

## TAILOR-MADE COMICS ON GEOFORENSICS IN LANGUAGE TEACHING: INTERFACULTY COOPERATION AND APPLICATION

Lidija Beko<sup>1\*</sup>, Dragoslava Mićović

<sup>1</sup>University of Belgrade, Faculty of Mining and Geology, Belgrade, Serbia

<sup>2</sup>University of Criminal Investigation and Police Studies, Belgrade, Serbia

### Abstract

Since comics are known as an increasingly popular modern educational strategy which have not been common in university classes so far, this paper represents a creative attempt to change this practice. Namely, we believe that a good comic, or more precisely an educational-scientific comic, could be a useful tool for teaching, bringing about change and inventiveness, and connecting topics and narratives in a multitude of registers. Additionally, we believe that the potential of university teaching can be increased by combining comics and foreign language teaching, not only due to the already mentioned interest in comics as a language method but also due to its multidisciplinary and the possibility of interfaculty cooperation as a completely new language practice, hitherto unexamined or insufficiently tested in language learning. The paper first discusses the arguments for and against the use of comics in teaching foreign languages, and then offers a practical overview on how to create a comic. Finally, we present our experiences in achieving interfaculty cooperation. In other words, this paper intends to shed light on three aspects: (1) promoting the idea of the teacher as a creator of innovative materials and strategies in education; (2) using comics as a language activity; and (3) the intellectual flexibility of students and lecturers in using comics at two different faculties. The research was conducted with the students of the Department of Geology of the Faculty of Mining and Geology of the University of Belgrade, and with the students of the Department of Forensic Engineering of the Belgrade University of Criminal Investigation and Police Studies.

**Key words:** educational-scientific comics, geoforensics, language teaching, teacher-creator, inter-faculty cooperation.

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\* Corresponding author: Lidija Beko, University of Belgrade, Faculty of Mining and Geology, 7 Đušina Street, 11000 Belgrade, Serbia, [lidija.beko@rgf.bg.ac.rs](mailto:lidija.beko@rgf.bg.ac.rs)

## СТРИПОВИ О ГЕОФОРЕНЗИЦИ У НАСТАВИ ЈЕЗИКА: МЕЋУФАКУЛТЕТСКА САРАДЊА И ПРИМЕНА

### Апстракт

Будући да су стрипови познати као све популарнија савремена образовна стратегија, а да у универзитетској настави они до сада нису били уобичајени, овим радом смо покушали да на креативан начин променимо ту праксу. Наиме, сматрамо да добар стрип, односно образовно-научни стрип, може бити користан вид наставе, да доноси освежење и промену, као и да повезује теме и наративе у више регистара. Такође верујемо у то да се спајањем стрипа и наставе страног језика може повећати потенцијал универзитетске наставе, не само због већ поменуте занимљивости стрипа као језичке методе, већ и због мултидисциплинарности и могућности остварења међуфакултетске сарадње као потпуно нове језичке праксе, до сада неиспитане или недовољно испитане у учењу језика. У раду се најпре наводе аргументи за и против коришћења стрипа у настави (страног језика), а затим се нуди практичан приказ о томе како се креира стрип. На крају, рад дискутује искуства аутора при остваривању међуфакултетске сарадње. Другим речима, овим радом намера нам је да осветлимо три аспекта: (1) промовисање идеје о наставнику као креатору иновативних материјала и стратегија у образовању, (2) употребу стрипа као језичке активности и (3) интелектуалну флексибилност студената и предавача при употреби стрипа на два различита факултета. Истраживање је обављено са студентима Одсека за геологију Рударско-геолошког факултета Универзитета у Београду и са студентима Департмана форензичког инжењерства Криминалистичко-полицијског Универзитета у Београду.

**Кључне речи:** образовно-научни стрип, геофорензика, настава језика, наставник-креатор, међуфакултетска сарадња.

### INTRODUCTION

We belong to a large number of authors (Tadić, 2008; Tatalović, 2009; Trnova et al., 2013; Maričić & Popović, 2014; Toh et al., 2017; Lo et al., 2019; Akcanca, 2020; Wijaya et al., 2021) who consider comics to be an interesting and useful tool in language teaching. Although comics are believed to be an entertaining and fun tool which brightens the atmosphere of classes, they can also be seen as an effective and serious educational tool when it comes to young academics for whom this type of language practice is not common. The novelty is all the greater and more serious because we used the same educational-scientific comic (hereafter referred to as ESC) in class for the first time at two different faculties: the Department of Geology of the Faculty of Mining and Geology of the University of Belgrade, and the Department of Forensic Engineering of the Belgrade University of Criminal Investigation and Police Studies. Interfaculty cooperation opens the possibility for the students and professors of the two faculties to frame new forms of practice, affiliation and reciprocity, wherein they can think and learn from the repertoire of joint practice, teaching materials and concepts as members of a 'new team'. A

new cohesive approach to learning allows the teaching team with a common interest or passion to communicate with each other and learn how to understand their own state of development from multiple perspectives, to re-examine assumptions and patterns, to discover hidden possibilities, and to use this self-awareness to move forward (Wenger, 2000, p. 230).

In the words of de Hosson et al. (2018, p. 2), a large number of works dealing with comics, as well as ESC, rely on the use of existing comics, where students are readers who identify scientific information conveyed in comics, examine scientific cohesion, and memorise specific scientific data. The role of the teacher is to be a guide who facilitates the identification and acquisition of relevant scientific information, concepts and vocabulary (Hosler & Boomer, 2011; Chevallier, 2013; Arguel et al., 2017).

#### *THE RISKS AND PITFALLS OF USING COMICS IN THE CLASSROOM*

The fact that comics are mostly composed of images and do not deal deeply with the topics present in them was accepted as the main reason for the underestimation of their value. This led many educators to believe that comics were created just for fun, and that they had little or no educational and literary value (Lo et al. 2019, p. n.d.), which was what initially prevented the use of comics in the process of education and scientific research. There were even periods during which it was considered forbidden to read comics during classes (Toh et al., 2017, p. 3), as comics were regarded as an 'enemy' of schools. Therefore, students caught reading comics in some schools were punished (Cleaver, 2008, p. 29). However, these periods did not last long, and it can be said that comics have regained the value and role they deserve in the educational process (Tilley, 2008, p. 24).

According to Trnova et al. (2013, p. 4-5), the disadvantages and risks of using comics can be listed as follows:

- There is a risk of their excessive or inappropriate use in classes, and inadequate choice of content;
- Shortening and simplifying texts can result in ambiguous and scientifically incorrect formulations;
- It is possible that a fixed linking of a phenomenon or situation to its comic solution can result in describing the phenomenon in a way that is not fully in line with reality. Therefore, the comic should include additional, i.e. alternative presentations in order to avoid misleading students;

- Students may find the requirement of interdisciplinary skills an obstacle. However, this can be solved by appropriate guidelines, or by choosing an appropriate task;
- Incorrect processing in comics, such as the simplification of the text, can lead to confusion and errors, so prevention is needed in the form of combining comics with other teaching methods and tools (Ibid).

### *THE PERSPECTIVES OF USING COMICS IN TEACHING*

Visual literacy, which characterises the younger generations, suggests that today's youth bases their mode of expression on visual communication – a multitude of pictures, and little text. Moreover, young people easily integrate text and images, move quickly between real and virtual environments, and often have problems with long texts and uninteresting instructions due to poor concentration or short periods of concentration. The aforementioned should all be taken into account by teachers when creating tasks.

Today, students have a habit of searching the Internet for information they need in their private and educational lives, and increasingly refuse to learn by heart. They feel that everything can be found on the Internet, and that there is no need to remember or recall facts. They refuse to read long texts and prefer visual stimuli. Their needs are met in comics that contain short messages placed in the meaningful contexts created by special images. Also, according to research, students adopt abstract concepts better if they use comics instead of conventional textbooks (Kabapinar, 2005, p. 136).

The advantages of comics, or teaching through comics, can be explained by the following arguments:

- Comics have great motivational potential;
- Short summary texts are suitable for today's Internet generation that refuses to read long texts;
- Comics put topics in a meaningful context;
- It is easier to visualise problems, as problems are presented through pictures;
- They are examples of an interdisciplinary approach – the use of scientific knowledge and skills, mother tongue, art, IT and English;
- They make a significant part of non-formal education, either in the form of printed materials or interactive materials on websites (Trnova et al., 2013, p. 5).

Maričić and Popović (2014, p. 619) are of the opinion that comics as a form are unfairly neglected, and should be used in the classroom like other media of communication because they offer great potential that can be used for developing language (lexical, grammatical, pragmatic) and

sociocultural competence, as well as for practicing language production and reception skills.

In addition to the above arguments, we were also guided by what Rose (2007, p. 30) calls the ‘culture of quality’, or the quality of work and organisational structure in teaching. Quality management means that what we implement as innovation needs to be focused on good organisation, to be well focused in general, to have a clear and efficient task function, to be based on personal and professional qualities that can help each student, to have moral value, and to have a democratic value, because it encourages all participants in the process to cross the boundaries of being passive recipients.

When it comes to interfaculty collaboration, joint task management focuses teachers on integrated management that expands the boundaries of management beyond a single classroom or faculty. The efficiency of such an endeavour will draw values from the repertoire based on the adjustment of all participants, and according to the set goal.

In a previous paper on interfaculty cooperation, wherein the focus was on teachers’ experiences and teaching activities using the same material, Beko and Mićović (2022, p. 89) noticed that such cooperation in the field of foreign language teaching as an educational challenge is rarely promoted by institutions of higher education even within the same country. The common practice of teaching the same foreign language activity at two completely different faculties – in our case two universities (the University of Criminal Investigation and Police Studies and the University of Belgrade, Faculty of Mining and Geology) – is a situation in which the heterogeneity of lecturers, students and teaching materials may potentially lead to tensions and uncertainty<sup>1</sup>.

It is equally important to point out that innovations of interfaculty scope are not related only to building new forms of work and increasing the capacity of institutions. This means that, in addition to the development of professional, intercultural, and technical capacities, the importance of the development of ‘emotional capacities’ should be emphasised because teachers’ feelings about success and efficiency are factors that directly affect students’ achievements. Teachers’ feelings are not usually taken into account by English language teaching methodology, and Benesch (2018,) notices that “emotions in ELT have mainly been considered as private psychological phenomena” (p. 3). In her research, Benesch “presented an alternative to psychological approaches to emotions that construct English language teachers as isolated individuals who experience emotions privately” (2018, p. 7), and instead tried to illustrate the ways in which the teachers’ emotions are the effects of interactions

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<sup>1</sup> For more on the teachers’ attitudes and proposed activities see (Beko and Mićović, 2022).

between teachers, institutional policies, and students. According to Timperley and Phillips (2003), “the complex interplay of new knowledge, how to teach it, and unanticipated changes in students’ achievements help to achieve changes in teachers’ feelings of self-efficacy in their expectations of students” (p. 639).

### *HOW TO CREATE A TAILOR-MADE EDUCATIONAL-SCIENTIFIC COMIC*

There are a lot of ready-made comics available on the market. There are comics that are made specifically for educational purposes – they tell a historical story, or graphically explain a natural or social phenomenon (Tadić, 2014, p. 207). In addition to such purpose-drawn educational comics, which do not have to be funny, there are many comics created with the sole intention of entertaining the reader, and those can be used in the classroom as well, under the supervision of the teacher (Ibid, p. 209). The teacher’s task is to constantly find new forms of work in order to make the lesson more interesting and harmonise it with the interests of his/her students (Maričić & Popović, 2014, p. 622).

Comics are usually made by hand, with the artist drawing panels for a story created by the writer. Illustrations can be black and white, or in colour. The development of technology has enabled comics to be created digitally with the help of applications<sup>2</sup>. There are also a number of online comics dealing with science and scientific topics<sup>3</sup>. Therefore, teachers can choose some of the ready-made comics available, if they find one suitable for their needs in the classroom. Even though there are a lot of scientific comics available, the chances of finding one best suited for a particular course are slim to none. This is a situation in which teachers can create comics on their own. This is also what we opted for, and an overview of the process of creating the tailor-made comic we used in class with two different groups of students is given in the text below. This particular comic was created by Lidija Beko and illustrated by Mijat Mijatović.

The creation of the comic occurred in four stages, discussed in the following subsections of the paper.

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<sup>2</sup> Some of them include Make Beliefs Comic (<http://www.makebeliefscomics.com>), Comic Life (<http://comiclfe.com/>), Strip Generator (<http://stripgenerator.com>), Storyboard That (<http://www.storiboardthat.com>), Comic Creator by Read Write Think (<http://www.readwritethinkink.org>), Toondo (<http://www.toondo.com>) or Picton (<https://www.pikton.com/mk>), to name just a few of them (Tatalović, 2009; Vijaia et al., 2021);

<sup>3</sup> Such comics are to be found on the following websites: LabRatz on laboratory and cabinet life, Newton and Copernicus on the adventures of laboratory rats, or PhD on research work.

*Stage 1: Selecting and Creating a Story*

When choosing a comic, Petrovački and Savić (2012, p.14) suggest keeping in mind the following criteria: *psychological* – the meaning should be clear, and the text should be understandable and distinct, whereas the content should be interesting for students, so that its interpretation would cause satisfaction; *aesthetic* – the images should have certain aesthetic and artistic value; and *pedagogical* – the situation in the comic should be appropriate for the age of the students, and their interests. Therefore, the same criteria should be applied when selecting a story which will be translated into a comic.

In addition to the above criteria, we should also take into account the type of course, i.e. the language being taught (if a General English (GE) course is being taught, then any topic suitable for a GE course can be chosen, and if an English for Special Purposes (ESP) course is being taught, then the topic should be related to a particular field of interest). Preferably, the story should be related to the topics covered by the main courses within the curriculum. In our case, those courses include Mineralogy, Geology, Palentology or Forensic Science<sup>4</sup>.

The story selected for making the comic used and given as an example in this article is a true story, and a good example of an interdisciplinary approach simultaneously covering geoscience, police investigation and forensic science. This is why it also proved appropriate for use at two different faculties.

**Geology Mystery Files:****The Case of Vandals, Rocks, and Smashed New Cars**

As long as there are people, there will be imaginative ways to destroy someone's property. An interesting example of that is the case of vandalism that occurred somewhere along the standard car transportation route from Detroit to New Jersey. The Penn Central Transportation Company was in a pickle due to mysterious incidents of smashed and dented new cars that were transported via their railroad cars.

The idea that someone would throw rocks at a passing train was insane. It was even more insane (and impossible) to have the police wait all along the tracks from Michigan to New Jersey in an attempt to catch the culprits. Especially since the cars were transported via two routes: one passing through Pennsylvania, and the other through New York City.

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<sup>4</sup> One of the books that helped in selecting a story is *An Introduction to Forensic Geoscience* by Elisa Bergslien. This is a book fundamental for training in geoscience, but its goal is also to familiarise the readers with the wide range of ways in which geoscience principles and geological materials can be utilised forensically. In addition to theory, it includes the examples of real criminal cases to help make connections between theory and real-world application.

So, what was the transportation company to do? They contacted the Pennsylvania Geological Survey and asked their researchers to inspect rocks found in smashed cars. Of course, everyone was aware that there were probably many places along these two routes that had the same types of rocks. However, the element of luck had its fair share in this story.

It turned out the combination of rocks the vandals used wasn't that common. They were metamorphic rocks that contained feldspar, quartz, biotite mica, chlorite, and slender crystals, probably apatite. The researchers consulted geologic maps, which helped them eliminate most of the locations from Detroit to New Jersey, and leave two sites: one in New York and one in Pennsylvania.

Upon closer inspection of the sites, it turned out the one in Pennsylvania had almost no apatite, while the NY location was rich in both apatite and biotite. They had a winner! The local police focused on this particular area during a regular Detroit-New Jersey car transport and they easily caught the vandals who enjoyed throwing rocks at new cars. Now, why did the vandals do it? That's a question for some other field. Perhaps psychology.

*Figure 1. Text of the selected story*

*Stage 2: Sequencing frames via text*

In this stage, an outline of the comic was made using only text. In other words, the story given above was broken down into sequences giving a rough idea what each panel would contain. This stage provided a skeleton of the story and was used by the graphic artist/illustrator while making drawings in the next stage.

Illustration 1  
 In the box in the corner:  
 Somewhere in Pennsylvania...  
 A man in a suit on the phone (maybe the company Boss):  
 Some vandals have been smashing brand new cars on our cargo trains for weeks!  
 A younger man:  
 I will deal with that problem immediately, sir!  
 Illustration 2  
 The younger man on the phone:  
 Hello, Pennsylvania Geological Survey lab? The Penn Central company needs you to check out some rocks URGENTLY!  
 ...

*Figure 2. Example of sequencing of the story*



### Stage 3: Making drawings

In this stage, based on the previous framework, the graphic artist produced the first rough sketch of the future comic, outlining the layout of illustrations and the text. One should take care to not put too much text in a panel, and to limit the number of speech bubbles as well as the number of words in a panel.

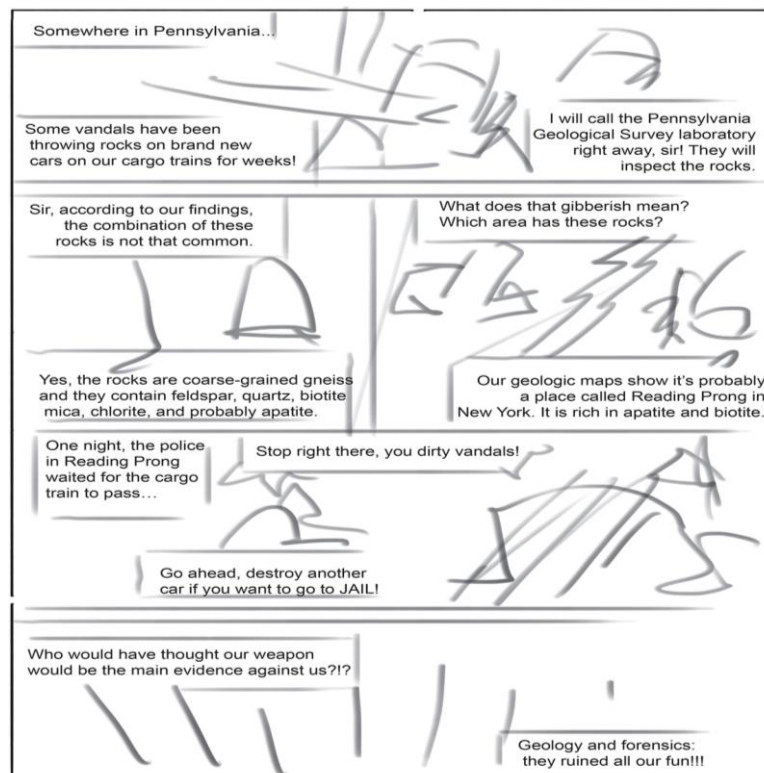


Figure 3. Example of rough drawings of the future comic

### Stage 4: Making comics

When the rough sketch described in the previous stage was checked and approved, the process of making the actual comic continued. Within this stage, the drawings were finished, each frame was put in its place, and the comic took its final form.

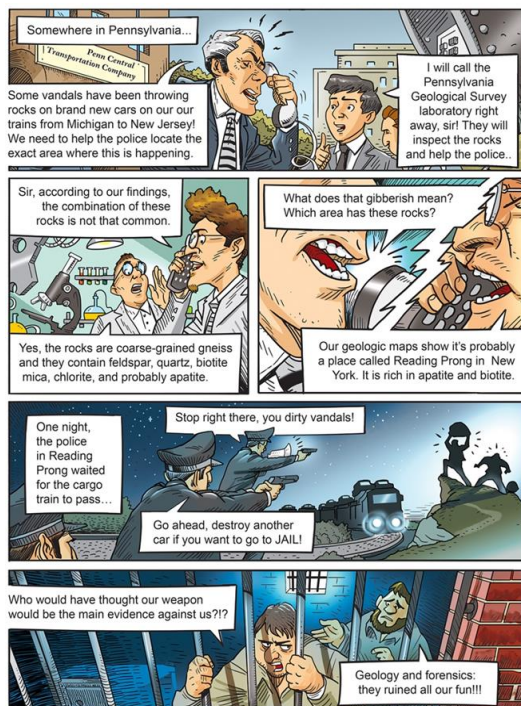


Figure 4. Comic book example (illustrated by Mijat Mijatović)

### HYPOTHESES AND METHODOLOGY

This research is designed to examine the interest and sensitivity of students in using scientific comics in English classes in their first year of studying geology at the Department of Geology at the Faculty of Mining and Geology of the University of Belgrade, and in their first year of studying forensic engineering at the Department of Forensic Engineering of the Belgrade University of Criminal Investigation and Police Studies. We assumed that the respondents would show openness and understanding for the adoption of new and different learning patterns that are in line with their academic needs. The respondents were expected to discover the fundamental motives that comics offer in science, as well as that solving the tasks related to criminal acts does not exclude aesthetics, morals or humour. Learning and solving forensic cases thusly opens the possibility for students to study an area that abounds in examples contrary to culture and morals in a culturally appropriate way.

The study aims to prove the following hypotheses: Hypothesis 1) the scientific comic is a useful educational activity in the dual learning of language and forensics at the two faculties; Hypothesis 2) the scientific

comic connects real life with the academic one in a convincing way; and Hypothesis 3) the scientific comic additionally and positively motivates students to include aesthetics, morals and humour in their studies.

The participants of this study were first year students who attended the English language course in 2021, and a total of 98 respondents participated in this study. It is important to point out that all the students who participated in this research at both faculties had previously had classes where the comic presented in this paper was used. Therefore, they were familiar with the comic and the possibilities of its use in the classroom. In order to examine what the students' opinions were following the classes during which the scientific comic was used, a questionnaire of 10 closed ended questions was made, and the answers were given based on a 5-point Likert scale (1 – Strongly Disagree; 2 – Disagree; 3 – Neither Agree nor Disagree; 4 – Agree; 5 – Strongly Agree). The questionnaire was posted on the Moodle platform, and the students were given a maximum of 30 minutes to complete it. The process was conducted in the course of their regular English classes in October 2021. All students gave their consent to participate in the research. The researcher informed them that their answers would remain confidential and instructed them to be as open as possible in order to contribute to the validity and the success of the research study. The researchers analysed the results of the application and the use of scientific comics through numerical data, and connected them with practical experiences.

### *RESULTS AND DISCUSSION*

The results of the research are shown in Table 1.

The answers presented in the above table confirm our expectations, taking into account our impressions of the class. Concerning Question 1, 72.4% of the participants of the survey strongly agree that comics are a very positive experience, and 22.4% agree that they are a positive experience. This leads us to the conclusion that the students liked a theme from geoforensics being presented in an artistically convincing way through pictorial illustrations. Contrary to the stereotype claiming that comics usually deal with fictional characters and events, true events and authentic characters were given in our comic. Through this scientific comic, students were not introduced to the world of illusions, and we are of the opinion that it would be useful to add additional information to the comic for those who are interested in reading about the case in more detail, so that they would be able to find out the names of those involved in the case, the time of the described crime, and the verdicts of the subsequent trial.

Table 1.

Question	1 (Strongly Disagree)	2 (Disagree)	3 (Neither Agree nor Disagree)	4 (Agree)	5 (Strongly Agree)
1. <i>I assess that comics as a language activity are a positive experience.</i>	0%	1%	4.2%	22.4%	72.4%
2. <i>I assess that comics as a language activity are a negative experience.</i>	85.7%	6.1%	5.1%	2.1%	1%
3. <i>Comics and comic text are in line with my academic interests.</i>	0%	1%	15.3%	34.7%	49%
4. <i>Multidisciplinary areas can be adopted through comics: geology, forensics, foreign language.</i>	0%	1%	6.1%	22.4%	70.5%
5. <i>Real life examples in comics affect the learning and use of different language registers: professional language, informal language, jargon, etc.</i>	0%	1%	10.2%	31.6%	57.2%
6. <i>Comics can be stimulating even in the higher years of language learning.</i>	1%	1%	7.1%	30.6%	60.3%
7. <i>Comics help to see the role of science and language in professional life more clearly.</i>	0%	3.1%	13.3%	33.6%	50%
8. <i>The comic suits my aesthetic taste.</i>	3.1%	4.1%	16.3%	30.6%	45.9%
9. <i>Comics meet my moral standards.</i>	1%	1%	12.2%	30.6%	55.1%
10. <i>Comics can reinvigorate classwork with humour.</i>	0%	0%	6.1%	12.2%	81.7%

Question 2 was asked in order to precisely establish the percentage of students who did not experience the class positively, and not to confirm the previous question. The percentage suggests that the majority of the students did not have a negative experience. In other words, 85.7% of the respondents think that they did not have a negative experience, and a total of 14.3% of the respondents found the experience to be less pleasant. This suggests that not all students are ready for innovation from the very first class. Moreover, not all students are open to cooperation within the new learning environment, especially when it comes to their first year of study.

Answering Question 3, 49% of the respondents strongly agree, and 34.7% of the respondents agree that comics and the texts of comics are in line with their academic interests. This makes the majority of 83.7%, confirming our assumption that comics are a great idea, and a good way to present geoforensics or forensics through painting and art. Academic knowledge can be achieved in more ways besides the traditionally accepted ones, especially when everyday life and its various examples are introduced into the world of theory. In the academic sense, however, it is important to cover as many areas of major studies as possible. However, one should not overdo it with comics, because they will lose their persuasiveness.

As far as Question 4 is concerned, according to the majority of the respondents (70.5% strongly agree, and 22.4% are less convinced, which is a total of 92.9%), multidisciplinary areas, such as geology, forensics or foreign language, can be adopted through comics. In other words, the majority of the respondents agree that comics unite more than one scientific field and sphere *of* knowledge. Therefore, if done in moderation, the combination of text and comics directs attention to the most important details and describes real-life contexts, censoring unnecessary details and avoiding trivialisation, while artistic effects follow the plot and its unfolding. Language is adapted to the speakers and speech situations. Thus, several disciplines, such as language, forensics, geology, and ethics, are imperceptibly intertwined, and this is done in an educationally useful way.

A large percentage – 57.2% of the respondents strongly agree, while 31.6% of the respondents agree with the statement covered by Question 5, which shows that the majority of the respondents are aware that comics nurture various forms of speech. Depending on the speaking circumstances, students are given the opportunity to practice and adopt different forms of formal and informal types of communication in specific situations. Also, depending on the circumstances, students can show their knowledge of the forms of speech used in specific situations in an appropriate amount and varying degrees of seriousness. The practical and the didactic must be carefully harmonised. If the text in the comics is too didactic, it could lose its connection with the context, resulting in a less interesting reading. In other words, the students would quickly lose motivation, and the comic would cease to be linguistically and scientifically stimulating.

The majority of the students agree (60.3% strongly agree and 30.6% agree) with Question 6, which states that comics can be stimulating even in the higher years of language learning. Such a result suggests that comics could serve as a useful contribution to traditional teaching, that they can illustrate different types of speech, and that they can help the students who have a photographic memory, or those who learn more easily through stories, memorise information more smoothly. The classic

way of teaching, that is, teaching through texts in the academic register, still remains the main type of academic teaching, while comics, animations, illustrations and the like can only be good additions.

The answers to Question 7 show that 50% of the respondents strongly agree, and 33.6% of the respondents agree that comics help students see the role of science and language in professional life more clearly. Although the percentage of 'strongly agree' and 'agree' answers considered together is rather high, it is a little bit lower than it is for previous questions, which leads us to the conclusion that, although comics are stimulating in learning, the professional life of our respondents is still a matter of the distant future, and they are not completely sure to what extent it is really important. Here, they should mostly be confident that scientific comics and other activities chosen by their lecturers contribute to their overall knowledge. Comics cannot be constantly applied in the field of forensics and geoforensics, since 'stereotypical' learning is prevalent. However, they are pragmatic and instructive enough for professional life. Promoting science and professional life through comics is exciting because it brings about change, but research on how much can be achieved with their use is still in its infancy.

The answers to Question 8 are dispersed to some extent. The majority of the respondents – 76.5% (45.9% strongly agree, and 30.6% agree) agree that the comic suits their aesthetic taste. It was noticed during classwork that a number of students had a problem with some pictures rich in text. In situations such as this, a more balanced approach regarding drawings and text should be taken. A problem of this kind can be overcome by constructing more frames/pictures in order to avoid overcrowding the panels. This also suggests that if a more complex story is selected, more space should be allocated for it in the textbook in order to better distribute the amount of useful details and increase visibility. The image to text ratio is important in learning, and it also determines the aesthetic moment when it comes to evaluating comics as a teaching tool.

The majority of the respondents (55.1% strongly agree and 30.6% agree) confirm that comics meet their moral standards. In other words, the majority of the respondents answered in favour of the moral aspect of comics (Question 9). Perhaps this aspect is not crucial for students, or it is not something they would think about a lot; however, such a high percentage suggests that they are not exclusively interested in knowledge and experience, that their engagement at the faculty is not focused only on academic values and knowledge, and that they are aware of moral standards. Subsequent research could shed more light on this particular aspect.

Finally, as can be seen from the table, the students do not have any negative attitude towards humour (81.7% strongly agree, and 12.2% agree that comics can reinvigorate classwork with humour) – they recognise it and accept it. Considering the fact that traditional learning methods

can sometimes be difficult and demanding, humour and a more cheerful way of presenting knowledge are a welcome change, especially in today's time of stress caused by the pandemic.

### *CONCLUSION*

This research presents the idea of using educational-scientific comics with the aim of pointing out the multiple benefits and the value of their use at the university level. The presented study dealt with the creation and implementation of a tailor-made comic at two faculties: the Faculty of Mining and Geology of the University of Belgrade, and the Department of Forensic Engineering of the Belgrade University of Criminal Investigation and Police Studies. In this way, the study also promoted interfaculty cooperation. The attitudes of students at both faculties were tested using a quantitative research model, and the data collected represents the first database on the creation and use of comics in teaching language, criminology and geology, or, more specifically, the topic of geoforensics. The choice of geoforensics, which concerns geology on the one hand and forensics on the other, enabled us to give the students a model of interdisciplinarity, or multidisciplinary, and to introduce to them the idea of interfaculty similarity and cooperation.

The results of the research confirmed all three of our hypotheses, and led to the following conclusions:

- Comics are a welcome novelty in university teaching when they are based on the quality of the text;
- Illustrations and language structures are acceptable to both academics and lecturers;
- Comics contribute to an increase in motivation, and increase interest in the topic being discussed;
- Comics do not interfere with concentration, but increase the parallel development of double literacy;
- Comics can encourage the development of interdisciplinarity, or multidisciplinary, by integrating language, forensics and geology;
- Comics help discover an alternative approach to language and content learning that has already been developed and accepted in the world;
- Comics are suitable for discussion;
- Comics give the opportunity to discover reality in a new way, sometimes without previous educational activity in that field;
- Comics make it easier to remember information since images and visualisation are used;
- Comics are sometimes more interesting than text because they offer opportunities for the active application of knowledge or theory, which is sometimes difficult to achieve in class.

However, it is necessary to keep comics in the domain of a smaller number of goals, and primarily within the goals limited to science, and to develop moral, aesthetic and professional elements gradually and with measure.

Interfaculty cooperation can also affect the quality of teaching in the higher years of study if research continues, and if new comic book models are potentially created with the greater participation of lecturers interested in the teaching process. We believe that this type of cooperation ensures that members of the academic community can experience a greater sense of contribution to scientific practice than they would while working within a single faculty. In this way, the development of the repertoire of common practices and concepts is augmented, as is the knowledge created from multiple perspectives, modalities and possibilities. In other words, through interfaculty cooperation, reciprocity, belonging and collegiality are prioritised alongside knowledge.

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## СТРИПОВИ О ГЕОФОРЕНЗИЦИ У НАСТАВИ ЈЕЗИКА: МЕЃУФАКУЛТЕТСКА САРАДЊА И ПРИМЕНА

Лидија Беко<sup>1</sup>, Драгослава Мићовић<sup>2</sup>

<sup>1</sup>Универзитет у Београду, Рударско-геолошки факултет, Београд, Србија

<sup>2</sup>Криминалистичко-полицијски универзитет, Београд, Србија

### Резиме

У овом раду приказана је употреба образовно-научног стрипа као корисне активности у учењу на основним академским студијама. Сматрамо да је образовно-научни стрип мултимодална наставна активност која причом и сликом на хармоничан и користан начин ствара нови наставни контекст. Активност базирана на стрипу током академских студија може ићи више корака испред традиционалне наставе, јер своју привлачност заснива на уживању у читању и учењу, креирању снажних визу-

елних ефеката кроз комбинацију слике и приче, као и буђењу маште која олакшава и обезбеђује дуже памћење. Самим тим што се путем уживања у читању појачавају позитивне емоције, спој стрипа и наставе може да има важну улогу у развоју визуелне перцепције, те код оних који имају фотографско памћење може допринети бољем усвајању знања.

Такође, концепт образовно-научног стрипа користили смо да бисмо развили репертоар заједничког учења и праксе на међуфакултетском нивоу. У овом случају је у питању сарадња Рударско-геолошког факултета Универзитета у Београду и Криминалистичко-полицијског универзитета. Сматрамо да овај вид рада дозвољава члановима академске заједнице да осете да у већој мери доприносе научној пракси но што је то случај са унутарфакултетским радом, да се овим начином повећава развој репертоара заједничке праксе и концепата, као и да се ствара знање из више перспектива, модалности и могућности. Другим речима, међуфакултетском сарадњом осим знања приоритети постају и узајамност, припадност и колегијалност.

Ова студија је понудила различите узорке питања која се могу користити како би се расветлиле не само предности коришћења стрипа на два факултета или предности коришћења стрипа као модела наставе, већ и предности коришћења стрипа као алата за учење. Приказани резултати показују да се стрип лако може користити у академској настави, да је поучан, те да се може сматрати потпуно прихватљивим алтернативним образовним задатком када је учење језика у питању. Студенти су у готово свим тестираним аспектима благонаклоно третирали поставку новог задатка.

Нема сумње да уџбеници и наставни материјали имају доминантну улогу у процесу учења и стицања научних знања у форензици, односно геофорензици, будући да је то случај у већини академских дисциплина. Међутим, с обзиром на специфичност научне области, њену новину и растућу популарност, као и недостатак наставног материјала, намера нам је била да наставу језика допунимо кроз креирање властитог стрипа. Даљи рад на технолошком унапређењу примене стрипа могао би бити предмет будућих истраживања.