Sergii Gorbachov

Needs assessment for mobile and web applications and game-based language learning with students of Eastern European languages

Introduction

In recent years there has been a significant push for technology integration in classrooms, however some of the issues such as effectiveness and scope of available technologies, students' preferences, user analysis and coverage of all languages, not just Western, have not been fully addressed. In the following paragraphs I will describe the current challenges and present findings on preferences and perceived benefit of technology used by students learning Eastern European languages.

Computer and mobile assisted language learning (CALL and MALL) has proven to positively affect various aspects of second language proficiency development including collaboration in target language (TL), reduced anxiety, extensive TL output, increased risk-taking, learner autonomy, culture learning, increased interest and motivation, increased interaction opportunities, and feedback facilitation (Peterson, 2016; Golonka et al., 2012). However practitioners may find it challenging to interpret and apply the findings since they have not always been consistent, the results may be limited and methodology vary greatly (Golonka et al., 2012; Plonsky & Ziegler, 2016). Some of the common issues include inadequate choice of variables, poor description of research design, studies based on untrained users of technology, lack of relevant data about participants, and lack of systematicity in investigating key variables enhancing FL learning (Golonka et al., 2012). In addition to the challenges arising from the research design of past studies, few of them analyzed the scope of available technological tools and the way students use them. For example, CALL, which can be defined as "the search for and study of applications of the computer in language teaching and learning" (Levy, 1997), itself encompasses an immense number of activities and tasks, let alone other devices such as phones, tablets, e-readers, game consoles, projectors, etc. Therefore a more in-depth analysis of students' behavior could complement the current body of research.

As computer and online-communication technologies have given rise to new tasks in the real world, these developments in turn demand suitable curricular and instructional responses (González-Lloret, 2014). Students, as well as instructors, represent various groups of people who may have very different habits in using technology and preferences for the use of it in education. Research efforts to identify technology use and needs in everyday life and academia in foreign language learning and teaching have so far been limited, and existing research almost exclusively focuses on Western European languages (Golonka et al., 2012). The need to understand how students of Eastern European languages feel about using technology in classrooms and how they use technology outside accademia should be addressed. A better understanding of current technology use and desires might help with providing direction for programs, projects, and

activities in Eastern European languages, as well as with determining priorities, goals, strategies and possible necessary changes in instructional practices to achieve greater successes (O'Reilly, 2016). Students might be more prone to engage in classroom activities with which they are already acquainted outside their classes and a hypothesis to investigate would involve identifying whether students are more comfortable and motivated to engage in similar activities from their everyday life but in a foreign language.

The current study was carried out to address the gap in the body of research on technology use in the teaching of Eastern European languages. The primary goals of this research that took place during Summer 2017 were to elicit information about the university students' current use of technology, their frequency of its use, their needs and desires of the use of technology and game-based resources. This study has been funded by the Summer Language Institute (SLI) at the University of Pittsburgh. A paper-based survey was conducted with students learning Eastern European languages at the Summer Language Institute. The research has been approved by IRB and REB. The survey consisted of three sections: a. background information, b. frequency, current use and desires in technology and c. CALL, MALL and game-based specific questions.

Background information questions asked about age, gender, foreign language, level, purpose of studying, other languages, academic status, native language, and devices owned. The second section was comprised of a list of activities utilizing different devices (computer, phone, tablet), frequency of use (never, several times per day, several times per week, several times per month), whether a student experienced this activity in their language classrooms during all time of their education, not only at SLI (yes, no) and perceived benefit of this activity if it was included in their language classroom (1 - least beneficial, 5 - most beneficial). The list of activities consisted of 33 items and was gathered from previously conducted technology needs analyses in foreign language teaching classrooms (Chapelle & Voss, 2016; Crews et al., 2018; Golonka et al., 2012; Park & Slater, 2015; O'Reilly, 2016; Surveymonkey.com, 2018). The selected activities should cover most of the popular uses of technology in real life. For every activity on every device, the survey asked about its frequency in real life of students and its perceived benefit in a classroom environment, which could show that a certain activity might be worth incorporating in the teaching process. Students were also asked whether they have experienced an activity in a foreign language classroom to see if desired and frequent activities in their life outside school are actually present in their classes. The third section asks more detailed information about students' experience with using online and offline games on various devices. A sample survey can be found in Appendix A.

Results

Students of the following languages have participated: Russian, Polish, Bosnian/Croatian/Serbian (BCS), Slovak and Czech. The majority of students are 19 to 34 years of age whose most learned language is Russian (18) and BCS (11). The majority of students

indicated fulfilling academic requirements and cultural interest as the most important reasons for their participation in their language courses. Other popular reasons included enhancing career prospects, improving proficiency and fulfilling their language requirement. All of the students have reported to have access to a laptop computer and only one person did not have phone with mobile internet, whereas the rest had mobile internet access. About third of the participants possessed tablets and desktop computers. Complete biographical information can be found in Table 1.

Table 1

Participants' biographical information

Age	12-18	19-24	25-34	35-44	60-...		
Number of students	1	22	12	2	1		
Gender	Female	Male	No entry				
Number of students	22	13	4				
FL	Russian	BCS	Czech	Polish	Slovak	Total	
Number of students	18	11	4	4	2	39	
Level of FL	First	Second	Third	Fourth			
Number of students	13	10	11	5			
Purpose	Academic	Cultural interest	Business/ employment	Communicate better	Language requirement	Tourism/ vacation	Understand ethnic heritage
Number of students	24	18	12	6	6	5	2
Other languages	Spanish	French	German	Russian	Latin	Italian	
Number of students	14	14	12	7	6	3	
Other languages:	Turkish, Mandarin Chinese, Uzbek, New Testament Greek, Church Slavonic, Arabic, Farsi, English, Ukrainian, Irish Gaelic, Kinyarwanda, Attic Greek, Hungarian, Portuguese, Polish, Latin/Greek - 1						
Academic status	Junior	Sophomore	Senior	MA	PhD	Not a university student	
Number of students	4	3	12	9	7	4	
Native language	English	Spanish	No entry	Italian	English, Turkish		
Number of students	34	2	1	1	1		

Devices owned	Laptop	Phone with internet	Phone w/out internet	Tablet	Desktop		
Number of students	39	38	1	13	10		

In the following paragraphs I will briefly analyze students' responses about frequency, experience and perceived benefits on one device – computer. All the responses for every activity utilizing a computer from 39 participants can be found in table 2:

Table 2

Results for computer

Activity	Device	Average perceived benefit (1-5)	Average perceived benefit (%)	Experienced (%)	Frequency of use (%)			
					Never	Several times per day	Several times per week	Several times per week
Watch movies	Computer	4.3	86	87.5	18.2	9.1	0	72.7
Read news, articles from newspapers and magazines	Computer	4.2	84	50	9.1	54.5	9.1	27.3
Use dictionary	Computer	4	80	71.8	16.7	58.3	16.7	8.3
Watch TV shows	Computer	4	80	50	50	6.2	25	18.8
Watch news	Computer	4	80	43.6	55.6	16.7	16.7	11.1
Listen to music	Computer	3.9	78	80	42.9	42.9	7.1	7.1
Use foreign language learning apps	Computer	3.7	74	23.1	85.7	0	0	14.3
Browse websites	Computer	3.6	72	59	9.1	63.6	18.2	9.1
Watch online lectures	Computer	3.4	68	34.2	76.2	0	9.5	14.3
Listen to podcasts	Computer	3.4	68	17.9	82.8	3.4	10.3	3.4
Write a diary	Computer	3.4	68	17.9	97.3	0	0	2.7
Write emails	Computer	3.3	66	46.2	23.1	23.1	38.5	15.4
Read fiction	Computer	3.2	64	27.5	82.1	7.1	3.6	7.1
Listen to radio	Computer	3.2	64	10.3	82.4	5.9	2.9	8.8
Play games	Computer	3.1	62	23.1	87.5	3.1	6.2	3.1
Record voice (make an audio recording of yourself)	Computer	3.1	62	17.9	100	0	0	0
Read e-mails	Computer	3	60	35	16.7	41.7	33.3	8.3
Listen to voice messages	Computer	2.9	58	21.1	93.8	0	6.2	0
Write blogs	Computer	2.9	58	12.8	100	0	0	0

Activity	Device							
Video call	Computer	2.9	58	7.7	78.3	4.3	4.3	13
Read news and articles on social media	Computer	2.8	56	12.8	50	31.2	12.5	6.2
Record videos	Computer	2.8	56	7.7	97.3	0	0	2.7
Take notes of a lecture, presentation, etc.	Computer	2.7	54	35.9	88	4	4	4
Read messages on social media	Computer	2.6	52	15.4	40	33.3	20	6.7
Write messages on social media (synchronous online chatting)	Computer	2.6	52	10.3	73.9	17.4	4.3	4.3
Read posts on social media	Computer	2.4	48	10.8	56.2	25	12.5	6.2
Make a reservation for transportation, restaurant, hotel, etc.	Computer	2.3	46	10.3	76.2	0	0	23.8
Create a post (eClass, FB, Twitter, Reddit, etc.)	Computer	2.3	46	7.7	78.3	0	8.7	13
Voice call	Computer	2.3	46	0	94.6	0	2.7	2.7
Read SMS	Computer	2.2	44	10.5	96.7	3.3	0	0
Write SMS	Computer	2.2	44	5.4	90	3.3	6.7	0
Write wikis	Computer	2.2	44	2.6	100	0	0	0
Get answers or assistance using voice search (e.g. Ok, Google; Siri)	Computer	2	40	10.3	97	3	0	0

One of the questions of this study related to everyday life activities that involved using a technological tool. The survey asked students to mark the frequency of every activity on three devices: computer, phone and tablet. The results for computer can be seen on figure 1 below:
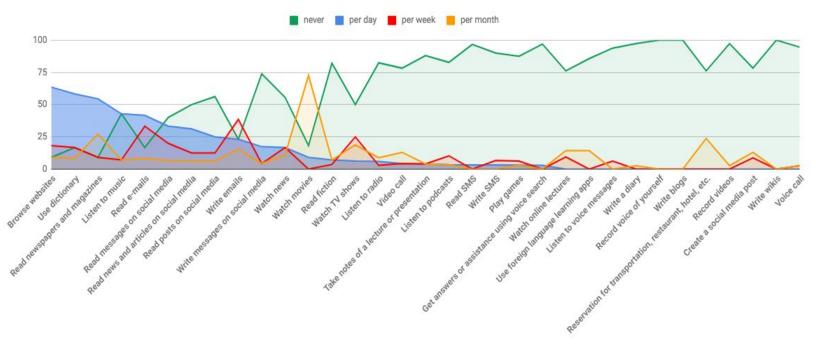
Figure 1. Frequency of technology use on computer

In the survey the students were given choices of 'several times per day, several times per week, several times per month, and never' to assess the frequency of each activity on every device. Although the data is not homogeneous, it is possible to identify the most frequent trends of students' engagement in language activities on different devices outside school. Students tend to use computers most often to consume information from various sources. The most frequent activities on a computer involve reading and listening skills during such activities as browsing websites, using dictionaries, reading news, newspapers and magazine articles, listen to music, reading e-mails, reading messages on social media, reading news and articles on social media, and reading posts on social media. The participants tend not to use computer often for communication or producing information, so computers are most commonly used to obtain it. Although writing emails is quite common, it is surprising that writing messages on social media (synchronous online chatting) was never used by about 75% of participants, whereas 20% of them still do it several times per day. Students tend to engage in watching news, watching movies, reading fiction, watching online lectures, using foreign language apps, making reservations and creating posts on social media less regularly.

The survey showed that students do not commonly engage in writing blogs, writing wikis, writing diaries, recording videos, getting answers or assistance using voice search, reading SMS, making voice calls, listening to voice messages, writing SMS, taking notes of a lecture, presentation, etc., playing games, using foreign language learning apps, listening to podcasts,

listening to radio, and reading fiction, as the majority (>80%) of them indicated to have never experienced these activities.

        Another survey question that students were asked related to whether students have experienced (yes/no) a certain activity on one of the devices in their classrooms during their study process not only during their summer language program but at any moment in their lives when they were taking a language class. The results for this survey item can be found in figure 2, where the most experienced activities are positioned to the left and the values are represented in percentages.
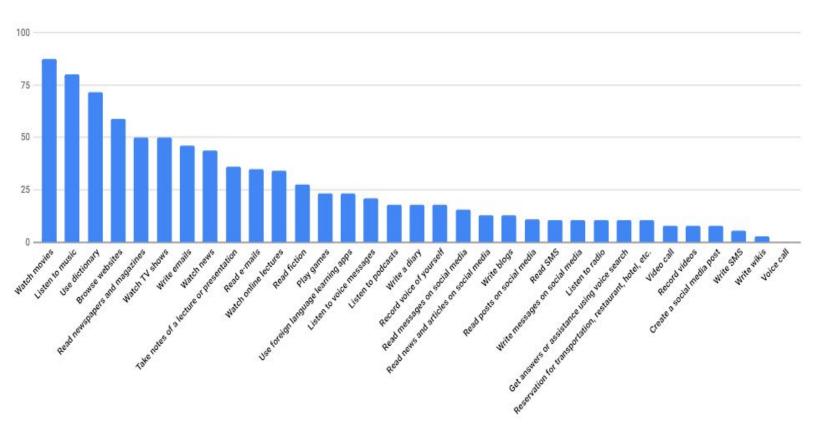

Figure 2. Activities experienced by students

        Overall, in the classroom environment the majority of students (more than 50% of students) experienced watching movies (87.5%), listening to music (80%), using dictionary (71.8%), browsing websites (59%), reading news, newspaper and magazine articles (50%), and watching TV shows (50%). Considerably less students (>20%) listen to podcasts (17.9%), write diaries (17.9%), make voice recordings (17.9%), read messages on social media (15.4%), write blogs (12.8%), read news and articles on social media (12.8%), read posts on social media (10.8%), read sms (10.5%), listen to radio (10.3%), write messages on social media (10.3%), make reservations for transportation (10.3%), get answers or assistance using voice search (10.3%), make video calls (7.7%), record video (7.7%), create posts on social media or eclass

(7.7%), write sms (5.4%), write wikis (2.6%), make voice calls (0%). Some of the activities received a low score because they are not suitable to be used on a computer, but others such as writing a diary, reading/writing messages and posts on social media, writing blogs, reading news and articles on social media could be quite useful be well utilized as homework activities, as they were rather frequent in students lives outside school.

      Students were also asked to provide perceived benefit for each activity on each device on a 1 to 5 scale where 1 is the least beneficial and 5 - most beneficial. This question aimed at identifying students' perception of an activity in their second language classes. Although this data might not reflect the actual benefit of a certain activity, it might however give a better idea which ones students might want to see in their classes and thus be more motivated and interested in completing them. The results are presented in figure 3.
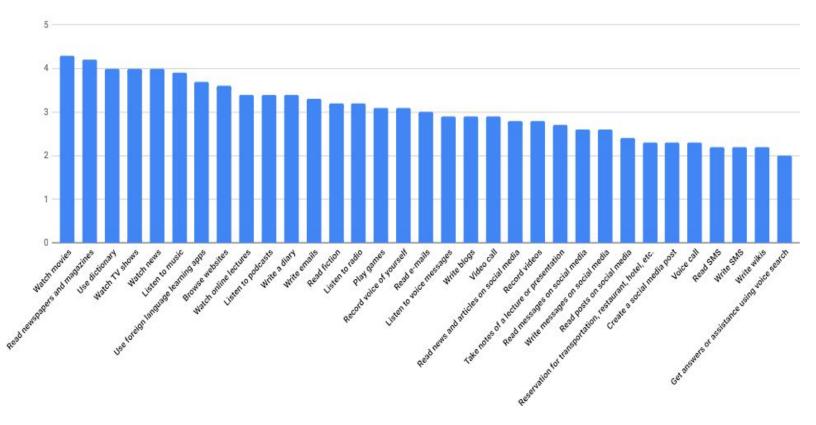

Figure 3. Average perceived benefit of activities on computer

      The highest rated activity (>3.5) were watching movies (4.3), reading news, articles from newspapers and magazines (4.2), watching news (4), watching TV shows (4), using dictionary (4), listening to music (3.9), using foreign language learning apps (3.7), and browsing websites (3.6). These most rated activities typically contain a higher informational and cultural load. A person engaging in these activities might be able to practice language skills, learn more about the country itself and/or entertain oneself, as these activities relate to news and movies/music. The

least rated activities (<2.4) such as reading posts on social media (2.4), voice calling (2.3), creating a post on social media (2.3), making a reservation for transportation, restaurant, hotel, etc (2.3), writing wikis (2.2), reading SMS (2.2), writing SMS (2.2) and getting answers using voice search (2) involve production skills more and in some cases are not suitable for doing on a computer. One of the trends that can be singled out from perceived benefits is that activities that are rich in information and cultural content and are produced in a target country were rated higher, whereas more functional activities focusing more on students language production skills were rated lower.

In the next figure I combine the data about perceived benefits and about students' experiences with activities to see the discrepancy between students' desires and activities that they have actually experienced to highlight which activities might be relevant for further exploration. These observations might be useful for instructors to incorporate in their teaching.
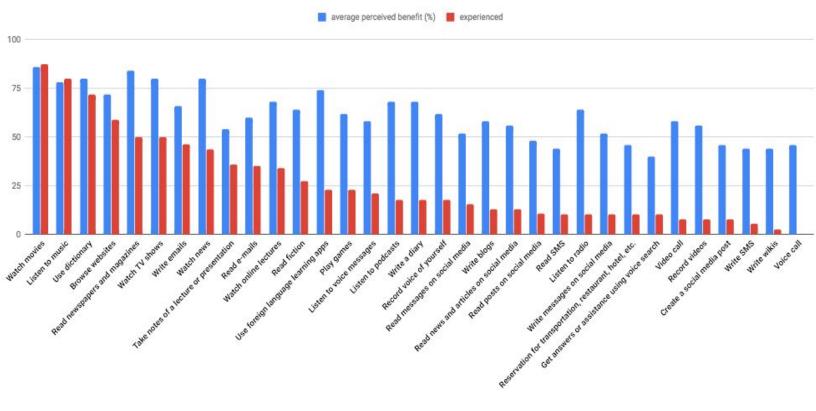

Figure 4. Average perceived benefit and activities experienced by students

On figure 4 the activities which have been experienced the most are placed to the left with corresponding perceived benefits. In the survey the benefits had values from 1 to 5, however on this graph they are represented in percentages to better juxtapose the two values. This graph shows that generally instructors incorporate and assimilate activities to students' behaviors outside their classes and it is worth noting that the majority of activities perceived as most beneficial are the ones that were experienced by more than 50% of the participants (watch

movies, listen to music, use dictionary, browse websites, read news, articles from newspapers and magazines and watch tv shows). As Pearson correlation coefficient showed, there is a strong positive correlation between the perecentages of perceived benefits and percentages of people who have experienced such activity with R = 0.8201 (http://www.socscistatistics.com/tests/pearson/Default.aspx). This shows that instructors in their classes create activities that correspond to students' activities in everyday life, however this also might tell us that students are rating experienced activities higher due to the fact that they have actually experienced them in their classes.

Some of the activities, however, judging by their perceived benefit, could be used more by the instructions. For example, activities with high perceived benefit score such as watching movies (experienced - 87.5%), listening to music (80%), browsing websites (59%), reading news, articles from newspapers and magazines (50%), watching tv shows (50%), watching news (43.6%), listening to podcasts (17.9%), writing a diary (17.9), reading fiction (27.5%) and listening to radio (10.3%) have still not been experienced by most of the students. Reading and watching news could be one of the areas worth paying more attention to, as these activities actively involve developing reading and listening comprehension and are high in cultural information. Background information questions about the students' reasons to learn a language support this finding, as cultural interest and business/employment were the primary reasons for 18 and 12 students accordingly. Such students are highly interested not only in developing language proficiency, but would like to learn more about the country itself with its political, economic, cultural and social context. News shows and articles would be a productive source of such information and could be used as authentic resources for activities in their classrooms relevant for development of speaking, writing, reading, listening and culture comprehension skills. News themselves can also come from different sources, for example, news shows, tweets, articles, and podcasts which may involve information with different level of complexity. Podcasts and TV shows might be well suited for more advanced students, whereas tweets or simple news articles will be suitable for beginners. Such information can also be accessed on various devices. Instead of surfing the web in English, a student might well be surfing their foreign language segment of it using their phone while taking a bus to the university.

Some of the activities were rated highly beneficial (>60%), however they have not been experienced by many students (<50%) and have low use frequency, please see table 3. Students have favourable attitude to the activities in the table below, however judging by the frequency of use in regular life, they very rarely engage in such activities outside their classes, except for writing emails and watching news. The fact that students do not frequently indulge in such activities, might negatively affect their motivation and interest in doing such activities in a foreign language classroom, however more research is necessary to support this claim.

Table 3

Highly beneficial and less frequently experienced activities

Activity	Average perceived benefit (%)	Experienced (%)	Frequency of use (%)			
			Never	Several times per day	Several times per week	Several times per week
Write emails	66	46.2	23.1	23.1	38.5	15.4
Watch news	80	43.6	55.6	16.7	16.7	11.1
Watch online lectures	68	34.2	76.2	0	9.5	14.3
Read fiction	64	27.5	82.1	7.1	3.6	7.1
Use foreign language learning apps	74	23.1	85.7	0	0	14.3
Play games	62	23.1	87.5	3.1	6.2	3.1
Listen to podcasts	68	17.9	82.8	3.4	10.3	3.4
Write a diary	68	17.9	97.3	0	0	2.7
Record voice (make an audio recording of yourself)	62	17.9	100	0	0	0
Listen to radio	64	10.3	82.4	5.9	2.9	8.8

The rest of the activities with perceived benefits percentage less than 60% have not been frequently experienced in classrooms and are rather infrequent in students' daily use, please see table 4.

Table 4

Less frequently experienced activities with low perceived benefit

Activity	Average perceived benefit (%)	Experienced (%)	Frequency of use (%)			
			Never	Several times per day	Several times per week	Several times per week
Take notes of a lecture, presentation, etc.	54	35.9	88	4	4	4
Listen to voice messages	58	21.1	93.8	0	6.2	0
Read messages on social media	52	15.4	40	33.3	20	6.7
Write blogs	58	12.8	100	0	0	0
Read news and articles on social media	56	12.8	50	31.2	12.5	6.2

Read posts on social media	48	10.8	56.2	25	12.5	6.2
Read SMS	44	10.5	96.7	3.3	0	0
Write messages on social media (synchronous online chatting)	52	10.3	73.9	17.4	4.3	4.3
Make a reservation for transportation, restaurant, hotel, etc.	46	10.3	76.2	0	0	23.8
Get answers or assistance using voice search (e.g. Ok, Google; Siri)	40	10.3	97	3	0	0
Video call	58	7.7	78.3	4.3	4.3	13
Record videos	56	7.7	97.3	0	0	2.7
Create a post (eClass, FB, Twitter, Reddit, etc.)	46	7.7	78.3	0	8.7	13
Write SMS	44	5.4	90	3.3	6.7	0
Write wikis	44	2.6	100	0	0	0
Voice call	46	0	94.6	0	2.7	2.7

Conclusion

In this study I have identified trends in current use of activities on a computer, frequency and perceived benefit of various activities in a language classroom. Due to time constraints I have analyzed the data about activities on a computer only, however the data for phone and tablet are presented in a table form at the end of the report. The results showed that instructors tend to incorporate activities that students engage in outside academia in their teaching, as shown by positive correlation between the frequency of activities and whether students experienced these activities in their studying. However there are certain areas that could be considered by instructors such as watching and reading news and watching TV shows from the target culture. The current study identified the scope of technological tools and activities used by students learning Eastern European languages and although further exploration is necessary to stronger support identified trends and patterns in data, the existing results might be useful for instructors to incorporate in their teaching.
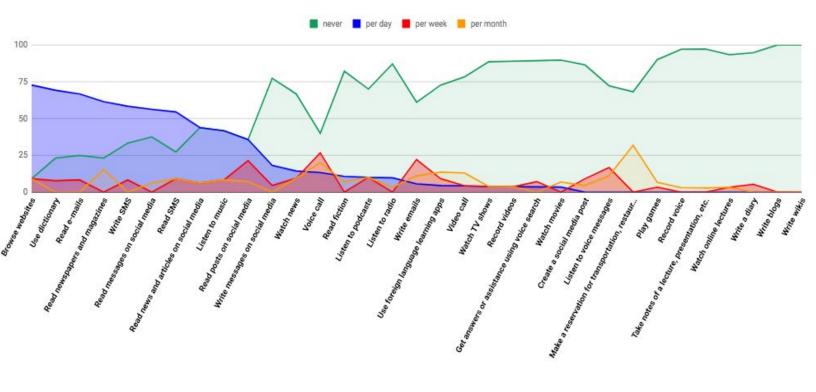
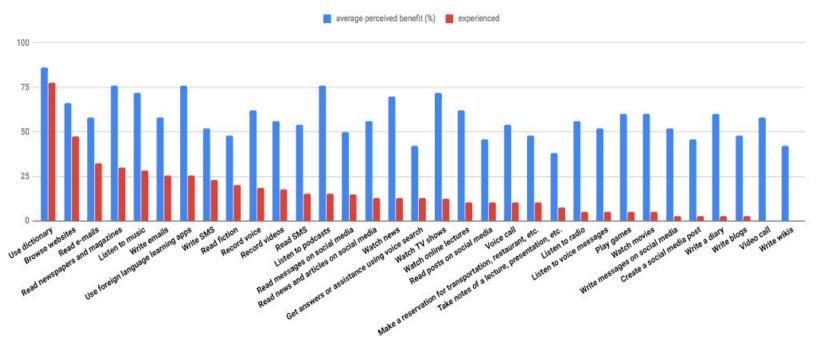*Figure 5.* Frequency of technology use on phone

Figure 6. Average perceived benefits and activities experienced by students on phone

Table 5

Results for phone

Activity	Device	Average perceived benefit (1-5)	Average perceived benefit (%)	Experienced (%)	Frequency of use (%)			
					Never	Several times per day	Several times per week	Several times per week
Use dictionary	Phone	4.3	86	77.5	23.1	69.2	7.7	0
Read news, articles from newspapers and magazines	Phone	3.8	76	30	23.1	61.5	0	15.4
Use foreign language learning apps	Phone	3.8	76	25.6	72.7	4.5	9.1	13.6
Listen to podcasts	Phone	3.8	76	15.4	70	10	10	10
Listen to music	Phone	3.6	72	28.2	41.7	41.7	8.3	8.3
Watch TV shows	Phone	3.6	72	12.5	88.5	3.8	3.8	3.8
Watch news	Phone	3.5	70	12.8	66.7	14.3	9.5	9.5
Browse websites	Phone	3.3	66	47.5	9.1	72.7	9.1	9.1
Record voice (make an audio recording of yourself)	Phone	3.1	62	18.4	97	0	0	3
Watch online lectures	Phone	3.1	62	10.5	93.3	0	3.3	3.3
Play games	Phone	3	60	5.1	90	0	3.3	6.7
Watch movies	Phone	3	60	5	89.7	3.4	0	6.9
Write a diary	Phone	3	60	2.6	94.7	0	5.3	0
Read e-mails	Phone	2.9	58	32.5	25	66.7	8.3	0
Write emails	Phone	2.9	58	25.6	61.1	5.6	22.2	11.1
Video call	Phone	2.9	58	0	78.3	4.3	4.3	13
Record videos	Phone	2.8	56	17.9	88.9	3.7	3.7	3.7
Read news and articles on social media	Phone	2.8	56	12.8	43.8	43.8	6.2	6.2
Listen to radio	Phone	2.8	56	5.1	87.1	9.7	0	3.2
Read SMS	Phone	2.7	54	15.4	27.3	54.5	9.1	9.1
Voice call	Phone	2.7	54	10.3	40	13.3	26.7	20
Write SMS	Phone	2.6	52	23.1	33.3	58.3	8.3	0
Listen to voice messages	Phone	2.6	52	5.1	72.2	0	16.7	11.1

Activity	Device	Average perceived benefit (1-5)	Average perceived benefit (%)	Experienced (%)	Never	Several times per day	Several times per week	Several times per week
Write messages on social media (synchronous online chatting)	Phone	2.6	52	2.6	77.3	18.2	4.5	0
Read messages on social media	Phone	2.5	50	15	37.5	56.2	0	6.2
Read fiction	Phone	2.4	48	20	82.1	10.7	0	7.1
Make a reservation for transportation, restaurant, hotel, etc.	Phone	2.4	48	10.3	68.2	0	0	31.8
Write blogs	Phone	2.4	48	2.6	100	0	0	0
Read posts on social media	Phone	2.3	46	10.3	35.7	35.7	21.4	7.1
Create a post (eClass, FB, Twitter, Reddit, etc.)	Phone	2.3	46	2.6	86.4	0	9.1	4.5
Get answers or assistance using voice search (e.g. Ok, Google; Siri)	Phone	2.1	42	12.8	89.3	3.6	7.1	0
Write wikis	Phone	2.1	42	0	100	0	0	0
Take notes of a lecture, presentation, etc.	Phone	1.9	38	7.7	97.2	0	0	2.8

Table 6
Results for tablet

Activity	Device	Average perceived benefit (1-5)	Average perceived benefit (%)	Experienced (%)	Frequency of use (%)			
					Never	Several times per day	Several times per week	Several times per week
Read news, articles from newspapers and magazines	Tablet	3.3	66	13.5	90.3	3.2	3.2	3.2
Use dictionary	Tablet	3.3	66	12.8	91.7	2.8	0	5.6
Watch TV shows	Tablet	3.2	64	2.6	100	0	0	0
Watch news	Tablet	3.1	62	5.3	94.3	2.9	2.9	0
Use foreign language learning apps	Tablet	3.1	62	2.7	97.3	0	0	2.7
Listen to podcasts	Tablet	3.1	62	0	97.4	0	0	2.6
Listen to music	Tablet	2.9	58	2.6	94.4	0	5.6	0
Watch movies	Tablet	2.8	56	7.7	100	0	0	0

Write a diary	Tablet	2.8	56	0	100	0	0	0
Browse websites	Tablet	2.7	54	5.3	87.1	6.5	3.2	3.2
Play games	Tablet	2.7	54	0	100	0	0	0
Watch online lectures	Tablet	2.7	54	2.8	100	0	0	0
Read fiction	Tablet	2.7	54	7.7	90.6	3.1	3.1	3.1
Read e-mails	Tablet	2.5	50	5.1	93.5	0	3.2	3.2
Listen to radio	Tablet	2.5	50	2.6	97.4	2.6	0	0
Video call	Tablet	2.5	50	0	97.3	0	0	2.7
Read news and articles on social media	Tablet	2.4	48	2.6	93.9	3	3	0
Write emails	Tablet	2.4	48	5.3	94.4	0	0	5.6
Write blogs	Tablet	2.3	46	0	100	0	0	0
Record voice (make an audio recording of yourself)	Tablet	2.3	46	0	100	0	0	0
Read messages on social media	Tablet	2.3	46	0	91.2	5.9	0	2.9
Write messages on social media (synchronous online chatting)	Tablet	2.2	44	0	97.2	0	0	2.8
Write SMS	Tablet	2.2	44	0	97.1	0	0	2.9
Read posts on social media	Tablet	2.1	42	0	91.2	5.9	2.9	0
Record videos	Tablet	2.1	42	0	100	0	0	0
Write wikis	Tablet	2	40	0	100	0	0	0
Listen to voice messages	Tablet	2	40	0	100	0	0	0
Voice call	Tablet	2	40	0	97.4	0	0	2.6
Read SMS	Tablet	2	40	0	94.6	0	2.7	2.7
Make a reservation for transportation, restaurant, hotel, etc.	Tablet	1.9	38	2.6	100	0	0	0
Create a post (eClass, FB, Twitter, Reddit, etc.)	Tablet	1.9	38	0	97.3	0	0	2.7
Take notes of a lecture, presentation, etc.	Tablet	1.8	36	0	100	0	0	0
Get answers or assistance using voice search (e.g. Ok, Google; Siri)	Tablet	1.7	34	0	100	0	0	0

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Appendix A

Biographical information:
1. What is your age? ☐ 12-18 ☐ 19-24 ☐ 25-34 ☐ 35-44 ☐ 45-60 ☐ 60-…
2. What is your gender? _____
3. Which foreign language and level are you taking at SLI?
  ☐ Russian ☐ Bosnian/Croatian/Serbian ☐ Bulgarian ☐ Czech ☐ Hungarian ☐ Polish ☐ Serbian ☐ Slovak ☐ Ukrainian
  Level: 1   2   3   4   5
4. How long have you been learning this language? _____
5. What is your main purpose to study this language?
  ☐ Cultural interest ☐ Tourism/vacation ☐ Communicate better ☐ Business/employment ☐ Academic ☐ Language requirement
  ☐ Understand ethnic heritage ☐ Religious Other: _____
6. Which other languages are you learning or have learned? _____
7. What is your academic status? ☐ Freshman ☐ Sophomore ☐ Junior ☐ Senior ☐ MA student ☐ PhD student ☐ Not a university student
8. What is your native language/s? _____
9. Which devices do you own? ☐ laptop ☐ desktop ☐ phone with Internet ☐ phone without Internet ☐ tablet ☐ e-reader

Frequency, current use and desires in technology in everyday life and in your overall second language learning experience:

Activity	Device	Frequency of use in everyday life	Have you experienced this activity on this device in your foreign language classes?	Do you think this activity on this device would be beneficial for your further foreign language learning? (1 – least beneficial; 5 - most beneficial)
Read fiction	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Read news, articles from newspapers and magazines	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Use dictionary	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Browse websites	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Read e-mails	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Read SMS	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Read messages on social media	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Read news and	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5

articles on social media	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Read news and articles on social media	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Read posts on social media	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Write messages on social media (synchronous online chatting)	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Create a post (eClass, FB, Twitter, Reddit, etc.)	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Watch online lectures	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Watch news	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Listen to podcasts	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Listen to voice messages	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Listen to music	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Watch TV shows	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5

		Frequency	Proxy	Rating
Watch movies	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Listen to radio	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Voice call	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Record voice (make an audio recording of yourself)	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Record videos	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Make a reservation for transportation, restaurant, hotel, etc.	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Video call	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Get answers or assistance using voice search (e.g. Ok, Google; Siri)	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Play games	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Use foreign language learning apps	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Write a diary	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Write a diary	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5

Take notes of a lecture, presentation, etc. Take notes of a lecture, presentation, etc.	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Write SMS	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Write emails	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Write blogs	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
Write wikis	Computer	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Phone	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5
	Tablet/e-reader	☐ never ☐ several times per week ☐ several times per day ☐ several times per month	☐ Yes ☐ No	1 2 3 4 5

10. What other activities not mentioned above and using which device do you engage in in everyday life and how often?

_____
_____
_____

11. What other activities and using which devices have you experienced in your overall foreign language learning?

_____
_____
_____

12. Which other activities would you like to see/have more in your foreign language classes using various devices? (fill out the table below)

Computer (desktop, laptop)	Phone	Tablet/e-reader
Example: Practice grammar by doing drills on a website	Example: Record a video and tell a story about something	

Computer-assisted language learning (applies to your overall foreign language learning experience):
13. Have you used or do you use any websites and/or browser-based applications to learn your foreign language?   ☐ Yes   ☐ No
14. How often do you usually use such resources?   ☐ never   ☐ several times per day   ☐ several times per week   ☐ several times per month
15. What websites/browser-based resources have you used or do you use? (name) _____
_____

16. In which types of activities do you engage there? (Reading exercises, watching videos, fill in the blanks, grammar spelling check, etc.)
_____
_____

17. Have you ever played a web-based language game?   ☐ Yes   ☐ No
18. Please provide details about the web-based language game you played? (name, language, type of exercises, etc.) _____
_____
_____
_____

19. Have you played any digital games when you were learning your foreign language? _____
_____
_____
20. Please provide details about the digital game game you played? (name, language, type of exercises, etc.)? _____
_____

21. What did you like about the resources mentioned in questions 15-20? _____
_____
_____

22. What other activities, exercises and features for language learning would you like to have that require access to a computer? (e.g. writing emails to native speakers; russian grammar spelling check, etc.) _____
_____
_____
_____
_____

Mobile-assisted language learning (applies to your overall foreign language learning experience):
23. Do you use any applications/resources to learn your second language on mobile devices (phone, tablet, e-reader, etc.)?   ☐ Yes   ☐ No
24. How often do you use such resources?   ☐ never ☐ several times per day   ☐ several times per week   ☐ several times per month
25. What are the names of the applications/resources? (Duolingo, Mondly, fluentU, Rosetta Stone, Mango, Babbel, etc.) _____
_____

26. In which types of activities do you engage there? (Reading exercises, watching videos, fill in the blanks, learning vocabulary, grammar spelling check, etc.) _____
_____
_____

27. Have you ever played games on your mobile device to learn your foreign language?   ☐ Yes ☐ No
28. Please provide details about the mobile-based language game you played? (name, language, type of exercises, etc.)? _____
_____

29. What did you like/dislike about the resources mentioned in questions 25-28? _____
_____
_____
_____

30. What other activities, exercises and features for language learning would you like to have that require access to a mobile device? (e.g. calling and talking to native speakers) _____
_____
_____
_____

31. Do you play game console? ☐ Yes   ☐ No
32. Have you played a game on a game console when you learned your foreign language?   ☐ Yes ☐ No
33. Do you think technology helps learning languages?   ☐ Yes ☐ No
34. In your opinion, what are the benefits of using technology in language classroom? _____
_____
_____
_____

35. Do you think there are any drawbacks in using technology in a language classroom? _____
_____
_____
_____
_____

36. Do you have any suggestions about using technology for learners? _____
_____
_____

37. Do you have any suggestions about using technology for instructors? _____
_____
_____
_____