An application of TikTok in higher education

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***Abstract*— The field of the research of this paper is an application of the social network TikTok in higher education. The introductory part of the paper will describe the concepts of social networks with a focus on the analysis of application in higher education. The research will be conducted in undergraduate studies at the Faculty of Organizational Sciences, University of Belgrade, as a part of the course Internet of Things. Students will participate in e-learning activities on the social network TikTok as a part of the "Learning with Elab" campaign. The campaign will be organized in the form of challenges and short quizes to test students' knowledge. At the end of the campaign, a survey will be conducted. The main aim of the campaign is to test the suitability of the social network TikTok for e-learning, students' level of motivation, creativity, and readiness for e-learning on this social network.**

Keywords—e-learning, social networks, TikTok, collaborative e-learning

I. INTRODUCTION

E-learning is a complex system that includes distance teaching and learning, separated in time and space, as well as teaching materials that can be in various forms, the individual or group learning process, the tutorial, and interactive work [1][2]. Social network sites have been defined as web services that allow individuals to construct public or semi-public profiles, articulate a list of other users with whom they are connected, and view and traverse connections made by others [3]. In their original form, social networks represent virtual spaces for social interaction, maintaining relationships with friends, colleagues, for public affirmation of one's status in the group [2].

Social media usage is one of the most popular online activities. In 2020, over 3.6 billion people were using social media worldwide, a number projected to increase to almost 4.41 billion in 2025 [4]. Facebook is the leading social network with more than 2.6 billion monthly active users[4]. The company also owns four of the biggest social media platforms, all with over 1 billion monthly active users each; WhatsApp, Facebook Messenger, and Instagram [4]. Due to the growing popularity of the use of social networks and their mobile applications, educators have the opportunity to use them for educational purposes [5] [6].

II. SOCIAL NETWORKS IN HIGHER EDUCATION

Social networks enable users to create digital content themselves and publish it online, creating the vast resource of user content that students and teachers can benefit from together, also encouraging more active and proactive approaches to learning. They connect students with each other as well as with their teachers, allowing them to share their knowledge and at the same time have access to specific and targeted knowledge in a given area of interest [7].

Short video platforms have become a popular form of social media networks for millennials to share entertainment content. Most platforms are mobile applications, where users can create, edit, share and watch short videos [8]. Short videos have a standardized short duration of a few seconds to a few minutes. The relative convenience of content generation, rapid content transmission, and emphasis on socialization are distinct attributes of short video platforms [8].

One such platform is TikToK, a mobile application available on Android and iOS devices for free download that allows "creators" to make short videos (3-60 seconds) set with creative tools and effects. TikTok videos are created on a mobile phone, using the phone camera, and then using the functions in the application to add audio and visual effects. This application not only allows users to express their creativity but also to interact with other users of the platform. One of the main advantages of using TikTok is that the created content can be easily shared in numerous applications and on other social media platforms. Since TikTok videos can be uploaded to any electronic device that has an internet connection, it allows users who don't have a smartphone to also join the application. While TikTok is mainly used by younger groups of audiences and teenagers to create fun, visually interesting, creative, and often funny videos online, there is also the opportunity to create informative, entertaining, and visually interesting learning content [9].

Based on the success of entertainment-oriented short video sharing platforms, knowledge-sharing has also become an important part of their services. The categories of shared knowledge on TikTok vary from creative skills and personal experience to explicit knowledge such as science, technology, and culture [8]. Short videos have become a popular form of learning and sharing creative skills such as cooking, drawing, and crafts. Short videos on social media platforms reshape the experience of learning creative skills through visually engaging materials and communication characteristics to socialize with other users who have similar interests [8].

Another application of TikTok in e-learning is in the area of science. York University members were interested in exploring the possibilities of TikTok application as a platform for learning chemistry. They set up the TikTok account "The Chemistry Collective", on which they posted

videos they created [9]. Their main goal was to use the creativity tools employed by TikTok to contextualize chemistry in a fun and engaging manner and to demonstrate it as a part of everyday life. TikTok can also be applied in medicine as a means of distributing health information, assessing public health literacy and opinions, recruiting clinical trial participants, and disseminating health interventions. Research on social networks has shown that they can positively influence the doctor-patient relationship and cause changes in the patient's behavior [10].

This paper aims to examine the possibility of using the social network TikTok as a support to the e-learning process.

III. METHODOLOGY

The methodology of application of social networks in the context of online education can be gradually applied in the following way:

A. Preparation of e-learning material

The professors must prepare the educational material in a slightly different way from a classic lecture. It has to be prepared for uploading to social networks, to encourage student collaboration and keep their attention. The process of preparation includes creating audio, video, and text material, which the professors create on their own, and publish it on social networks such as Instagram, Facebook, etc. in form of a post or a story.

B. Conducting e-learning challenges on social networks

The e-learning challenges can be conducted through social networks in form of challenges. The main aim of the challenges is to encourage students to participate, emphasizing collaborative e-learning and creativity. Through several tasks, students will have to find an interesting way to show the answer to the given task through a video. For their answers to be noticed, they will have to use hashtags, and each correctly posted answer will be reposted on the official page of the educational institution. The challenges represent additional activities for bonus points.

C. Collaboration between students

Social networks represent a means of communication between students and professors. It is important to understand that encouraging collaborative e-learning is one of the most important elements in online student engagement. Just as important the communication with the official page of the educational institution is, so is the mutual communication of students. Students will be rewarded with additional points for each liking, grading, and impressions on other students' posts.

D. Testing students' knowledge

To test the students' knowledge and get an insight into how much they have learned and remembered from the campaign and all the challenges, a quiz will be conducted as the final challenge. Students will earn points with each correct answer. The quiz will be posted on the official TikTok account.

E. Survey

Upon completion of all challenges, students will be given a survey to complete. The survey will contain questions that will provide an insight into what their attitudes about this type of learning and online collaboration are. It will provide information about the possibilities and readiness of students to learn via the social network TikTok.

F. Analysis of the results

The collection of the data will take place from the first day of the campaign, collecting students' answers, level of collaboration, etc. The analysis is supposed to present the level of collaboration during e-learning, the increase of students' motivation, the success of promoting such methods of learning, what impact did the campaign have on students' knowledge, etc.

IV. AN APPLICATION OF TIKTOK IN HIGHER EDUCATION

The research was realized on the Faculty of Organizational Sciences in Belgrade within Department for e-business. The participants were students of 4th year of undergraduate studies, study program Information systems and technologies. „Učimo uz Elab" campaign was conducted on the social network TikTok. The students who were enrolled in classes of Internet of Things and Risk management in electronic business had the right to participate.

The campaign was constructed of three segments, two challenges that required students to post a video as an answer to the challenge, and a quiz designed to test students' knowledge.

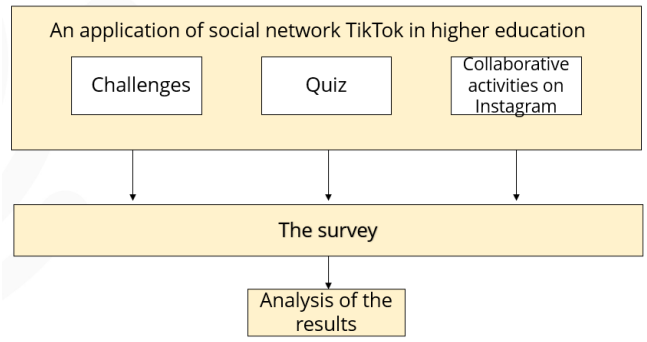

Figure 1. Methodology approach of application of TikTok in e-learning in higher education

To test the possibilities of collaborative learning and activities among the students, the social network Instagram was used. All of the posts from TikTok were also posted on Instagram on the official profile, so that more students could notice. Every one of the challenges, as well as responses to the challenges were reposted on Instagram in the form of an Instagram story, and the students had the task to grade each other's responses. The goal of the campaign was to encourage students' motivation, creativity and collaborative e-learning.

In the first challenge, the students had a task to create and post a video explaining a good example of applying IoT in the area of sports, transportation, or agriculture. The task

included creating and editing the video, and explaining what the video represented, which they could write in the description of the post, or explain in words in the video. The Figure 2. below shows the posts that announced the first challenge.

Figure 2. Announcement of the first challenge

In the second challenge, the students had to present the development of their own projects in the area of IoT, and explain it in the video, in words or in the description of the post, as shown in Figure 3.

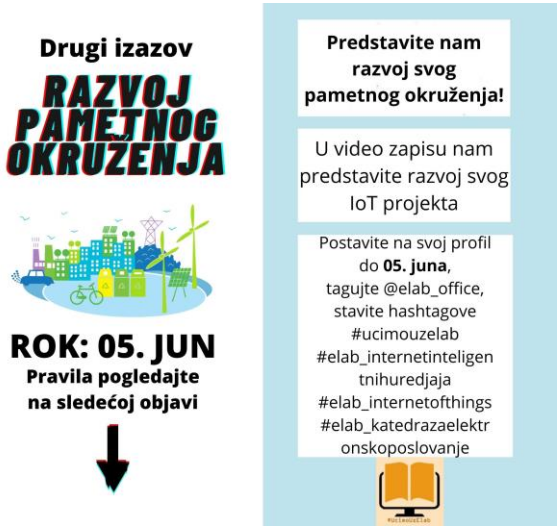

Figure 3. Announcement of the second challenge

The third activity of the campaign is the quiz. It is designed to test the students' knowledge in the area of IoT. Every day for five days, a new question is posted on the official TikTok page, and reposted on the Instagram page. Students who answer correctly to all of the questions are eligible to earn the points. Figure 4. represents the questions posted for the quiz.

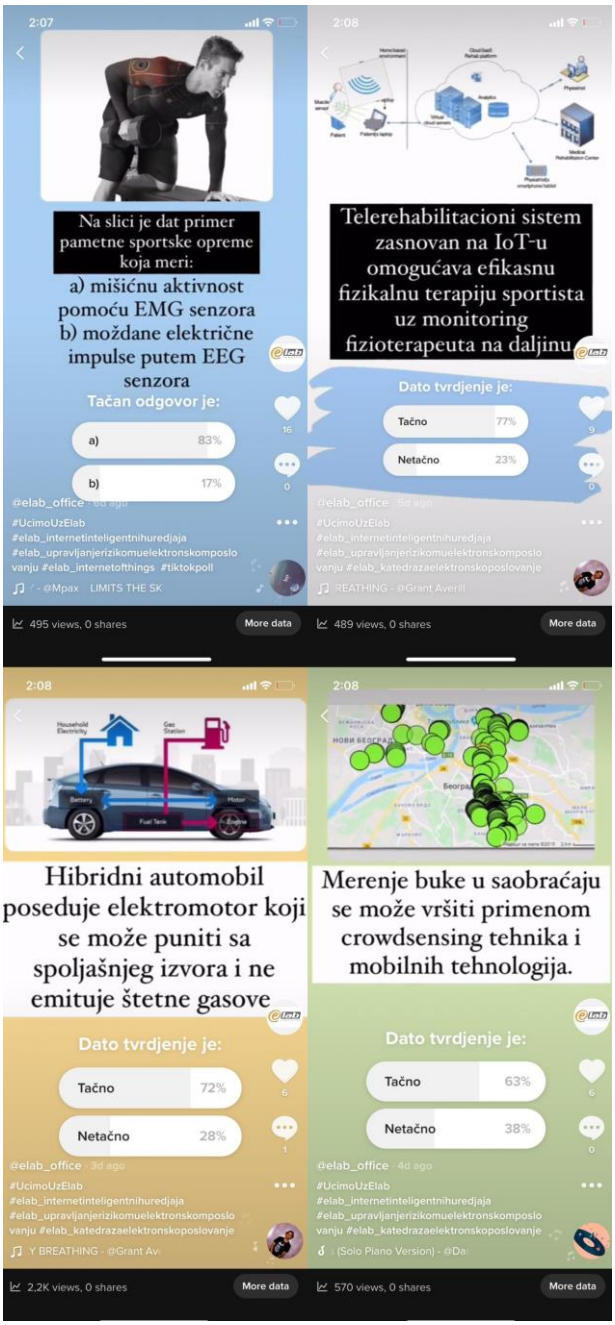

Figure 4. Questions for the quiz

The social network Instagram was used to examine the possibilities of application of collaborative e-learning. The student's responses were reposted on the official Instagram page, in the form of a post or a story. Each story was posted with a grading scale, so the students could all participate.

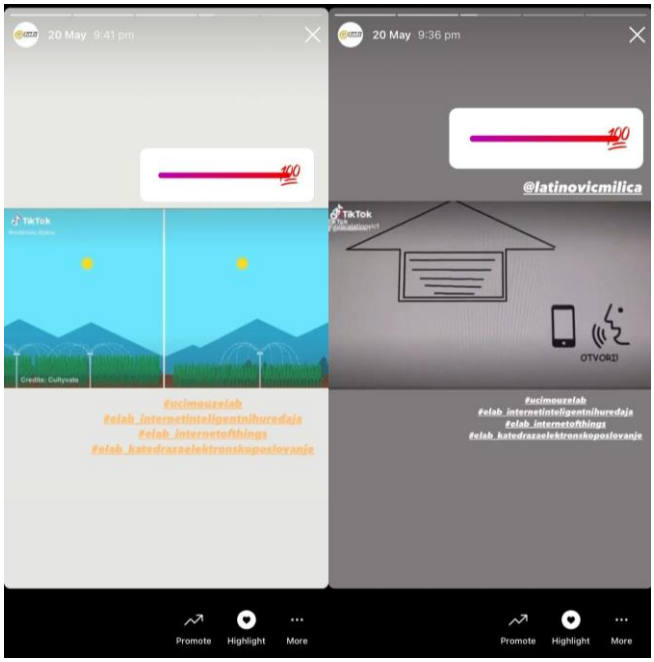

Figure 5. Students' responses to the challenges reposted on Instagram

V. ANALYSIS OF THE RESULTS

In order to participate in the challenge, the students had to fill in the form that was listed in the profile description, both in TikTok and Instagram.

According to the number of students that filled in the application, there were 7 of them, 6 female and 1 male. The total number of answers to the challenges is 3. Also, of the 7 students enrolled, 3 of them answered to all of the questions in the quiz.

The official TikTok profile was opened with the start of the campaign. It didn't have any followers, likes or shares at the time. The number of followers started to increase when the announcement of the campaign was posted on Instagram. About a week from the announcement, the profile had 4 followers, over 4000 video views, 35 profile visits, 75 likes and 3 shares. After that day, the numbers started decreasing. After the first challenge, the total number of the followers was 12, with 2759 video views, 84 profile visits, 144 likes and 7 shares. After the second challenge, the total number of the followers was 15, with 4418 video views, 38 profile visits, 57 likes, 1 comment and 0 shares. After the quiz, the total number of followers was 15, with 1329 video views, 18 profile visits, 24 likes, 1 comment and 0 shares.

More detailed analytics of the followers, such as location, gender and age is available when the number of followers reaches 100.

The post on TikTok that was viewed the most was the 4th question in the quiz. The post counted 2222 views, with 3h 22min total play time, and had reach of 2072 people. 98% of the audience saw the video on the "For you" page.

From the creation of the TikTok page until this day, total number of video views is over 12000, with 168 profile visits, 280 likes, 1 comment and 10 shares. The total number of the followers reached 15.

An analysis of the collaborative activities on Instagram was also conducted. In total there were 4 grades of the 3 responses to the challenges among the students who applied for the campaign. In the Figure 6, on the left side are presented the students who evaluated the responses, and on the right side are the students who gave the answers to the challenges.

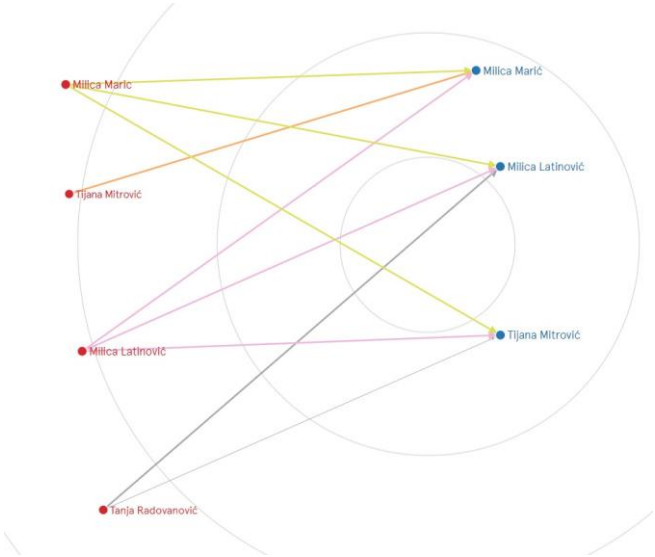

Figure 6. Visualization of students' interactions

From this analysis, we can conclude that all of the participants who were enrolled in the campaign had interactions with each other, and that all of them contributed in collaborative activities by grading each other's answers.

Figure 7. contains the value of the grades that the students gave to their colleagues.

Figure 7. Value of the grades for students' responses

The analysis shown above is applied only on the students who filled in the form that was a condition for participating in the campaign. There is a large number of responses to the quiz on TikTok, as well as the grades of the challenges on Instagram, that were posted by students who weren't officially enrolled in the campaign, which is why their activities do not influence the total analysis.

VI. CONCLUSION

The main aim of the challenge was to examine the possibilities of using the social network TikTok in the process of e-learning. The goal was to encourage students' motivation, creativity and collaborative learning.

As it was already mentioned, TikTok is a social network mostly used by teenagers and a younger group of audience, mainly for entertainment. TikTok still hasn't gained as much popularity with the older audience who still do not feel comfortable enough using it. That is probably the reason the response rate to this campaign was low.

Regardless, this social network does provide opportunities for creating educational content, disseminating knowledge and for collaborative learning. The possibilities are likely to be higher once the generations that are active users of TikTok reach the age when this kind of e-learning is applicable.

Future goals will include further development of e-learning activities on TikTok, and encouraging students for the participation.

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