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PRE-SERVICE BIOLOGY TEACHERS’ PERCEPTIONS OF AND ATTITUDES TOWARDS PODCAST-BASED LEARNING

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Abstract: Covid-19 and the limitations resulting from it have led to changes in training in secondary and higher education institutions. This type of training is associated with specific problems (lack of direct visual contact, lack of concentration, and rapid loss of interest) that encourage the search of other alternatives. One possible solution is to utilize educational podcasts. For their successful implementation in secondary education, it is important to familiarize and initially train pre-service biology teachers with the educational podcast. The topic of using educational podcasts in training is new and not well studied. There are reports of its successful implementation in the field of foreign languages in the USA, Singapore, China, and Korea. To the best of our knowledge, there is no information about such studies being conducted in Bulgaria at this stage. The article presents and discusses the results of a survey conducted among 99 pre-service biology teachers full-time students at Sofia University “St. Kliment Ohridski”. The responders are from the three binary specialties “Biology and Chemistry”, “Geography and Biology” and “Biology and English” being in 1st, 3th and 4th year of education.

Only a small percentage of respondents were aware of the term “podcast”, types, and method of their application. Less than one percent of respondents participated in the creation of a training podcast. The results obtained have been processed statistically and conclusions and recommendations have been drawn on the pedagogical effectiveness and learning opportunities of the students through the inclusion of podcasts. Pre-service biology teachers were convinced that the podcast, as an educational tool, has high potential to be applied to university learning.

INTRODUCTION

Bulgarian education has significantly changed in the last two years. The traditional forms of education in secondary and higher schools have been changed towards remote electronic education. That form of education has become the leading and sole possible way for teaching during the isolation.

What benefits does the usage of podcasts have in the educational process?

The advantages of podcasts are the following:

- the learner picks the time, day, and place of acquaintance with the material (thus avoiding fatigue and easy loss of concentration(Maugeais, 2020).
- can leave comments, opinions, and ask questions (which will be answered).
- retake the training and/or parts of it again (as many times as necessary)

The alternative approach that can be involved is the usage of educational podcasts. This approach in secondary and higher education is relatively new, not well studied in Bulgaria, and subject matter expertise is not available, except very few studies on the topic.

The role of podcasts in the field of education

An analysis of the role of the podcast in the field of exploration was conducted with biology students in the disciplines of histology and embryology, where podcasts were considered as a learning resource within the e-course in the disciplines (Necheva, 2018). An approach of creating podcasts and videos to be used in foreign language learning was proposed (Kremenska, 2018). Research, based on the theory of information systems, called "Unified Theory of adoption and use of technology"(Ho et al., 2010) report that the podcast has a positive effect on the presentation of learning content on literature. The effectiveness of the podcast in professional preparation was proven with medical students (Barnes, 2020).

Asenova and Dulev (Asenova and Dulev, 2017; Asenova et al., 2014) consider the pedagogical possibilities of podcasts as part of the learning resources inside the Webex Web platform.

The monograph "Key Competences of Biology Teachers in the Context of E-Learning" examines the structure and function of podcasts and video lectures in the teaching of future pre-service biology teachers (Asenova and Yotovska, 2011).

An important condition for the successful implementation of educational podcasts in secondary education is the acquaintance and initial training of students - pre-service teachers, with this technology.

MATERIALS AND METHODS

This article presents and discusses the results of a study conducted among pre-service biology teachers in the three binary specialties, 1st, 3rd and 4th year, full-time study: "Biology and Chemistry" (1st year-14 students, 3rd year-5 students, 4th year-8 students) "Geography and Biology" (1st year-12 students, 3rd year-9 students, 4th year-4 students) and "Biology and English" (1st year-19 students, 3rd year-13 students, 4th year-15 students) on the application of educational podcasts in their vocational training. The survey is a printed version, containing 11 questions. The questions are partially standardized, as it includes closed and open questions, consisting of two sections:

Section 1 introductory-constructive: includes questions (recommended, but not mandatory) aiming for categorization of the target group, collecting information about the faculty, the degree of training, gender, etc. The aim of the respondents is to get acquainted with the purposes of the survey, what the results will be used for, and the possible ways of answering.

Section 2 questionnaire: includes questions related to determining the experience and attitudes towards usage of podcasts in student preparation. Questions are closed, open type, and combination of closed and open types. Questions 1,,4, when students have the positive answer they are asked to give details .Questions 3 and 5 respondents have the opportunity to indicate answer from the listed answers and / or to indicate their own .

Answers to the Questions 6-10 are graded by using Likert scale containing four answers:

- definitely;
- probably;
- probably not;
- definitely not;

The obtained results were processed statistically by by calculating the relative share, conclusions and recommendations made regarding the pedagogical effectiveness and training opportunities for the students through the inclusion of podcasts.

RESULTS

Section 1 includes questions (recommended, but not mandatory) aiming for categorization of the target group, collecting information about the faculty, the degree of training, gender, etc. Question 5 (of Section 1) for instance is analyzed, even though it is not mandatory, as it aims to establish the initial level of experience in podcasts usage (fig1).

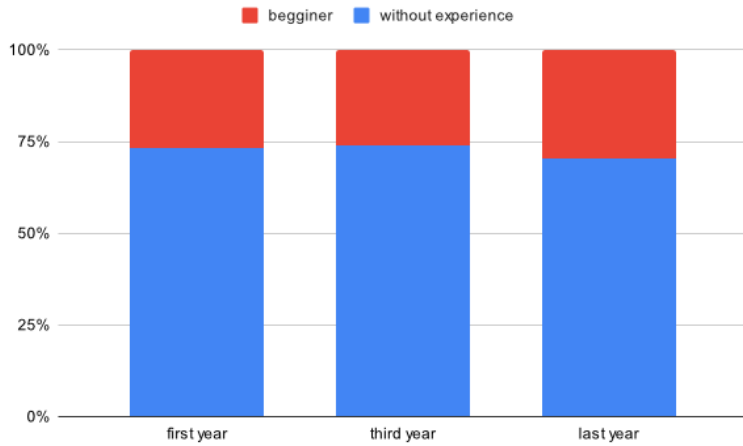


Figure 1. Experience working with podcasts
(Q 1.5 Please indicate your self-assessment of what type of podcast user you are?)

Answers to the survey conducted among students of pedagogical specialties show that students in the first year a little over 73% of the respondents have no experience, a little over 26% describe themselves as beginners. Among students in the third year a little over 74% of the respondents have no experience, and a little over 25% describe themselves as beginners. Among students in the fourth year over 70% of the respondents have no experience and over 29% describe themselves as beginners. The results clearly and unequivocally show that respondents who have no experience with the use of podcasts are a little over 72%, and slightly over 26% identify themselves as beginners. Section podcast awareness ratio includes questions related to the survey and assessment of the application of educational podcasts in vocational training (mandatory section) (fig.2).

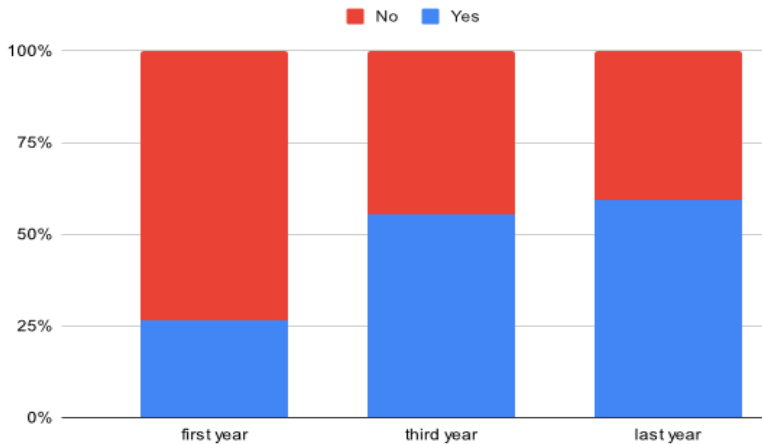


Figure 2. Podcast awareness ratio (Q 2.1 Do you know what podcasts are?)

A stunning 73% of first-year respondents are unaware of what a podcast is, and just over 26% are familiar. Among third-year students, just 44% of respondents are unfamiliar with what a podcast is, and 56% are familiar. Among last year's respondents, the data are similar-40% are unfamiliar and 60% are familiar. The results of the survey show that awareness of the respondents is low and more than half of the students are "unfamiliar" with podcasts, but higher grades are more aware of the topic than lower ones. The podcast usage ratio is shown in Figure 3.

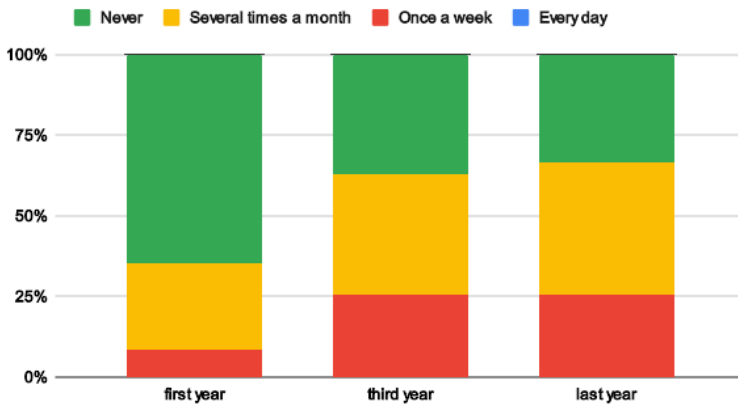


Figure 3. Podcast usage ratio (Q 2.2 Have you used podcasts?)

As seen, the results for podcast usage are closely correlated with podcast awareness. Answers to the survey conducted among first-year binary students show that 26% of respondents use a podcast several times a month, 8.% use a podcast once a week, and 64.4% have never used a podcast. In the third year, 30.7% of respondents use a podcast several times a month, 25.9% use a podcast once a week, and 30.7% have never used a podcast. Answers of fourth-year students are similar-40.7% use a podcast several times a month, 25.9% use a podcast once a week, 33.3% have never used a podcast. The analysis of the data shows that the highest percentage of respondents have never used a podcast, followed by a lower percentage of using the podcast several times a month and the lowest percentage once a week.

What type of devices students use to listen to or watch podcasts is shown in Figure 4.

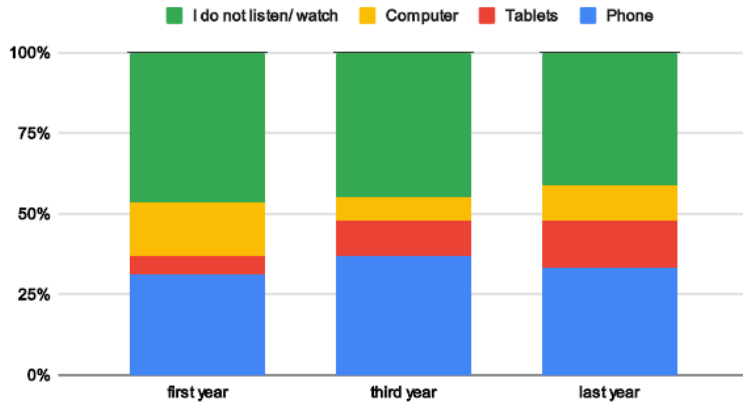


Figure 4. Type of devices to listen to or watch podcasts (Q 2.3 What type of devices do you use to listen/watch podcasts?)

Respondents provided more than one answer to this question.

In the first year, the highest percentage of respondents who do not use any device for podcasts is 46.3%, followed by 31.5% who use a phone, 16.7% that use a computer, and 5.6% use a tablet. This year students who do not use a podcast are 44.4%, 37.0% use a phone, 7.4% use a computer, and 11.1% use a tablet. For last year's students, the highest percentage of respondents do not use podcasts - 46.7%, followed by 33.3% who use a phone, 11.1% use a computer, 14% use a tablet when using a podcast. The analysis of the data shows that the highest percentage of respondents' answer, "I do not listen to podcasts", followed by a lower percentage of phone usage, and the lowest percentage for tablets and computers.

Of interest is the issue of student participation in training in which pre-service biology teachers have used educational podcasts (Question 4). None of the respondents participated in such training (100% of the respondents answered "No").

The next question from the survey examines the competencies of the respondents in terms of creating podcasts (fig.5).

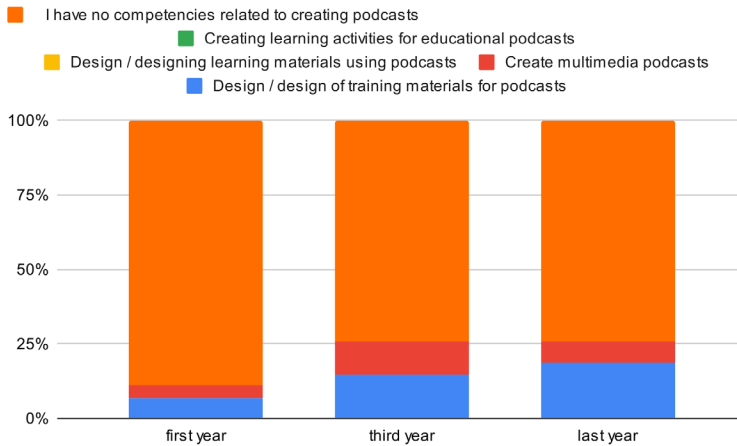


Figure 5. Competencies of the respondents in terms of creating podcasts (Q 2.5 What competencies do you think you have with educational podcasts?)

In the first year, the highest percentage-88.9% have no competence in terms of educational podcasts, followed by 6.7% who have competence in design/design of teaching materials for podcasts, and 4.4% for creation of multimedia podcasts. In the third year, again the highest percentage are those who do not have competence in producing educational podcasts 74.1%, followed by 14.8% with experience in the design/design of teaching materials for podcasts, and ones competent in the creation of multimedia podcasts are 11.1%. The trend is maintained in the answers of fourth-year respondents, with the highest percentage of respondents who do not have competence in educational podcasts 74.1%, followed by 18.5% with competence in the design/design of teaching materials for podcasts, and 7.4%. creating multimedia podcasts. The analysis of the data shows that the “highest podcasts”, and no one has experience in “creating learning activities for educational podcasts”.

The next question from the survey is related to the usefulness of podcasts. The percentage of respondents with the answer: “I have no competencies related to creating podcasts”, followed by “design/design of learning materials for students' professional training (fig. 6).

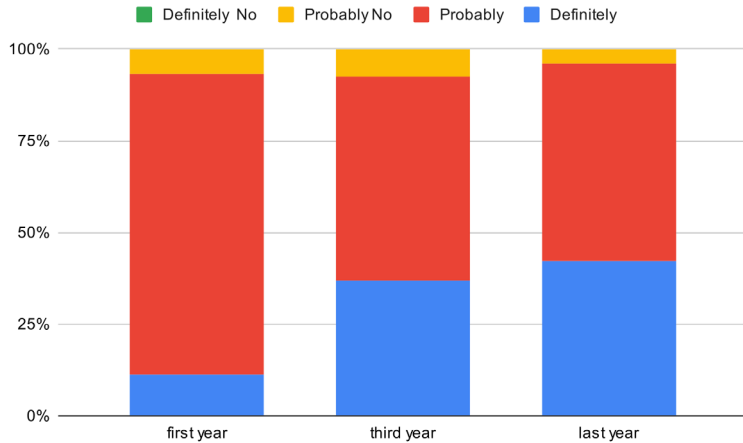


Figure 6. The usefulness of podcasts in students' professional training (Q 2.6 Podcasts are useful for studying topics related to your training)

In the first year, the highest percentage of answers is "probably" 82.2%, followed by "definitely" 11.1%, but there is a small percentage of 6.7% who indicated the answer "probably not". In the third year, the highest percentage is of the answers "probably" 55.6%, followed by "definitely" 37.0%, but there is also a small percentage of 7.4% who indicated "probably not" as the answer. The fourth year students has the highest response rate "probably" 53.8%, followed by "definitely" 42.3%, but there is also a small percentage of 3.6% who indicated the answer "probably not". The analysis of the survey indicates that the highest percentage of answers is "probably", followed by a lower percentage of "definitely", and the lowest percentage of "probably not".

The students' opinion on the role of podcasts on the content of course topics is shown in Figure 7.

Ratio of opinion on the role of podcasts on the content of course topics

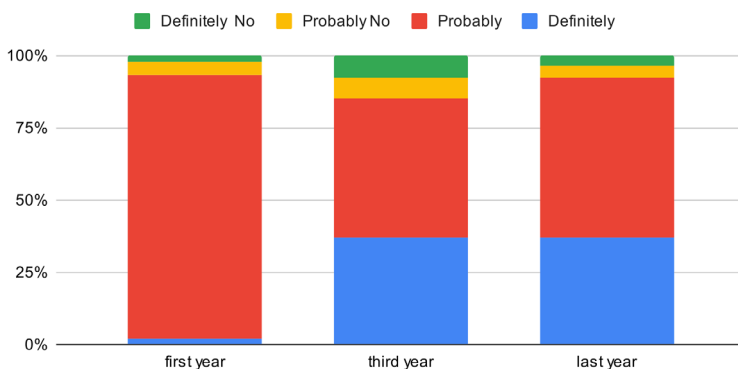


Figure 7. The students' opinion on the role of podcasts on the content of course topics is (Q 2.7 Podcasts provide clear and specific information about the theoretical content of course topics).

“Probably” is mentioned as the most common answer in the first year-91.1%, followed by “probably not” with 4.4%, and then both “definitely not” and “definitely” with 2.2% each. “Probably” is indicated as the most common answer among the respondents from the third year as well-48.1%, followed by “definitely” 37.0% then “probably not” and “definitely not” with 7.4% each. The answers are similar and among the respondents from the last year "probably" is the most common answer again with 55.6% followed by "definitely" 37.0% "probably not" 3.7%, and "definitely not" 3.7%. The analysis of the survey indicates that the highest percentage of answers, "probably", followed by a lower percentage of "definitely", and the lowest percentage "probably not". The answers to Question 7 are similar to those of Question 8, which shows a positive attitude among respondents, but lack of proper training and skills makes them uncertain about added value.

The next question from the survey examines students' motivation to use podcasts (fig. 8)

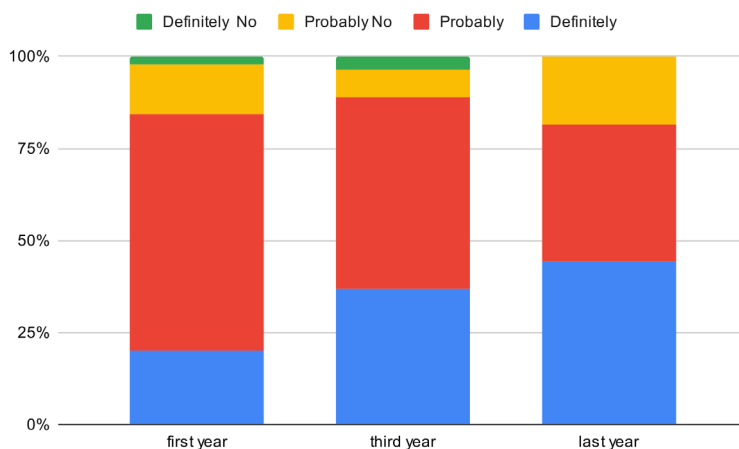


Figure 8. Students' motivation to use podcasts (Q 2.8 I feel more motivated when I watch/listen to lectures that are presented with the help of a podcast)

In the first course "probably" is indicated as the most common answer, 64.4%, followed by "definitely" 20.0%, "probably not" 13.3%, and "definitely not" 3.7%.

In the third year "probably" is again indicated as the most common answer 51.9%, followed by "definitely" 37.0% "probably not" 7.4%, "definitely not" 3.7%. Among the last year students "definitely" with 44.4% is already the most popular answer offsetting "probably" with 37.0% to second place, followed by "probably not" 18.5%, and "definitely not" is not present at all. The analysis of the survey indicates a strong trend towards building credibility with podcast educational value and benefits associated with the usage of podcasts among more mature students.

Question 9 The design of podcasts makes them attractive for training in areas related to the professional qualifications of future biology teachers. It is of interest and attractiveness of podcast for educational purposes (fig. 9).

Attractiveness of podcast for educational purposes

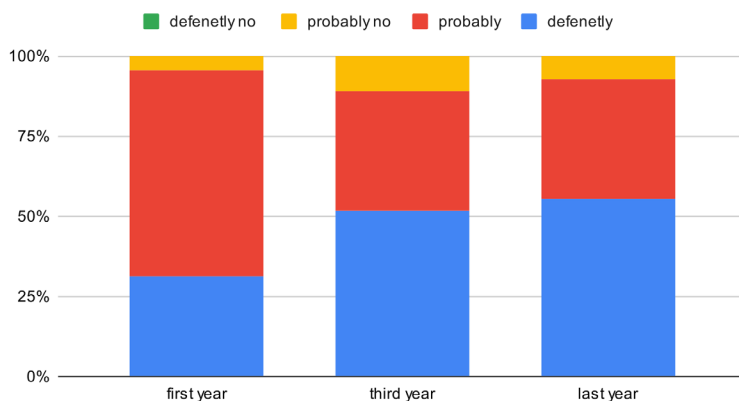


Figure 9. The attractiveness of podcasts for educational purposes (Q 2.9 The design of podcasts makes them attractive for training in areas related to the professional qualifications of pre-service biology teachers).

In the first year answers "probably" is indicated as the most common answer-64.4%, followed by "definitely"-31.1% and "probably not"-4.4%. Within the third year answers "definitely" is indicated as the most common answer-51.9%, followed by "probably" with 37.0% and "probably not" with 11.1%. The fourth year "definitely" is again indicated as the most common answer-55.5%, followed by "probably"-37.0% and "probably not" 3.7%. Data indicates that the positive attitude towards the application of podcasts in the professional qualification of pre-service biology teachers is preserved.

The results of the study of the possibilities for the application of podcasts are shown in Figure10.

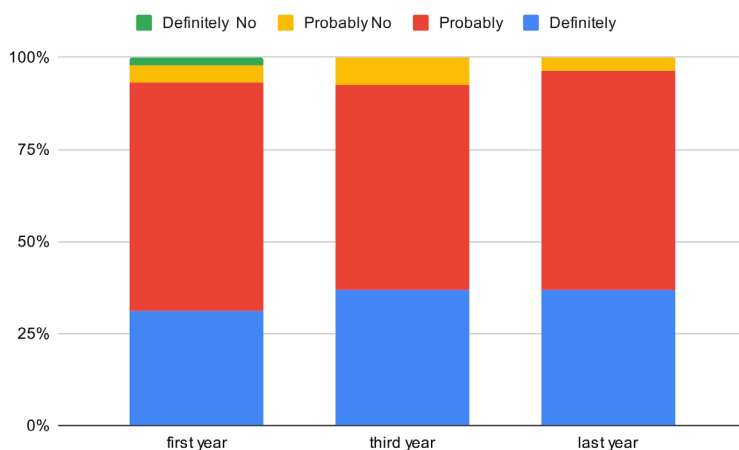


Figure 10. Possibilities for the application of podcasts (Q 2.10 The podcast, as an educational tool, has the potential to be used in university education.)

The podcast as an educational tool, has the potential to be used in university education. "Probably" is again indicated as the most common answer in the first year - 62.2%, followed by "definitely" 31.1% "probably not" 4.4% and "definitely not" 2.2%. This is also the case with the answers of the third-year students "probably" with 55.5% is again indicated as the most common answer, followed by "definitely" 37.0% "probably not" 7.4%. This trend is preserved within last year students with "probably" dominating as the most common answer - 59.9%, followed by "definitely" 37.0% and "probably not" 3.7%.

DISCUSSION

The trend of uncertainty about the potential use of podcasts as educational tools contrasts with responses towards benefits and attractiveness that students see in this method of knowledge sharing in the previous question. It could be associated with the really low practical experience they have in managing and producing such content by themselves. Distance type of learning is new for Bulgarian education and not typical for learners. Some of them have shared that they easily lose focus and concentration, get distracted, and skip part of the information. These kinds of issues can be addressed with the introduction of podcasts but this becomes a challenge of its own as pre-service biology teachers are uncertain of how exactly they can and should produce such. For a short period of time, the trainees had to learn to use different types of software. The score shows that the introduction of podcasts as a part of distant education, requires additional training, for all students, especially for first-year students. The first-year students have the least experience with remote study topics in general and also little to none first-hand experience with their own distant learning at the university and platforms it is based on.

CONCLUSION

A significant percentage of respondents (about 70%) answered that they were not familiar with the term "podcast", the types and methods of application of the podcast. One hundred percent (100%) of the respondents did not participate in training in which their teachers used educational podcasts (Question 4). There are no students who have participated in the training podcast preparation. From the above data, it can be concluded that the application of the educational podcast is a new and not well-researched topic.

Pre-service biology teachers are progressively convinced that podcasts, as an educational tool, have potential and value their pedagogical effectiveness. However, lack of experience and support to become familiar with preparing such

podcasts makes them skeptical toward using them in their teaching approach. A hands-on approach with podcasts and teaching them how to produce such can be used in university studies as part of remote and mixed learning approaches. Involving students in making podcasts would certainly increase their pedagogical training.

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REFERENCES

1. Asenova, A. 2020. Prilojenie na savremenni obrazovatelni tehnologii v profesionalnata podgotovka na uchiteli po biologiya [Application of modern educational technologies in the professional training of biology teachers], University Publishing House "St. Kl. Ohridski", 206 p.
2. Asenova, A., Yotovska, K. 2011. Kluchovi kompetencii na uchitelq po biologia v elektronnoto obuchenie [The key competencies of the biology teacher in the context of e-learning], Publisher: D. Ubenova, Sofia, 159 p.
3. Asenova, A., Yotovska, K., Dulev, P. 2014. Prilojenie na savremenni obrazovatelni tehnologii v profesionalnata podgotovka na uchiteli po biologiya [University course for mobile learning (technological and pedagogical aspects), Ed. Technical University, Sofia, 100 p
4. Asenova, A., & Dulev, P. 2017. WEBEX WEB platform application on students online training. Yearbook Telecommunications, 4: 55-62.
5. Barnes, J. H., Choby, G., Smith, A. J., Kiessling, P., Marinelli, J. P., Bowe, S., & Carlson, M. L. 2020. Creation of a new educational podcast: "Headmirror's ENT in a nutshell". Otolaryngology–Head and Neck Surgery, 163(4): 623-62.5
6. Ho, C-T., Chou, Y-T., & O'Neill, P. 2010. Technology adoption of mobile learning: A study of podcasting. International Journal of Mobile Communications, 8(4): 468 - 485.
7. Kremenska, A. 2018. Savremenni informacionni i komunikacionni tehnologii i vazmojnostite, koito predlagat za obuchenie po i na chujd ezik Anelia Kremenska [Information and communication technologies and their use in foreign language learning], Anelly Kremenska, <https://www.academia.edu/16564716>
8. Maugeais, C., Magg, C., Dernick, G., Matile, H., von der Mark, E., Pflieger, E. J. 202. Dalcetrapib binds to and changes the conformation of CETP in a unique manner (differing to that observed with torcetrapib), 8(4): 53-58.
9. Necheva, V. 2018. Prouchvane vurhu naglasite na studentite po biologiya za usvoyavane na uchebnia po histologia chrez elektronno baziran kurs v mudle. Godishnik Telekomunikacii,(5): 21-29.[Research on the attitudes of biology students to master the teaching material in histology through an electronically based course in moodle]. Yearbook of Telecommunications, (5): 21-29.