 Concept

In the practical part of the thesis, the author conducts in-depth research into the subject of studying instances of student plagiarism and anti-plagiarism programs usage on the example of one specific university - Czech University of Life Sciences, and one specific faculty - the Faculty of Economics and Management, where students are taught in both English and Czech languages. Ultimately, the author evaluates different platforms according to the assessment provided by students whose responses will be recorded with the help of the questionnaire that is indicated in the appendix (see Chapter number 21.1) of this diploma thesis.

Next author will conduct an illustrative online survey among students to gather information regarding the prevalence of the term "plagiarism" and anti-plagiarism software, as well as the frequency with which they are confronted with this phenomenon in their day-to-day lives. After that, a representative online survey that is indicated in the appendix (see Chapter number 21.2) will be carried out, and participants will be asked to evaluate the anti-plagiarism applications that have been chosen by the author for this research, focusing on the primary benefits and drawbacks of each option.

The author will perform an evaluation of these programs utilizing the MDCA (Multi-decision criteria analysis) approach. The study will be based on the results of the last survey conducted (see appendix, chapter 21.2). The purpose of this research is to help the author in drawing a conclusion on which of the anti-plagiarism programmes is the most effective and inexpensive option for university workers and students.

4.1.1 Limitations

The author of this thesis focuses on questionnaires and illustrative interviews with three representatives from Czech University of Life Sciences. The first questionnaire will be illustrative with the goal of demonstrating the frequency of plagiarism appearance and the frequency of using anti-plagiarism programs among students and teachers at Czech University of Life Sciences.

Since there is a small number of participants in the case study of plagiarism, one of the surveys as well as structured interviews, will only be illustrative in this diploma thesis. Another challenge that the author has encountered during her research is ethical considerations. There may be an increase in the number of ethical concerns if the author will consider conducting more in-depth investigations of the reasons and frequency of instances of plagiarism and the use of anti-plagiarism applications. These concerns include protecting the privacy of individuals or institutions that are involved, which inevitably resulted in the lower activity and engagement of students than had been expected by the author initially.

4.1.2 Participants

For the two questionnaires (both are available in the chapter number 9, appendices of the thesis), the main group of participants are students from the Czech University of Life Sciences, but surely enough, this is not the only kind of students considered for the study as the author also incorporates responses of students at other universities in her analysis. Henceforth, the main criteria for being a participant in the questionnaire was the actual status of being a student at any Czech university. Participants were contacted through different social media platforms which are popular among students – Telegram, Facebook, and Instagram. The questionnaire is based on Google Forms.

When it comes to the series of interpersonal interviews, the author managed to get the consent of three professors from the Czech University of Life Sciences, who provided their insights on the occurrences of plagiarism and their personal experience with anti-plagiarism software.

4.2 First Questionnaire Analysis

The first survey that was carried out by the author includes questions that are concerned with the frequency of occurrence of a phenomenon known as plagiarism among students attending institutions in the Czech Republic. The primary objective of this survey is to assess the level of familiarity, knowledge, and use of plagiarism among the target audience in the context of their education and work in general.

There are a total of eleven questions in this questionnaire, all of which reflect students' perspectives on the issue of plagiarism.

Figure 12, First questionnaire. Question 1
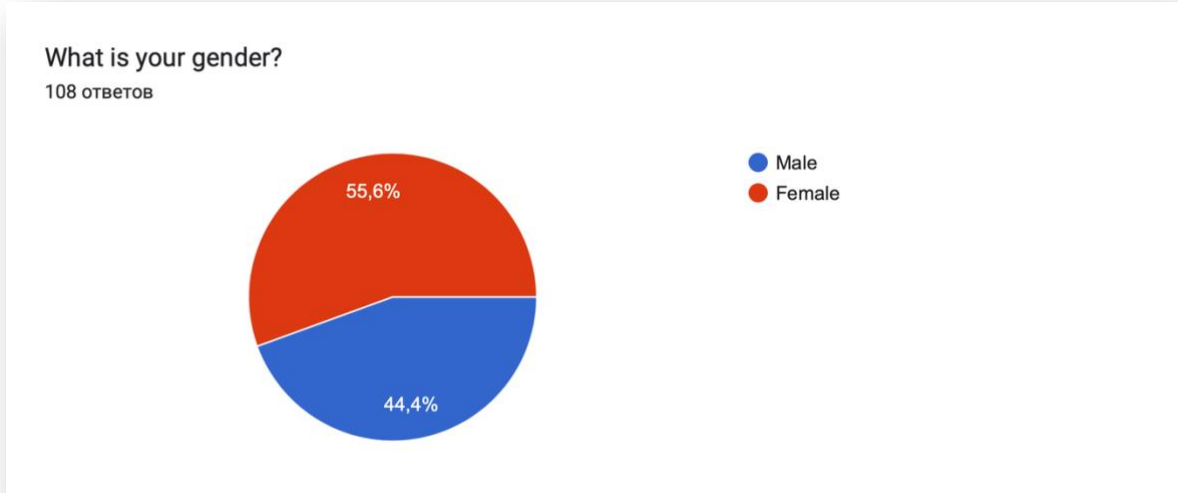
Source: own processing

The following chart presents data regarding the students' countries of origin in more detail. A total of 108 people responded to the author's questionnaire. In the first inquiry, participants were questioned about their gender identity. According to the diagram, 55.6% of the respondents identified themselves as female, whereas 44.4% of the respondents identified themselves as male. Women were more likely to participate in the survey.

Figure 13, First questionnaire. Question 2
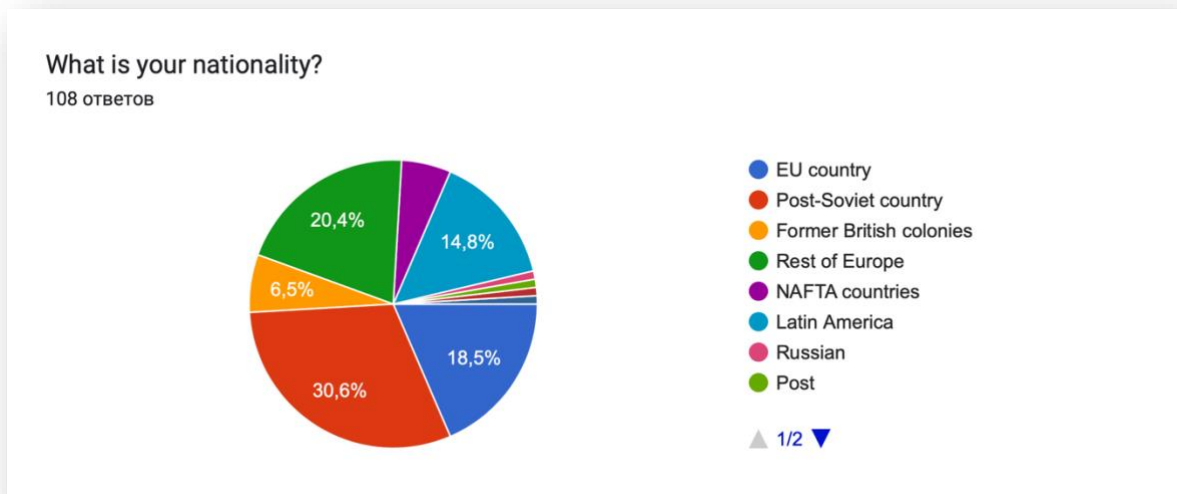
Source: own processing

The following chart presents data regarding the students' countries of origin in more detail. As can be observed, the majority of the students in the Czech Republic came from post-Soviet nations. This group of students represents 30.6% of the total number of respondents and consists of 33 individuals. The category known as "Rest of Europe" comes in at number two with a share of 20.4%. (22 people). Respondents from European Union countries came in third place, making up only 18.5% of the total (20 people). Students from Latin American countries make up the fourth spot, accounting for 14.8% of the total (16 people). Students who were born in territories that were formerly under British control make up 6.5% of the fifth-placed group (7 people). NAFTA countries are in sixth place, with a percentage of 5.6% (6 people).

Figure 14, first questionnaire. Question 3
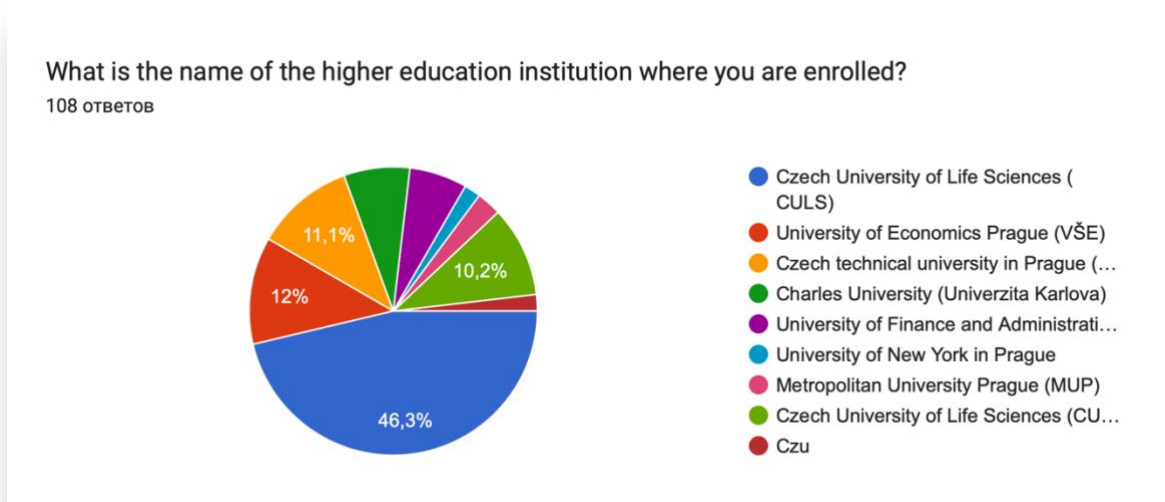
Source: own processing

The third question on the questionnaire asked participants about the universities where they are currently enrolled (see figure number 14). The chart above depicts the number of students attending each of Prague's numerous universities. Czech University of Life Sciences (CZU) took first place with a total percentage of 46,3% (50 respondents) and 10,2% (11 respondents) enrolled in this higher institution (10,2% from the same institution were collected due to students' written by hand responses themselves, not from the existing option in asked question). According to gathered responses, the High School of Economics in Prague (VŠE) is ranked second, with 12% of students enrolled (13 people).

Czech Technological University in Prague (ČVUT) comes in third with a total of 11,1% (12 persons). Charles University in Prague (Univerzita Karlova v Praze) came in fourth with a response rate of 7.4%. (8 people).

Figure 15, first questionnaire. Question 4
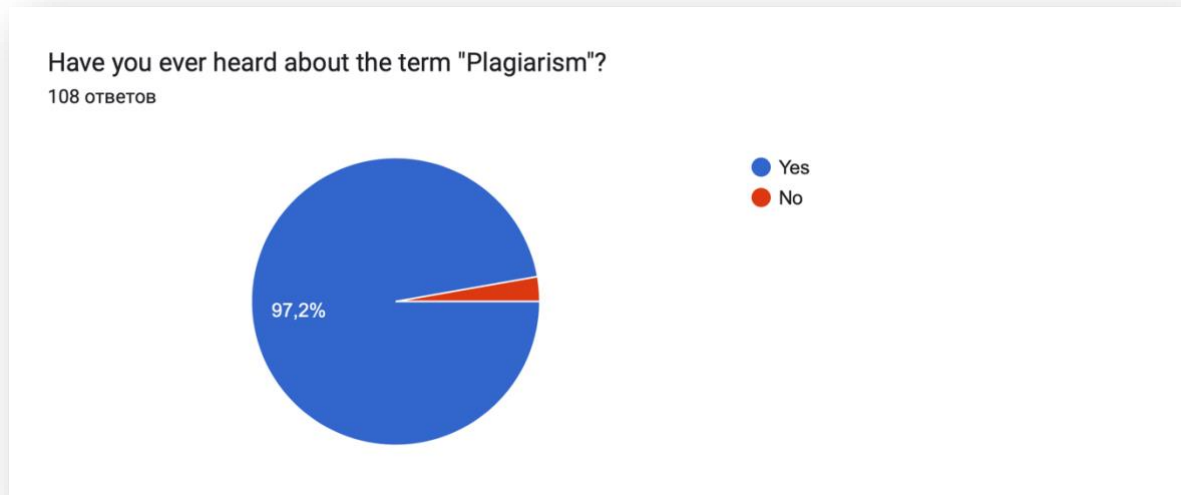
Source: own processing

The following chart represents the next question, which was focused on the extent to which the students understood the concept of "plagiarism." It can be seen from the graphic that is located above that the majority of the respondents, specifically 97,2% (105 persons), are familiar with this occurrence. However, the least number of respondents is only 2,8%. (3 people). It is not hard to understand why. Since all of the respondents are now enrolled in universities, they are receiving instruction from professors about what does it mean to plagiarize and the reasons why it is unethical to do so in their work. The remaining students, which accounts for 2,8% of the total respondents, are most likely engaged in independent studies and learning activities, which is why they are unaware of this phenomenon.

Figure 16, first questionnaire. Question 5

How frequent do you think this issue is?
108 ответов

- ● Quite frequent, many people doing or have done that
- ● It is common among students in universities
- ● I have heard about its occurence from time to time
- ● I have never heard about any cases of plagiarism

26,9%

50%

23,1%
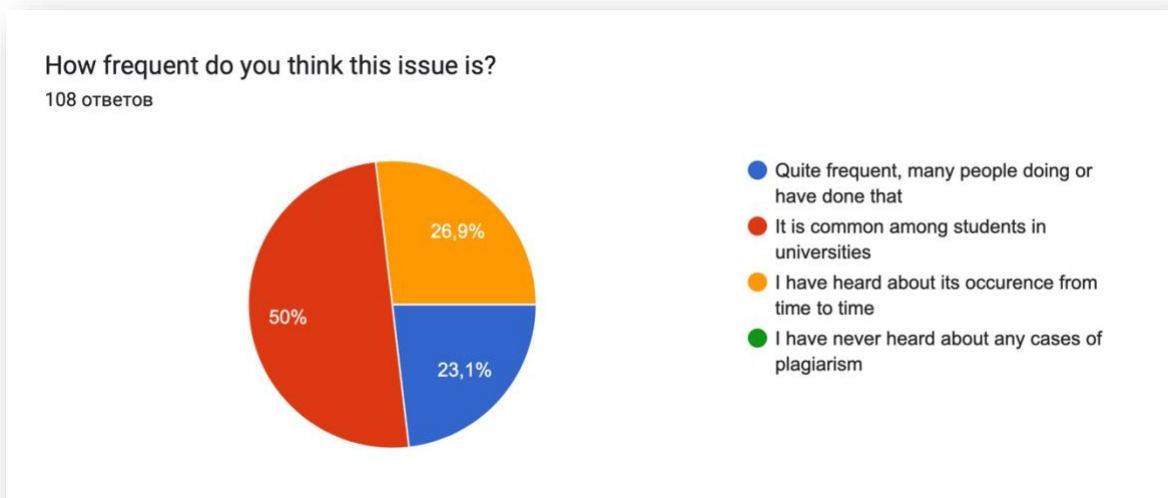
Source: own processing

The following chart represents the question, which was asked to the participants in an effort to gain insight into their own perspectives regarding how frequently they believe the issue of plagiarism arises. Exactly half of those who participated in the survey, or 54 persons, believe that students in colleges and universities face this problem on a regular basis. This noteworthy fact is supported by the reality that many students are identified as being responsible for committing academic dishonesty each year when they are found to have plagiarized in the course of completing their various assignments, projects, etc. The remaining 26,9% of respondents, or 29 people, assert that they are aware of instances of plagiarism occurring occasionally. And the remaining 23,1% of respondents (25 persons) believe that the problem is quite common and that many people are currently doing or have previously done it, which indicates, once more, that respondents are familiar with this phenomenon.

Figure 17, first questionnaire. Question 6

What is your personal opinion - should universities allow plagiarism usage among their students?

108 ответов

- Yes, it should be entirely permitted
- No, it is not fair towards other students that study independently
- Maybe, I am not sure
- Yes, but only in some special cases with a specific percentage allowed (for example: not more than 15% of plagiarism occurrence allowed)

50%

29,6%   14,8%
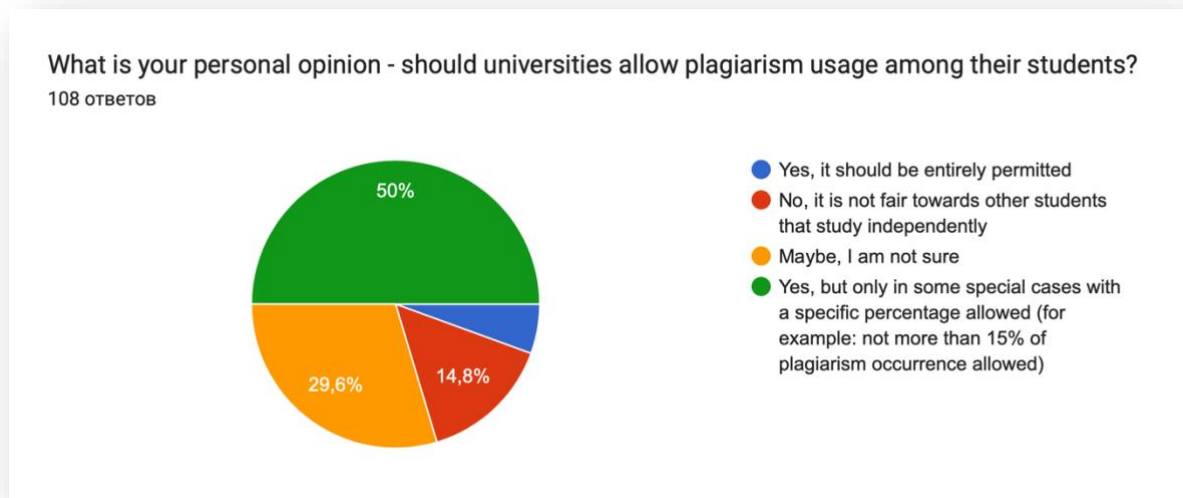
Source: own processing

The following graphic, which can be found above, displays the responses from the participants about their personal opinion on the subject of whether or not educational institutions should permit the utilization of plagiarism among their students. Again, as in the previous question, fifty percent of those who participated believe that it is appropriate to permit instances of plagiarism in certain exceptional circumstances and with a specific percentage allowed (for example, not more than 15% of instances of plagiarism are allowed). This is the same percentage of answers as in the previous fourth question. There is a very common level of plagiarizing that is allowed among higher institutions in different countries, and that level is between 15 and 20%. However, most teachers recommend to their students that they do not exceed even 10% while writing their papers due to the existence of really powerful anti-plagiarism tools that can detect even the smallest similarities. Another 29,6% of respondents, or 32 people, are uncertain as to whether or not it should actually be permitted. The remaining 5,6% of respondents believe that it should be totally authorized, while the other 14,8% of respondents believe that it is not worth allowing plagiarism because it is not fair towards other students who are studying independently.

Figure 18, first questionnaire. Question 7

Have you ever cheated during your study course in university?
108 ответов

- Yes
- No
- Only once
- From time to time
- Always

11,1%
13,9%
24,1%
50%
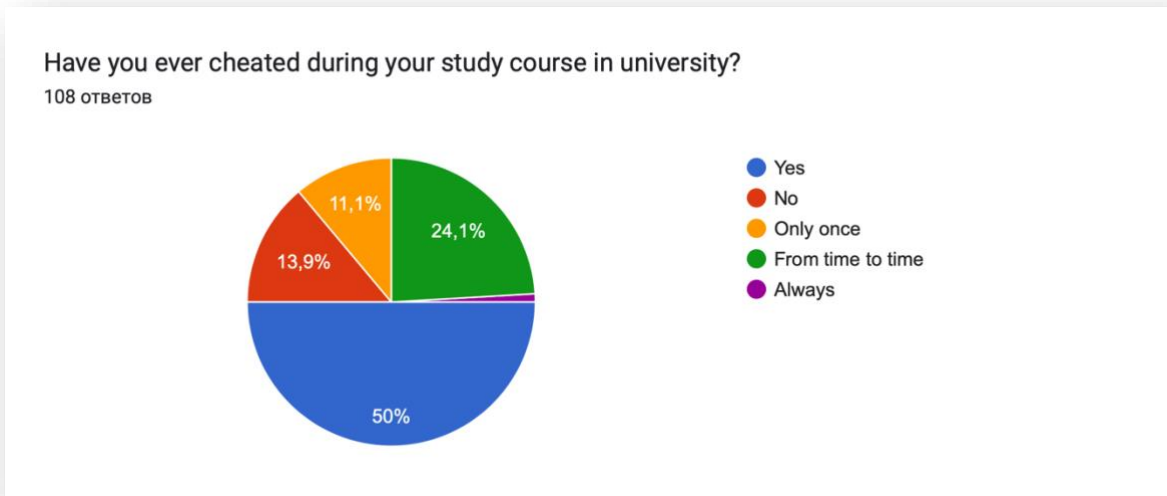
Source: own processing

In the next question (see figure number 18), participants were asked to respond to a question on whether or not they had ever committed an act of academic dishonesty while attending college. The majority of the students gave the answer yes, indicating that they were dishonest in their academic pursuits. There was a total of 54 respondents, and 24,1% of participants, or 26 individuals, admit that they have cheated at some point in their lives. The remaining 13.9% of respondents, or fifteen individuals, have selected the response option "No," indicating that they have never engaged in academic dishonesty. Another portion of the pupils (11,1%, or 12 individuals) responded that they have only cheated once. Only one of the respondents admitted that they had cheated at least once when they were taking their academic classes.

Figure 19, first questionnaire. Question 8

Has your work/test/exam/assignment ever been found to be plagiarized?
108 ответов

- Yes
- No

71,3%

28,7%
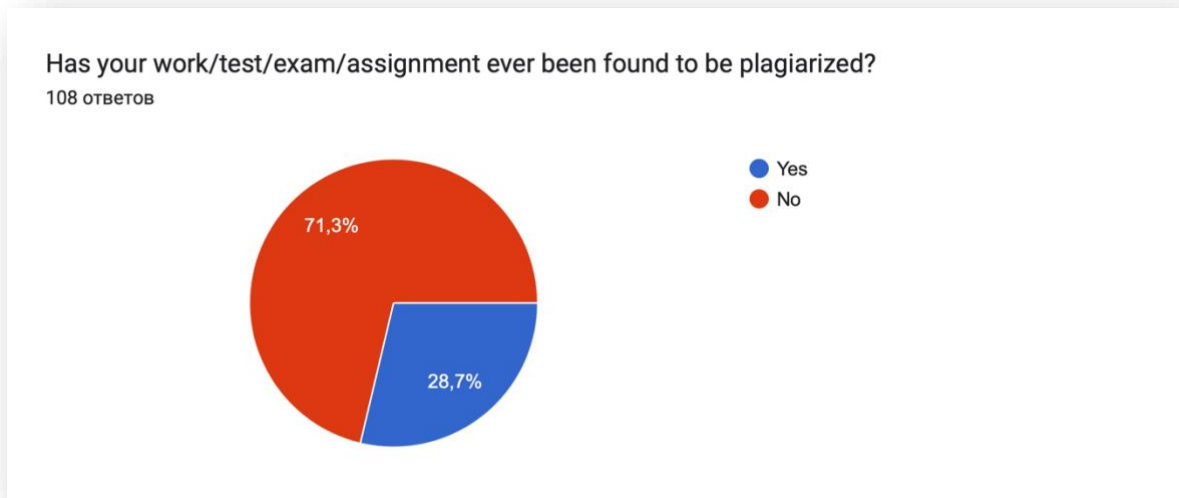
Source: own processing

The next question in the survey (see figure number 19) investigated whether or not the work, tests, exams, or assignments submitted by students had ever been found to contain instances of plagiarism. The vast majority of the participants (71.3%, or 77 individuals) had their paper detected to contain instances of plagiarism, and just a minority (28.7%, or 31 people) have been able to avoid doing so.

Figure 20, first questionnaire. Question 9

What was your recent case of plagiarism usage (for instance: copying or paraphrasing from someone else's work)?
108 ответов

- I have never cheated
- Exam
- Assignment
- Project
- Test

23,1%

11,1%

43,5%

11,1%

11,1%

Source: own processing

The answer to the eighth question of the survey can be seen in the figure with the number 23. The students were questioned about the most recent instance of plagiarism that they had committed (such as copying or paraphrasing from the work of another person). Out of all the answers, "Assignment" was chosen by 43.5 percent of respondents, which is 47 people. This answer was the one with the most votes. A variation named "Project" came in at number two, receiving responses from 23.1% of the sample population, which equates to a total of 25 people. In the third place were three different answers at the same time with the same percentage of 11,1% or 12 respondents for each answer. These answers were "Test," "Exam," and the variant "I have never cheated."

Figure 21, first questionnaire. Question 10
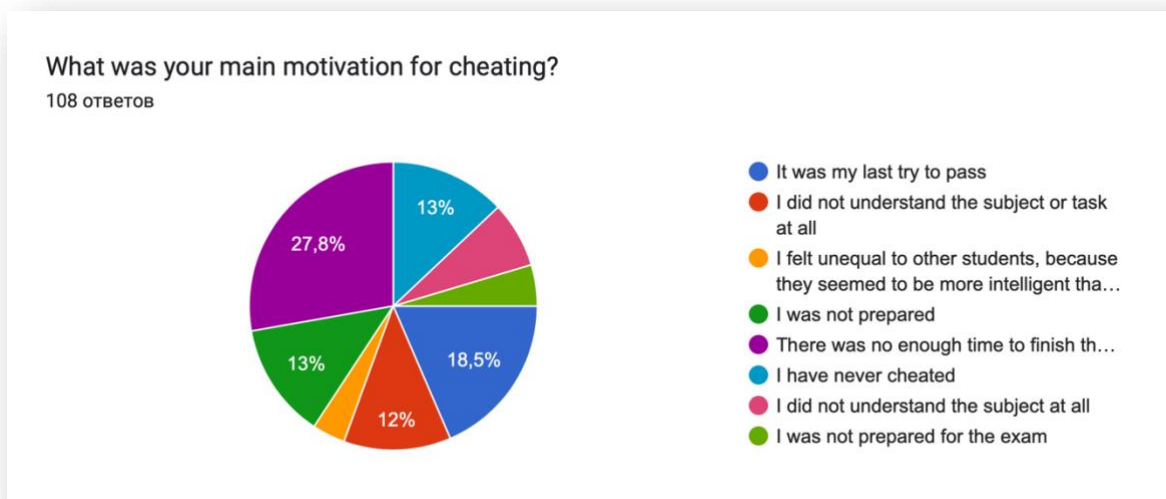
Source: own processing

For this question, the participants were given a list of eight different alternative answers and asked to select one of those answers to explain their primary purpose for cheating. The biggest reason why students began cheating was that they did not have enough time to accomplish the assignment on time. In total, 27.8% of respondents (30 persons) have chosen this choice as the main explanation for their dishonest behaviour. Another 18.5% of students, or 20 individuals, said that they had cheated on the exam because it was their last chance at getting a passing grade on the topic.

Both the answer "I have never cheated" and the answer "I was not prepared for the exam" had the same number of responses from students, which was 13%, or 14 participants. The other 13+8 students, representing 12% and 7,4% of the total responses (considering that some of the respondents were writing their answers manually and the answer was essentially the same as specified in a questionnaire), stated that they could not comprehend either the topic or the assignment in any way. All of these hypotheses are plausible, given that the author speculates that the explanation for this could be either students' resistance to learning or, rather, teachers' inability to effectively explain the course material to students during the degree programme. Another five students stated (4.6%) that they were not prepared for the exam. And the fewest number of people had selected the option "I felt unequal to other students" (3.7%, or 4 participants), and the author presumes that the possible explanation that this occurred was because some of the undergraduates, whereas watching how the rest of their classmates seemed to have the opportunity to cheat, began cheating themselves in order to get a comparable or better mark for the subject or in order to not look worse in comparison to the others.
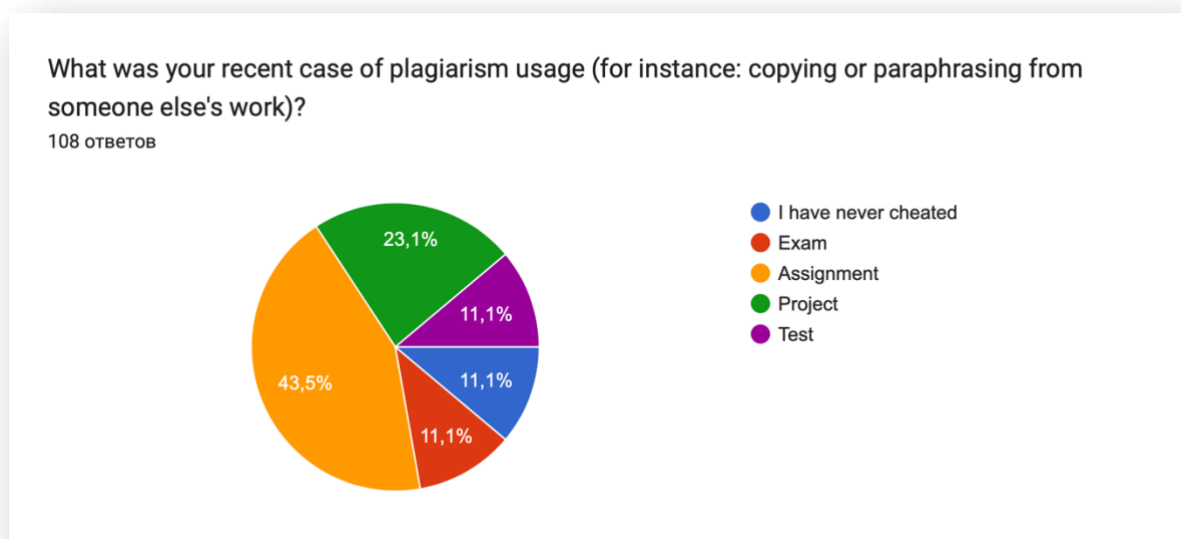
Figure 22, first questionnaire. Question 11
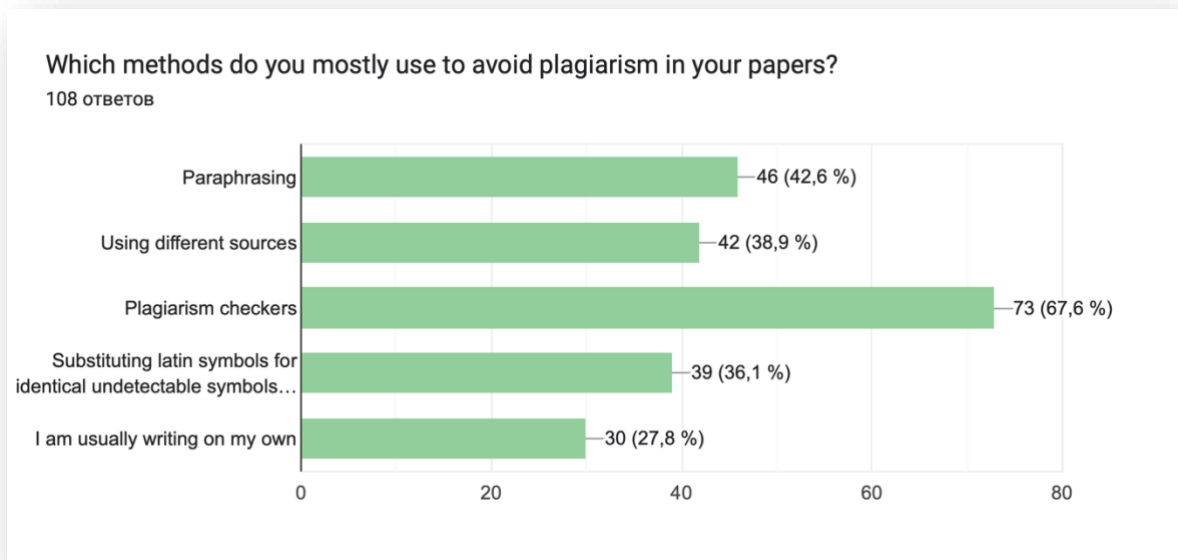
Source: own processing

The final question of the survey (see figure number 22) investigates the students' choices regarding the strategies they employ to avoid any sort of plagiarism in their papers.

The answer "Plagiarism checkers" was chosen by 67,6% of the overall respondents, making it the most popular option out of the five possible choices presented in this question. There were a total of 73 respondents who chose the same variant. Another option named "Paraphrasing" came in second place with 42,6% out of the total vote or 46 participants. Next, another 42 students chose the next available option named "Using various sources" (38,9% of the total). The remaining 36,1% of participants, or 39 people, voted in favour of the proposition that "Latin symbols should be replaced with identical symbols that cannot be distinguished in other languages." And finally, the remaining students (27,8% or 30 individuals) compose their papers all on their own the majority of the time.

The author can draw the following conclusion based on the responses to the first questionnaire: the vast majority of students who are currently enrolled in higher education are familiar with the term "plagiarism." It was revealed that the majority of participants were involved in instances of academic dishonesty; this indicates that it is possible for students to cheat while they are taking a study course. Since there are a variety of ways for students to avoid writing papers that contain their own thoughts, teachers find it significantly more challenging to encourage their students to engage in independent research as a result of the widespread practice of academic dishonesty among students at universities. However, in some cases, laziness is not the primary motivation for cheating among undergraduate students. Students typically reported that there was not sufficient time for them to prepare or that they did not fully comprehend either the topic or the assignment at hand. The author presupposes that there is a need for an update to the current educational system, as well as a change in the way students behave and perceive their studies.

4.3   Second Questionnaire Analysis

The second questionnaire that the author distributed asked its participants about the usage of various anti-plagiarism applications in order to investigate the users' intentions and the frequency with which they used those programs. The respondents of the survey are, once more, students who are presently enrolled in various academic institutions. Students attending higher education institutions in Prague were asked their opinions on various types of anti-plagiarism tools, as well as the benefits and drawbacks of using such software. The results of the questionnaire will help the author to make a comparison of the various anti-

plagiarism tools, as well as learn what the primary advantages and disadvantages of using such programs are.

The author has prepared a total of ten questions for this questionnaire, and each one illustrates the students' propensity toward the use of plagiarism checkers. In total author was able to collect 123 responses from students.

Figure 23, second questionnaire. Question 1
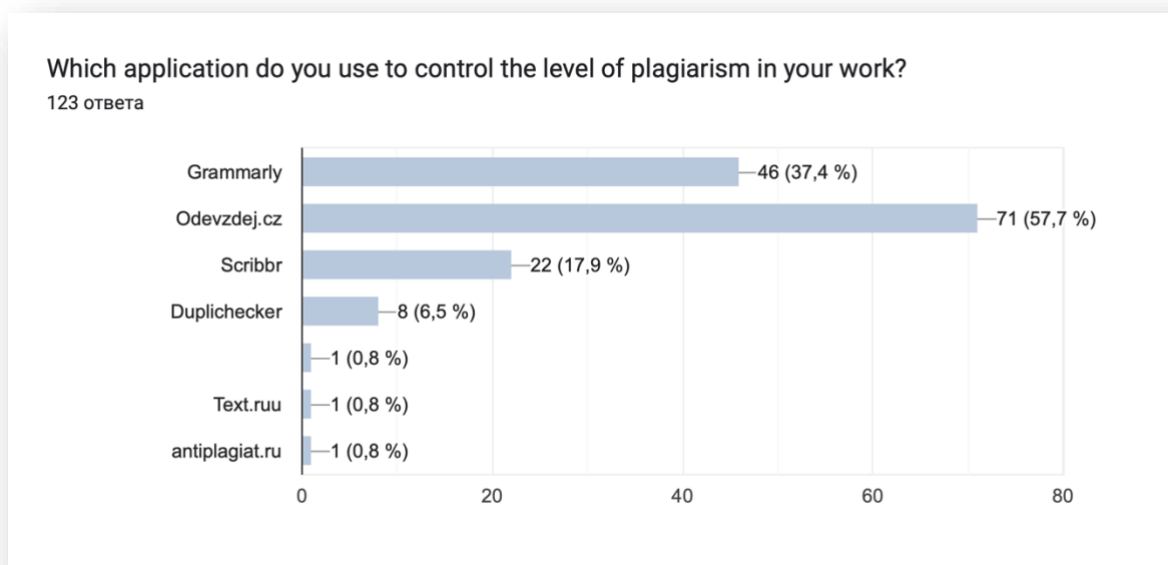
Source: own processing

The choices that the participants made regarding a particular anti-plagiarism application are depicted in the graph that can be found above. With a total percentage of 57,7% or 71 respondents, "Odevzdej.cz" was the most popular answer. The response "Grammarly" received a total of 46 votes, placing it in second place (37,4% out of the total). The "Scribbr" variant was selected by another 22 of the participants (17,9% out of the total). The following variant, "Duplichecker," was selected by eight people, which corresponds to 6.5% of the total percentage. Other two anti-plagiarism tools, referred to as "Text.ru" and "Antiplagiaat.ru," were manually named by the students, and each two of them accounted for 0.8% of the total.

Figure 24, second questionnaire. Question 2

How easy was it to navigate the interface of the plagiarism checker? Rate your experience

123 ответа
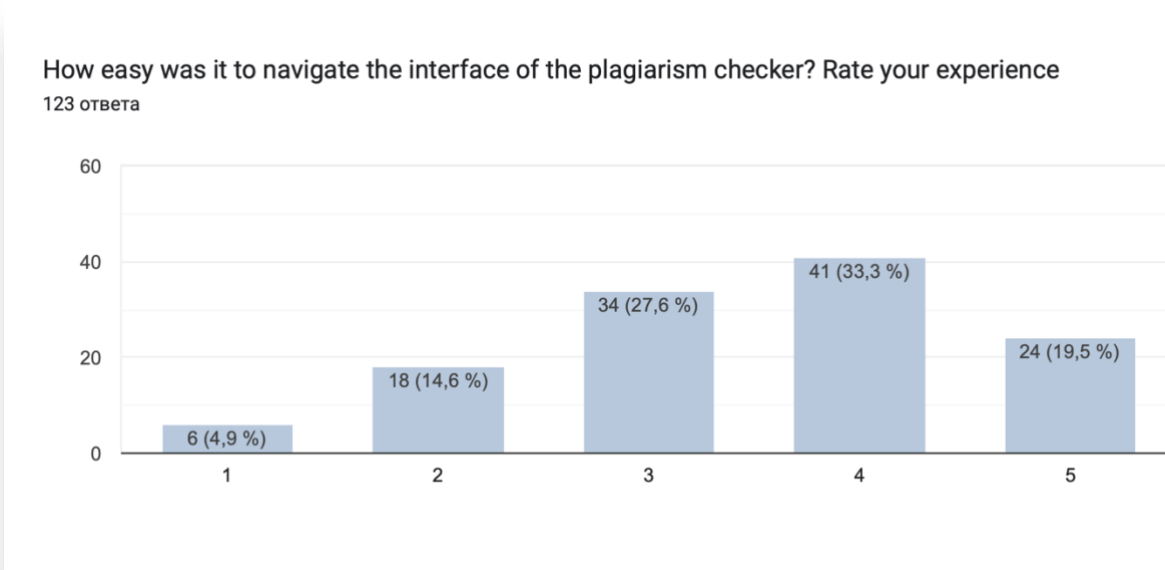
Source: own processing

Figure number 24 represents the next question that was asked by the author, who requested the participants to rate their degree of satisfaction when it came to navigating through the user interface of the plagiarism application that they are utilizing to maintain a level of originality in their respective papers. The participants evaluated each option on a scale that ranged from 1 to 5, with 1 - representing the worst possible performance and 5 - representing the best possible performance. According to the scale, the majority of the students (41 respondents, or 33,3% of all respondents) gave the tools' interface a rating of 4. Another 34 participants, or 27,6% of the total, reported being satisfied with the plagiarism checkers that they typically use and ranked them as having a rating of 3. Twenty-four of the students rated the experience a 5 (or 19,5% out of all). The following 18 respondents, or 14,6%, are not satisfied with the interface of the tools, and the remaining six respondents, or 4,9%, claim that the interface is very poor.

Figure 25, second questionnaire. Question 3

Did you find the plagiarism checker to be accessible and user-friendly? Rate your experience
123 ответа
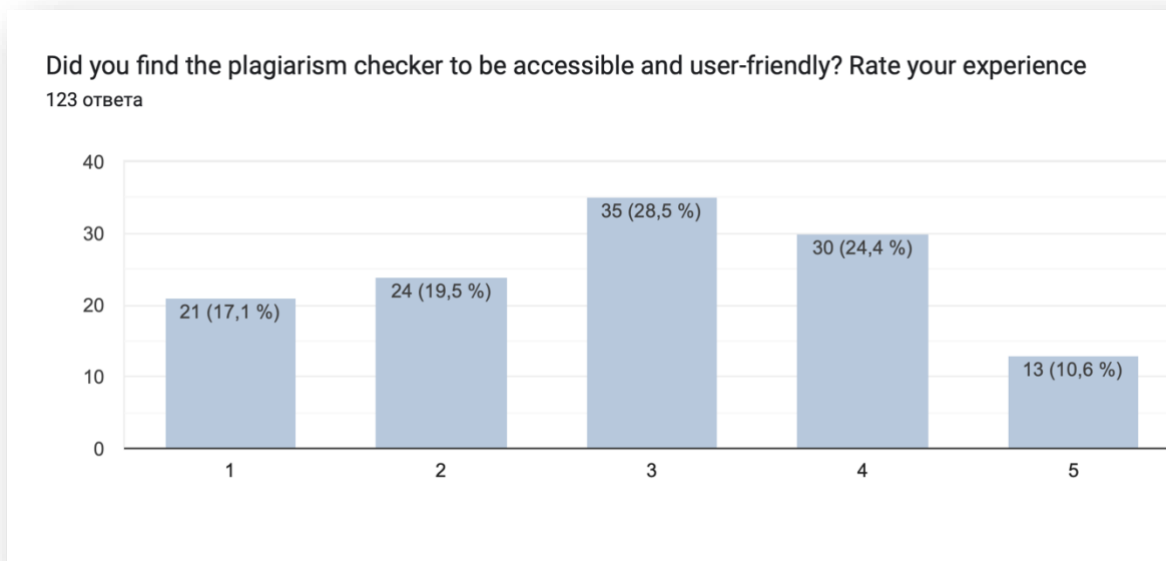
Source: own processing

The responses of students to the question of whether or not the applications that check for plagiarism can be accessed easily and whether or not they are user-friendly are displayed in figure 25, which can be found above. Once more, respondents were asked to rate each alternative on a scale that ranged from 1 to 5, with 1 representing the worst experience and 5 representing the absolute best experience possible. According to the responses obtained, 35 individuals (or 28,5% of the total number of respondents) rated the accessibility of the anti-plagiarism tools that are currently in use with a score of 3. The following 30 respondents, representing 24,4% of the total, assigned a rating of 4 to the selected tools. The applications were given a score of 2 by the other 24 students, which counts for 19.5% of the total. The remaining students (21 participants, or 17,1%) gave a rating of 1 for both accessibility and user-friendliness, which indicates that the tool they were using to check their papers for originality had a really poor performance whereas they were utilized.

Figure 26, second questionnaire. Question 4

How would you rate the pricing of the plagiarism checker? Rate your experience
123 ответа
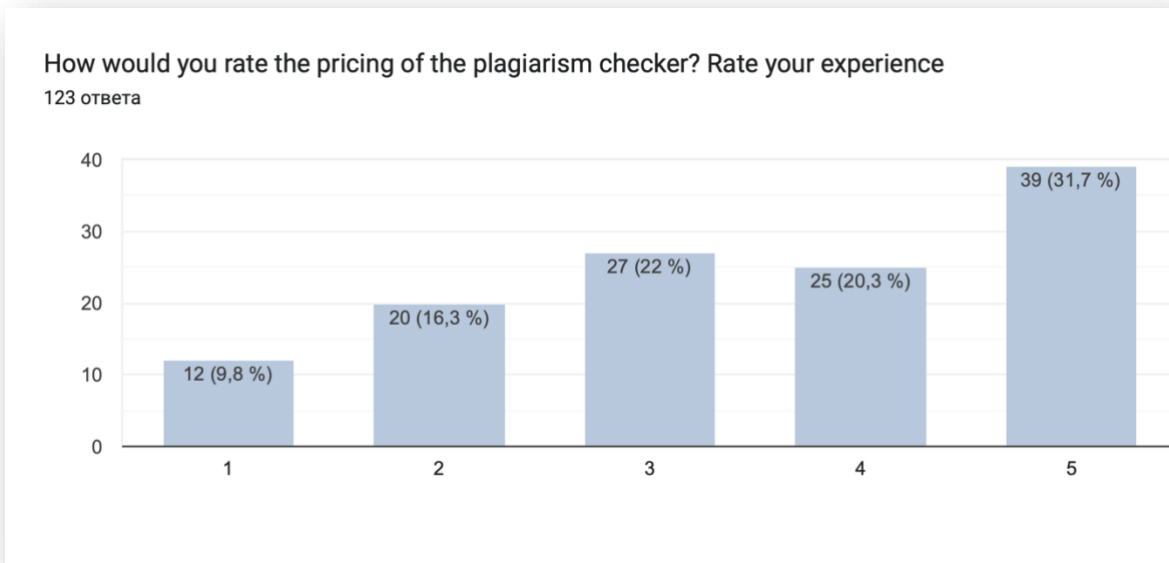
Source: own processing

In the fourth part of the survey, participants were asked about the extent to which they were satisfied with the cost of various anti-plagiarism applications (see figure number 26). Students selected the appropriate choice for them based on a scale that ranged from 1 (indicating a very poor experience) to 5 (indicating an excellent experience). The vast majority of respondents gave their experience a rating of 5, which suggests that the program or service they used was likely offered at no cost (like the tool known as "Odevzdej.cz," for instance). The pricing was satisfactory for the remaining 27 students, which accounts for 22% of the total, and they gave it a rating of 3. The following 25 respondents, accounting for 20,3% of the total, gave their experience a rating of 4. The rating 2 was given by 20 students (or 16,3%), and the remaining students (12 participants, or 9,8%) were not at all satisfied with the pricing and rated the pricing with 1, which indicates that they felt the price was excessive for what they were receiving.

Figure 27, second questionnaire. Question 5

How long did it take for the plagiarism checker to process your document? Rate your experience
123 ответа
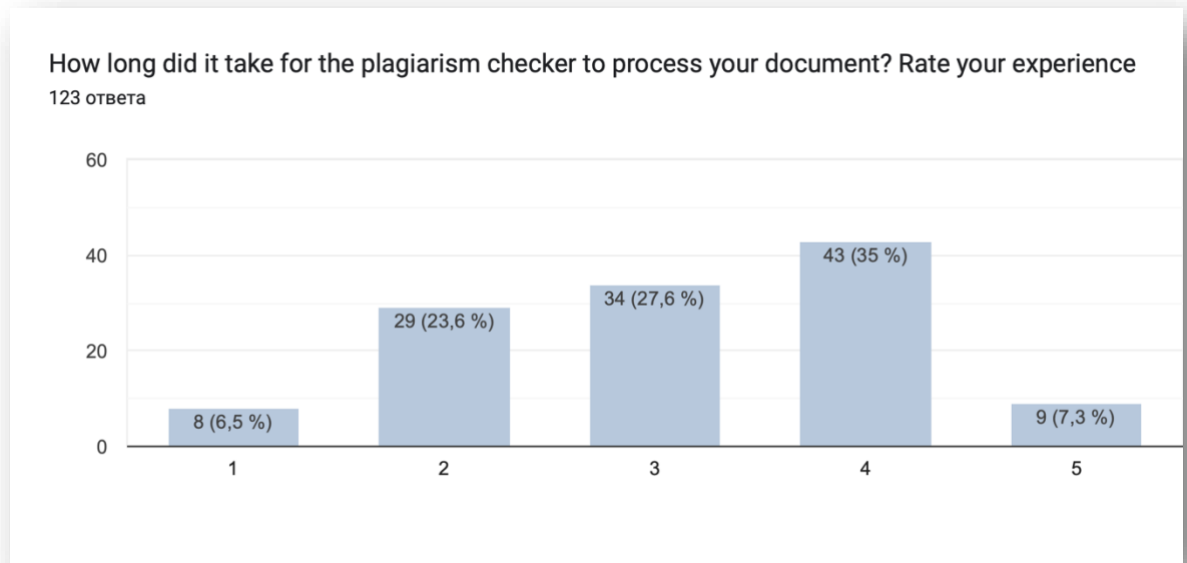
Source: own processing

Figure number 27 represents the next question, which was asked by the author in order to evaluate the speed of the checking process for the various anti-plagiarism tools chosen by the students. The students rated their experiences on a scale that ranged from 1 (representing the worst possible experience) to 5 (representing the best possible experience). The durability of checking was rated a 4 out of 5 by the vast majority of students (43 respondents, or 35%). Only 5 of the respondents, or 7,3%, had a positive experience with how quickly their papers were checked for instances of plagiarism. The speed of the anti-plagiarism tools was deemed satisfactory by an additional 34 participants (or 27,6% of the total). The following 29 students, or 23,6% of the total, rated their experience as a 2, and the remaining eight students, or 6,5% of the total, were not at all satisfied with the reliability of the checking.

Figure 28, second questionnaire. Question 6

How satisfied were you with the efficiency and accuracy of the plagiarism checker in detecting plagiarism? Rate your experience

123 ответа
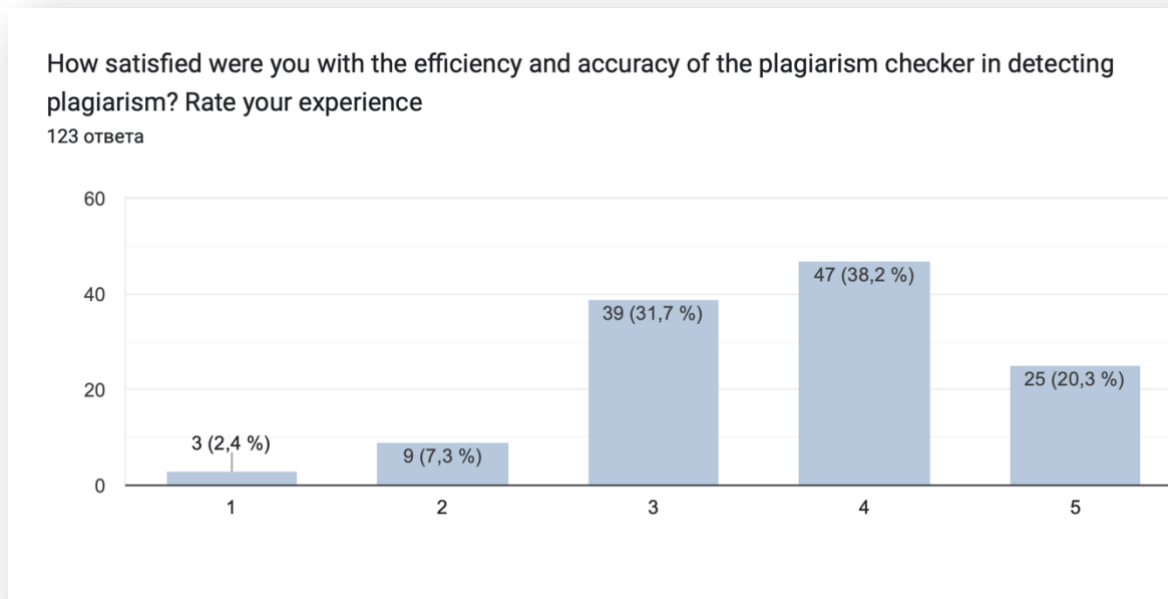
Source: own processing

Figure number 28 illustrates the responses given by students in response to the question according to their level of satisfaction with the effectiveness and precision of the anti-plagiarism tools they used. On a scale that went from 1 (representing the very worst possible experience) to 5 (representing the best possible experience), the students rated their experiences. According to the experiences that they had, the vast majority of students (47 students, or 38,2%) gave a rating of 4. The following 39 respondents, or 31,7%, rated the accuracy and efficiency of the tools with a 3. The remaining 25 participants, which counts for 20,3% of the total, had an excellent experience and gave the efficiency of plagiarism detection a score of 5. The remaining nine students (or 7,3% of the total) rated their experience as a 2, and only three students (or 2,4% of the total) had the worst experience possible and rated it as a 1.

Figure 29, second questionnaire. Question 7
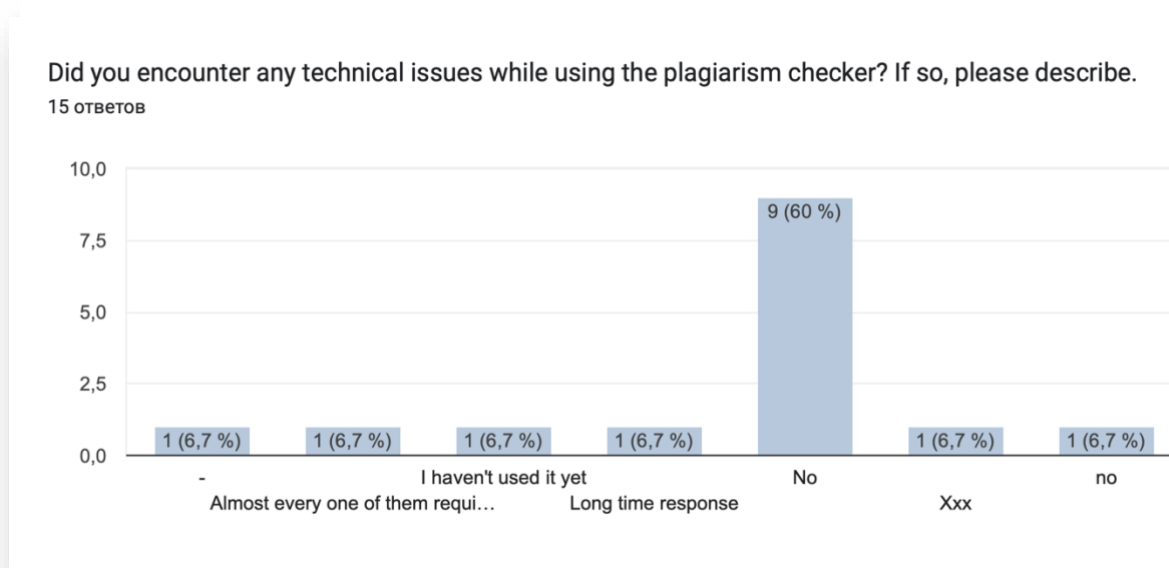
Source: own processing

In this question, participants were asked whether or not they had any technical issues while using plagiarism applications, and if they had, they were required to describe the nature of the problem that they had encountered (see figure number 29). Response to the question was voluntary. The overwhelming majority of students (9 in total) who responded to the questionnaire stated that they did not experience any difficulties while using anti-plagiarism software. Only a few of the students experienced certain difficulties. The first person gave an explanation for the issue and said, "Almost all of them require a paid subscription, and as a student, I simply cannot afford it." It is true that some of the applications require a significant sum of money in order to check the document for instances of plagiarism; even if the document is relatively short, the user is required to pay for an entire month's subscription to use the application. It is extremely challenging to cover those costs, especially considering that some of the students do not yet have full-time working positions at any organization. Another student responded with a response of "Long time response," and the final one said, "I haven't used it yet."

Figure 30, second questionnaire. Question 8

Were you able to easily interpret the results provided by the plagiarism checker? Rate your experience

123 ответа
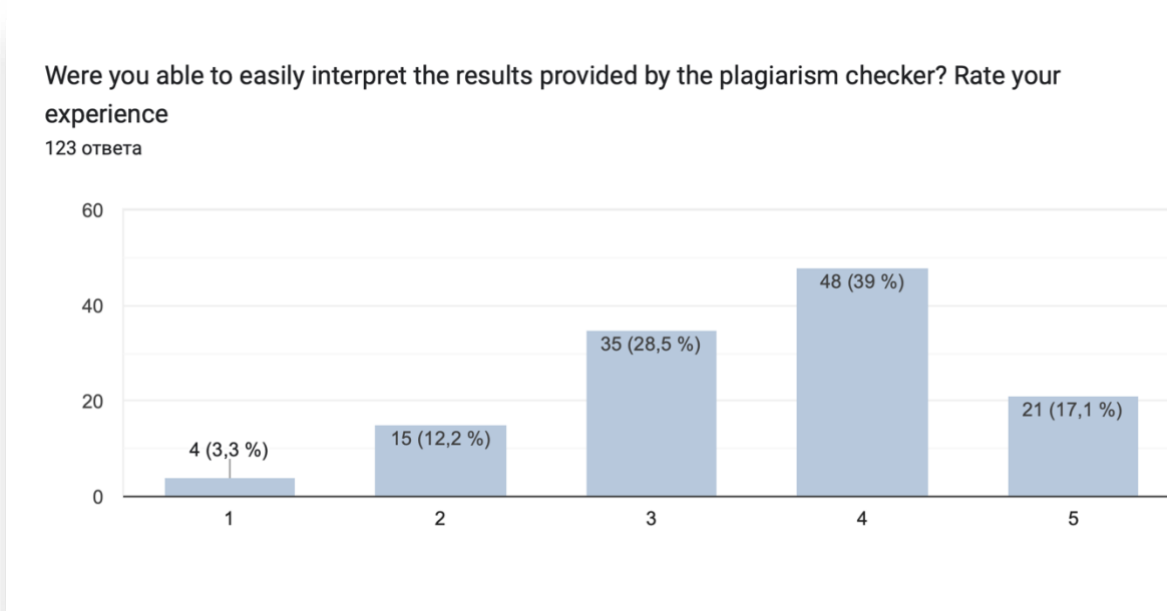
Source: own processing

The next question of the questionnaire, which is illustrated in figure number 30, was asked in order to learn if students were able to easily interpret the results given by the anti-plagiarizing applications after checking the paper for instances of plagiarism. The students were to rate their overall experience on a scale from 1 (very poor) to 5 (excellent). The majority of respondents (48 students or 39%) gave a rating of 4. Another 35 participants, representing 28,5% of the total, gave their experience a rating of 3. The following 21 students, which is 17,1% of the total, had an excellent experience interpreting the results of plagiarism tools and gave it a rating of 5. Another 15 respondents gave a rating of 2 for this question (or 12,2% out of all respondents). The fact that only four students, or 3,3%, were unsatisfied with the results that the anti-plagiarism software provided and were unable to interpret it well is the reason why their rating for that question was only 1.

Figure 31, second questionnaire. Question 9

How helpful were the suggestions provided by the plagiarism checker to improve the originality of your work? Rate your experience

123 ответа
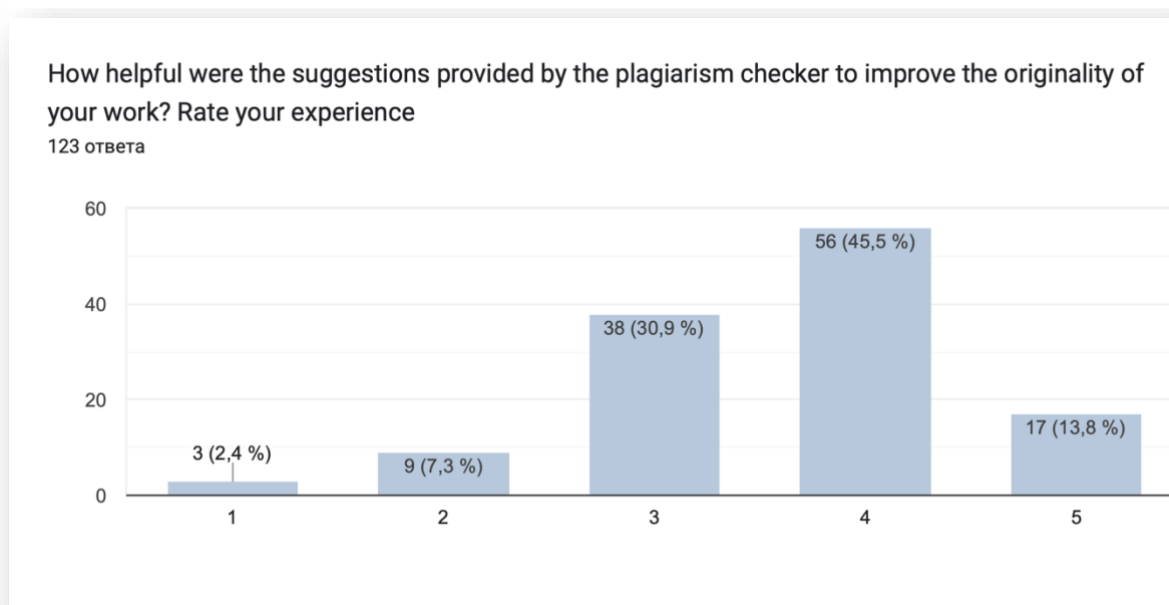
Source: own processing

The responses that have been displayed above in figure number 31 are illustrations of student recommendations for ways in which the tools that detect plagiarism can be enhanced. The response to the question was not mandatory. A total of 48 responses were received by the author. The topic of price reduction was mentioned in the vast majority of participant responses. Because the vast majority of students do not have the financial means to pay a significant amount of money to have their papers checked for instances of plagiarism, it would be preferable if applications could either reduce the price of their subscriptions or, as an alternative, offer a special discount if the user is currently enrolled in some sort of educational institution. An additional portion of the respondents provided feedback regarding the response portion of the anti-plagiarism applications. The offer was to hasten the process of checking documents that were downloaded, making it possible to bring the rate of plagiarism under control in a shorter amount of time. The remaining responses from the students consisted of suggestions regarding language support. Participants are of the opinion that it would be beneficial for plagiarism checkers to be able to comprehend more than one language.

4.4 Structured Interviews

In this chapter, the author provides the findings of structured interviews conducted with three professors from the Czech University of Life Sciences in Prague to learn their thoughts on the topic of plagiarism as well as the utilization of anti-plagiarism techniques in their study programs. The purpose of these interviews was to gain insight into professors' experiences and their personal opinions regarding instances of plagiarism among students, also to provide a contribution to the academic discourse on this topic and to evaluate the effectiveness of the current university system for plagiarism detection called Moodle. The interviews were conducted using a structured approach, with a set of 11 pre-determined questions that were created by the author to elicit detailed responses from professors.

4.4.1 Participants

Three professors from Czech University of Life Sciences from various faculties agreed to participate in the author's interview and answer the questions she had prepared. Professor Kotyza and Professor Kuzmenko from the Department of Economics are the first and second teachers with whom the interview was done. Professor Pitrová of the Department of Management conducted the third interview.

4.4.2 First Interview with Professor Kotyza

The author approached several different teachers, but Professor Kotyza was the first one who found free time, agreed to assist the author with her study, and graciously responded to all of the questions she had prepared.

The first question asked to the professor by the author was: *"Can you please describe your experience with detecting and preventing plagiarism during your courses of teaching subjects at Czech University of Life Sciences?"* and professor responded with the following words: *"The plagiarism exists among students, therefore, must be checked and the submission has to be controlled. I have experienced submission with plagiarism in many subjects, therefore I use plagiarism checker almost in all subjects I teach."*

Coming to the next question: *"How do you define plagiarism, and what steps do you take to ensure your students understand this definition?"* the professor provided the author with the following answer: *"For me, plagiarism is mostly a text, which is copied and pasted from another resource, or it can be a file (Excel) submitted but prepared by another person. Mostly it happens that one student submits his homework, and another student submits the same file without any changes or updates. Theoretically, I could consider it as a plagiarism text where the references are not mentioned, just maybe there is a list of used resources at the end of the file. But in such a case, I usually return the file or text to the author and ask for updates (changes – adding references to the text), or I provide a lower mark and additional comments. ¨*It is unfortunate but true that a significant number of students deceive themselves and their classmates into believing that they will not be discovered cheating. However, in the vast majority of cases, it is clear to the teacher whether or not he/she is reading the same kind of material submitted by students.

Continuing to the next question: *"How do you teach your students to cite sources and avoid plagiarism properly?" the* professor answered that: *"I usually explain that copying and pasting is forbidden, and that is considered as plagiarism. Also, I'm always saying that they cannot up upload a file of anybody else and pretend that it is their own work! However, in Moodle I also share with them files that explain what plagiarism means. At the same time, I have created a video where I fully explain to students how to use a tool called "Zotero", which is a referencing manager."* It is quite important for the students if the professor thoroughly explains the conditions of study and the repercussions of not following the rules that are stated by the university. The author thinks that the best approach to teach students something is by providing them with some creative content, such as how professor Kotyza does by showing a video to his students about the tool "Zotero." The author feels that this is the best method to help undergraduates understand something during their study course.

When being asked the question: *"Have you encountered cases of plagiarism in your courses, and how have you handled those situations?"* the professor replied that: *"If I find students plagiarizing, I either give them zero points for the submitted task or I do not provide a credit for the subject. In the event that plagiarism occurs once more, I reserve the right to*

escalate the situation to the disciplinary committee." Even though some students have already been detected plagiarizing, the author believes that they will try to plagiarize in their papers again. Depending on the circumstances, the disciplinary committee is the one that typically decides whether or not a student will be allowed to continue his or her studies.

On the following question: *"What resources or tools do you use to detect plagiarism in student work?"* professor Kotyza answered in the following way: *"In our university system called Moodle we have pre-installed two tools, which are able to detect plagiarism. Those tools are called "Odevzdej.cz" and "Turnitin". Most recently, Turnitin seems to be more efficient."*

As for another question: *"Have you noticed any patterns or trends in cases of plagiarism among students in the Czech University of Life Sciences?"* was answered by the professor in the following way: *"I think that copy-paste pattern was quite heavily used in the past. Now we are facing a situation where students can ask artificial intelligence for re-writing, and then the plagiarism is hardly detectable. There will be an ongoing discussion on how to work with artificial intelligence or maybe how to incorporate that artificial intelligence into the education process. However, at the moment, I have to say that the students are ahead of the teachers. The ratio teacher/student is quite high, and teachers do not have enough time and capacity to read all submissions in every detail and, for example, double check the resources that are listed in the paper."* It is common knowledge that Artificial Intelligence (AI) is continuously gaining popularity, particularly among students, and this trend is expected to continue in the foreseeable future. The author has an opinion that since there is an innumerable wide variety of different artificial intelligence programs that can write or generate anything the user wants, students will tend to use those applications more in their assignments or projects, which the author believes is not fair towards the professors.

For the question: *"What steps do you think the university can take to further prevent plagiarism and promote academic honesty?"* the teacher responded that: *"Definitely, there have to be more discussions on this topic. For instance, I teach in the third year of bachelor studies (mostly international students), and some of them still have problems with understanding what the term plagiarism means and what does it mean to cite properly."*

Next, the author asked professor Kotyza about his personal opinion on**:** *"How do the prevalence of online sources and easy access to information affect the issue of plagiarism in Czech University of Life Sciences?"* and received a response from the professor that: *"It has a significant impact on us. The education system has to find a way how to combine the prevalence of online sources and the ease with which information can be accessed across different platforms in the education process in order to be effective."*

Coming to the question: *"Are there any particular challenges you have faced in teaching students about plagiarism, and how have you addressed those challenges?"* was answered by the professor in the following words: *"I see two challenges – first, the text which can be developed by artificial intelligence. Second, students think if they just change a few words in a paragraph, then it cannot be considered as plagiarism. But that is not a correct assumption. Paraphrasing a text means something different than just changing a few words in a paragraph. And here we should provide as teachers and as an institution more training on that."* The author is in complete agreement with professor Kotyza that the majority of students do not have a clear understanding of how essentially their papers and projects shall look before submitting them in a system,

The last question asked by the author was: *"How many students have you detected cheating or plagiarizing their work during the current or previous academic year?"* and professor replied that: *"I'm not entirely sure, but I believe that it could be from 5 to 10 students enrolled in one study course."*

4.4.3   Second Interview with Professor Pitrová

Professor Pitrová kindly agreed to participate in the author's interview and answered all ten questions prepared.

The first question asked to the professor by the author was: *"Can you please describe your experience with detecting and preventing plagiarism whereas teaching subjects at Czech University of Life Sciences?"* and professor responded**:** *"Detecting and preventing plagiarism is a significant challenge for many educators. In my experience, it is crucial to establish clear guidelines on academic integrity and plagiarism and communicate them*

effectively to students. It is also important to create assignments and assessments that encourage critical thinking, creativity, and originality rather than rote memorization and replication of information." The author agreed with the professor. It is essential to give students creative projects to work on so that they are interested in finding ways to make the material more helpful, and most probably, they will search for information themselves.

Coming to the question: *"How do you define plagiarism, and what steps do you take to ensure your students understand this definition?"* the teacher has claimed that: *"It is common that plagiarism is the act of using someone else's work, ideas, or words without giving them proper credit or attribution and to ensure that students understand this definition, I usually include it in the course syllabus and discuss it during the first lecture. I also provide examples of various forms of plagiarism, such as copying and pasting text from a website, paraphrasing without citation, or submitting work completed by someone else."* The author holds a belief that plagiarism is not only the act of using someone's else work, the ideas of another person, etc. However, it can also occur in presentations, monologues, and other types of documents.

When being asked the question: "*How do you teach your students to properly cite sources and avoid plagiarism?"* the professor replied: "*Proper citation and referencing are essential to avoiding plagiarism. I teach my students how to use various citation styles, such as APA, MLA, or Chicago, and provide them with resources, such as citation guides and online tools. I also emphasize the importance of using multiple sources and critically evaluating the information they find."* All formats, which the teacher has mentioned in her answer, are quite popular around the universities in Europe. At ČZU (Czech University of Life Sciences), most of the students are recommended and sometimes even obligated to use the APA style of citation.

The following question: *"Have you encountered cases of plagiarism in your courses, and how have you handled those situations?"* was answered by professor Pitrová in the following way: *"I have encountered cases of plagiarism in the past, and I always handled them according to the university's policies and procedures. I usually start by discussing the issue with the student and explaining why their behaviour is unacceptable. Depending on the severity of the plagiarism, I may assign a lower grade, require the student to resubmit*

the work, or even report the incident to the university's academic integrity office." It is true that institutions have very strong policies against plagiarism, and students might face serious consequences if they are caught. Students who were detected plagiarizing in their papers or even diploma theses would be brought to the disciplinary commission, which would then decide whether or not the student would be permitted to continue their education in the future.

On the next question: *"What resources or tools do you use to detect plagiarism in student work?"* the professor answered that: *"There are various tools available to detect plagiarism, such as Turnitin or PlagScan. These tools compare students' work to a database of existing publications and highlight any similarities or matches. However, it is important to use these tools as a supplement, not a substitute, for manual review and evaluation of students' work."* The author concurred with the teacher and can claim that nowadays exist a large number of anti-plagiarizing tools, which can be utilized by students and professors too in universities. Truly said that those applications should not be a supplement, but not every student is being honest during his or her studies and unfortunately, not every software is able to identify when a student has changed words or sentences in a paper that they have submitted.

As for the question: *"Have you noticed any patterns or trends in cases of plagiarism among students in the Czech University of Life Sciences?"* the teacher replied with the following words: *"It is unfortunate to state that some students at the Czech University of Life Sciences are frequently submitting assignments without proper citation norms and trying to pass off others' work as their own. Plagiarism is a serious academic offence that undermines the integrity of the educational process and can harm both the individual student and the university as a whole."* The author believes that plagiarism is becoming a serious problem for professors who are now teaching at universities. Students' cheating in practically every assignment demonstrates that they are uninterested in the material they are studying. For that reason, the author believes that the educational system should be improved in order to motivate undergraduates to study more effectively.

Coming to the question: *"What steps do you think the university can take to further prevent plagiarism and promote academic honesty?"* the professor provided the author with

the following answer: *"The university can take a number of measures to stop plagiarism and encourage academic honesty, such as:*

1. *Providing clear guidelines and policies on academic integrity and plagiarism*
2. *Offering workshops or training sessions for students on proper citation and referencing*
3. *Encouraging and rewarding originality, creativity, and critical thinking in assignments and assessments*
4. *Using plagiarism detection tools and manual review to evaluate students' work*
5. *Encouraging students to report any suspected cases of plagiarism or academic misconduct."*

Next, the author asked professor Pitrová about her personal opinion on: *"How do the prevalence of online sources and easy access to information affect the issue of plagiarism in Czech University of Life Sciences?"* and got a response from the professor that: *"The prevalence of online sources and easy access to information can make it easier for students to plagiarize. However, it also provides opportunities for educators to teach students how to use these resources ethically and effectively. As such, it is essential to emphasize the importance of critical thinking, evaluation, and attribution when using online sources."* It is a common fact that there are more than a billion web pages and journals available online on the internet, and each of them has a unique variety of information. The author also believes that it is difficult for students to gather data or to find the appropriate source for their assignments or projects since they cannot choose the appropriate one. Due to that fact, the author believes that it is easier for students to plagiarize rather than to form their own ideas based on what they found.

The other question: *"Are there any particular challenges you have faced in teaching students about plagiarism, and how have you addressed those challenges?"* was answered by professor Pitrová: *"One challenge in teaching about plagiarism is that some students may not fully understand the concept or may have different cultural or linguistic backgrounds that affect their approach to academic writing. To address these challenges, I try to be patient, clear, and supportive in my communication with students. I also provide*

additional resources, such as writing centres or peer tutoring, to help students develop their skills and overcome any difficulties."

The last question of the interview was: *"How many students have you detected cheating or plagiarizing their work during the current or previous academic year?"* the teacher replied that: *"It would be several teams during every academical year from the total amount of 17 (about 4-5), the teams usually consist of 5-6 students."* Although not all professors and not all anti-plagiarism software are able to detect academic dishonesty among students in universities, the author has a belief that this number is continuously increasing from year to year, and the number that was mentioned by professor Pitrová could even be higher given that some of these factors.

4.4.4 Third Interview with Professor Kuzmenko

Continuing with the second interview with Professor Kuzmenko from the Department of Economics, who kindly provided the author with short answers for the same ten prepared by her questions. The first question asked to the professor by the author was: *"Can you please describe your experience with detecting and preventing plagiarism during your courses of teaching subjects at Czech University of Life Sciences?"* to which the teacher responded that: *"Usually I utilize a university system called Moodle."*

While being asked: *"How do you define plagiarism, and what steps do you take to ensure your students understand this definition?"* the professor responded that: "According to Oxford definition: *„Plagiarism is presenting work or ideas from another source as your own, with or without consent of the original author, by incorporating it into your work without full acknowledgement. Plagiarism can also include re-using your own work without citation."* This aspect is mentioned both verbally and in a written form via Moodle in each course taught by me."*

Coming to the next question: *"How do you teach your students to properly cite sources and avoid plagiarism?"* the professor's answer was: *"Students understand better when I use examples from everyday life to illustrate the point."* The other question asked was: *"Have you encountered cases of plagiarism in your courses, and how have you handled*

those situations?" the teacher replied with the following response: *"Yes, multiple times. It depends on a concrete situation."*

For the question: *"What resources or tools do you use to detect plagiarism in student work?"* Professor Kuzmenko answered that: *"Via anti-plagiarizing tool which is installed in university system called Moodle."* As the author has learnt from the interview with professor Kotyza, there are few tools that are implemented in Moodle, which makes it simpler for teachers to detect instances of plagiarism in students' writings.

Another question was: *"Have you noticed any patterns or trends in cases of plagiarism among students in the Czech University of Life Sciences?"* the teacher provided the author with the answer that: *"Probably the fact that plagiarism is detected almost always when students submit their semestral projects or essays. In case of Bachelor and Diploma theses the overall situation is much better."* The author agrees with the professor that the most common place for students to plagiarize is in their projects and assignments, and this is something that is illustrated in the results of the questionnaire that was conducted among students in chapter 4.2.

Following the question: *"What steps do you think the university can take to further prevent plagiarism and promote academic honesty?"* the author has received the answer from the teacher that: *"It seems this question should be formulated the other way around - What steps do students can finally take to prevent plagiarism and promote academic honesty?"*

While being asked: *"In your opinion, how do the prevalence of online sources and easy access to information affect the issue of plagiarism at Czech University of Life Sciences?" the* professor replied with the following words: *"We are now living in the information age, and there is an endless number of web sources all over the world that can provide a wealth of information. It is not a problem to use it. All problems start to occur when information is used without being critically considered, systematized, and mentioning the source of the ideas used."*

Another question asked by the author was: *"Are there any particular challenges you have faced in teaching students about plagiarism, and how have you addressed those challenges?"* and teacher's answer was: *"Students frequently just forget about it, disregard it, or make an effort to conceal the fact that they use the ideas of other people or present the ideas of other people as their own without realizing it."* Truly said, a vast majority of students consciously plagiarizing in their papers which is disrespectful towards the teacher who was explaining the material during the whole semester. The author believes that the only way to change students' perception regarding plagiarism is to encourage their original thinking with unique tasks.

The last question of the interview was: *"How many students have you detected cheating or plagiarizing their work during the current or previous academic year?"* the professor responded that: "*During one academical year I was able to identify approximately 80% of the students cheating."* The author also believes that the percentage of undergraduates cheating can fluctuate based on the degree of difficulty of the subject being studied.

After conducting the series of three interpersonal interviews, the author was able to interpret all of her findings in the table listed below, which provides a detailed overview of each participant's responses.

Table 1, structured interviews with professors at CZU

Question	Ing. Pavel Kotyza, Ph.D.	Ing. Jana Pitrová, Ph.D.	Mgr. Elena Kuzmenko, Ph.D.
Experience with plagiarism and approach to tackling	*Meticulously relies on detection programs and encounters the problem from time to time*	*Frequently came across the issue and tackled it with the help of programs*	*Mostly relies on Moodle for tackling and faces it quite often*
Definition of Plagiarism	*Copy + paste from other resources or having someone else writing your work; warns and describes plagiarism before each course*	*Sticks to academic definition, warns before each assignment*	*Sticks to academic definition; puts information about it on Moodle and discusses it verbally*
Resources Used	*Turnitin and Odevzdej.cz*	*Turnitin and PlagScan*	*Detection from Moodle*
Experience at CZU	*Copy-paste in the past, but now they use the help of AI*	*Students often steal someone else's work and do not also do the job of properly citing well*	*Plagiarism is detected almost always when students submit their semestral projects or essays*
Specific challenges	*Presence of artificial intelligence*	*Having a different cultural approach to academic writing*	*An absolute reluctance of students*
Number of students caught	*From 5 to 10 students per course*	*Around 17 per year*	*A few per course*
Recommendations on addressing	*Teachers should provide more instructions from the very beginning of the academic life*	*Being more patient and dedicating more personal time to resolve issues individually*	*Students have to be more attentive*

Source: own processing

4.5 Multi-Criteria Evaluation

4.5.1 Inputs for the analysis

For the purpose of comparison of 4 different plagiarism detection applications according to different evaluation criteria such as accessibility, price level, response lag and program efficiency, the author has created a Word document which contains eight texts in total. All texts were composed on different topics with different levels of plagiarism in order to see how effective the tools are in terms of their utilization. The first three texts were taken by the author from 3 different sources without any proper citation.

Figure 32, text 1 - Social networks affection

1. Social Networks affection

Teens constantly struggle with their self-esteem as they find their place in society. Social media posts have the power to boost or harm teens' self-image. More often than not, the latter is the case.

Thanks to magazine-quality photos with blemish-hiding filters, future adults often look at their own faces and bodies with disdain. Also, seeing posts of parties, get-togethers, and other events can make a teen extremely sad if they weren't invited.

Another way that social media makes people lonely is that they might physically be in the same room together, but they might be on social media the whole time and have no interaction.

Social media can also give users a case of FOMO, for example, if they were invited on their friend's beach vacation but couldn't go for some reason. Or if the friend didn't ask them on the trip at all, users might feel hurt and left out to see that others in their social circle were. It can lead them to question their friendships or their own self-worth.

Source: own processing

The first text, which is displayed in figure number 35, was originally taken by the author from the very first source that was found, without any edits or word replacements being made. This article has "Social networks affection" as its topic and explains the repercussions of people's excessive usage and deep affection of social media.

Figure 33, text 2 - Healthy benefits of eating well

2. Healthy benefits of eating well

Following a healthy diet has many benefits, including building strong bones, protecting the heart, preventing disease, and boosting the mood. Research has shown that students are able to learn better when they're well nourished, and eating healthy meals has been linked to higher grades, better memory and alertness, and faster information processing. Naturally colorful foods like blueberries and red bell peppers contain antioxidants, vitamins, fiber, and many other nutrients that support healthy growth, and help prevent problems such as obesity, dental cavities, iron deficiency, and osteoporosis. Healthy foods help to maintain or improve overall health. Thus, it stands out of utmost importance to individuals to examine the significance of a healthy body. The key points to remember are to eat plenty of fruit and vegetables, wholegrains, and healthy sources of protein (like fish or pulses) while reducing processed food, sugar, and alcohol you drink. The quality of life can be improved so that everyone has to choose the best to eat. Feeling good on the inside can give you more self-confidence or a more positive self-image. Higher self-esteem can make you more confident socially, strengthening your desire to forge new friendships and romantic connections.

Source: own processing

The second text, which is shown in figure number 36, was created using the same method that was used for the first text. The text was copied by the author from a web page without any changes being made in order to test how well anti-plagiarism tools can recognize text that has been copied and pasted from another source. The article explains the significance of maintaining a healthy diet and provides multiple recommendations on how one's overall quality of life can be enhanced.

Figure 34, text 3 - Environmental impacts of autonomous vehicles

3. Environmental impacts of autonomous vehicles

Autonomous vehicles (AVs) may have significant environmental impacts although there are still few studies focusing solely on these effects. Most AVs developed today have highly efficient and extremely advanced electric engines that offer huge opportunities for emission savings. This is because they generate very little emissions over their lifetime when compared to conventional vehicles with internal combustion engines operating on fossil fuel. Yet, while tailpipe emissions from electric vehicles are zero, how much AVs actually pollutes depend on where they get their electricity from. If batteries of Autonomous Electric Vehicles (A-EVs) are charged by clean energy sources, their environmental impact is minimal. Yet not all countries get their power from renewables. In several US countries, for example, most of it is still generated by coal plants, making driving EVs less sustainable than in those relying for the most part on green energy sources. People might be willing to live further away from work and cars would be able to drive for a longer period of time. However, that would cause an increase in energy.

Source: own processing

The text that can be seen in figure number 37 displayed above is similar to the two texts, which were illustrated above in figures 36 and 35, and had been copied and pasted from an online source. The "Environmental impact of autonomous vehicles" is the main topic of this text, which also outlines the various factors that contribute to environmental pollution.

The next text, which will be displayed in figure 35, has three different versions of itself, which are going to be utilized for the purpose of evaluating the performance of plagiarism-detecting tools. The first version of the text was originally taken by the author from a website without any changes or paraphrasing. The second version was paraphrased with the use of a tool known as "Quillbot", which was described by the author in chapter 3.5.1. The third version is an additional version of the text, which was rephrased one more time in "Quillbot" in order to achieve more word replacement.

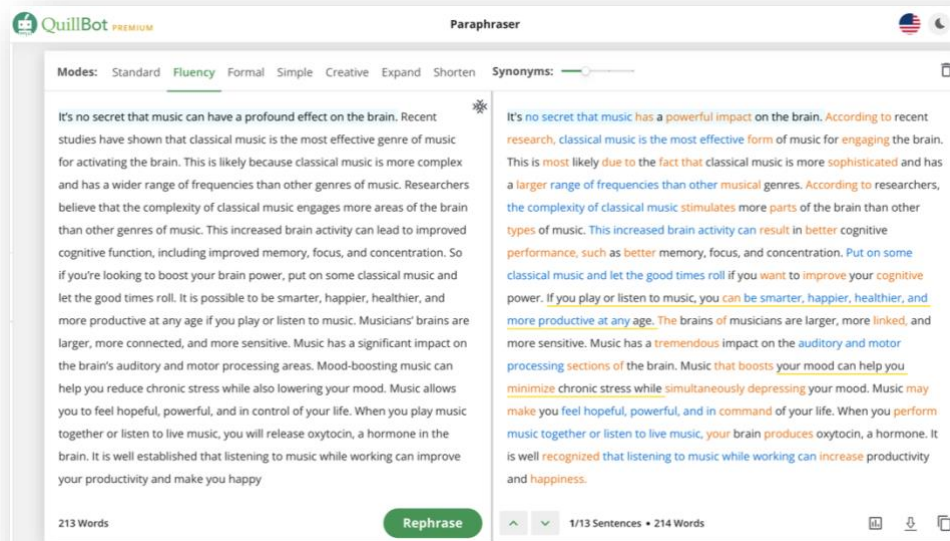**Figure 35, text 3 - The effects of classical music on the brain**

The effects of classical music on the brain (first version, originally taken from a website)

It's no secret that music can have a profound effect on the brain. But what genre of music activates the brain the most? Recent studies have shown that classical music is the most effective genre of music for activating the brain. This is likely because classical music is more complex and has a wider range of frequencies than other genres of music. Researchers believe that the complexity of classical music engages more areas of the brain than other genres of music. This increased brain activity can lead to improved cognitive function, including improved memory, focus, and concentration. So, if you're looking to boost your brain power, put on some classical music and let the good times roll. It is possible to be smarter, happier, healthier, and more productive at any age if you play or listen to music. Musicians' brains are larger, more connected, and more sensitive. Music has a significant impact on the brain's auditory and motor processing areas. Mood-boosting music can help you reduce chronic stress while also lowering your mood. Music allows you to feel hopeful, powerful, and in control of your life. When you play music together or listen to live music, you will release oxytocin, a hormone in the brain. It is well established that listening to music while working can improve your productivity and make you happy.

Source: own processing

Above, in figure number 38, is illustrated the first original version of the text with the topic "The effects of classical music on the brain", which was copied and pasted from an online source without referencing. The text describes how listening to classical music can affect brain activity and how doing so can contribute to a healthy lifestyle.

Figure 36, text 2 - paraphrased in Quilbot (version 1)

Source: own processing

The text, which is shown in figure number 39 displayed above, illustrates the paraphrased with the help of a Quillbot tool version of an original text, which was displayed earlier in figure 38. It is clear that the rephrased version of the text is not identical to the original one. The blue colour indicates the longest unchanged words, and the yellow underlining shows that the tool made changes to the structure of the pasted text. The orange colour indicates any improvements that have been made, and if the user does not like the way something has been changed, there are some alternatives given to modify it. Quillbot gives its users a few more possibilities for how the word or phrase can be substituted. The user can adjust the function of the synonym's replacement by dragging the green slider, which is placed at the very top of the tool, directly above the window that displays the rephrased text. By moving the slider to the left, the program will use fewer synonyms to replace the pasted text, and it will keep the majority of the original words unchanged. And vice versa – by moving the slider to the right, the tool will look up for a greater number of synonyms, and it will use those synonyms to replace the text that was pasted. There are also seven modes for different types of text change, which are placed in the upper part of the Quillbot. The modes are named "Standard", "Fluency", "Formal", "Simple", "Creative", "Expand", and "Shorten". The author has selected a mode of "Formal" formatting and dragged the slider to the left side for normal substitution of synonyms.

Figure 37, text 3 – paraphrased in Quillbot (version 2)
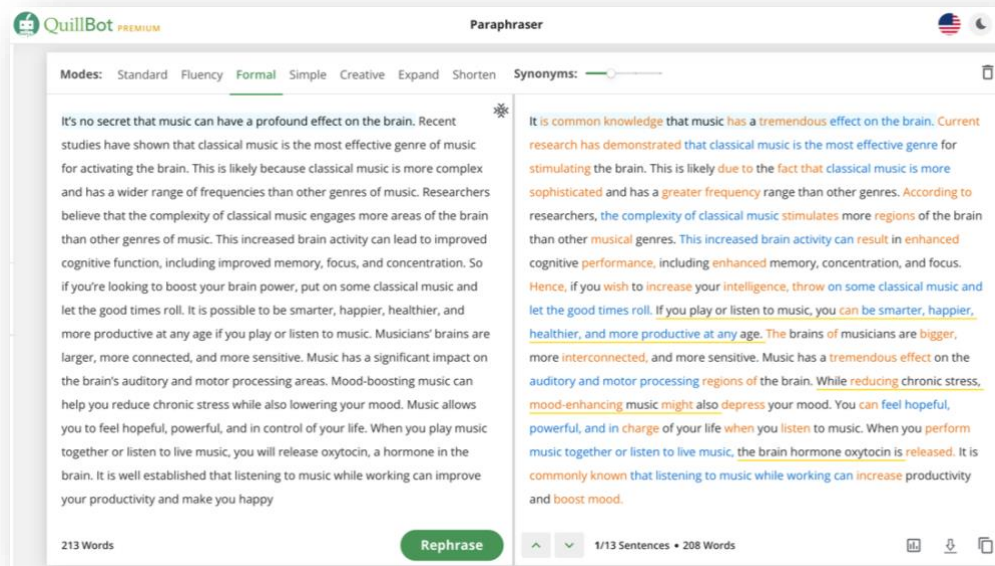
Source: own processing

The second paraphrased version of the original text that was collected from an online source can be seen in figure number 40 placed above. From the figure can be clearly seen that the substitution of the words and the structure of sentences differ from the first version of the paraphrased text (see figure number 39). In spite of the fact that the tool rephrased sentences in a different manner and used a unique combination of synonyms this time, the original significance of the text was not affected in any way. The author has continued to use the same mode, which is a formatting style named "Formal," with the typical substitution of synonyms.

Each of these different paraphrased versions of the same text are meant to demonstrate how easily the text can be altered with the assistance of a tool designed specifically for that purpose and will be utilized by the author in her comparative analysis in the next chapter. Additionally, the purpose of these examples is to understand and illustrate how effective anti-plagiarism tools can be in practical terms.

Figure 38, text 4 - Traffic congestion in cities

4. Traffic congestion in cities

Traffic Jam has a tremendous impact on the life of people. It is one of the most serious problems in big cities that people have to deal in daily life. Since most of the people have to deal with it on a daily basis they may get psychologically affected. It also negatively affects work, education, and personal life of people and finally to the progress of the country. The urban transportation system is a big challenge for the governments because it requires a state-of-the-art Vehicles and a state-of-the-art road designed for public transport. There are many reasons for traffic problems, but the aftereffects of getting stuck in traffic for long are only frustration and anger. Being stuck in traffic for long hours results in unproductive time. The time sitting idle and getting late to your appointment causes frustration and anger in a person. Aggressive driving increases road rage. Moreover, the longer people are staying in a traffic the bigger is the wastage of fuel and therefore the more emissions released into the atmosphere. Stopping, accelerating, and again stopping the car leads to an unnecessary release of carbon dioxide. Also, emergency vehicles like the fire brigade and ambulance get stuck up in the traffic, which is crucial to people, whose life can be in danger in that moment. Another popular problem is that people can get late for their important meetings and to cover up the time sometimes drive fast and cause accidents.

People should be informed especially about traffic and be warned about the use of vehicles. Of course, many studies and projects are done on this subject. Renovated roads, new roads, and many more investments are made for the improvement of traffic. However, no matter how long the road is made, it is necessary to direct the people towards using public transportation.

Source: own processing

The represented above figure number 41 shows the text which was the same way as the first three texts mentioned above, taken by the author from an online source and did not include any referencing. The only aspect that is different this time is that the author has changed a few sentences in the middle of the text by paraphrasing them herself. The topic of "Traffic congestion in cities" is described and discussed in the text displayed in figure number 41 above, which also provides an explanation of the causes and factors that contribute to traffic backups.

Figure 39, text 5 - Consequences of plagiarism for students of higher institutions

5. Consequences of plagiarism for students of higher institutions

Plagiarism among university students can have a variety of harmful consequences. If the student is proven to have plagiarized another person's work, the following are some of the possible consequences:

- Receiving a failing grade for a specific task with no ability to improve your grade;
- Receiving an immediate failing grade for the entire term
- Disciplinary hearing - the commission will request an explanation from the student regarding plagiarism in his work in order to acquire a better grasp of the subsequent circumstances
- Being assigned more chores, all of which are required to evaluate whether you have learnt your lesson; - Getting dismissed from university

Yet, these are not the only consequences that people face as a result of replicating or copying someone else's work. Students at universities are becoming accustomed to plagiarizing everything and passing off other people's work as their own as they progress through their studies. As a result, students lose motivation to complete even the most basic assignments. As a result, the world ends up with specialists who have neither the abilities nor the education required to execute their professions when they graduate from universities. It is difficult for these people to make judgments on their own, finish modest activities, or take on duties during a hectic workflow. The majority of employers want their employees to be educated and orientated in accordance with the program they studied while attending university. These firms are unwilling to hire persons with low levels of expertise, resulting in a labor shortage in the labor market. (2006, University of Melbourne, Australia)

Source: own processing

The last text, which is illustrated by the author in figure number 42, was originally written by the author herself in chapter number 3.1.3, "Repercussions". No paraphrasing applications were used for writing this text. The text explains what the consequences of academic dishonesty for students of higher institutions are.

In total, the author has created eight texts with and without plagiarism. Texts were gathered into one Word document, so it will be much easier to examine them with the

help of anti-plagiarising tools and determine whether or not they contain instances of plagiarism.

4.5.2 Price comparison

In this chapter the author will conduct a price-based comparison of four different anti-plagiarism tools that she has picked previously for her analysis. Information about the price of each program was originally taken by the author from programs' official websites with current pricing displayed and was described by the author in the theoretical part of this diploma thesis (see Chapters number 3.3.1 - 3.3.4)

Table 2, price comparison of plagiarism detection tools

	Grammarly	Scribbr	Moodle	Odevzdej.cz
Price (USD)	30	20	0	0

Source: own processing

The prices that were gathered for each anti-plagiarism tool are illustrated in table number 2, displayed above. The author rounded the prices up. It is clear from the table that "Moodle" and "Odevzdej.cz" are two of the most cost-effective programs because it is not necessary to pay to make use of any one of them. The application called Grammarly turns out to be the most expensive one, and because of this, it is not a choice that can be considered by all people to be cheap. This is especially significant for undergraduate students who are not employed yet. Scribbr falls somewhere in the middle of the pricing spectrum due to the fact that it is ten dollars less expensive than Grammarly.

4.5.3 Response lag comparison

To compare the response lag of each selected plagiarism detection program the author used a Word document with eight created by her texts, which were described and displayed in Chapter number 4.5.1, "Inputs for the analysis". The author uploaded the Word document that was previously mentioned to all of the chosen plagiarism detection programs and recorded the time of verification lag.

For Moodle verification the author needed a window for document submission. All actions regarding students' submissions in Moodle system are available only for the teachers, who are currently employed at Czech University of Life Sciences. The author has approached professor Kotyza in the hopes that he will assist her with the comparative analysis of Moodle program. The professor has kindly consented to do so and has created a window for document submission in one of his study courses. Without the help of professor Kotyza, the author would not be able to evaluate the Moodle system. Since the other three applications are accessible to anyone online, the author did not experience any difficulties with file uploading. After keeping track of the time that each of the anti-plagiarism programs required to check the document for instances of plagiarism occurrence, the author prepared a summary of the findings in the table that can be found below.

Table 3, response lag comparison of plagiarism detection tools

|	Grammarly	Scribbr	Moodle (Turnitin)	Odevzdej.cz
Response lag (minutes)	Less than 1 min (18.87 seconds)	Less than 1 min (24.33 seconds)	325 minutes	710 minutes

Source: own processing

From table number 3 it is visible that the fastest anti-plagiarism tool in terms of utilization was a tool named "Grammarly". It took "Grammarly" only 18.87 seconds to check the document for instances of plagiarism and to display the results. In the second place, with a response lag of 24.33 seconds, was the application named "Scribbr". The next one was "Moodle", with the result of 325 minutes (5 hours and 25 minutes) of document verification. And on the last place was the tool named "Odevzdej.cz", with a result of 710 minutes (11 hours and 50 minutes). The conclusion that can be drawn from these findings is that instruments with a higher cost appear to be faster than those that do not demand payment.

4.5.4 Efficiency comparison

For the comparative analysis of the efficiency of each of the selected anti-plagiarism programs the author downloaded mentioned before Word document, which consists of 8 prepared by author texts with and without plagiarism (see chapter number 4.5.1 "Inputs for the analysis"). The first program where the author downloaded the document was Moodle CZU, with the Turnitin plugin pre-installed. The author uploaded the Word document prepared beforehand in the window, which professor Kotyza had opened for her in his course. The results of the plagiarism check are illustrated below.

Figure 40, Moodle system - plagiarism check results (sources and percentage)
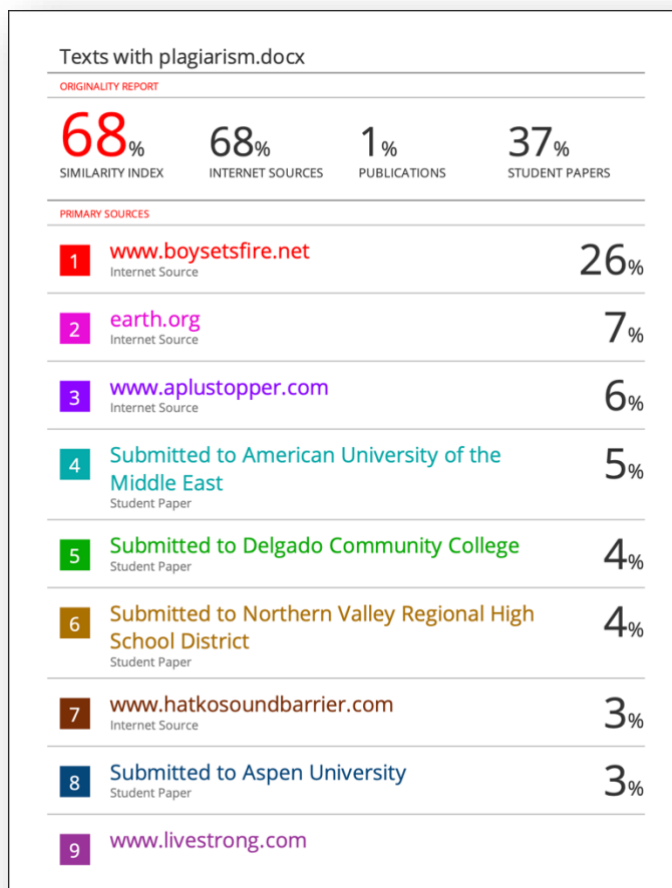

Source: Moodle CZU, 2023

Figure number 41 illustrates the results from the Moodle CZU with the Turnitin plugin pre-installed. In total, the system was able to detect 68% of plagiarism occurrences

in a whole document submitted by the author for the check. All sources found by the anti-plagiarizing tool and sorted by the total percentage of detection are also listed in the figure.

From figure number 44, 45 and 46 (see appendix 7.4), it is clear that the tool fully detected that texts number 1, 2, 3 and 4 are plagiarized. All similarities are coloured, and each colour corresponds to a separate source (see figure 41), which was utilized by the author while preparing a Word document. Next, figures number 46 and 47 (see appendix 7.4) represent the results of the plagiarism check of two paraphrased with the help of Quillbot tool texts with the topic "The effects of classical music on the brain". Moodle CZU, with the Turnitin plugin pre-installed, was able to recognize similarities from those texts only partially. Figures number 47 and 48 (see appendix 7.4) illustrate a text with the topic "Traffic congestion in cities", and the tool also recognized all plagiarized parts of the text. The result after the plagiarism check for the last text prepared by the author is illustrated in figure number 48 and 49. The tool did not recognize any instances of plagiarism occurrences since the text was originally written by the author herself.

The next tool which was utilized by the author was the Scribbr plagiarism checker. The same Word document was uploaded into the system. In order to get a full description of the document's similarities, the author has paid $19,95 on the Scribbr website. Figure number 42, displayed below, shows the results of checking the document by Scribbr for instances of

Figure 41, Scribbr - plagiarism check results
(sources and percentage)
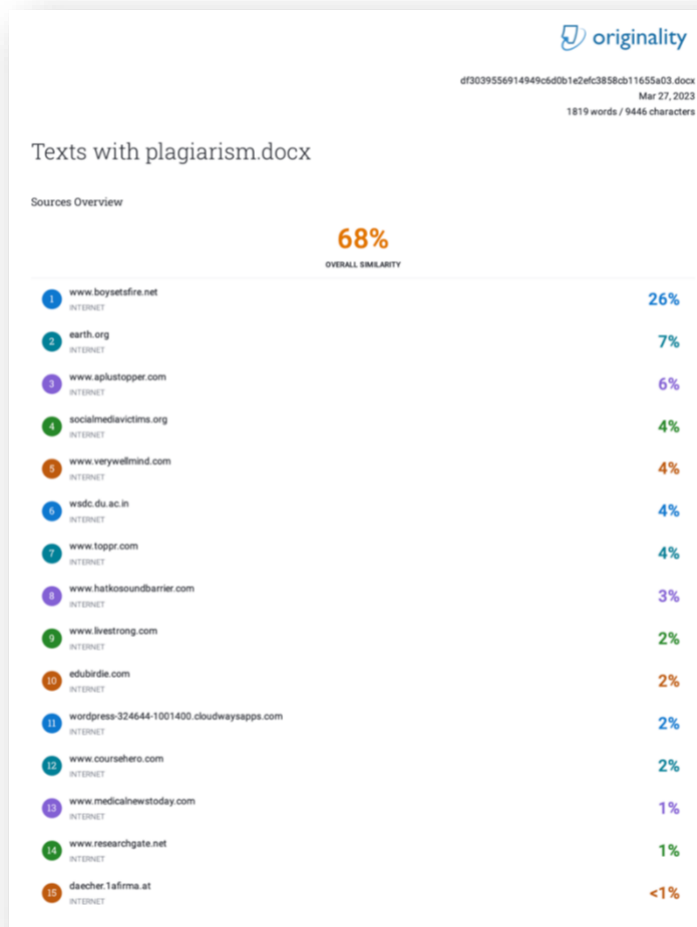
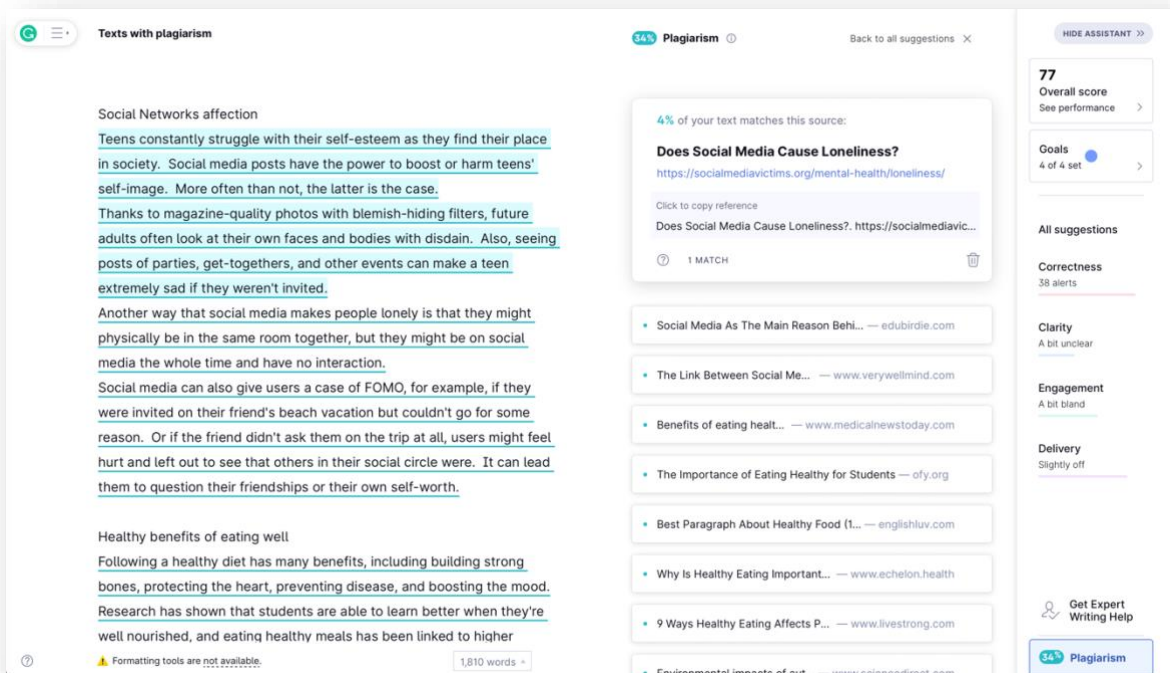

plagiarism.

Source: Scribbr, 2023

Figures number 50, 51, 52, 53, 54, 55 and 56 (see appendix 7.5) illustrate already analyzed for instances of plagiarism eight texts with different topics. The results turned out to be absolutely identical to the ones which the author received after uploading the document to Moodle CZU system with the Turnitin plugin pre-installed. The same similarities were

detected by Scribbr. The reason for that is that Scribbr is also powered by the Turnitin system for plagiarism checks.

The next anti-plagiarizing tool utilized by the author was Odevzdej.cz. The Word document consisting of 8 different texts was uploaded to the system. The results for this plagiarism checker were not as good as the results from Moodle CZU with the Turnitin plugin pre-installed and Scribbr. Figure number 56 represents the total amount of similarities found, which is in total 8% (see appendix 7.6). Next, figure number 57 illustrates sources which were recognized by Odevzdej.cz and further highlights it in the text, same as Moodle CZU with the Turnitin plugin pre-installed and Scribbr do. Unfortunately, the tool was not able to detect all plagiarized parts of the text as the previous two programs did. It is visible from figure number 58 that Odevzdej.cz highlighted only one source, which it was able to find in its database. The author supposes that this anti-plagiarism tool is mainly focused on checking documents that were written in Czech language rather than in English.

Grammarly was the author's final tool to analyze. The author paid $30 for a one-month subscription to present the entire list of similarities discovered by the system. The same document with eight different texts was sent in for checking. Compared to the previously mentioned Odevzdej.cz, the Grammarly tool showed better results. Figure number 43, represented below, shows the outcomes of using the Grammarly tool to examine the Word file prepared by the author for instances of plagiarism.

Figure 42, Grammarly - plagiarism check results (sources and percentage)

Source: Grammarly, 2023

Figure number 42 illustrates the first text and the percentage of plagiarism, which is shown above the sources that the program thinks were utilized by the author. Figure number 60 and 61 (see appendix 8.7) represent the second and the third texts and the same as for the first one selected anti-plagiarizing tool was able to detect instances of plagiarism. But from figure number 62 (see appendix 8.7) it is clear that Grammarly did not recognize any cases of plagiarizing in spite of the fact that the author fully copied this text from a few online sources. The same situation happened with the following two texts with the same topic, which were paraphrased by the author with the help of a tool named Quillbot. In figure number 65 (see appendix 8.7) can be seen that the plagiarism checker has detected some instances of plagiarizing, but not all of them. The last text with the topic "Consequences of plagiarism for students of higher institutions" had the same results as four previous anti-plagiarizing tools – no plagiarism was detected (see figure number 66, appendix 8.7).

After an examination of four distinct software packages, it is possible to conclude that the two applications, Scribbr and Moodle CZU, with the Turnitin plugin already installed, are the most efficient tools for identifying instances of plagiarism in written works.

4.5.5 Accessibility and interface comparison

The author made a comparison of four different programs for detecting plagiarism based on the principle of accessibility and interface. This comparison was made with the assistance of a second survey that was conducted among students, as well as based on the author's own experience after utilizing applications. The vast majority of students who utilized the services provided by Scribbr and Grammarly were satisfied with the outcomes. Another part of the students who utilized Moodle CZU with the Turnitin plugin already pre-installed, were of the opinion that the interface is still satisfactory. However, they claim that there are some issues on the site that could be improved in order to make it more accessible to use the service and quickly locate the component that was sought after. As the author was conducting her research, she ran into an issue that Moodle CZU system is only accessible to professors and students who are currently enrolled in the Czech University of Life Sciences. That means that the other users who would like to check their papers for instances of plagiarism would not be able to do so since they are not undergraduates or employees at CZU and therefore do not have access to the system.

The remaining students who used the anti-plagiarism tool provided by Odevzdej.cz experienced a great deal of disappointment as an outcome of using the service. Most of the users did not find the accessibility and interface of the program to be pleasant, and it was constantly impracticable for them to identify where to upload the file in order to conduct the document's plagiarism testing.

4.5.6 Multi-Criteria Decision Analysis

To begin the chapter of evaluation, the author presents the matrix available in Table 4, containing variants (rows) and criteria (columns). For weights, the author considers the price to be the most crucial criterion, followed by response lag and efficiency, then followed by accessibility and finally, with the interface or generally the way how the platform looks like. By using the data from previous research, the author computed weights in accordance with the scoring method, where the number of points per each criterion is then divided by the total in order to find a relative share.

Table 4, initial table with variants and criteria

Variants/Criteria	Interface, points	Accessibility, points	Price, USD	Response lag, days	Efficiency, points
Odevzdej.cz	2.00	1.00	0.00	0.49	2.00
Grammarly	8.00	8.00	30.00	0.00	5.00
Moodle	6.00	6.00	0.00	0.22	9.00
Scribbr	8.00	8.00	20.00	0.00	9.00
Criteria character	max	max	min	min	max
Weight	0.04	0.09	0.47	0.20	0.20

Source: own processing

For the simple additive method, it is downright essential to first conduct the process of criteria transformation, where criteria having the minimum nature will be transformed into max. In Table 5, the author presents the dataset containing the results of criteria transformation for the third criterion (Price) and for the fourth one as well (Response lag).

Table 5, transformed criteria

Variants/Criteria	Interface, points	Accessibility, points	Price, USD	Response lag, days	Efficiency, points
Odevzdej.cz	2.00	1.00	30.00	0.00	2.00
Grammarly	8.00	8.00	0.00	0.49	5.00
Moodle	6.00	6.00	30.00	0.27	9.00
Scribbr	8.00	8.00	10.00	0.49	5.00
Criteria character	max	max	max	max	max
Weight	0.04	0.09	0.47	0.20	0.20

Source: own processing based on formula (1)

Then, the author proceeds to the final implementation of the first formula indicated in the methodology of the diploma thesis with the output shown in Table 6.

Table 6, final result of the SAW

Variants/Criteria	Interface, points	Accessibility, points	Price, USD	Response lag, days	Efficiency, points	Global Utility	Rank
Odevzdej.cz	0.00	0.00	1.00	0.00	0.00	0.465581125	3
Grammarly	1.00	1.00	0.00	1.00	0.43	0.418250155	4
Moodle	0.67	0.71	1.00	0.55	1.00	0.87076299	1
Scribbr	1.00	1.00	0.33	1.00	0.43	0.573443863	2
Weight	0.04	0.09	0.47	0.20	0.20		

Source: own processing

As a result, the author arrives at a conclusion that Moodle CZU with the Turnitin plugin pre-installed is the most effective tool for preventing plagiarism, followed by Scribbr and Odevzdej.cz according to the set of criteria chosen by the author (Interface, Accessibility, Price, Response lag and Efficiency). And the last tool, Grammarly, turns out to be the absolute worst choice for preventing plagiarism.

5 Results and Discussion

The aim of this study was to investigate plagiarism at the Czech University of Life Sciences and to compare the efficiency and cost-effectiveness of four different anti-plagiarism systems. According to the findings of the author's research, plagiarism is a significant issue that affects educational institutions of higher learning, including the Czech University of Life Sciences. The utilization of the software that detects and prevents plagiarism is an efficient method for cutting down on instances of plagiarism. "Moodle CZU", "Odevzdej.cz," "Scribbr," and "Grammarly" are the names of the four different anti-plagiarism programs that were evaluated and compared in this study. According to the findings of the study, Moodle CZU is the tool that is both the most effective and the most cost-efficient for the Czech University of Life Sciences and the education system in the Czech Republic.

Over the course of the analysis, the author also encountered certain limitations. Firstly, the study was limited to the Czech University of Life Sciences, which may limit the generalizability of the findings to other universities in the Czech Republic. Secondly, the study focused only on four anti-plagiarism systems, and other systems may be available that were not evaluated in this study. Another limitation is that the other people who would like to use this system to check documents for plagiarism will have a much harder time doing so because, as was further clarified by the author, Moodle CZU is only available for students and teachers who work at Czech University of Life Sciences. This makes it much more difficult for other people to use this system. These users have the option of using Scribbr, which came in second place, instead of Moodle CZU with the Turnitin plugin. However, once looking at this choice from the perspective of the students, it is important to note that not all students are in a financial position to be able to spend a certain amount of money every month to check their documents for instances of plagiarism. The third option is Odevzdej.cz tool, which is already quite popular among students, according to the second questionnaire conducted by the author.

According to the series of structured interviews conducted by the author, the usage of plagiarism detection software is helpful not only for students but also for teachers and professors in universities. Plagiarism detection software is utilized pretty frequently by both

students and teachers alike. Professors do this in order to determine if the student wrote the assignment on his or her own, using his or her own knowledge, or whether the student copied work from outside sources. Based on structural interviews with professors at Czech University of Life Sciences, the author can conclude that the main objective pursued not only by the teachers but also by higher education institutions as a whole is to teach students writing projects, assignments and other papers on their own, without using any paraphrasing tools and not by duplicating someone else's work.

The author has also discovered via her research that even paraphrased content can be recognized as plagiarized with the help of programs such as Moodle CZU with the Turnitin plugin pre-installed or Scribbr with the same plugin. The number of students who cheat at universities continues to rise on an annual basis, which has a significant impact on how well they do in their studies during the academic year. McCabe (2001) discovered a similar tendency in his research. According to his research, dishonesty among students attending higher education institutions is prevalent, and his findings suggest that certain types of dishonesty have seen a significant rise over the past three decades. The findings of McCabe's research also suggest that although individual and contextual factors promote cheating, contextual factors, such as students' views of the behaviour of their classmates, are the most powerful influence, which coincides with the author's research in this thesis. Another study by Chen (2008) explains the individual factors that also influence cheating. Also, the author mentions the importance of the academic integrity programs and regulations of an educational institution. During the course of a series of structured interviews that were carried out by the author of this diploma thesis, this topic was also discussed by professor Pitrová. According to the findings of the first questionnaire that the author carried out, it was evident that the majority of students are familiar with the term "plagiarism," and they are not afraid to acknowledge that at least once in their lives, they have plagiarized something that another person has previously written without giving any credit to them.

5.1 Impacts and Use of Plagiarism

Students' academic and professional lives might be significantly changed as a direct result of committing academic dishonesty, which is regarded as one of the most serious academic offences. For the aim of helping students in avoiding the adverse outcomes that can result from plagiarism, various anti-plagiarizing tools have been developed.

The use of those tools that detect plagiarism has a dual effect on students. First of all, it helps students in avoiding the repercussions that can come from plagiarizing the work of others. Suppose a student submits an assignment that has been plagiarized. In that case, they are at risk of receiving a lower grade, failing the assignment or the course, and potentially getting suspended or expelled from the institution without the possibility of continuing his or her studies in the future and which can result as the loss of the opportunity of getting a degree. Students now have the ability to check their own work for any instances of plagiarism before submitting it, and all thanks to programs that detect and prevent plagiarism. Students have a better chance of avoiding the damaging effects of plagiarism and maintaining their academic integrity if they do so.

Second, the use of plagiarism detection tools can have an educational effect on students. They educate students on the significance of maintaining academic integrity as well as the ethical repercussions of engaging in plagiarism. When students utilize tools that detect plagiarism, it raises their awareness of the sources they use in their work and the necessity of properly citing those sources. This might result in a deeper comprehension of the steps involved in academic writing as well as the significance of upholding ethical standards in research.

On the other hand, there are some negative outcomes that could result from that. Some students are likely to depend far too heavily on these resources, to the point where they might not develop their abilities in research and critical thinking. Because of this, the work that they create could lack originality and innovation.

5.2 Software Ranking

In accordance with the findings of the research, Moodle CZU is the anti-plagiarism system that is the most effective in terms of both efficiency and cost among the four systems that were investigated. The technology features an intuitive user interface and makes it simple for users to identify instances of plagiarism in the uploaded document. The Scribbr anti-plagiarizing tool turned out to be as good as the Moodle CZU system. The only difference is in the price and duration of plagiarism detection. Scribbr is more expensive than Moodle CZU, but in terms of its utilization, it can detect instances of plagiarism faster. But as it was mentioned by the author in chapter 5, "Results and Discussion", the Moodle

CZU system can be used only by the teachers and students who are currently enrolled or employed at Czech University of Life Sciences, which significantly narrows the circle of people who can use this application for detecting instances of plagiarism in their documents.

It was discovered by the author that Odevzdej.cz was effective in detecting plagiarism as well. However, they were determined to be significantly less efficient than Moodle CZU. Grammarly, on the other hand, was discovered to be the system with the lowest level of effectiveness and the highest price among the four. It is possible that the system's low performance is due to the fact that it is intended for use by individual users, and the component that detects plagiarism is not specifically geared to the needs of academic writing.

5.3 Recommendations

As a first piece of advice, it would be beneficial if the Czech University of Life Sciences could encourage the usage of anti-plagiarism systems among its students, teachers, and professors in an effort to prevent plagiarism and preserve the integrity of academic work. Second, the university should investigate the possibility of replacing all other anti-plagiarism software with Moodle CZU with the Turnitin plugin pre-installed in the future as its primary anti-plagiarism system.

Out of the four anti-plagiarism systems that were examined, this one was discovered to be the most effective and cost-effective of the four, and it also eliminates the need for any other third-party software. A further essential aspect is that the CZU university might provide some training to students, teachers, and professors based on the fundamentals of how to properly use anti-plagiarism systems in order to ensure that their utilization is at its maximum effectiveness.

6 Conclusion

The aim of the diploma thesis was to study the phenomenon of plagiarism in universities on the example of a specific university (Czech University of Life Sciences), to learn how it can affect the students' performance during the academic year and the study of

how effective the plagiarism applications are. And finally, to determine which plagiarism detection software is the most efficient and cost-effective for the Czech University and for the education system in the Czech Republic overall.

The author applied various techniques in her diploma thesis, including questionnaires for students and structured interviews with professors at the Czech University of Life Sciences. Finally, the author conducted a comparative analysis of all four applications' usage through Multi-Decision Criteria Analysis. The author transformed the qualitative data into quantitative one and evaluated these data received from surveys and structured interviews with the help of a weighted scoring system and assigned a rating to each tool. Also, the author in her diploma thesis conducted the method of SAW for the calculation of the utility of each plagiarism tool.

Consequently, the author comes to the series of fundamental conclusions that do fulfil the author's expectations and the objectives stressed by her in the objectives chapter of the diploma thesis. Firstly, with a help of questionnaires it was possible for the author to conclude that most of the students are tending to plagiarize in their papers due to the lack of time for preparation or misunderstanding the subjects they are currently learning in universities. Next, based on structured interviews conducted with the professors at Czech University of Life Sciences, the author arrives to the send conclusion that the issue of plagiarism can affect students' performance during academic year a lot and can have a serious repercussions on their future lives. Third conclusion which was made by the author based on Multi-Decision Criteria Analysis is that the most efficient and cost-effective anti-plagiarism tool is Moodle CZU.

Based on the conclusions of the diploma thesis, it is recommended that future research explores several areas to build upon the knowledge gained and provide further insight into the issue of plagiarism in universities.

Firstly, it would be beneficial to explore the reasons why students tend to plagiarize in their papers. While in this diploma thesis the author revealed that many students do so due to a lack of time or misunderstanding of the subject, a more in-depth investigation could provide further insight into the thought processes and motivations behind this behavior. This could lead to potential solutions to address these underlying reasons for plagiarism.

Secondly, it would be valuable to investigate the long-term impact of plagiarism on students' academic and professional careers. By tracking the academic and professional success of students caught plagiarizing versus those who have not, a better understanding of the repercussions of this behavior could be gained.

Another step which can be done in future research is to investigate the effectiveness of plagiarism education programs. This could involve evaluating existing programs at the Czech University of Life Sciences or developing and implementing new programs to address the issue of plagiarism. Feedback from both students and professors on the effectiveness of these programs could also provide valuable insights.

And finally, exploring the cultural and societal factors that contribute to plagiarism in universities could provide valuable insights, not only in the Czech Republic but in other countries as well. This could involve a comparative analysis of plagiarism rates and attitudes towards plagiarism in different countries and cultures. By understanding the broader cultural and societal factors that contribute to plagiarism, more effective strategies to address this issue could be developed.

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8 List of pictures, tables, graphs and abbreviations

8.1 List of pictures

8.2 List of tables

8.3 List of abbreviations

AI	Artificial Intelligence
CZU	Czech University of Life Sciences
AMOS	Automated Manipulation of Strings
LLC	Limited Liability Company
SAW	Simple Additive Method
USD	United States Dollar
MCDA	Multi-Criteria Decision Analysis
VAV	Vícekriteriální analýza variant

9 Appendices

9.1 First Survey

1. *What is your gender?*
   - Male
   - Female
2. *What is your nationality?*
   - EU country
   - Post-Soviet country
   - Former British colonies
   - Rest of Europe
   - NAFTA countries
   - Latin America
   - Other
3. *What is the name of the higher institution where you are enrolled?*
   - Czech University of Life Sciences (ČZU)
   - University of Economics Prague (VŠE)
   - Czech Technical University in Prague (ČVUT)
   - Charles University (Univerzita Karlova)
   - University of Finance and Administration (VŠFS)
   - University of New York in Prague
   - Metropolitan University Prague (MUP)
   - Other
4. *Have you ever heard about the term "Plagiarism"?*
   - Yes
   - No
5. *How frequent do you think the issue is?*
   - Quite frequent, many people doing or have done that
   - It is common among students in universities
   - I have heard about its occurrence from time to time
   - I have never heard about any cases of plagiarism

6. *What is your personal opinion – should universities allow plagiarism usage among their students?*
   - Yes, it should be entirely permitted
   - No, it is not fair towards other students that study independently
   - Maybe, I am not sure
   - Yes, but only in some special cases with a specific percentage allowed (for example: not more than 15% of plagiarism occurrences allowed)

7. *Have you ever cheated during your study course in university?*
   - Yes
   - No
   - Only once
   - From time to time
   - Always

8. *Has your work/test/exam/assignment ever been found plagiarized?*
   - Yes
   - No

9. *What was your recent case of plagiarism (for instance: copying or paraphrasing from someone's else work)?*
   - I have never cheated
   - Exam
   - Assignment
   - Project
   - Test

10. *What was your main motivation for cheating?*
   - It was my last try to pass
   - I did not understand the subject or task at all
   - I felt unequal to other students, because they seemed more intelligent than I am
   - I was not prepared
   - There was no enough time to finish the task on time
   - I have never cheated

11. *Which methods do you mostly use to avoid plagiarism in your papers?*
   - Paraphrasing

- Using different sources
- Plagiarism checkers
- Substituting Latin symbols for identical undetectable symbols in other languages
- I am usually writing on my own

9.2 Second Survey

1. *Which application do you use to control the level of plagiarism in your work?*
   - Grammarly
   - Odevzdej.cz
   - Scribbr
   - Other

2. *How easy was it to navigate the interface of the plagiarism checker? Rate your experience (1 – Very poor, 5 – Excellent, very good)*
   - 1
   - 2
   - 3
   - 4
   - 5

3. *Did you find the plagiarism checker to be accessible and user-friendly? Rate your experience. Rate your experience (1 – Very poor, 5 – Excellent, very good)*
   - 1
   - 2
   - 3
   - 4
   - 5

4. *How would you rate the pricing of the plagiarism checker? Rate your experience (1 – Very poor, 5 – Excellent, very good)*
   - 1
   - 2
   - 3
   - 4
   - 5

5. *How long did it take for the plagiarism checker to process your document? Rate your experience (1 – Very poor, 5 – Excellent, very good)*
   - 1
   - 2
   - 3
   - 4
   - 5

6. *How satisfied were you with the efficiency and accuracy of the plagiarism checker in detecting plagiarism? Rate your experience (1 – Very poor, 5 – Excellent, very good)*
   - 1
   - 2
   - 3
   - 4
   - 5

7. *Did you encounter any technical issues while using the plagiarism checker? If so, please describe.*

8. *Were you able to easily interpret the results provided by the plagiarism checker? Rate your experience (1 – Very poor, 5 – Excellent, very good)*
   - 1
   - 2
   - 3
   - 4
   - 5

9. *How helpful were the suggestions provided by the plagiarism checker to improve the originality of your work? Rate your experience (1 – Very poor, 5 – Excellent, very good)*
   - 1
   - 2
   - 3
   - 4
   - 5

9.3   Structured Interview Transcript

1. *Can you describe your experiences with detecting and preventing plagiarism in your courses?*

2. *How do you define plagiarism, and what steps do you take to ensure your students understand this definition?*

3. *How do you teach your students to cite sources properly and avoid plagiarism?*

4. *Have you encountered cases of plagiarism in your courses, and how have you handled those situations?*

5. *What resources or tools do you use to detect plagiarism in student work?*

6. *How do you balance promoting academic integrity while also supporting your students' learning and growth?*

7. *Have you noticed any patterns or trends in cases of plagiarism among students at the Czech University of Life Sciences?*

8. *What steps do you think the university can take to prevent plagiarism further and promote academic honesty?*

9. *In your opinion, how do the prevalence of online sources and easy access to information affect the issue of plagiarism in academia?*

10. *Are there any particular challenges you have faced in teaching students about plagiarism, and how have you addressed those challenges?*

11. *How many students have you detected cheating or plagiarizing their work during the current or previous academic year?*

9.4 Results from Moodle Anti-Plagiarism Tool

Figure 43, Moodle system - plagiarism check results (text 1, 2)

1. Social Networks affection

Teens constantly struggle with their self-esteem as they find their place in society. Social media posts have the power to boost or harm teens' self-image. More often than not, the latter is the case.

Thanks to magazine-quality photos with blemish-hiding filters, future adults often look at their own faces and bodies with disdain. Also, seeing posts of parties, get-togethers, and other events can make a teen extremely sad if they weren't invited.

Another way that social media makes people lonely is that they might physically be in the same room together, but they might be on social media the whole time and have no interaction.

Social media can also give users a case of FOMO, for example, if they were invited on their friend's beach vacation but couldn't go for some reason. Or if the friend didn't ask them on the trip at all, users might feel hurt and left out to see that others in their social circle were. It can lead them to question their friendships or their own self-worth.

2. Healthy benefits of eating well

Following a healthy diet has many benefits, including building strong bones, protecting the heart, preventing disease, and boosting the mood. Research has shown that students are able to learn better when they're well nourished, and eating healthy meals has been linked to higher grades, better memory and alertness, and faster information processing. Naturally colorful foods like blueberries and red bell peppers contain antioxidants, vitamins, fiber, and many other nutrients that support healthy growth, and help prevent problems such as obesity, dental cavities, iron deficiency, and osteoporosis. Healthy foods help to maintain or improve overall health. Thus, it stands out of utmost importance to individuals to examine the significance of a healthy body. The key points to remember are to eat plenty of fruit and vegetables, wholegrains, and healthy sources of protein (like fish or pulses) while reducing processed food, sugar, and alcohol you drink. The quality of life can be improved so that everyone has to choose the best to eat. Feeling good on the inside can give you more self-

Source: Moodle CZU, 2023

Figure 44, Moodle system - plagiarism check results (text 2, 3, 4)

confidence or a more positive self-image. Higher self-esteem can make you more confident socially, strengthening your desire to forge new friendships and romantic connections.

3. Environmental impacts of autonomous vehicles

[13] Autonomous vehicles (AVs) may have significant environmental impacts although there are still few studies focusing solely on these effects. [2] Most AVs developed today have highly efficient and extremely advanced electric engines that offer huge opportunities for emission savings. This is because they generate very little emissions over their lifetime when compared to conventional vehicles with internal combustion engines operating on fossil fuel. Yet, while tailpipe emissions from electric vehicles are zero, how much AVs actually pollutes depend on where they get their electricity from. If batteries of Autonomous Electric Vehicles (A-EVs) are charged by clean energy sources, their environmental impact is minimal. Yet not all countries get their power from renewables. In several US countries, for example, most of it is still generated by coal plants, making driving EVs less sustainable than in those relying for the most part on green energy sources. [11] People might be willing to live further away from work and cars would be able to drive for a longer period of time. However, that would cause an increase in energy.

4. The effects of classical music on the brain (first version, originally taken from a website)

[1] It's no secret that music can have a profound effect on the brain. But what genre of music activates the brain the most? Recent studies have shown that classical music is the most effective genre of music for activating the brain. This is likely because classical music is more complex and has a wider range of frequencies than other genres of music. Researchers believe that the complexity of classical music engages more areas of the brain than other genres of music. This increased brain activity can lead to improved cognitive function, including improved memory, focus, and concentration. So, if you're looking to boost your

Source: Moodle CZU, 2023

Figure 45, Moodle system - plagiarism check results (text 4, 5)

brain power, put on some classical music and let the good times roll. It is possible to be smarter, happier, healthier, and more productive at any age if you play or listen to music. Musicians' brains are larger, more connected, and more sensitive. Music has a significant impact on the brain's auditory and motor processing areas. Mood-boosting music can help you reduce chronic stress while also lowering your mood. Music allows you to feel hopeful, powerful, and in control of your life. When you play music together or listen to live music, you will release oxytocin, a hormone in the brain. It is well established that listening to music while working can improve your productivity and make you happy.

The effects of classical music on the brain (paraphrased with Quillbot)

It is common knowledge [1] that music has a tremendous effect on the brain. Current research has demonstrated [1] that classical music is the most effective genre for stimulating the brain. This is likely due to the fact that classical music is more [1] sophisticated and has a greater frequency range than other genres. According to researchers, the complexity of classical music stimulates more regions of the brain than other musical genres. This increased brain activity can result in enhanced cognitive performance, including enhanced memory, concentration, and focus. Hence, if you wish to increase your intelligence, throw on some [1] classical music and let the good times roll. If you play or listen to music, you can be smarter, happier, healthier, and more productive at any age. The brains of musicians are bigger, more interconnected, [1] and more sensitive. Music has a tremendous effect on the auditory and motor processing regions of the brain. While reducing chronic stress, mood-enhancing music might [1] also depress your mood. You can feel hopeful, powerful, and in charge of your life when you listen to music. [1] When you perform music together or listen to live music, the brain hormone oxytocin is released. It is commonly known [1] that listening to music while working can increase productivity and boost mood.

Source: Moodle CZU, 2023

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Figure 46, Moodle system - plagiarism check results (text 6, 7)

The effects of classical music on the brain (2nd version from Quillbot)

It's no secret that music has a powerful impact on the brain. According to recent research, classical music is the most effective form of music for engaging the brain. This is most likely due to the fact that classical music is more sophisticated and has a larger range of frequencies than other musical genres. According to researchers, the complexity of classical music stimulates more parts of the brain than other types of music. This increased brain activity can result in better cognitive performance, such as better memory, focus, and concentration. Put on some classical music and let the good times roll if you want to improve your cognitive power. If you play or listen to music, you can be smarter, happier, healthier, and more productive at any age. The brains of musicians are larger, more linked, and more sensitive. Music has a tremendous impact on the auditory and motor processing sections of the brain. Music that boosts your mood can help you minimize chronic stress while simultaneously depressing your mood. Music may make you feel hopeful, powerful, and in command of your life. When you perform music together or listen to live music, your brain produces oxytocin, a hormone. It is well recognized that listening to music while working can increase productivity and happiness.

5. Traffic congestion in cities

Traffic Jam has a tremendous impact on the life of people. It is one of the most serious problems in big cities that people have to deal in daily life. Since most of the people have to deal with it on a daily basis they may get psychologically affected. It also negatively affects work, education, and personal life of people and finally to the progress of the country. The urban transportation system is a big challenge for the governments because it requires a state-of-the-art Vehicles and a state-of-the-art roads designed for public transport. There are many reasons for traffic problems, but the aftereffects of getting stuck in traffic for long are only frustration and anger. Being stuck in traffic for long hours results in unproductive time. The time sitting idle and getting late to your appointment causes frustration and anger in a person. Aggressive driving increases road rage. Moreover, the longer people are staying in a traffic

Source: Moodle CZU, 2023

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Figure 47, Moodle system - plagiarism check results (text 7, 8)

the bigger is the wastage of fuel and therefore the more emissions released into the atmosphere. Stopping, accelerating, and again stopping the car leads to an unnecessary release of carbon dioxide. Also, emergency vehicles like the fire brigade and ambulance get stuck up in the traffic, which is crucial to people, whose life can be in danger in that moment. Another popular problem is that people can get late for their important meetings and to cover up the time sometimes drive fast and cause accidents.

People should be informed especially about traffic and be warned about the use of vehicles. Of course, many studies and projects are done on this subject. Renovated roads, new roads, and many more investments are made for the improvement of traffic. However, no matter how long the road is made, it is necessary to direct the people towards using public transportation.

6. Consequences of plagiarism for students of higher institutions

Plagiarism among university students can have a variety of harmful consequences. If the student is proven to have plagiarized another person's work, the following are some of the possible consequences:

- Receiving a failing grade for a specific task with no ability to improve your grade;
- Receiving an immediate failing grade for the entire term
- Disciplinary hearing - the commission will request an explanation from the student regarding plagiarism in his work in order to acquire a better grasp of the subsequent circumstances
- Being assigned more chores, all of which are required to evaluate whether you have learnt your lesson; - Getting dismissed from university

Yet, these are not the only consequences that people face as a result of replicating or copying someone else's work. Students at universities are becoming accustomed to plagiarizing everything and passing off other people's work as their own as they progress through their studies. As a result, students lose motivation to complete even the most basic assignments. As a result, the world ends up with specialists who have neither the abilities nor the education required to execute their professions when they graduate from universities. It is difficult for

Source: Moodle CZU, 2023

Figure 48, Moodle system - plagiarism check results (text 8)

these people to make judgments on their own, finish modest activities, or take on duties during a hectic workflow. The majority of employers want their employees to be educated and orientated in accordance with the program they studied while attending university. These firms are unwilling to hire persons with low levels of expertise, resulting in a labor shortage in the labor market. (2006, University of Melbourne, Australia)

Source: Moodle CZU, 2023

9.5 Results from Scribbr Anti-Plagiarism Tool

Figure 49, Scribbr system - plagiarism check results (text 1, 2)
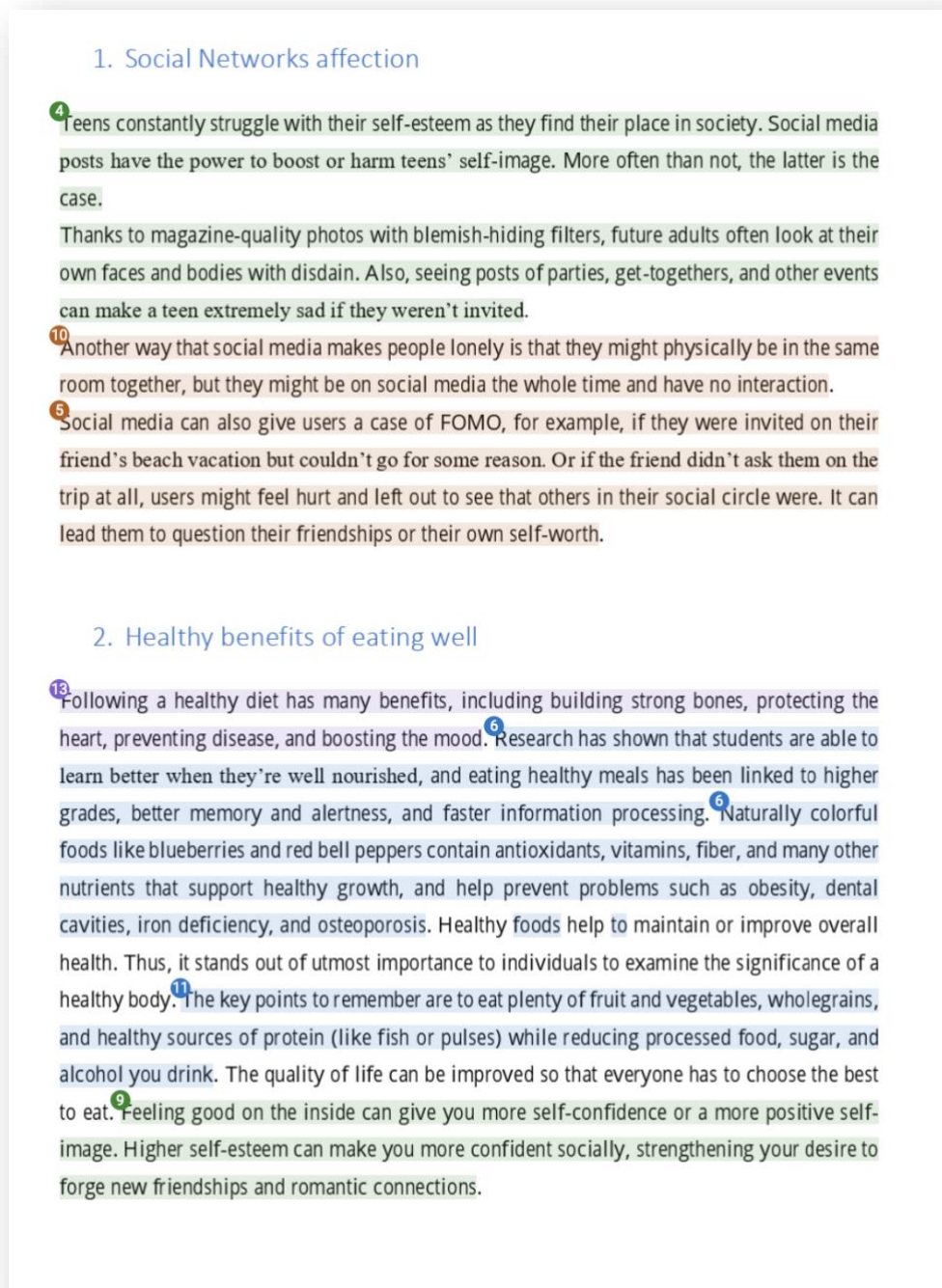
Source: Scribbr, 2023

Figure 51, Scribbr system - plagiarism check results (text 3)

3. Environmental impacts of autonomous vehicles

[14]Autonomous vehicles (AVs) may have significant environmental impacts although there are still few studies focusing solely on these effects. [2]Most AVs developed today have highly efficient and extremely advanced electric engines that offer huge opportunities for emission savings. This is because they generate very little emissions over their lifetime when compared to conventional vehicles with internal combustion engines operating on fossil fuel. Yet, while tailpipe emissions from electric vehicles are zero, how much AVs actually pollutes depend on where they get their electricity from. If batteries of Autonomous Electric Vehicles (A-EVs) are charged by clean energy sources, their environmental impact is minimal. Yet not all countries get their power from renewables. In several US countries, for example, most of it is still generated by coal plants, making driving EVs less sustainable than in those relying for the most part on green energy sources. [12]People might be willing to live further away from work and cars would be able to drive for a longer period of time. However, that would cause an increase in energy.

Source: Scribbr, 2023

Figure 50, Scribbr system - plagiarism check results (text 4)

The effects of classical music on the brain (first version, originally taken from a website)

[1]It's no secret that music can have a profound effect on the brain. But what genre of music activates the brain the most? Recent studies have shown that classical music is the most effective genre of music for activating the brain. This is likely because classical music is more complex and has a wider range of frequencies than other genres of music. Researchers believe that the complexity of classical music engages more areas of the brain than other genres of music. This increased brain activity can lead to improved cognitive function, including improved memory, focus, and concentration. So, if you're looking to boost your brain power, put on some classical music and let the good times roll. It is possible to be smarter, happier, healthier, and more productive at any age if you play or listen to music. Musicians' brains are larger, more connected, and more sensitive. Music has a significant impact on the brain's auditory and motor processing areas. Mood-boosting music can help you reduce chronic stress while also lowering your mood. Music allows you to feel hopeful, powerful, and in control of your life. When you play music together or listen to live music, you will release oxytocin, a hormone in the brain. It is well established that listening to music while working can improve your productivity and make you happy.

Source: Scribbr, 2023

Figure 52, Scribbr system - plagiarism check results (text 5)

The effects of classical music on the brain (paraphrased with Quillbot)

It is common knowledge that music has a tremendous effect on the brain. Current research has demonstrated that classical music is the most effective genre for stimulating the brain. This is likely due to the fact that classical music is more sophisticated and has a greater frequency range than other genres. According to researchers, the complexity of classical music stimulates more regions of the brain than other musical genres. This increased brain activity can result in enhanced cognitive performance, including enhanced memory, concentration, and focus. Hence, if you wish to increase your intelligence, throw on some classical music and let the good times roll. If you play or listen to music, you can be smarter, happier, healthier, and more productive at any age. The brains of musicians are bigger, more interconnected, and more sensitive. Music has a tremendous effect on the auditory and motor processing regions of the brain. While reducing chronic stress, mood-enhancing music might also depress your mood. You can feel hopeful, powerful, and in charge of your life when you listen to music. When you perform music together or listen to live music, the brain hormone oxytocin is released. It is commonly known that listening to music while working can increase productivity and boost mood.

Source: Scribbr, 2023

Figure 53, Scribbr system - plagiarism check results (text 6)

The effects of classical music on the brain (2nd version from Quillbot)

It's no secret that music has a powerful impact on the brain. According to recent research, classical music is the most effective form of music for engaging the brain. This is most likely due to the fact that classical music is more sophisticated and has a larger range of frequencies than other musical genres. According to researchers, the complexity of classical music stimulates more parts of the brain than other types of music. This increased brain activity can result in better cognitive performance, such as better memory, focus, and concentration. Put on some classical music and let the good times roll if you want to improve your cognitive power. If you play or listen to music, you can be smarter, happier, healthier, and more productive at any age. The brains of musicians are larger, more linked, and more sensitive. Music has a tremendous impact on the auditory and motor processing sections of the brain. Music that boosts your mood can help you minimize chronic stress while simultaneously depressing your mood. Music may make you feel hopeful, powerful, and in command of your life. When you perform music together or listen to live music, your brain produces oxytocin, a hormone. It is well recognized that listening to music while working can increase productivity and happiness.

Source: Scribbr, 2023

Figure 54, Scribbr system - plagiarism check results (text 7)

4. Traffic congestion in cities

Traffic Jam has a tremendous impact on the life of people. It is one of the most serious problems in big cities that people have to deal in daily life. Since most of the people have to deal with it on a daily basis they may get psychologically affected. It also negatively affects work, education, and personal life of people and finally to the progress of the country. The urban transportation system is a big challenge for the governments because it requires a state-of-the-art Vehicles and a state-of-the-art road designed for public transport. There are many reasons for traffic problems, but the aftereffects of getting stuck in traffic for long are only frustration and anger. Being stuck in traffic for long hours results in unproductive time. The time sitting idle and getting late to your appointment causes frustration and anger in a person. Aggressive driving increases road rage. Moreover, the longer people are staying in a traffic the bigger is the wastage of fuel and therefore the more emissions released into the atmosphere. Stopping, accelerating, and again stopping the car leads to an unnecessary release of carbon dioxide. Also, emergency vehicles like the fire brigade and ambulance get stuck up in the traffic, which is crucial to people, whose life can be in danger in that moment. Another popular problem is that people can get late for their important meetings and to cover up the time sometimes drive fast and cause accidents.

People should be informed especially about traffic and be warned about the use of vehicles. Of course, many studies and projects are done on this subject. Renovated roads, new roads, and many more investments are made for the improvement of traffic. However, no matter how long the road is made, it is necessary to direct the people towards using public transportation.

Source: Scribbr, 2023

Figure 55, Scribbr system - plagiarism check results (text 8)

5. Consequences of plagiarism for students of higher institutions

Plagiarism among university students can have a variety of harmful consequences. If the student is proven to have plagiarized another person's work, the following are some of the possible consequences:

- Receiving a failing grade for a specific task with no ability to improve your grade;
- Receiving an immediate failing grade for the entire term
- Disciplinary hearing - the commission will request an explanation from the student regarding plagiarism in his work in order to acquire a better grasp of the subsequent circumstances
- Being assigned more chores, all of which are required to evaluate whether you have learnt your lesson; - Getting dismissed from university

Yet, these are not the only consequences that people face as a result of replicating or copying someone else's work. Students at universities are becoming accustomed to plagiarizing everything and passing off other people's work as their own as they progress through their studies. As a result, students lose motivation to complete even the most basic assignments. As a result, the world ends up with specialists who have neither the abilities nor the education required to execute their professions when they graduate from universities. It is difficult for these people to make judgments on their own, finish modest activities, or take on duties during a hectic workflow. The majority of employers want their employees to be educated and orientated in accordance with the program they studied while attending university. These firms are unwilling to hire persons with low levels of expertise, resulting in a labor shortage in the labor market. (2006, University of Melbourne, Australia)

Source: Scribbr, 2023

9.6 Results from Odevzdej.cz Anti-Plagiarism Tool

Figure 56, Odevzdej.cz system - plagiarism check results (page 1)
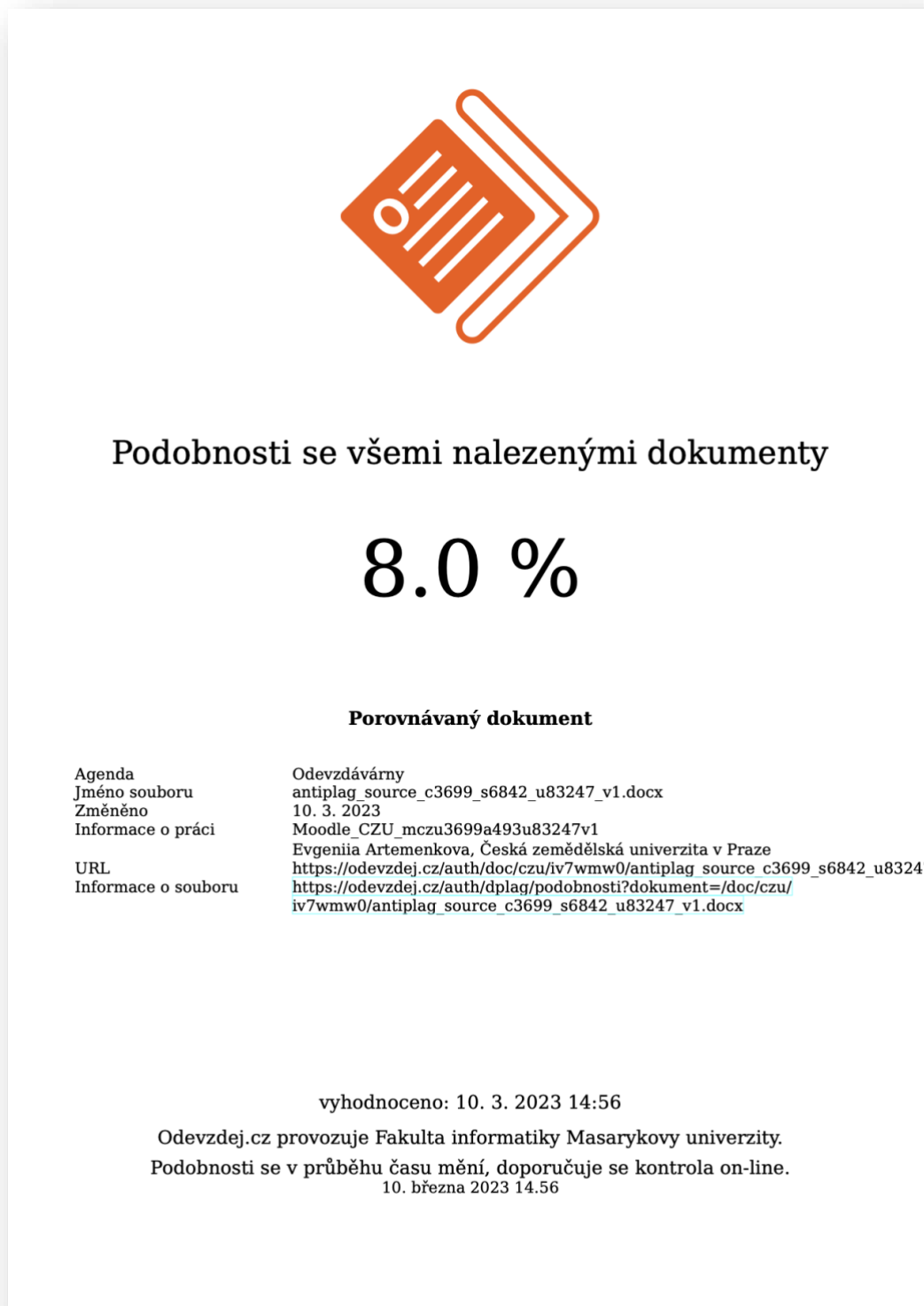
Source: Odevzdej.cz, 2023

Figure 57, Odevzdej.cz system - plagiarism check results (page 2)

Seznam vybraných podobných dokumentů:

	Agenda	Zdroj z internetu
	Jméno souboru	31949332.html.txt
8.0 %	Změněno	27. 5. 2019
	Informace o souboru	https://bebrainfit.com/music-brain/

Podobné pasáže s výše uvedenými dokumenty jsou vyznačeny barevně

1. Social Networks affection
Teens constantly struggle with their self-esteem as they find their place in society. Social media posts have the power to boost or harm teens' self-image. More often than not, the latter is the case.
Thanks to magazine-quality photos with blemish-hiding filters, future adults often look at their own faces and bodies with disdain. Also, seeing posts of parties, get-togethers, and other events can make a teen extremely sad if they weren't invited.
Another way that social media makes people lonely is that they might physically be in the same room together, but they might be on social media the whole time and have no interaction.
Social media can also give users a case of FOMO, for example, if they were invited on their friend's beach vacation but couldn't go for some reason. Or if the friend didn't ask them on the trip at all, users might feel hurt and left out to see that others in their social circle were. It can lead them to question their friendships or their own self-worth.
2. Healthy benefits of eating well
Following a healthy diet has many benefits, including building strong bones, protecting the heart, preventing disease, and boosting the mood. Research has shown that students are able to learn better when they're well nourished, and eating healthy meals has been linked to higher grades, better memory and alertness, and faster information processing. Naturally colorful foods like blueberries and red bell peppers contain antioxidants, vitamins, fiber, and many other nutrients that support healthy growth, and help prevent problems such as obesity, dental cavities, iron deficiency, and osteoporosis. Healthy foods help to maintain or improve overall health. Thus, it stands out of utmost importance to individuals to examine the significance of a healthy body. The key points to remember are to eat plenty of fruit and vegetables, wholegrains, and healthy sources of protein (like fish or pulses) while reducing processed food, sugar, and alcohol you drink. The quality of life can be improved so that everyone has to choose the best to eat. Feeling good on the inside can give you more self-confidence or a more positive self-image. Higher self-esteem can make you more confident socially, strengthening your desire to forge new friendships and romantic connections.
3. Environmental impacts of autonomous vehicles
Autonomous vehicles (AVs) may have significant environmental impacts although there are still few studies focusing solely on these effects. Most AVs developed today have highly efficient and extremely advanced electric engines that offer huge opportunities for emission savings. This is because they generate very little emissions over their lifetime when compared to conventional vehicles with internal combustion engines operating on fossil fuel. Yet, while tailpipe emissions from electric vehicles are zero, how much AVs actually pollutes depend on where they get their electricity from. If batteries of Autonomous Electric Vehicles (A-EVs) are charged by clean energy sources, their environmental impact is minimal. Yet not all countries get their power from renewables. In several US countries, for example, most of it is still generated by coal plants, making driving EVs less sustainable than in those relying for the most part on green energy sources. People might be willing to live further away from work and cars would be able to drive for a longer period of time. However, that would cause an increase in energy.
4. The effects of classical music on the brain (first version, originally taken from a website)
It's no secret that music can have a profound effect on the brain. But what genre of music activates the brain the most? Recent studies have shown that classical music is the most effective

2

Source: Odevzdej.cz, 2023

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Figure 58, Odevzdej.cz system - plagiarism check results (page 3)

genre of music for activating the brain. This is likely because classical music is more complex and has a wider range of frequencies than other genres of music. Researchers believe that the complexity of classical music engages more areas of the brain than other genres of music. This increased brain activity can lead to improved cognitive function, including improved memory, focus, and concentration. So, if you're looking to boost your brain power, put on some classical music and let the good times roll. It is possible to be smarter, happier, healthier, and more productive at any age if you play or listen to music. Musicians' brains are larger, more connected, and more sensitive. Music has a significant impact on the brain's auditory and motor processing areas. Mood-boosting music can help you reduce chronic stress while also lowering your mood. Music allows you to feel hopeful, powerful, and in control of your life. When you play music together or listen to live music, you will release oxytocin, a hormone in the brain. It is well established that listening to music while working can improve your productivity and make you happy.

The effects of classical music on the brain (paraphrased with Quillbot)

It is common knowledge that music has a tremendous effect on the brain. Current research has demonstrated that classical music is the most effective genre for stimulating the brain. This is likely due to the fact that classical music is more sophisticated and has a greater frequency range than other genres. According to researchers, the complexity of classical music stimulates more regions of the brain than other musical genres. This increased brain activity can result in enhanced cognitive performance, including enhanced memory, concentration, and focus. Hence, if you wish to increase your intelligence, throw on some classical music and let the good times roll. If you play or listen to music, you can be smarter, happier, healthier, and more productive at any age. The brains of musicians are bigger, more interconnected, and more sensitive. Music has a tremendous effect on the auditory and motor processing regions of the brain. While reducing chronic stress, mood-enhancing music might also depress your mood. You can feel hopeful, powerful, and in charge of your life when you listen to music. When you perform music together or listen to live music, the brain hormone oxytocin is released. It is commonly known that listening to music while working can increase productivity and boost mood.
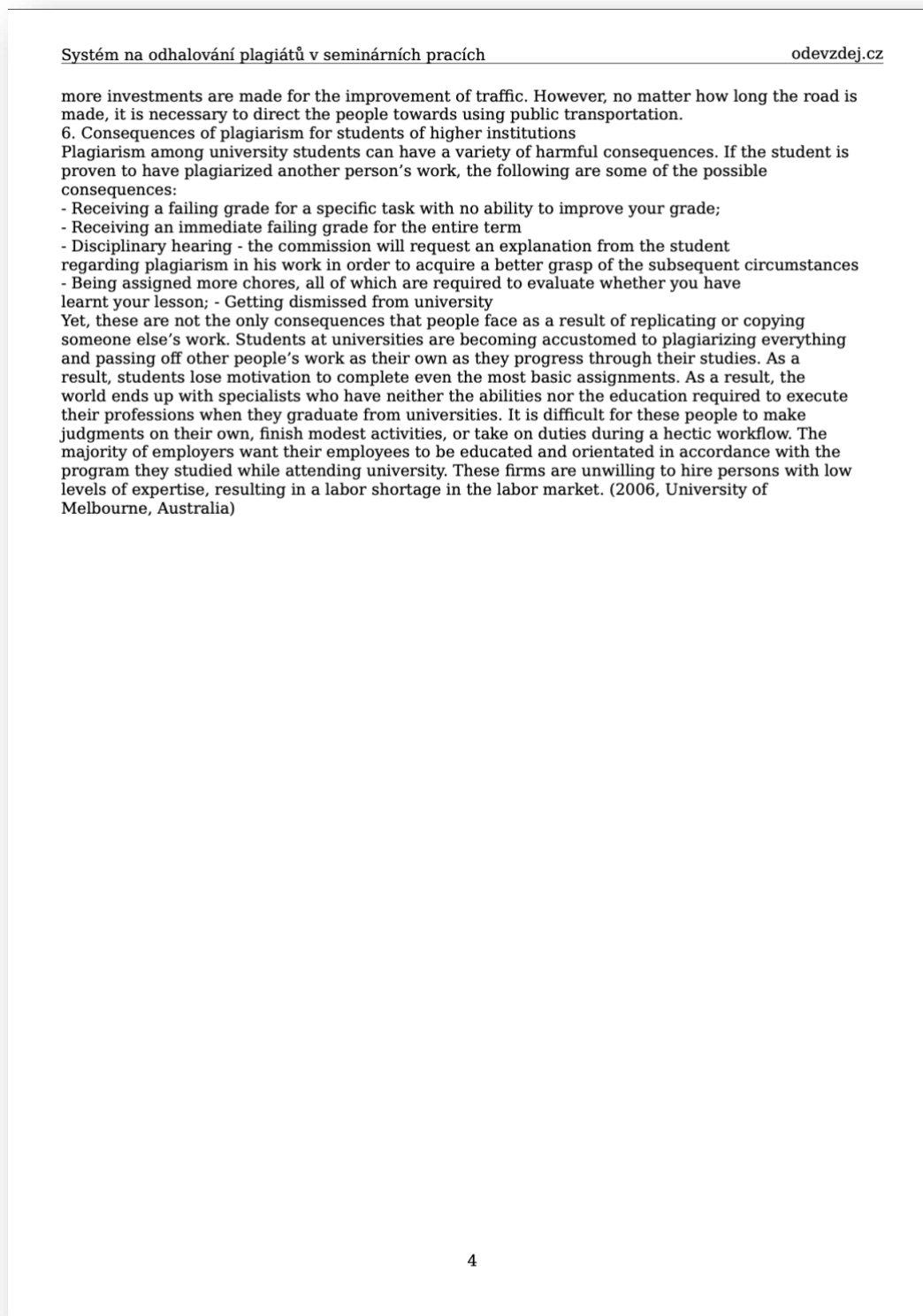
The effects of classical music on the brain (2nd version from Quillbot)

It's no secret that music has a powerful impact on the brain. According to recent research, classical music is the most effective form of music for engaging the brain. This is most likely due to the fact that classical music is more sophisticated and has a larger range of frequencies than other musical genres. According to researchers, the complexity of classical music stimulates more parts of the brain than other types of music. This increased brain activity can result in better cognitive performance, such as better memory, focus, and concentration. Put on some classical music and let the good times roll if you want to improve your cognitive power. If you play or listen to music, you can be smarter, happier, healthier, and more productive at any age. The brains of musicians are larger, more linked, and more sensitive. Music has a tremendous impact on the auditory and motor processing sections of the brain. Music that boosts your mood can help you minimize chronic stress while simultaneously depressing your mood. Music may make you feel hopeful, powerful, and in command of your life. When you perform music together or listen to live music, your brain produces oxytocin, a hormone. It is well recognized that listening to music while working can increase productivity and happiness.

5. Traffic congestion in cities

Traffic Jam has a tremendous impact on the life of people. It is one of the most serious problems in big cities that people have to deal in daily life. Since most of the people have to deal with it on a daily basis they may get psychologically affected. It also negatively affects work, education, and personal life of people and finally to the progress of the country. The urban transportation system is a big challenge for the governments because it requires a state-of-the-art Vehicles and a state-of-the-art roads designed for public transport. There are many reasons for traffic problems, but the aftereffects of getting stuck in traffic for long are only frustration and anger. Being stuck in traffic for long hours results in unproductive time. The time sitting idle and getting late to your appointment causes frustration and anger in a person. Aggressive driving increases road rage. Moreover, the longer people are staying in a traffic the bigger is the wastage of fuel and therefore the more emissions released into the atmosphere. Stopping, accelerating, and again stopping the car leads to an unnecessary release of carbon dioxide. Also, emergency vehicles like the fire brigade and ambulance get stuck up in the traffic, which is crucial to people, whose life can be in danger in that moment. Another popular problem is that people can get late for their important meetings and to cover up the time sometimes drive fast and cause accidents.

People should be informed especially about traffic and be warned about the use of vehicles. Of course, many studies and projects are done on this subject. Renovated roads, new roads, and many

Source: Odevzdej.cz, 2023

Figure 59, Odevzdej.cz system - plagiarism check results (page 4)

more investments are made for the improvement of traffic. However, no matter how long the road is made, it is necessary to direct the people towards using public transportation.

6. Consequences of plagiarism for students of higher institutions

Plagiarism among university students can have a variety of harmful consequences. If the student is proven to have plagiarized another person's work, the following are some of the possible consequences:

- Receiving a failing grade for a specific task with no ability to improve your grade;
- Receiving an immediate failing grade for the entire term
- Disciplinary hearing - the commission will request an explanation from the student regarding plagiarism in his work in order to acquire a better grasp of the subsequent circumstances
- Being assigned more chores, all of which are required to evaluate whether you have learnt your lesson; - Getting dismissed from university

Yet, these are not the only consequences that people face as a result of replicating or copying someone else's work. Students at universities are becoming accustomed to plagiarizing everything and passing off other people's work as their own as they progress through their studies. As a result, students lose motivation to complete even the most basic assignments. As a result, the world ends up with specialists who have neither the abilities nor the education required to execute their professions when they graduate from universities. It is difficult for these people to make judgments on their own, finish modest activities, or take on duties during a hectic workflow. The majority of employers want their employees to be educated and orientated in accordance with the program they studied while attending university. These firms are unwilling to hire persons with low levels of expertise, resulting in a labor shortage in the labor market. (2006, University of Melbourne, Australia)

Source: Odevzdej.cz, 2023

9.7 Results from Grammarly Anti-Plagiarism Tool

Figure 60, Grammarly system - plagiarism check results (text 2)

Healthy benefits of eating well
Following a healthy diet has many benefits, including building strong bones, protecting the heart, preventing disease, and boosting the mood. Research has shown that students are able to learn better when they're well nourished, and eating healthy meals has been linked to higher grades, better memory and alertness, and faster information processing. Natu`rally colorful foods like blueberries and red bell peppers contain antioxidants, vitamins, fiber, and many other nutrients that support healthy growth, and help prevent problems such as obesity, dental cavities, iron deficiency, and osteoporosis. Healthy foods help to maintain or improve overall health. Thus, it stands out of utmost importance to individuals to examine the significance of a healthy body. The key points to remember are to eat plenty of fruit and vegetables, wholegrains, and healthy sources of protein (like fish or pulses) while reducing processed food, sugar, and alcohol you drink. The quality of life can be improved so that everyone has to choose the best to eat. Feeling good on the inside can give you more self-confidence or a more positive self-image. Higher self-esteem can make you more confident socially, strengthening your desire to forge new friendships and romantic connections.

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Source: Grammarly, 2023

Figure 61, Grammarly system - plagiarism check results (text 3)

Environmental impacts of autonomous vehicles
Autonomous vehicles (AVs) may have significant environmental impacts although there are still few studies focusing solely on these effects. Most AVs developed today have highly efficient and extremely advanced electric engines that offer huge opportunities for emission savings. This is because they generate very little emissions over their lifetime when compared to conventional vehicles with internal combustion engines operating on fossil fuel. Yet, while tailpipe emissions from electric vehicles are zero, how much AVs actually pollutes depend on where they get their electricity from. If batteries of Autonomous Electric Vehicles (A-EVs) are charged by clean energy sources, their environmental impact is minimal. Yet not all countries get their power from renewables. In several US countries, for example, most of it is still generated by coal plants, making driving EVs less sustainable than in those relying for the most part on green energy sources. People might be willing to live further away from work and cars would be able to drive for a longer period of time. However, that would cause an increase in energy.

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Figure 62, Grammarly system - plagiarism check results (text 4)

The effects of classical music on the brain (first version, originally taken from a website)

It's no secret that music can have a profound effect on the brain. But what genre of music activates the brain the most? Recent studies have shown that classical music is the most effective genre of music for activating the brain. This is likely because classical music is more complex and has a wider range of frequencies than other genres of music. Researchers believe that the complexity of classical music engages more areas of the brain than other genres of music. This increased brain activity can lead to improved cognitive function, including improved memory, focus, and concentration. So, if you're looking to boost your brain power, put on some classical music and let the good times roll. It is possible to be smarter, happier, healthier, and more productive at any age if you play or listen to music. Musicians' brains are larger, more connected, and more sensitive. Music has a significant impact on the brain's auditory and motor processing areas. Mood-boosting music can help you reduce chronic stress while also lowering your mood. Music allows you to feel hopeful, powerful, and in control of your life. When you play music together or listen to live music, you will release oxytocin, a hormone in the brain. It is well established that listening to music while working can improve your productivity and make you happy.

Source: Grammarly. 2023

Figure 63, Grammarly system - plagiarism check results (text 5)

The effects of classical music on the brain (paraphrased with Quillbot)

It is common knowledge that music has a tremendous effect on the brain. Current research has demonstrated that classical music is the most effective genre for stimulating the brain. This is likely due to the fact that classical music is more sophisticated and has a greater frequency range than other genres. According to researchers, the complexity of classical music stimulates more regions of the brain than other musical genres. This increased brain activity can result in enhanced cognitive performance, including enhanced memory, concentration, and focus. Hence, if you wish to increase your intelligence, throw on some classical music and let the good times roll. If you play or listen to music, you can be smarter, happier, healthier, and more productive at any age. The brains of musicians are bigger, more interconnected, and more sensitive. Music has a tremendous effect on the auditory and motor processing regions of the brain. While reducing chronic stress, mood-enhancing music might also depress your mood. You can feel hopeful, powerful, and in charge of your life when you listen to music. When you perform music together or listen to live music, the brain hormone oxytocin is released. It is commonly known that listening to music while working can increase productivity and boost mood.

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Source: Grammarly, 2023

Figure 64, Grammarly system - plagiarism check results (text 6)

The effects of classical music on the brain (2nd version from Quillbot)

It's no secret that music has a powerful impact on the brain. According to recent research, classical music is the most effective form of music for engaging the brain. This is most likely due to the fact that classical music is more sophisticated and has a larger range of frequencies than other musical genres. According to researchers, the complexity of classical music stimulates more parts of the brain than other types of music. This increased brain activity can result in better cognitive performance, such as better memory, focus, and concentration. Put on some classical music and let the good times roll if you want to improve your cognitive power. If you play or listen to music, you can be smarter, happier, healthier, and more productive at any age. The brains of musicians are larger, more linked, and more sensitive. Music has a tremendous impact on the auditory and motor processing sections of the brain. Music that boosts your mood can help you minimize chronic stress while simultaneously depressing your mood. Music may make you feel hopeful, powerful, and in command of your life. When you perform music together or listen to live music, your brain produces oxytocin, a hormone. It is well recognized that listening to music while working can increase productivity and happiness.

- Essay on Traffic Problems in 400 ... — www.sarthaks.com

Figure 65, Grammarly system - plagiarism check results (text 7)

Traffic congestion in cities

Traffic Jam has a tremendous impact on the life of people. It is one of the most serious problems in big cities that people have to deal in daily life. Since most of the people have to deal with it on a daily basis they may get psychologically affected. It also negatively affects work, education, and personal life of people and finally to the progress of the country. The urban transportation system is a big challenge for the governments because it requires a state-of-the-art Vehicles and a state-of-the-art road designed for public transport. There are many reasons for traffic problems, but the aftereffects of getting stuck in traffic for long are only frustration and anger. Being stuck in traffic for long hours results in unproductive time. The time sitting idle and getting late to your appointment causes frustration and anger in a person. Aggressive driving increases road rage. Moreover, the longer people are staying in a traffic the bigger is the wastage of fuel and therefore the more emissions released into the atmosphere. Stopping, accelerating, and again stopping the car leads to an unnecessary release of carbon dioxide. Also, emergency vehicles like the fire brigade and ambulance get stuck up in the traffic, which is crucial to people, whose life can be in danger in that moment. Another popular problem is that people can get late for their important meetings and to cover up the time sometimes drive fast and cause accidents.

Source: Grammarly, 2023

Figure 66, Grammarly system - plagiarism check results (text 8)

Consequences of plagiarism for students of higher institutions

Plagiarism among university students can have a variety of harmful consequences. If the student is proven to have plagiarized another person's work, the following are some of the possible consequences:

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Receiving an immediate failing grade for the entire term
Disciplinary hearing - the commission will request an explanation from the student regarding plagiarism in his work in order to acquire a better grasp of the subsequent circumstances
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Source: Grammarly, 2023