

Slovak Response to Plagiarism and Related Matters

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Plagiarism does not make exceptions among countries, it is present in small and large, developed and less-developed countries. In the past two decades in Slovakia, we have witnessed rapid growth in the number of higher education institution (HEI) students with increased penetration of information and communication technologies, including the Internet. Low level of copyright and intellectual property rights awareness was an accompanying factor. All that contributed to the growth of plagiarism at Slovak HEIs. A significant and unique system step, at least in the European scale, was the implementation of a system that concentrates bachelor's, master's, dissertation, rigorous and habilitation theses in the only national repository and provides their originality check. This system has been used since 2010 by all HEIs operating in Slovakia under the Slovak legislation. HEIs are required to send theses before their defence to the central repository; the theses are archived for 70 years. Each thesis is checked for originality and an originality check protocol is delivered to HEIs electronically. This paper describes pre-implementation, implementation and post-implementation milestones, upcoming changes and some other effects of the system's implementation on the society.

Introduction

The paper analyses the causes that contributed to the spread of plagiarism at HEIs in Slovakia and the responses to the spreading of plagiarism. The academic community and MinEdu realised the need to stop the thriving plagiarism. Time was needed for the awareness to grow into the belief that the fight against plagiarism requires systemic action on a national level. Finally, a nationwide central repository of theses and dissertations and a nationwide anti-plagiarism system were implemented; we use the common name ANTIPLAG for both interrelated systems.

In the second part of the paper, in relation to the implementation of both systems mentioned above, we analyse the number of texts containing the word *plagiátorstvo* (plagiarism) on the Slovak Internet and in the media for the period 2002-2012 and the behaviour of the community regarding the frequency of the searches for the word *plagiátorstvo* (plagiarism). The aim was to identify whether the adoption of the systemic measure at the national level in 2010 maximised the number of texts and their increases for the period up to 2010 inclusive. A similar question was raised regarding the frequency of searches for the word *plagiátorstvo* (plagiarism) in the examined period.

This paper is a slight modification of the papers *CRZP/APS: milníky, aktuálny stav, pripravované zmeny*¹ (Kravjar, 2013b) and *Strategies and Responses to Plagiarism in Slovakia* (Kravjar, Noge, 2013). The modification lies in the shortening of the part addressing the occurrence of the word *plagiátorstvo* (plagiarism) and in updating Graph 3. An analytic part based on the paper (Kravjar, 2013c) was added addressing the occurrence of the terms “academic ethics” and “academic integrity” on the Slovak Internet and in the media in the period 2002-2012.

Abbreviations

- CR:** Central Repository of Bachelor's, Master's, Dissertation, Rigorous and Habilitation Theses
LR: Local Repository of Bachelor's, Master's, Dissertation, Rigorous and Habilitation Theses
APS: Anti-Plagiarism System (Plagiarism Detection System, System for Originality Check)
HEI: Higher Education Institution
SRC: Slovak Rector's Conference
MinEdu: Ministry of Education, Science, Research and Sport of the Slovak Republic
SCSTI: Slovak Centre of Scientific and Technical Information (CVTI SR: Centrum vedecko-technických informácií Slovenskej republiky)

¹ CR/APS: Milestones, Current Status, Planned Changes

Explanation

A “small doctorate” can be received by a person with a master’s degree. It requires that a candidate passes rigorous examination and defends his/her rigorous thesis.

A prerequisite for the granting of the scientific-pedagogical degree “docent” (assistant professor) is a habilitation lecture, and submission and defence of the habilitation thesis.

Background Information

Low awareness of copyright, intellectual property rights and academic ethics combined with a growing number of Internet users, students and higher education institutions has been a breeding ground for the spread of plagiarism in written papers at HEIs. According to Skalka et al. (2009b)

“Internet was the likely catalyst for an avalanche of plagiarism; it provided students, often including primary school pupils, with resources for quick, easy and effortless access to information about the assigned topic and later even complete texts.”

A comprehensive overview of the state of academic ethics in Slovakia is analysed by R. Králiková (2009) in her publication “Implementation of rules of academic ethics at Slovak HEIs”. She states that:

“The issue of academic ethics started to attract attention in Slovakia especially in the past three years. It usually appeared in relation to the issue of plagiarism among students and teachers. However, plagiarism is just one of the infractions against academic ethics and the issue of academic ethics in Slovakia is much broader than just plagiarism.”

K. Staroňová (2010) describes the causes supporting plagiarism as follows:

“... plagiarism has its roots mainly in the method of teaching; the absence of systematic education (ideally from the primary school level), teaching the students to write argumentative texts, list resources correctly, benefits of quotations (it is much easier to go back to the original source and critically consider the author’s conclusions) and especially ethical principles that would clearly define plagiarism as violation of intellectual property rights and parasitizing on the work of others, and not playing down the situation. It is very sad to watch how many teachers who should teach students ethical principles, explain to them the nature of plagiarism and require them to think and write originally are themselves guilty of the sin and play down its significance if caught in the act.”

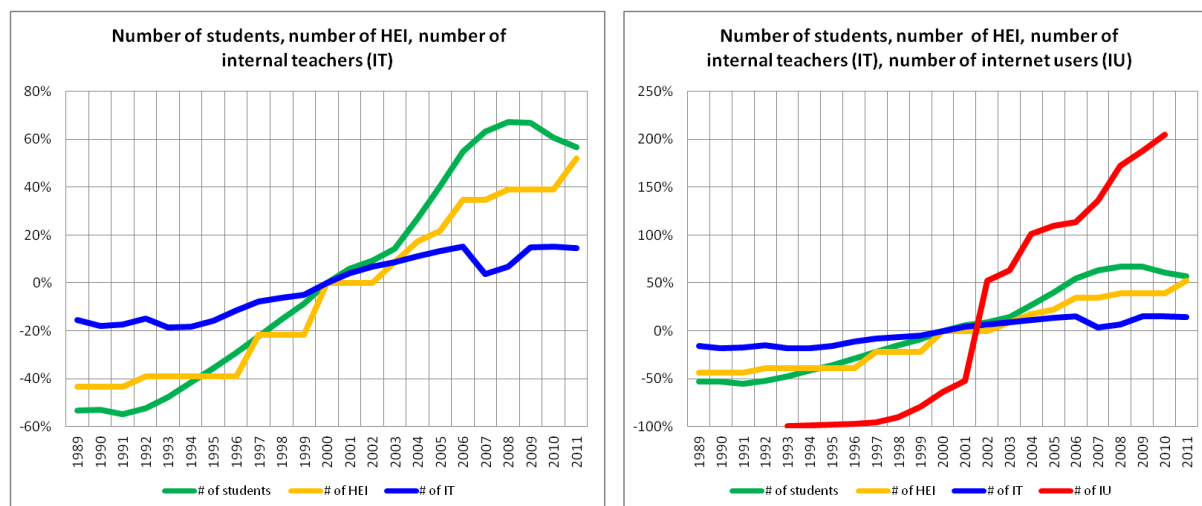
In 1989, there were 13 HEIs in Slovakia and today there are 40; 36 operate under the Slovak legal order. The development of the number of students, teachers, HEIs (iEDU, 2012) and the number of Internet users (www.indexmundi.com, 2012) is shown in Graph 1 and 2. The number of students and teachers applies to HEIs operating under the Slovak legal order.

The year 2000 was the year of highest annual increase in the number of HEIs (5), 2002 was the year with the highest increase in the number of Internet users (nearly 1.5 million, almost 28% of the total population). In 2006, there was the highest annual increase in the number of students (over 20,000); 2004 and 2005 were also the years of high annual increases in the number of students (more than 17,000 and 18,000 respectively). The highest increase in the number of teachers (774) was recorded in 2009.

In Slovakia, there were many discussions on the subject of plagiarism, but without a specific result for a long time. In 2001, the first HEI (Vysoká škola manažmentu – in Trenčín) in Slovakia started to use an electronic system to detect plagiarism. It was not only the system to detect plagiarism, there were also other related measures: the rules of academic ethics, as well as a process defining the procedure for the investigation of suspected plagiarism were adopted (Kročitý, Argaláš, 2012).

Graph 1 and 2:

Development of observed indicators over time transformed according to the formula $100 \cdot (x_i - x_{\text{median}}) / x_{\text{median}}$



In 2006, more than 213,000 students studied at Slovak HEIs – 3.3 times more than in 1989, and there were 32 HEIs – 2.4 times more than in 1989; the number of Internet users increased and exceeded 3 million, representing more than 55% of the total population. However, still only one HEI used an electronic system to detect plagiarism. In 2008, it was joined by another HEI (University of Economics in Bratislava) and in 2009 by a third HEI (Comenius University in Bratislava).

Opinions of representatives of HEIs on the use of the system to detect plagiarism varied initially. A significant progress in this area was SRC plenary's opinion on plagiarism dated 28 September 2006 entitled "Measures to Eliminate Plagiarism in the Preparation and Presentation of Bachelor's, Master's and Dissertation Theses" (Slovak Rectors' Conference, 2006a). The document is important in that:

- Plagiarism is considered a serious problem that must be addressed by informing students how to write papers correctly and how to cite literary sources;
- The best way to reduce plagiarism is prevention; and
- In the case of confirmed plagiarism, it requires that the student bears the consequences in accordance with the internal regulations of a HEI.

Another important document approved by SRC on the same day was "Code of Ethics for HEI Employees" (Slovak Rectors' Conference, 2006b). However, the Code contains no mention of plagiarism, as if plagiarism never related to teaching and research staff at HEIs.

These two documents did not change the status quo nor did they affect the suppression of plagiarism. A more effective action was needed, with a major impact on combating plagiarism. SRC (2008) adopted a resolution with a potential of a fundamental solution:

"The plenary of Slovak Rectors' Conference revisited the issue of plagiarism. It asks the Ministry of Education of the Slovak Republic to coordinate the relevant activities, especially those relating to the acquisition of the software. It also urges the members of the Slovak Rectors' Conference to create an electronic archive of theses. It recommends that HEIs modify their regulations to address the issue of plagiarism."

In March 2008, the Internet media reported (Supuka, 2008) that "the Minister of Education promised to obtain software to control plagiarism for HEIs in Slovakia". The Ministry of Education decided that a comprehensive solution will be implemented at a national level covering the collection, processing and originality check of specified papers. HEIs in Slovakia will be required to use this comprehensive solution (Skalka et al., 2009a).

The basic strategic goal was defined and it was necessary to develop a strategy to achieve it. One of the major factors that contributed to the success in achieving the strategic objective was finding the support in the Parliament and incorporation in the amendment to the Higher Education Act of the obligations for HEIs to send specified papers in the central repository in order to be checked for originality after registration.

The amendment to the Higher Education Act was approved in 2009 and paved the way for the preparation of a nationwide repository of bachelor, master, dissertation, rigorous and habilitation theses. SCSTI was commissioned by the Ministry of Education to obtain the necessary software by public procurement and it was also made responsible for its operation. The preparation phase was challenging due to a lack of time. The real operation of the central repository and system to detect plagiarism began on 30 April 2010.

ANTIPLAG

ANTIPLAG is a cooperating group of software components whose objective is to collect bachelor's, master's, dissertation, rigorous and habilitation theses from all Slovak HEIs in one repository and to check their originality. ANTIPLAG is used obligatorily by HEIs operating under Slovak legal order (public, state and private). This group of components includes:

- The Central Repository is a storage aggregating bachelor's, master's, rigorous, dissertation and habilitation theses of Slovak HEIs with the relevant metadata in electronic form;
- The Local Repository is the place where the HEI aggregates bachelor's, master's, rigorous, dissertation and habilitation theses with the relevant metadata in electronic form for sending to CR; CR communicates automatically with the LR (from various suppliers) of HEI;
- The comparative corpus is a set of papers and documents against which each paper incoming to CR from the LR (local repository) is compared; the comparative corpus consists of papers stored in CR, from documents downloaded from selected Internet sources and from other electronic sources;
- The Originality Check System (also known as the Plagiarism Detection System, Anti-Plagiarism System, APS) ensures originality check of the paper incoming to the CR against the comparative corpus; the output of the system is the originality check protocol, which is available in electronic form for the relevant HEIs; the protocol highlights matches of the paper's text with identified documents from the comparative corpus; the paper is included in the comparative corpus after the originality check.

The originality check detects simple matches, but also incorporates sophisticated algorithms to detect attempts to mask plagiarism, i.e. attempts to change the original text to new text by changing words, word order and paraphrasing. The originality check protocol is neither a confirmation that the checked paper is plagiarised, nor a confirmation that the paper is an original. The protocol is a supporting material for decisions of the examination committee, an aid. It identifies documents that may have escaped the tutor's or the opponent's attention (Grman, 2010). An important side effect of the check is raising awareness about copyright, intellectual property rights, and improving work with literature.

Important Moments

The important moments associated with the development and operation of both systems are shown below (more details can be found in the paper "Barrier to Thriving Plagiarism" (Kravjar, 2012)):

- Absence of a systemic barrier for fight against plagiarism at HEIs;
- Agreement of rectors of HEIs regarding the system for the detection of plagiarism;
- Support for the rectors' requirement to obtain a system to detect plagiarism from MinEdu;
- Elaboration of the study „Prevencia a odhaľovanie plagiátorstva“² (Skalka, J. et al., 2009c);
- Legislative support from the Parliament – approval of an amendment to the Higher Education Act;
- Appointment of SCSTI as the operator of both systems;
- Preparation of methodological materials for HEIs;
- Preparation of the project;
- Procurement of the system, technical, technological and organisational preparation of the systems;
- Effective cooperation in the preparation phase between MinEdu, SCSTI and the supplier of the system SVOP, spol. s r. o.;
- On 30 April 2010, the routine operation of the CR and APS was started at SCSTI's premises; all HEIs operating in Slovakia under Slovak legislation are required to send, before the defence, bachelor's, master's, dissertation, rigorous and habilitation theses to the CR, where it is archived for 70 years; each work is checked for originality and the originality check protocol is delivered to HEIs electronically;

² "Prevention and detection of plagiarism"

- The new algorithm for the originality check won the first place at an international competition External Plagiarism Detection Performance at PAN 2011 Lab Uncovering Plagiarism, Authorship, and Social Software Misuse Conference in Amsterdam; it was not only the overall victory, but total victory in all four evaluation indicators;
- Second place at the International Congress ITAPA 2011 (Information Technology and Public Administration) in the category New Services;
- Migration of both systems in 2011 to the Data Centre for Research and Development with more efficient, more reliable and more secure ICT infrastructure; the Data Centre is built by SCSTI within the national project “Infrastructure for Research and Development – Data Centre for Research and Development (CVTI SR, 2010)”;
- A change in the system was introduced by another amendment to the Higher Education Act, which imposed on the operator the obligation to make papers stored in the CR available to the public; papers registered in the CR after 31 August 2011 are made available;
- In February 2013, we signed up for the competition "European Prize for Innovation in Public Administration" in the category “Initiatives for Education and Research” (more: http://ec.europa.eu/research/innovation-union/index_en.cfm?section=admin-innovators). The Prize was announced by the European Commission. At the end of March, we were informed that we had advanced further and on 11 April, we received the information that our application had been shortlisted as one of the 6 most innovative initiatives in our category. After the presentation and hearing in Brussels on 22 April, we waited for the verdict of an international jury. On 17 May, we were informed that our ANTIPLAG will place among three winning projects in our category.

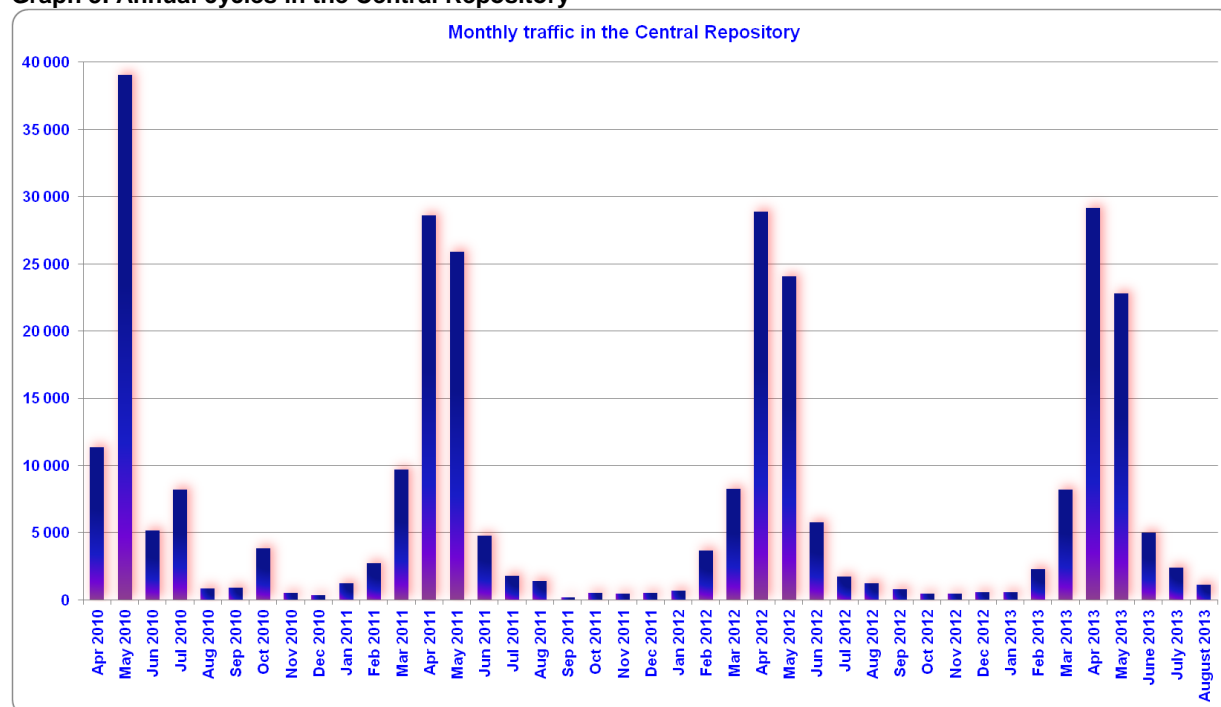
Prepared Changes

CR and APS are live and developing systems responding to everyday operation impulses, as well as to technological trends in the area of plagiarism detection software. We are prepared to develop ANTIPLAG further. Only the most important plans are mentioned:

- ☛ Deployment of the winning originality check algorithm from the international competition in Amsterdam (WWW.UNI-WEIMAR.DE, 2011). This competition involved only English, Spanish and German texts. The algorithm won overall, as well as in each of the four evaluated indicators. One of the indicators was detection of translational plagiarism (cross-languages plagiarism). According to professor Weber-Wulff (Pataki, 2012), who has dealt with plagiarism since 2002, detection of translational plagiarism belongs to the greatest weaknesses of anti-plagiarism systems. This claim is based on her experience with testing 48 of such systems from different countries. Detection of translational plagiarism will make the new version of ANTIPLAG a top system in its class.
- ☛ The originality check protocol in its paper version will have a more advanced “brother”: a web version with all text matches that ANTIPLAG detected, not only text matches from the first fifteen documents with the highest percentage of over-the-threshold match (which limits the paper version of the protocol).
- ☛ Extension of the comparative corpus with papers in the Czech language from Internet sources.
- ☛ Preparation to extend the comparative corpus with papers in the English language from Internet sources.

ANTIPLAG is used by HEIs 24/7 throughout the year. The seasonality of additions in the number of papers in the CR is illustrated in Graph 3.

Graph 3: Annual cycles in the Central Repository



Reactions to the Implementation of CR and APS into Routine Operation

According to the statements of HEI officials in the media, the mere publication of the information that operation of such systems is being prepared had a positive preventive effect. Students and teachers realised that their papers will be under permanent supervision of the plagiarism detection system and they began to approach the preparation of papers and work with literature more seriously.

Reactions to the implementation of the CR and APS systems in the media agree that they contributed to:

- Increased responsibility of students and teachers;
- Greater student autonomy in the preparation of papers;
- Improvement in the quality of papers; and
- A higher level of citations.

One quote for all (www.topky.sk, 2010):

“Zuzana Pucherová from the Department of Ecology and Environmental Sciences at the Constantine the Philosopher University in Nitra noted that the anti-plagiarism system forced students and teachers to be more responsible. “*A teacher has to approach the reading of partial texts with greater precision in order to avoid overlooking something,*” she commented. According to her, although a student is the author, the responsibility is borne by teachers/tutors.”

The implementation of both systems was a significant step; however, the originality check only covers bachelor's, master's, dissertation, rigorous and habilitation theses. There still remains a range of publications produced by HEIs, which are not covered by the originality check. A critique of this situation and plagiarism among teachers was included in E. Mistrik's (2012) article “Why academics remain silent about plagiarism”. He looks for and finds reasons why academics remain silent. He reveals why some teachers resort to unethical practices and specifies them. He also writes:

“However, I feel that the most widespread form of plagiarism is using the papers of their students/postgraduates (“But I taught him”, “But he/she did under my supervision”), or of their subordinates (“After all, he/she did in my laboratory”, “But he/she is in my department”).”

It is a pity that the amendments to the Higher Education Act did not consider feedback. HEIs are not required to disclose information, such as the number of suspected plagiarism cases investigated, how many of them represented a

positive finding, and what were the sanctions against the plagiarists. Even with a nationwide system in place, we do not know whether the number of plagiarists is increasing or decreasing. There is a lack of exact data on plagiarism.

The Occurrence of the Term *plagiátorstvo* (plagiarism) in Texts on the Internet and in the Media

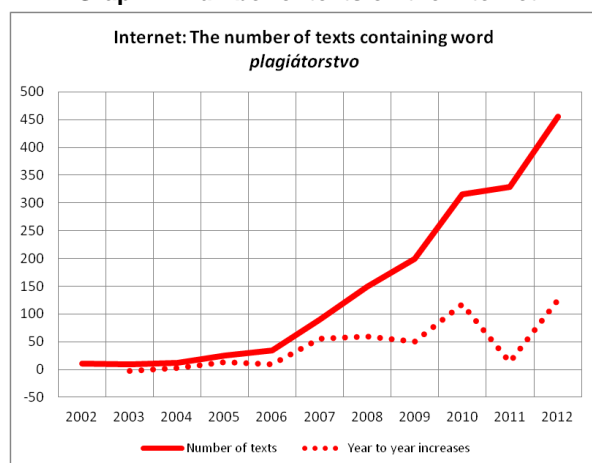
The launch of CR along with APS into live operation in 2010 represents a significant milestone in the fight against plagiarism of theses and dissertations (bachelor's, master's, rigorous, dissertation, habilitation) at HEIs in Slovakia. The pre-implementation period and the first months of the operation of these systems was a period when *plagiarism* often appeared in the traditional media and on the Internet.

Our objective was to determine whether this breakthrough event affected the number of texts containing the word *plagiátorstvo* (plagiarism), as well as their annual increase on the Internet and in the media in the period 2002-2010. We assumed 2010 to be the year with both indicators at the maximum.

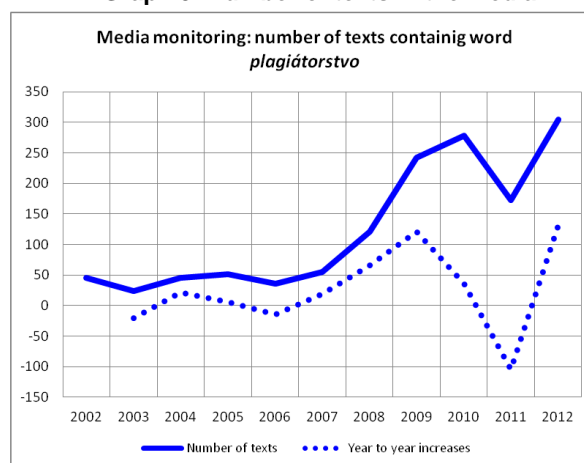
The 2002-2006 period may be characterised as a period of very low occurrence of information about plagiarism on the Internet with given search parameters. This corresponds with the finding of R. Králiková (2009). However, Internet penetration amounted to 40% and 56% in 2002 and 2006 respectively. A sharp increase in the number of Internet texts containing the word *plagiátorstvo* (plagiarism) occurred after 2006 (Graphs 4 and 5).

The data relating to the media monitoring was provided by Storin (Bartko, 2012, 2013). The occurrence of the variants of the word *plagiátorstvo* in the media was monitored (radio, television, press, Internet media). The monitoring of radio and press covers the 2002-2012 period, the television monitoring started in 2004 and the Internet media monitoring started in 2007. Like with the Internet search, a very slow growth in the number of texts on plagiarism is characteristic for the initial years 2002-2007 (Graphs 6 and 7).

Graph 4: Number of texts on the Internet



Graph 5: Number of texts in the media

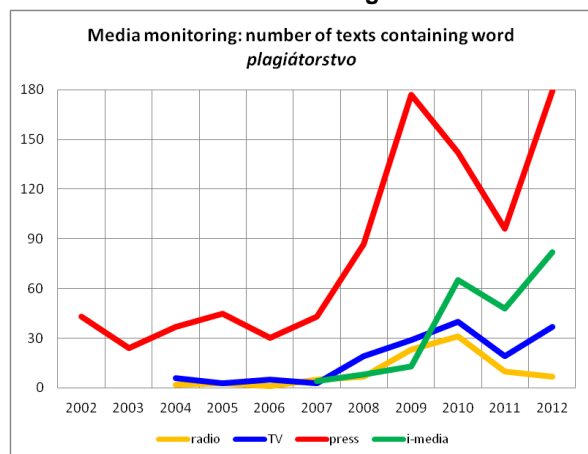


We assumed that the frequency of texts with the word *plagiátorstvo* on the Internet, in media monitoring and the frequency of searches for this word by Internet users for the period until 2010 (including their increases) will culminate in 2010. This assumption was confirmed only partially.

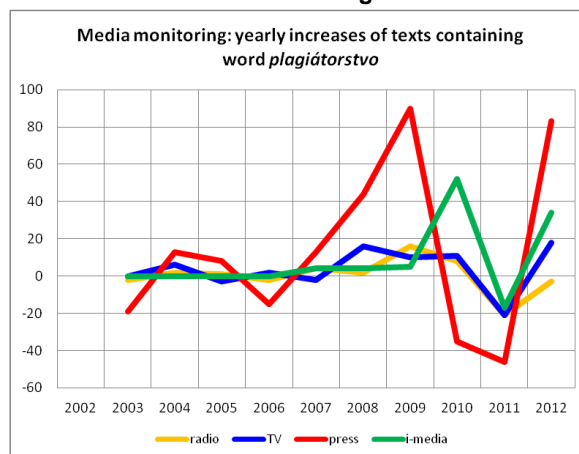
Regarding the texts containing the word *plagiátorstvo* on the Internet and in the media, only in one case for the 2002-2010 period, the maximum is not achieved in 2010 – in the case of press monitoring (maximum in 2009). Regarding the increases, there are four exceptions: overall monitoring, radio and press (maximum in 2009), television monitoring (maximum in 2008). The number of Internet texts containing the word *plagiátorstvo* shows a rising trend after 2010, contrary to the media.

The maximum of Internet texts with the word *plagiátorstvo* was achieved in December 2010, the value over 50% of the maximum was achieved in November 2009. Values over 40% of the maximum were achieved in October, November 2009 and in March, October, November and December 2010. The maximum increase in the number of texts was not concentrated in the first month of using CR and APS, but in the period seven months later.

Graf 6: Media monitoring: Numbers



Graf 7: Media monitoring: Increases

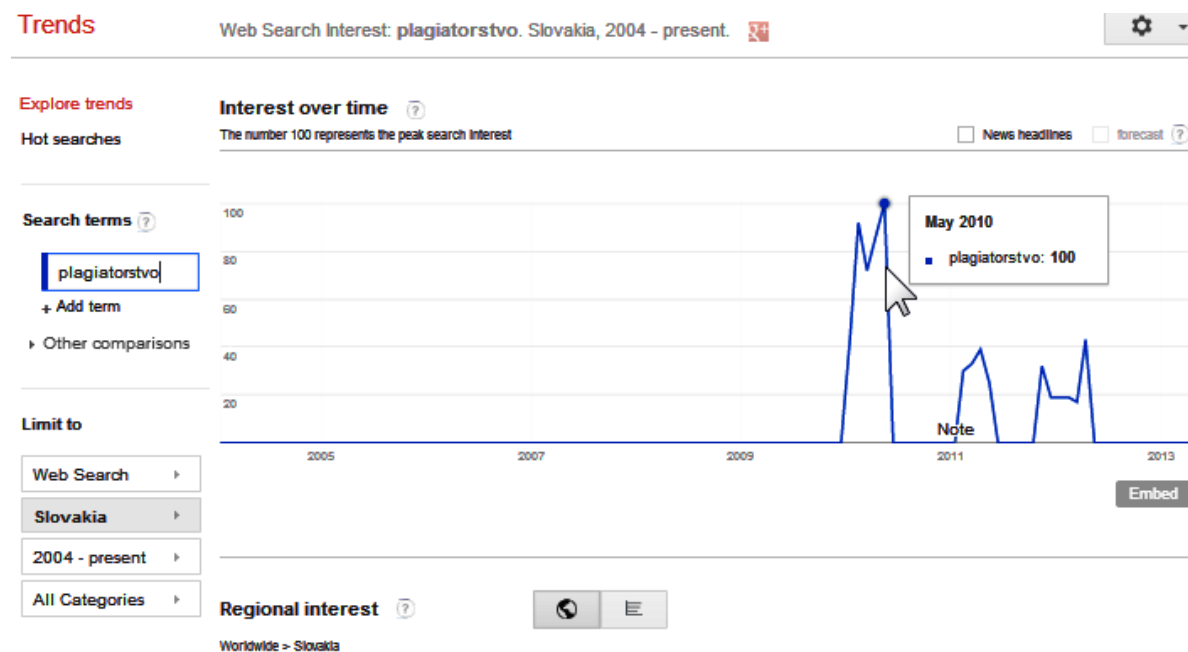


The Number of Search Hits for the Word *plagiátorstvo* on the Internet

On one hand, interest in plagiarism leads to an increasing number of texts about plagiarism on the Internet; on the other hand, there is the activity of Internet users searching for the word *plagiátorstvo* (*plagiarism*). Google Trends (www.google.com/trends/) provides the ability to quantify the frequency of searched words entered for a period since 2004 per months in percentage compared to the month in which the maximum number of searches was recorded. It should be noted that the zero value does not mean any query, but that the number did not exceed the threshold value. We assumed that the interest in the search for the word *plagiátorstvo* would peak in 2010.

When entering the word *plagiátorstvo* in Google Trends and defining Slovakia, we got a graph with only one over-the-threshold value (June 2011). Given that Internet users largely ignore diacritics when entering search queries, we also looked at the trends in searching for the word *plagiatorstvo*. The maximum number of queries (Graph 8) was recorded in May 2010; over-the-threshold values are shown in January to April 2010. An increased interest for the search grows every year in the period of submission of papers.

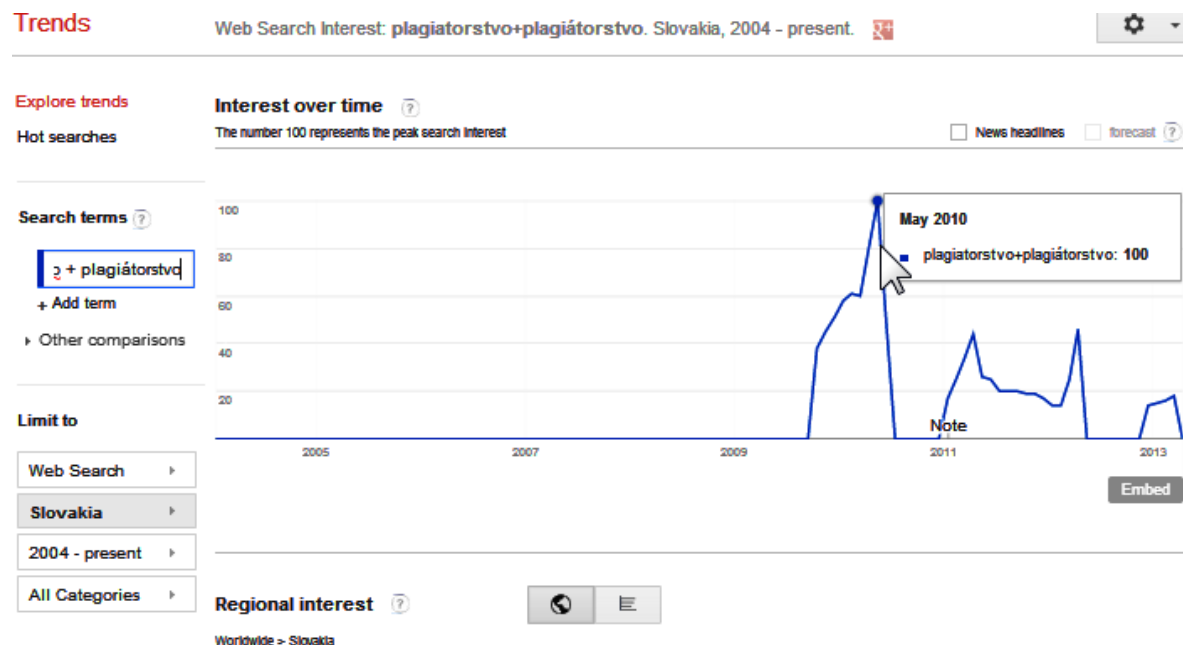
Graph 8: Relative number of searches for the word *plagiatorstvo*



Google Trends allows identifying not only relative numbers of searches for one word, but also for multiple words. When identifying the number of queries for the words *plagiatorstvo* and *plagiátorstvo* (Graph 9), we get a higher number of over-the-threshold values (a sum of two below-the-threshold values exceeding the threshold value). Re-

sults for *plagiátorstvo* and *plagiatorstvo* (Graph 10) are not identical with the results for *plagiatorstvo* and *plagiátorstvo*; however, the maximums are identified in the same months.

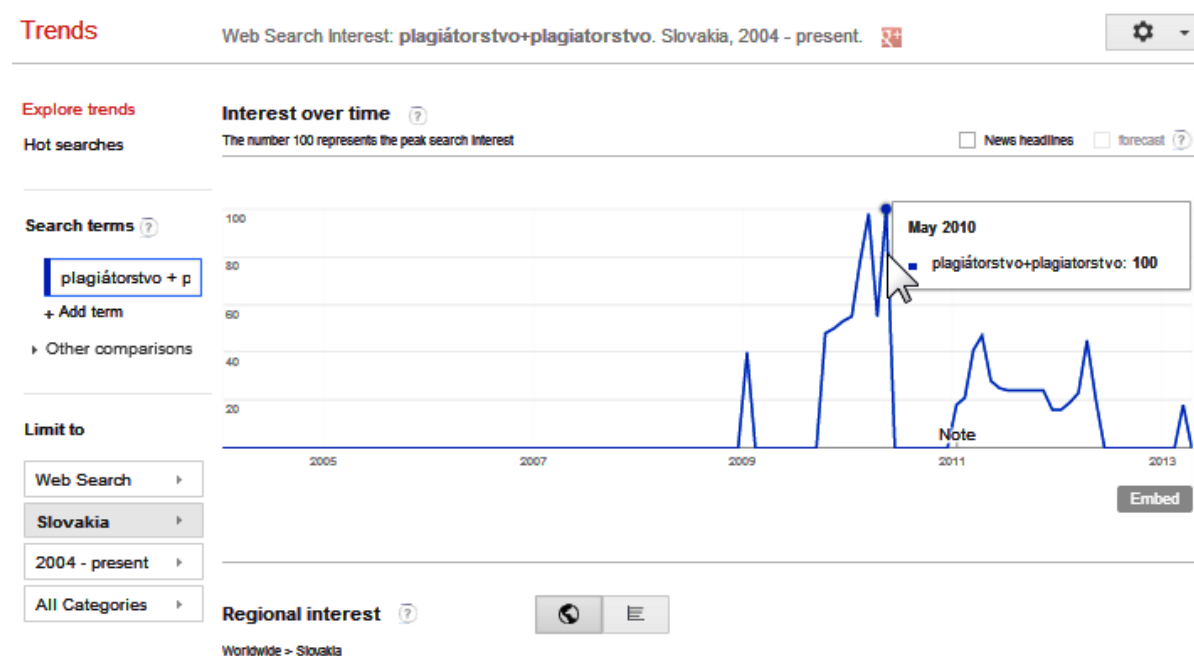
Graph 9: Relative number of searches for the word *plagiatorstvo* and *plagiátorstvo*



Despite the "non-commutativity" in identifying the number of searches, the trends are well-identified. Identifying the number of searches are not invariant in time; a shift in identification by 24 hours identifies small deviations compared with the previous day.

Results regarding the number of searches for the word *plagiátorstvo* document that the use of Slovak language without diacritics when entering search queries dominates the grammatically correct Slovak language.

Graph 10: Relative number of searches for the word *plagiátorstvo* and *plagiatorstvo*



The first month of the use of CR and APS was May 2010 and May showed the maximum number of searches. The local maximums of the number of searches have a year's periodicity and they belong to the main period of submission of papers (March to May).

The Occurrence of the Terms *akademická etika* and *akademická integrita* in Texts on the Internet and in the Media

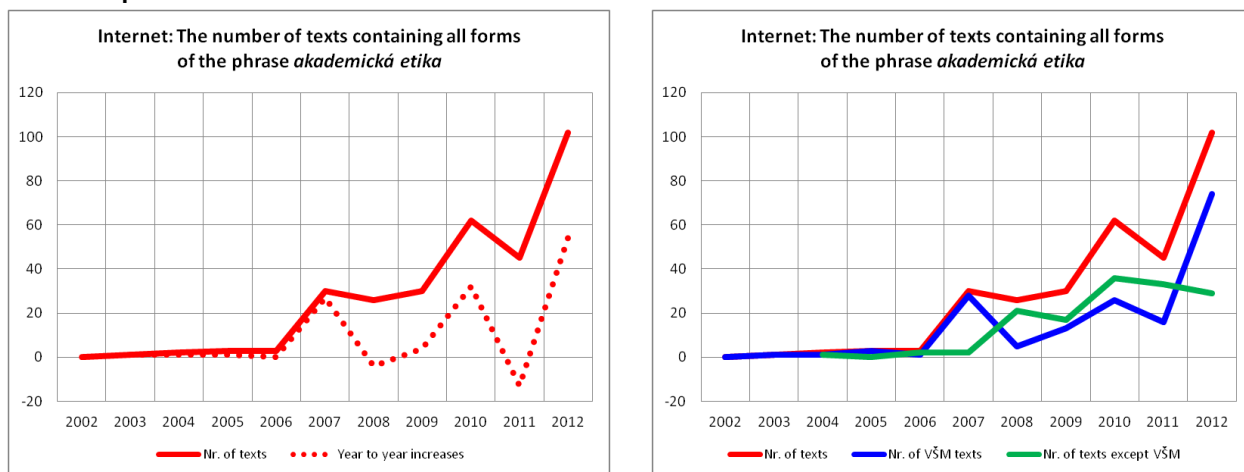
Academic ethics defines standards, rules and principles of behaviour and actions in the academic community. One of the principles in academic ethics is academic integrity, meaning honesty, fairness, conscientiousness and responsibility. Integrity is associated mainly with the ethical problem of plagiarism when an individual does not act in line with the integrity principle, violates it and such actions are considered dishonest. Plagiarism is a serious breach of academic ethics and integrity (Platková-Olejárová, 2013).

I looked for an answer to the question whether the occurrence of terms *akademická etika* (all forms) and *akademická integrita* (all forms) on the Internet and in the media in Slovakia in the 2002-2012 period corresponds with the occurrence of the term *plagiátorstvo* (all forms).

Based on the obtained results for the term *akademická etika* for the 2002-2006 period, we can characterise this period as a period of almost zero occurrence of the phrase on the Internet with the given search parameters. The number of texts on the Internet with the occurrence of the term started to grow in 2007 (Graph 11).

A detailed analysis of the search results revealed that the School of Management in Trenčín (Vysoká škola manažmentu v Trenčíne, further VŠM) has a significant share in the search results. In the years with non-zero, but very low occurrence of the term *akademická etika*, i. e. 2003-2006, the results related to VŠM represented two thirds of all occurrences. In the 2007-2012 period, the results related to VŠM represented 54% of all occurrences for the period (Graph 12). VŠM was the first HEI in Slovakia that began to use the anti-plagiarism system (from 2001). The occurrences from VŠM's texts for the 2003-2012 period (years with non-zero occurrence of texts) represented 54,4%.

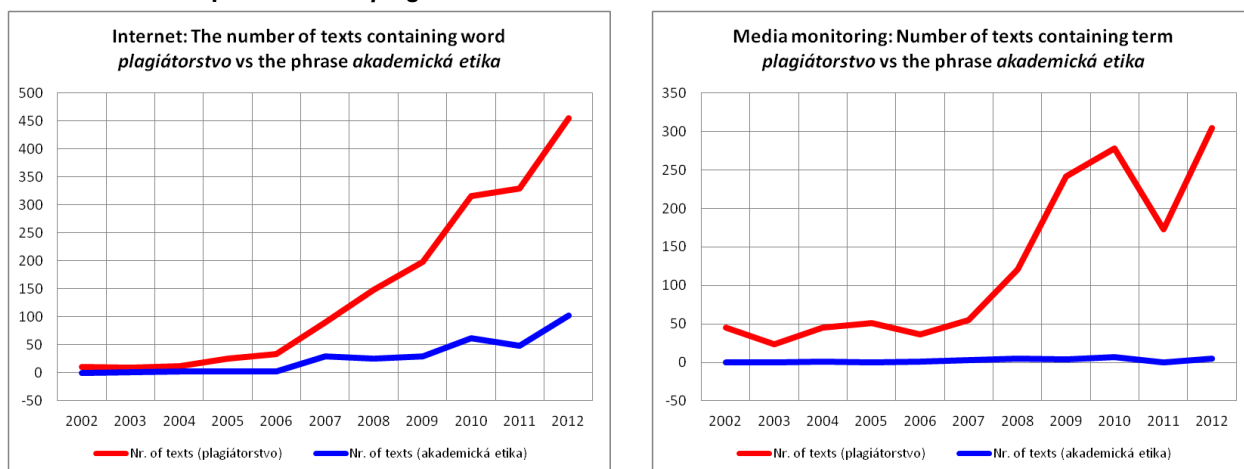
Graph 11 and 12: Total Number of Text on Internet / Total and Partial Number of Texts on Internet



I assumed that the frequency of texts containing the term *akademická etika* including all its forms for the 2002-2010 period will peak in 2010. This assumption was confirmed for Internet and the media (Graph 13 and 14). The frequency of this term on Internet is many times lower than the frequency of the term *plagiátorstvo* (Graph 13), it amounts to 15.6% on average.

And what did media monitoring show? A radically different situation. The occurrence of texts about *akademická etika* is minimal – 7 occurrences (maximum) were recorded in 2010. On average, it amounts to 8.5% compared to the occurrence of the term *plagiátorstvo* for the 2002-2012 period (Graph 14). The occurrence of the term *akademická etika* compared to the occurrence of the term *plagiátorstvo* is more than 6 times lower on Internet and almost 12 times lower in the media.

Graph 13 and 14: *plagiátorstvo* vs *akademická etika* on Internet and in the media



Analogically, I assumed that the occurrence of texts containing the term *akademická integrita* including all its forms for the 2002-2010 period will peak in 2010. However, the frequency of this term on Internet was very low – a total of 12 occurrences with the maximum of 7 in 2011. Given the low number of occurrences, it makes no sense to compare the frequency of the term *akademická integrita* with the occurrence of *plagiátorstvo*. Media monitoring recorded no occurrence of the term *akademická integrita*, which is something I did not assume at all.

Summary

The implementation of the strategic objective to deploy national CR and APS was a fundamental systemic step and brought positive effects in the fight against the spreading of plagiarism. The operation of both systems is a preventive tool; it contributes to improvements in education, to a better understanding and application of academic ethics, copyright and intellectual property rights, and to improvements in students' work with literature. The papers registered in CR from 1 September 2011 are available to the public (www.crzp.sk/crzpopacxe) and the public is able to verify suspected plagiarism. We can conclude that theses and dissertation are under the triple supervision: the tutor's, the examination committee's and the public supervision.

However, we do not have exact plagiarism data due to non-existent feedback from HEIs regarding the results of investigations into suspected plagiarism.

The originality check does not cover all HEI publications; there is still room to implement the originality check for other types of HEI publications.

The use of plagiarism detection systems has had longer tradition in many countries than in Slovakia. The implementation of CR and APS and their mandatory use nationwide (at HEIs operating under Slovak legislation) is a unique solution in Europe and very likely in the world.

Education and prevention play an important role in combating plagiarism. HEIs are aware of this and improve the moral and knowledge level of students in this regard. However, there is one major drawback: our Higher Education Act does not recognise a withdrawal of a HEI degree. If moral principles are violated in the preparation of the thesis and it remains undetected until the award of a degree, the degree remains intact in the hands of the owner (Húska, 2012). Therefore, we have seen no withdrawal of degrees yet like, for example, in Germany (case Guttenberg, Schavan) and in Hungary (case Schmitt). Hopefully a change is in sight – in August 2012, the newspapers informed (SME.SK, 2012) that a fraudulently obtained degree will be qualified as a criminal offense. The issue should be subject to the amendment of the Criminal Code.

The number of texts containing the term *plagiátorstvo* was very low on the Slovak Internet and in the media until 2006 or until 2007 (media) which corresponded with the number of searches for this term. This was a reflection of the situation of the whole society – the issue of plagiarism, copyright, intellectual property rights was not given sufficient attention by the society. Significant changes started in 2007/2008, when the number of texts on plagiarism significantly increased, and the issue of plagiarism became a public matter. The term *plagiarism* is no longer a Cinderella of Slovak Internet and media. We are more open to the issue of plagiarism, its presence is openly admitted and there is much more written and spoken word on the topic. The interest in the search for the term *plagiátorstvo* or

plagiatorstvo culminates in spring every year, which is the main period for submission of theses and dissertations (Graphs 3, 8, 9 and 10). A large contribution to that was the effort that led to the nationwide implementation of CR and APS.

A targeted education in academic ethics and academic integrity should foster the preventive effect of ANTIPLAG and contribute to the reduction of plagiarism at HEIs. I assumed that the occurrence of these terms in texts on Internet and in the media in Slovakia will follow analogical trends as the occurrence of the term plagiarism.

For academic ethics and Internet, the trend is analogical (Graph 13), but on a significantly lower quantitative level. The occurrence of texts addressing academic ethics is very low in the media (Graph 14). The occurrence of academic integrity is even lower and alarming. There was no term “academic integrity” found in the media.

It is necessary to consider that the occurrence of the terms “academic ethics” and “academic integrity” was searched in this forms and its variants. It cannot be ruled out that there are texts with these terms, but not as the exact terms mentioned above.

Table 1: Comparison of Results 2002-2012

Period	Average occurrence of the term per period					
	plagiarism		academic ethics		academic integrity	
	Internet	media	Internet	media	Internet	media
per year	148,1	125,0	28,1	2,4	1,1	0
per month	12,3	10,4	2,3	0,2	0,1	0

The table documents the occurrence of texts about plagiarism, academic ethics and academic integrity and shows that academic ethics and academic integrity are infrequent in the society and it is likely that knowledge of these terms and their meaning in the society is low. It is a negative, alarming situation that requires action. Why? Because full understanding and respecting of academic ethics and academic integrity can significantly contribute to the prevention of plagiarism.

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