

## **NATIONWIDE PLAGIARISM DETECTION SYSTEM IN SLOVAKIA: IN OPERATION SINCE 2010**

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**Abstract:** Slovakia made a unique and significant step forward in the fight against plagiarism at higher education institutions in April 2010. At this time, the SK ANTIPLAG system (a central repository of theses and dissertations, a plagiarism detection system) started routine operation on a national level after a preparatory phase. Pursuant to the amendment to the Higher Education Act from October 2009, the use of SK ANTIPLAG is mandatory for all Slovak higher education institutions operating under the Slovak legal order. It is an example of an unparalleled and unprecedented implementation of such a system on a national level. A relevant milestone has been built not only on the Slovak scale, but also worldwide.

**Key words:** plagiarism, higher education, student, teacher, supervisor, opponent, rector, thesis, dissertation, metadata, central repository, plagiarism detection system, project, uniqueness, implementation, similarity, indicator, quality, ghost writing, portal, internet, media, awareness, methodology, copyright, intellectual property rights, academic community, accessibility, benefit, impact, citation, MinEdu, analytic output, EU, European Commission

Plagiarism is an undesirable phenomenon, unwanted “creativity” in the educational system at all levels that existed in the past, exists today and will exist in the future. Slovakia with its population of 5.4 million, like other countries, has been particularly confronted with theses and dissertation plagiarism. The rapid increase in the number of students at higher education institutions (HEIs), non-corresponding growth in the number of teachers, the ICT and internet penetration growth after 1992, together with a low level of copyright and intellectual property rights awareness contributed to the spread of plagiarism at HEIs in Slovakia. A systemic measure was needed.

MinEdu made a strategic decision in 2008: a system will be prepared and implemented on a national level covering the collection, processing and originality checks of the specified HEI theses to inhibit the spread of plagiarism. The Slovak Centre of Scientific and Technical Information (SCSTI) was charged by MinEdu with the formidable challenge to transform the decision into a system of everyday use.

SK ANTIPLAG (Central Repository of Theses and Dissertations + Plagiarism Detection System) has been in live operation since 30 April 2010. The system has to be used by all higher education

institutions operating under the Slovak legal order<sup>1</sup> thanks to the Amendment to the Higher Education Act. The Central Repository collects five types of theses (bachelor's, master's, dissertation, rigorous<sup>2</sup> and habilitation<sup>3</sup>) using a uniform collection methodology (theses + metadata).

We have registered positive repercussions on the internet and in the media from the HEI officials and pedagogical staff.

### Technological Solution

The Central Repository of Theses and Dissertations is based on the core of Library Information System DAWINCI and its modules for Electronic Theses and Dissertations<sup>4</sup>. The database engine is based on SQL technology and XML metadata description. The system is designed to be suitable for the description of grey literature entities. The output of the system is the Originality Protocol.

The system contains a database engine, user interface for presentation of metadata and documents (with respect to the license), background communication interfaces for data harvesting and collection of support services.

The Central Repository of Theses and Dissertations is a data source and a presentation portal serving as a background for the SK ANTIPLAG system, which is used to validate originality of the submitted theses using the Plagiarism Detection System.

### Main Results, Benefits and Impacts

The impact of SK ANTIPLAG on academic community has been significant and it has also affected the general public. According to statements of HEI officials and pedagogical staff in the media, the mere publication of the information that the operation of such a system 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 SK ANTIPLAG system in the media agree that it 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.

Repeated uploads of theses are allowed exceptionally, because repeated uploads can support ghost writing. Theses and dissertations that were registered in the CR on 1 September 2011 and

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<sup>1</sup> The total number of HEIs in Slovakia is 40; 4 of them do not operate under the Slovak legal order.

<sup>2</sup> 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 thesis.

<sup>3</sup> A prerequisite for the granting of the scientific-pedagogical degree "docent" (assistant professor) is a habilitation lecture, and submission and defense of the habilitation thesis.

<sup>4</sup> Slovak company SVOP, Ltd. is the software developer.

later are publicly accessible. So they are under triple control: supervisor, examination committee, public. Since then the opponents' reviews are collected too.

The uniform methodology for the collection of theses and the relevant metadata that is binding for all Slovak HEIs opens possibilities for various unique analytical outputs on a national level. Some examples include: identical thesis titles (by supervisor, by HEI, by all Slovak HEIs), the number of theses pertaining to one supervisor, the percentage (index) of similarity of theses (by supervisor, by field of study, by department, faculty, HEI, by types of HEIs etc.). MinEdu has the advantage of using different kinds of analytic outputs that can help in assessing the quality of work with students during the preparation of theses broken down by various indicators.

The number of texts containing the word *plagiátorstvo* (plagiarism) was very low on the Slovak internet and in the Slovak media until 2007. This was a reflection of the situation of the whole society – the issue of plagiarism, copyright and intellectual property rights was not given sufficient attention. Significant changes started in 2008, when the number of texts on plagiarism increased significantly, and the issue of plagiarism became a public matter (in this year Slovak Rector's Conference required from MinEdu acquisition of a nationwide plagiarism detection system). As a result, the term *plagiátorstvo* is no longer hidden on the Slovak internet and in the Slovak 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. A significant increase in searches for the word *plagiátorstvo* (plagiarism) has been recorded. It culminates in spring every year, which is the main period for the submission of theses and dissertations. In the period before 2010, there was subliminal interest.

The international research project “Impact of Policies for Plagiarism in Higher Education Across Europe” (IPPHEAE, EU funded, 2010-2013) carried out a survey in the EU and country reports were prepared for 27 countries (<http://ippheae.eu/project-results>). The report “[Plagiarism Policies in Slovakia](#),” says:

“There were some notable differences between the Slovak surveys and the EU average. Almost all Slovak students (99%!) become aware of plagiarism before or during their bachelor studies. The EU average shows that 20% of students become aware of plagiarism during their masters/PhD degree or are still not sure about it.”

" ... Slovak students are the most aware of plagiarism among all EU countries"

"The most outstanding example of good practice is definitely the existence of national repository of theses. As it is run centrally and universities are obliged to upload their theses, students from all institutions have theoretically the same conditions. The other aspect is that the software tool provides just a protocol for matching with other sources. The decision about whether a given case is plagiarism or not lies with teachers and/or the examination committee and these may not always follow the same procedures."

"Compared to other countries, Slovakia should be praised for its achievements. And it already was: The European Commission has awarded the Slovak Centre of Scientific and Technical Information the [European Prize for Innovation in Public Administration](#)."

"The responses from Slovak students demonstrated the highest level of understanding about plagiarism within the whole Europe. Their unwillingness (in comparison with other countries) to receive more training on plagiarism is therefore understandable. The research team of the IPPHEAE project would also like to praise Slovakia for existence of national repository of theses and built-in plagiarism detection tools."

### Lessons Learnt

1. Psychological effects
  - Disclosure of the information that a nationwide plagiarism detection system is being prepared had a positive, preventive effect (probably much more effective impact than any expensive media campaign).
  - Public accessibility of theses and dissertations contributes to that the authors prepare their theses more carefully and more responsibly. They respect copyright and they are better at citing.
2. Raising awareness of plagiarism and copyright in general, not only in the academic community.
3. Uniqueness of the implementation on a global scale.
4. Where there is a respected target for all stakeholders, the will to achieve it and good relations among them make “hard” tasks achievable.
5. Implementation of SK ANTIPLAG becomes a subject of interest in several countries.
6. There is a wide variety of analytical outputs for MinEdu that can help in decision-making.

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