

Crowdsourcing and language learning habits and practices in Turkey, Bosnia and Herzegovina, the Republic of North Macedonia and Poland in the pre-pandemic and pandemic periods

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The popularity of online crowdsourcing platforms was slowly increasing among language learners before the pandemic, but COVID-19 changed the educational systems worldwide. This study aims to uncover whether or not, and if 'YES', how the attitudes and habits of language learners concerning the

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use of crowdsourcing materials in Turkey, Bosnia and Herzegovina, the Republic of North Macedonia and Poland changed during the pandemic.

To compare the pre-and during the covid crowdsourcing tool usage, the cross-culturally appropriate questionnaire utilised in the pre-COVID-19 period was used again. The collected data were analysed qualitatively and quantitatively to identify the differences between the periods.

The study's findings showed that the shift from face-to-face to online learning significantly affected the development of crowdsourcing platforms worldwide and their employment in the studied countries. The results also demonstrated that a combination of factors, such as reduced interactions with teachers and peers, an increase in workload, and a lack of support on the part of institutions, led to students taking responsibility for their learning. The number and characteristics of the popular platforms changed from country to country since expectations from students varied.

Keywords: crowdsourcing, language learning, COVID-19, pre-pandemic period, post-pandemic period

1 Introduction

Crowdsourcing, in Estellés-Arolas et al.'s (2015, p. 33) definition, is a problem-solving and task realisation model where thanks to harnessing collective intelligence, creative solutions to complex problems are found. Due to the success and usefulness of the initiative and its products, the number of fields embracing it (e.g., tourism, architecture, artificial intelligence) and researchers focusing on the concept (Lyding et al., 2018; Rodosthenous et al., 2019) have been steadily increasing (Xu et al., 2022). The popularity of online crowdsourcing platforms in language teaching and learning was slowly rising before the COVID-19 pandemic (Arhar Holdt et al., 2020; Gajek, 2020; Hatipoğlu et al., 2020; Miloshevska et al., 2021). Studies done in Turkey (TUR), Bosnia and Herzegovina (B&H), the Republic of North Macedonia (RNM), and Poland (POL) showed that language teachers used them both as in- and out-of-class materials, and students employed them as tools helping them to sharpen their skills and knowledge in the target languages and become more autonomous learners (Hatipoğlu et al., 2020, 2021; Miloshevska et al., 2021).

The COVID-19 pandemic has changed, however, the educational systems worldwide and the established teaching and learning practices.

Face-to-face classes were abruptly suspended in almost all countries, and this led to the disruption of “the original teaching plans of schools in these countries and regions” (Chen et al., 2020, p. 1). During the first COVID-19 period of online education (2019-2020 spring semester, especially after March 2020), teachers and students had to abandon their familiar settings and quickly adapt to the new environments, which was a stressful process for all involved parties (Akat and Karataş, 2020; Krajka, 2021). Teachers, who up to that point were experts in their fields but did not frequently use digital technology, had to learn about new tools and systems and modify their teaching methods, techniques, materials and assessment practices (Hatipoğlu et al., 2021). Unfortunately, many of the changes were done randomly or opportunistically, without being aware of and, therefore, not following any of the established Computer Assisted Language Learning (CALL) models (Bax, 2003; Hampel and Stickler, 2005). Students also had to adjust to the new, mainly solitary online environment where they were deprived of social contact with their peers and teachers, and could not expect constant support from their institutions (Miloshevska et al., 2020; Trung et al., 2020).

Studies related to the status of tertiary education during the second and third semesters of online learning and teaching in some countries (e.g., Australia, the USA, and Canada in Hickling et al., 2021; Latvia in Baranova et al., 2020) showed that both teachers and students successfully settled into new routines and started following practices that were more suitable for the prolonged period online education. But what about the foreign language students in TUR, B&H, RNM and POL? What were their learning and teaching experiences during the COVID-19 pandemic with regard to using online/digital crowdsourcing materials/platforms?

This study was conducted to find out whether there have been any changes related to the use of crowdsourcing materials for language learning and teaching purposes (e.g., sources such as *Wikipedia*, *Duolingo*, *Kahoot*, Online dictionaries, social media sites) in TUR, B&H, RNM and POL during the different phases of the COVID-19 pandemic (for more detailed examples and explanations, see the Literature Review section). These four countries were selected as focal points since some previous studies (Delibegović Džanić et al., in press; Hatipoğlu, 2021;

Miloshevska et al., 2020, 2021) showed that the national ministries of education and the university administrations planned and organized instruction in K-12 and tertiary levels differently. The expectations and requirements from students were also somewhat different in these countries. To reach our goal, the results of the Miloshevska et al.'s (2021) study, which are based on data from the pre- and initial COVID-19 periods, are compared with new data sets collected in the later phases of the pandemic (i.e., from December 2021 to March 2022, that is 2021-2022 spring semester).

2 Literature review

The term “crowdsourcing” was first coined by the American journalist Jeff Howe (2006) in an article for *Wired* magazine. The term was developed further, defined, and exemplified in his book *Crowdsourcing: How the Power of the Crowd is Driving the Future of Business* (Howe, 2008). In his work, Howe (2006, 2008) describes how the internet and the development of Web2.0 tools broke down the traditional way of doing work as well as the employer-employee relationships. He argued that thanks to the collaborative nature of the newly developed digital tools, companies, institutions, and even individuals, just by posting an open call, could now benefit from the wisdom of the usually heterogeneous crowd on the internet (e.g., volunteers, experts, even amateur enthusiasts) to find solutions for challenging problems, create new products, sort pictures and a multitude of other tasks. The reward the contributors receive in this setting depends on the company posting the call, the project's nature, and the crowd's interests. It could be either intangible (e.g., recognition or prestige within a group with specific interests, being entertained because they like playing a particular game) or tangible (e.g., money). The first of these practices is known as “microworking crowdsourcing” (e.g., people add entries to *Wikipedia*, but they are not paid), while the latter is called “benevolent crowdsourcing” (e.g., Amazon's Mechanical Turk pays individuals for their work¹). This model of doing things and/or completing projects was first used in the business environment, but has evolved and spread and is now being used for different purposes in fields

1 www.mturk.com

as diverse as geography (See et al., 2014), medicine (King et al., 2013), and multimedia (Soleymani and Larson, 2013). Nowadays, anyone can post videos on *YouTube* or *TikTok*, those who feel competent are free to write book reviews on Amazon, and ambitious, fearless artists submit their T-shirt designs to *Threadless* and wait for the crowd's verdict.

One other field where crowdsourcing has started gaining momentum and is being used more frequently in recent years is education. Since education theories, methods and techniques, as well as the learner profiles (e.g., daily routines, interests, social, cultural and language backgrounds) are getting increasingly diverse, conventional education, where traditional classrooms and textbooks limit students' experiences, is now being challenged and replaced by various other practices. Rapid developments in technology and greater respect for diversity in learning needs mean that the "wisdom of the crowd" is being considered by a growing number of competitive educational organizations (Çebi, 2018; Solemon et al., 2013; Wang, 2016). Crowdsourcing is used in various ways to support innovative education, and research shows that with such practices it is possible to create and offer authentic in- and out-of-class activities (Chen and Luo, 2014; Hui et al., 2014), innovative learning and teaching resources (Farasat et al., 2017), and context and student group-specific support (Goel, 2017; Shaikh et al., 2017; Weld et al. 2012).

Despite the advantages associated with the use of crowdsourcing in education, research also shows that one field where its use was not fully incorporated before the COVID-19 pandemic was language teaching and learning. Two main reasons have been identified as to why the inclusion of crowdsourcing activities in language education was still in its initial stage at this time: 1) the lack of knowledge on the part of the teachers, which led to 2) disinterest and gaps in students' knowledge related to them. In a study conducted by Arhar Holdt et al. (2019), where the researchers collected data from 1,129 language teachers from more than 30 countries, it was found that quite a significant number of the participants were not familiar with the concept of crowdsourcing, and therefore they were using a very small number of crowdsourcing activities in their classrooms. Maybe this is why, several years earlier, Odo (2016) published an article targeting language teachers and comparing

the advantages and disadvantages of using crowdsourcing materials. He also presented some lists aiming to show language teachers how such materials could be used in the classroom, the stages of the lessons where they could be incorporated, what teachers are expected to do to encourage the use of such materials, and the available and useful crowdsourcing resources. Odo (2016) completed his article by arguing that the “potential of these resources is immense. Ignoring the possibilities for our classroom is a missed opportunity for our students to join a trend that could revitalize our language teaching and their learning” (p. 23).

2.1 Crowdsourcing research before COVID-19

The number of studies examining language learners’ views of crowdsourcing was even more limited before the COVID-19 pandemic. The authors are aware of just four papers that specifically focus on language learners’ views of crowdsourcing platforms (Gajek, 2020; Hatipoğlu et al., 2020; Miloshevska et al., 2021; Mospan, 2018), and this indicates a significant gap in the field, since it is essential that students (i.e., end users) accept the validity of a new product and begin to use it. Rafiee and Abbasian-Naghneh (2019, p. 1) maintain that there are “complex relationships between the perceived usefulness, perceived ease of use, e-learning motivation, online communication self-efficacy and language learners’ acceptance and readiness of e-learning”. Stated differently, knowing which crowdsourcing materials are employed by language learners, as well as when and how, is vital information not only for language teachers but also for platform creators, since it will aid them in developing and recommending resources to help students with their learning and progress.

Online teaching and/or blended learning were part of the educational system long before the COVID-19 pandemic. What is more, technology has often been used to support the continuity of teaching and learning in areas suffering from natural disasters (e.g., earthquakes, floods) (Baytiheh, 2018) or a lack of resources (e.g., large classes) (Krajka, 2021). These were, however, implementations in a limited number of places or in periods that were carefully planned and followed well-designed stages and procedures. The rest of the education, the vast

bulk of it, both around the world and in TUR, B&H, RNM and POL was done face-to-face (Miloshevska et al., 2020).

2.2 Crowdsourcing research during COVID-19

The spread of COVID-19 and its identification as a pandemic led to sudden lockdowns in many countries. This required changes in all established ways of teaching and learning, including language education. All stakeholders in the educational institutions suddenly found themselves “in a new reality, with technology-mediated instruction of different kinds substituting for traditional face-to-face teaching” (Krajka, 2021, p. 112). Neither teachers nor students had access to the resources, methods and techniques they were used to, so they had to use a system that many of them were testing for the first time, i.e., on-line learning and teaching. As a result of this sudden but compulsory change, there was a boom in the development, usage and research related to the use of crowdsourcing materials during the COVID-19 period. When Kansal et al. (2021) used Google Trends analysis to uncover the platforms of online teaching and learning that made remote learning around the world possible, they found that there had been significant growth in the number of such platforms in just a year. They also reported that the “existing assets of educational establishments have effectively converted conventional education into new-age online education with the help of virtual classes and other key online tools in this continually fluctuating scholastic setting” (Kansal et al., 2021, p. 418). That is, faced with the harsh reality of lockdowns, platform developers, teachers, students, and researchers were all trying to find ways to help formal education continue.

The research done during the COVID-19 period can be placed mainly in three sometimes overlapping categories. The studies in the first group focus on uncovering, classifying and/or listing the platforms that could be used in such circumstances (Chen et al., 2020; Kansal et al., 2021; Reimers et al., 2020). Reimers et al. (2020, p. 2), for instance, prepared an annotated selection of “online educational resources to support the continuity of teaching and learning during the 2019-20 COVID-19 Pandemic with education leaders around the

world". The list of resources was compiled based on the responses of 333 informants from 99 countries. They asked stakeholders participating in the survey to identify online educational resources that they had found helpful in supporting education continuity up to that point, and classified them into *Curriculum Resources*, *Professional Development Resources* or *Tools*. They also used Pellegrino and Hilton's (2012) taxonomy to provide information related to the foreign languages, skills, and subjects that can be taught using the materials, as well as the grades of students that could benefit from them and whether or not they developed the interpersonal and intrapersonal skills of the users.

To be able to construct a valid evaluation index that could be used in the case of other emergencies similar to the COVID-19 pandemic, Chen et al. (2020) asked users in China to review their experiences with online education platforms before and after the outbreak of the disease using criteria such as access speed, reliability, timely transmission of video data, course management, communication and interaction, and learning and technical support. The study focused on the performance of the seven most popular platforms in the country: *Chaoxing Learning*, *DingTalk*, *MOOC*, *Tencent Meeting*, *TIM*, *WeChatWork*, and *Zoom Cloud*. The analysis of the data showed that before the pandemic what users expected from a good platform were characteristics such as good access speed, reliability, and smooth transmission of video data. However, after the outbreak of COVID-19, when all classes moved online, they were more concerned with course management, communication and interaction, and the quality of the learning and technical support services of the platforms. In Chen et al.'s (2020) article, overall "Chaoxing Learning had the poorest user experience and DingTalk performed best" (p. 28).

The second group of studies tried to uncover the general benefits of using certain platforms as main or supplementary materials for language learners (Ali, 2022; Krishnan et al., 2020; Nadhifah and Puspitasari, 2021). When Krishnan et al. (2020) looked at how free online resources were used by language learners during the pandemic, they found two crucial facts. One, the user-friendly technologies that were freely available on the internet gained popularity during the COVID-19 crisis (i.e., they were used much more frequently and by a bigger number of students). Two, the educational lives of many students who

reported experiencing economic problems during the pandemic were saved by freely available online resources, such as online dictionaries, *YouTube* videos, foreign language material development platforms, and grammar checkers. Nadhifah and Puspitasari (2021), who reviewed the effects of remote learning on students' study habits (before specifically focusing on *Duolingo*), maintain that the use of online platforms during the pandemic forced students to become more “responsible learners”, and that the “pandemic condition urged them to conduct a self-regulated language learning by utilizing and optimizing the relevant media to learn” (p. 303).

The third group of studies examined whether, and if so how, certain online resources helped language learners develop specific language skills and sub-skills, such as listening, speaking, and pronunciation, and types of knowledge, including vocabulary and grammar (e.g., Kracka, 2021; Li and Xu, 2015; Nadhifah and Puspitasari, 2021; Trinh et al., 2021; Tsai, 2019; Waicekawsky et al., 2020). Nadhifah and Puspitasari (2021) studied the effects of *Duolingo* on the development of the structural knowledge of students with low and intermediate proficiency levels. They found that while intermediate-level students did not think they benefited much from the exercises on the platform, low-level learners stated that *Duolingo* helped them develop their grammar knowledge in English with tasks that were fun and appropriate for their level.

Trinh et al. (2021, p. 28), who worked with Vietnamese language learners, and Waicekawsky et al. (2020), whose participants were Argentinian EFL students, looked at the effects of another group of online resources that were frequently employed by foreign language learners during the pandemic – online dictionaries. Trinh et al.'s (2021) participants, who were native speakers of a tonal language (Alvez, 2006) and for whom speaking patterns in English are usually tricky, reported benefits such as improved intonation, pronunciation and grasp of vocabulary items' meaning. Consequently, the majority of the 300 junior students who participated in Trinh et al.'s (2021) study demonstrated a strong preference for online dictionaries over paper ones.

The concise literature review in this section demonstrates the striking differences in the use of crowdsourcing materials in educational settings before and during the COVID-19 pandemic. The current study

aims to contribute to this area of research and examines the potential changes in TUR, B&H, RNM and POL.

The specific research questions that this study aims to answer are:

- (1) What digital crowdsourcing resources did students in TUR, B&H, RNM and POL know about and use to learn foreign languages in the pre- and initial COVID-19 period (Period1, P1) versus the late COVID-19 period (Period2, P2)?
- (2) Were there any changes in the frequencies, attitudes, contexts of use, and habits related to crowdsourcing materials of language learners in TUR, B&H, RNM and POL in P2 when compared to P1?

3 Methodology

3.1 Data Collection

In this study, the main aim was to uncover whether there have been any changes related to the use, attitudes, habits and contexts of use of crowdsourcing materials from the pre- to during the COVID19 periods by language learners in TUR, B&H, RNM and POL. To achieve this goal, the results of the authors' earlier study (Miloshevska et al., 2021) for which the data were collected in the pre- and during the emergency online teaching period in the Spring 2020 semester are compared with the new data collected in Spring 2022.

To ensure a reliable and valid comparison across countries and periods, the questionnaire designed for the initial study was utilized again, since it proved to be a cross-culturally appropriate data collection tool eliciting high-quality data enabling researchers to answer their research questions.

The written data collection tool employed in both studies had two sections, A and B. The 11 questions in Section A aimed to gather detailed information about the participants' use of crowdsourcing tools and platforms. Nine of the 11 items in this section were checkbox questions where the participants could select multiple answers from a list of options (see Figure 1 for an example question). There was also one Likert scale item and one open-ended item. The Likert scale item asked participants to rate the crowdsourcing platforms they used from "Very enjoyable" (5) to "Not enjoyable at all" (1) and "I have not used it" (0). On the other hand,

in the open-ended item the participants were asked to give information about their previous contributions to various crowdsourcing platforms.

2. Which of the following types of tools do you use for language learning? Multiple answers are possible.

- online learning platforms (Duolingo, Busuu, Babbel etc.)
- mobile and online games (Scrabble, Kahoot etc.)
- dictionaries (Oxford, Collins, Wiktionary, dict.cc)
- encyclopaedias (e.g. Wikipedia)
- online text collections (corpora, newspapers)
- translation tools (Google translate, Linguee etc.)
- None of the above
- Other...

Figure 1: Example checkbox question used in the study.

Section B of the questionnaire included six questions, and it aimed to collect data related to the participants' backgrounds. Four of the six questions were checkbox items, and two were open-ended.

3.2 Data Analysis

The collected data sets were analyzed both qualitatively and quantitatively to identify even the most minor changes between the compared periods in the studied four countries. The quantitative analyses were done using SPSS, where various descriptive (e.g., frequencies, percentages) tests were performed. The qualitative data were evaluated following the procedures proposed by Miles and Huberman (1994, pp. 58-69).

The tested hypothesis was that there had been a significant change in both teaching and learning habits in the pre-and pandemic periods, and that crowdsourcing platforms gained popularity during the COVID-19 period. This hypothesis was based on the findings of a study (Miloshevska et al., 2020) showing that teachers in B&H, NM, POL and TUR, similarly to their colleagues around the world, were forced to use almost all the digital tools they had at their disposal at this difficult time,

especially during the emergency online teaching period in the Spring 2020 semester. At the same time, language learners were forced to independently use different crowdsourcing tools and platforms to catch up with the requirements of their institutions.

3.3 Participants

A total of 396 university students participated in the study. The participants in Study1 (Period1, Spring 2020) were 211 students from TUR (N=43, 20.4%), B&H (N=69, 32.7%), RNM (N=42, 19.4%) and POL (N=58, 27.5%) (see Table 1a). Their age range was 18-39, although 98.1% of them were 18-25 years old (Age Group 1: 18-21 years old, N=109, 51.7%; Age Group 2: 22-25 years old, N=98, 46.4%). Only 1.9% of the informants were in Age Group 3 (Range: 26-39; N=4).

Table 1a: *Participants in Period 1 (P1) (Spring 2020)*

	TUR	B&H	RNM	POL	ALL
Males (M)	12 (27.9%)	17 (24.6%)	27 (65.9%)	12 (20.7%)	69 (33%)
Females (F)	31 (72.1%)	52 (75.4%)	14 (34.1%)	45 (79.3%)	142 (67%)
Prefer not to say	0	0	0	0	0
TOTAL	43 (20.4%)	69 (32.7%)	41 (19.4%)	58 (27.5%)	211 (100%)

As can be seen in Table 1a, 67% (N=142) of the participants were female, while 33% (N=69) were male. The informants from TUR, B&H and POL were training to become foreign language teachers, while the participants from RNM were Information and Communication, Engineering, and Computer Science Engineering students learning English for specific purposes. The smaller number of male participants in the study reflected the gender distribution of students at the Faculties of Education in TUR, B&H and POL (Can Daşkın & Hatipoğlu, 2019).

Table 1b: *Participants in Period 2 (P2) (Spring 2022)*

	TUR	B&H	RNM	POL	ALL
Males (M)	28 (46.7%)	11 (23.9%)	33 (67.3%)	5 (16.7%)	77 (42%)
Females (F)	32 (53.3%)	31 (67.4%)	16 (32.7%)	23 (76.7%)	102 (55%)
Prefer not to say	0	4 (8.7%)	0	2 (6.6%)	6 (3%)
TOTAL	60 (32.4%)	46 (24.9%)	49 (26.5%)	30 (16.2%)	185 (100%)

To have comparable informant groups to the first study (i.e., P1), the data in Study2 (Spring 2022) were collected from the same institutions and faculties. The total number of participants in Study2 was 185 – TUR (N=60, 32.4%), B&H (N=46, 24.9%), RNM (N=49, 26.5%) and POL (N=30, 16.2%) (see Table 1b) – and their age range was 17-40. Similarly to Study1, most of the students (94%) were 18-25 years old (Age Group 1: 18-21, N=114, 62%; Age Group 2: 22-25, N=60, 32%), and only 2% were in the 35-40 age group. Among the 185 participants, 55% (N=102) were female, and 42% (N=77) were male; 3% (N=6) of the informants ticked “Prefer not to say” as an answer to this question.

To check whether the students’ language proficiency affected the type of crowdsourcing tools they utilized for language learning, the participants in both phases of the study were asked to self-evaluate using CEFR levels and criteria (Council of Europe, 2001).

As shown in Table 2a, in Study1 about two-thirds (65.4%) of the participants placed themselves in the *Proficient Users* (C1=79, 37.4% or C2=59, 28%) category, while 18.4% identified themselves as *Independent Users* (B1=6, 2.5% or B2=33, 15.6%). Only a small number of the participants from RNM stated they were *Basic Users* (A1=4, 1.9%; A2=3, 1.3%).

Table 2a: Self-reported level of proficiency of the participants in Period 1 (Spring 2020)

	TUR		B&H		RNM		POL		ALL	
	n	%	n	%	n	%	n	%	n	%
A1					4	9.8			4	1.9
A2					3	7.3			3	1.4
B1			2	2.9	4	9.8			6	2.8
B2	3	7.0	15	21.7	10	24.4	5	8.6	33	15.6
C1	8	18.6	27	39.1	13	31.7	31	53.4	79	37.4
C2	23	53.5	19	27.5	5	12.2	12	20.7	59	28.0
No answer	9	20.9	6	8.7	2	4.9	10	17.2	27	12.8
All	43	100.0	69	100.0	41	100.0	58	100.0	211	100.0

When the students participating in our Period 2 study were asked to evaluate their language proficiency, 99% of them placed themselves in either the *Proficient Users* (C1=91, 49.2% or C2=56, 30.3%) or *Independent Users* (B1=5, 2.7% or B2=31, 16.8%) categories (see Table

2b). Only one student from RNM chose the A1 level, and there was one student who did not respond to this question. So, similarly to the participants in P1, the students we are dealing with in Study 2 are also mainly advanced learners of English, and thus the preferences and experiences discussed in this paper are more relevant to learners with more advanced skills in the target languages.

Table 2b: *Self-reported level of proficiency of the participants in Period 2 (Spring 2022)*

	TUR		B&H		RNM		POL		ALL	
	n	%	n	%	n	%	n	%	n	%
A1					1	2.0			1	0.5
A2									0	0.0
B1			1	2.2	4	8.2			5	2.7
B2	4	6.7	11	23.9	15	30.6	1	3.3	31	16.8
C1	32	53.3	18	39.1	20	40.8	21	70.0	91	49.2
C2	24	40.0	15	32.6	9	18.4	8	26.7	56	30.3
No answer	0	0.0	1	2.2	0	0.0	0	0.0	1	0.5
All	60	100.0	46	100.0	49	100.0	30	100.0	185	100.0

4 Results and discussion

Before the COVID-19 pandemic, crowdsourcing materials were a relatively new phenomenon. Their use was beginning to gain pace, but they were still not often used in the educational context (Chen et al., 2020; Jiang et al., 2018) or in the four countries examined in this study (i.e., TUR, B&H, RNM and POL) (Miloshevska et al., 2021). The rapid switch from face-to-face to online learning, however, surprised and forced students, teachers, and institutions to alter their teaching and learning practices (Delibegović Džanić et al., in press; Hatipoğlu et al., 2022). What about the crowdsourcing resources that students use to learn languages? Did they change from the pre- to the late COVID-19 periods? Were there any changes in the frequencies, attitudes, contexts of use, and habits related to the crowdsourcing materials used by language learners in TUR, B&H, RNM and POL in P2 when compared to P1?

This study aims to answer these questions by comparing the crowdsourcing materials students from TUR, B&H, RNM, and POL knew about and used to learn foreign languages in P1 and P2. It was hoped

that comparing students' answers in P1 and P2 would provide clues about the immediate and prolonged effects of online learning on the students' habits, and would enable different stakeholders in education to create more suitable and productive learning environments for the current and following generations of students based on empirical information coming from four distinct countries.

Analysis of the students' answers in P1 and P2 revealed some general tendencies observed across the four countries and certain country-specific changes (i.e., different countries were affected differently by the pandemic). One common feature was the **increase in the number of platforms listed by the students** in P2. In our first study, the total number of platforms reported by the participants was 26 (see Appendix A; for more details, see Miloshevska et al., 2021). Among those, POL students stated that they had used 14, TUR and B&H students 13 and the participants from RNM had used 8 (i.e., apart from the RNM students, the participants coming from the other three countries had experience with roughly the same number of online platforms). The number of platforms listed in P2 was 92 (i.e., 3.5 times more than in P1), and the percentage of students who said they had never used any crowdsourcing materials went from 6.6% in P1 down to 2.2% (see Appendix B). This finding can, on the one hand, be explained by Chen et al.'s (2020) claim that after the outbreak of COVID-19 the number of mobile online platforms increased because of the market demand for online education and the rise in the number of online platform users. Our participants could list more digital resources because more platforms catering to their needs had been created, and they could choose and use the ones they needed. Another plausible explanation for the observed sharp rise in the number of the listed online resources could be the new "strong technology literacy" (Ali, 2022, p. 202) of the students that was fostered by the prolonged online teaching and learning environment. In the second period examined in this study, P2, the students were still at home, away from their university campuses, with limited or no access to their teachers, peers, and university libraries. This meant that the resources and skills they used to depend on were partially or entirely inaccessible to them. But they had already had some experience with online learning, and they knew they had to develop new skills and find

new resources to help them reach their goals in the new environment. And that is what they did. They improved their technology literacy and started searching for and using tools that best suited their needs.

Different to P1, there were clear differences between the number of crowdsourcing platforms used by the participants in the four countries. The data show that in P2 the TUR students reported using 60, RNM 26, B&H 23, and POL 23 of these platforms (i.e., in P2, TUR students used 4.6 times more crowdsourcing platforms, RNM participants 3.3, B&H 1.8 and POL 1.6). Based on these findings, it can be argued that TUR students were affected the most by the changed teaching mode, RNM students were affected moderately, and B&H and POL were affected the least. One explanation for the sharp rise in the number of online resources employed by TUR students in P2 might come from a study conducted by Delibegović Džanić et al. (in press) in TUR, B&H and RNM. In that study, students were asked to talk about the positive changes brought by online education and TUR students, like the one quoted in Example 1, frequently stated that one

Example 1: *TUR Student 71*

...positive effect and advantage might be my experiences about using web 2.0 tools, computer and doing effective search on net to get my answer and do my assignments more fruitful.

That is, TUR students viewed their experiences with different online resources as something positive, as something that gave them a chance to improve their computer and digital literacy skills.

Among the 26 crowdsourcing sites listed in P1, six were used by the students in all four countries and with relatively high frequency (i.e., *Wikipedia* (N=158, 74.9%), *Kahoot* (N=133, 63%), *Duolingo* (N=130, 61.6%), *Khan Academy* (N=49, 23.2%), *Memrise* (N=43, 20.4%), *Busuu* (N=21, 10%). The remaining 20 platforms were usually rarely employed, and if they were, that usage was country-specific (i.e., they were employed in only one of the studied countries, e.g., *Rosetta Stone* in TUR; *Flocabulary* in B&H; *Quizlet* and *Anki* in POL) (for more details, see Miloshevska et al., 2021). In P2, five sources were used in all the studied countries: *Duolingo* (N=75, 40.5%), *Google Translate* (N=40, 21.6%), *Kahoot* (N=32, 17.3%),

Wikipedia (N=32, 17.3) and *YouTube* (N=31, 16.8%). Similarly to P1, the remaining 87 platforms were utilized less frequently and not across all of the examined countries (see Appendix B).

As shown in Appendix B, the order of popularity and the characteristics of the most frequently used individual platforms changed from P1 to P2. Among the top six resources listed in P1, three were still at the top in the later period – *Duolingo* (N=75, 40.5%), *Kahoot* (N=32, 17.3%) and *Wikipedia* (N=32, 17.3%). However, the number of students who reported using them was much smaller. *Wikipedia*, the overwhelming favorite crowdsourcing resource before and during the first COVID-19 period, as well as *Kahoot* (N=32, 17.3%), *Khan Academy* (N=5, 2.7%), *Memrise* (N=3, 1.6%), and *Busuu* (N=2, 1.1%), were not the go-to sites in P2 anymore. In contrast, platforms such as *Google Translate* (N=40, 21.6%) and *YouTube* (N=31, 16.8%), which just one student in P1 mentioned, were now the second and fifth most popular crowdsourcing sites, respectively, for the students in TUR, B&H, RNM and POL.

Analyses of the contents and aims of the resources listed by the students in P2 showed that they could be grouped under seven categories (see Table 3). The biggest of those categories, as in P1, is still the **language learning and teaching platforms** (e.g., *Duolingo*, *Rosetta Stone*) (N=121, 25.9%), but together with those students reported using resources such as **online dictionaries** (e.g., *Cambridge Online Dictionary*, *Tureng*) (N=82, 17.5%), **professional development and collaboration**

Table 3: Crowdsourcing resource sub-categories in P2

	CATEGORIES	N	%
1.	Language learning and teaching platforms	121	25.9
2.	Online dictionaries	82	17.5
3.	Professional development and collaboration platforms	70	15
4.	Game-based platforms	65	13.9
5.	(Digital) TV channels and news media websites	62	13.2
6.	Translation and grammar monitoring platforms	58	12.4
7.	Social media messaging apps	6	1.3
8.	None of the above	4	0.9
	ALL	468	100.0

resources (e.g., *Anki*, *Wikipedia*, *Udemy*) (N=70, 15%), **game-based platforms** (e.g., *Kahoot*, *Scrabble*) (N=65, 13.9%), **(digital) TV channels and news media websites** (e.g., *Netflix*, *TwitchTV*, *YouTube*, *BBC websites*) (N=62, 13.2%), **translation and grammar monitoring platforms** (N=58, 12.4%), and **social media messaging apps** (N=6, 1.3%), which were mentioned by only a few students or not mentioned at all in P1.

A closer look at the listed platforms showed that in contrast to platforms such as *Wikipedia*, *Duolingo*, *Memrise*, *Khan Academy* and *Busuu* that offer general information or guidance related to learning foreign languages, in P2 the students started searching for and using more resources that catered to their country-specific and/or individual needs, and could fill in the gaps created by the lack of regular, in-person interaction with the most reliable sources of information, i.e., their lecturers, classmates and on-campus libraries.

4.1 Language Learning and Teaching Platforms

Students who participated in the P2 study listed 14 language learning and teaching platforms (LLTP) in total, and they formed 25.9% of all mentioned resources (121/468) (see Appendix B). Among those, *Duolingo* was the most popular tool (overall mentioned by 40.5% of the students in P2) and the only one named by the participants in all four countries (TUR: N=26, 43.3%; B&H: N=16, 34.8%; RNM: N=19, 38.8%; POL: N=14, 46.7%). However, when compared with P1, it was seen that even its popularity dropped 1.5 times in P2, as in P1, it was mentioned by 61.6% of the students.

One possible explanation for the fall in popularity of *Duolingo* in P2 in TUR, B&H, RNM and POL could come from Nadhifah and Puspitasari (2021), who worked with beginner- and intermediate-level undergraduate students in Indonesia. The students used *Duolingo* to learn English during the COVID-19 period as a self-learning tool. The results of the study showed that while beginner-level users felt satisfied with *Duolingo* since it was fun, easy to use and helped them develop their knowledge related to basic structures in English, the intermediate-level students reported that the platform did not really help in improving

their target language skills. They maintained that it was a bit boring and too easy, but the more critical problem for them was the lack of discussion boards on the application. That is, the already isolated learners did not have a chance to share their experiences with each other while using *Duolingo*, and felt they “needed a place to share and to interact with the other users about their experience during using this application” (Nadhifah and Puspitasari, 2021, p. 308). As such, two things in Nadhifah and Puspitasari’s work (2021) are particularly relevant to the current study. First, the students who participated in our P2 study were predominantly advanced learners of English (79.5% of the informants classified themselves as proficient users). *Duolingo*, a novel and exciting platform to use in P1, was now not satisfying their needs as advanced learners in P2. Second, the opportunity for social interaction, which has been shown to motivate students in self-regulated learning (Zimmerman and Schunk, 2001), was missing in *Duolingo*. This aspect of the *Duolingo* that was mentioned as a notable disadvantage by Indonesian students might have been a critical drawback for TUR, RNM, B&H and POL students when choosing a self-regulated learning platform in P2, too.

Among the remaining 13 platforms, *Quizlet* (listed by 14.1% of the students in P2), which only POL students mentioned in P1, was listed by the TUR, RNM and POL participants in P2. It was the second most popular platform overall in P2, and the most popular platform in POL (70%) once more. *Quizlet* is described as a “multi-facet CALL software” (Toy, 2019, p. 26) that can also be used as an online learning platform by both teachers and language learners. One reason why it was used by POL, TUR and RNM students in P2 could be the fact that it combines the benefits of classroom interactivity with personal self-study (Kose et al., 2016), and when using *Quizlet*, students can learn at their own pace and meet their individual needs better, in a fun manner. As seen in Example 2, it looks as if these features of *Quizlet* appealed to the student in three of the studied countries, and they started using it more in P2.

Example 2: *RNM student 16 (from Delibegović Džanić et al., in press)*

I have more free time since I can organize my time more freely.

Khan Academy, *Memrise* and *Rosetta Stone* were listed by TUR and RNM students, while the remaining nine platforms were mentioned by either one or two students in a single country (e.g., *Lingodeer* in TUR, *Lingvist* in RNM).

4.2 Online Dictionaries

“The importance of dictionaries in language learning is indisputable” (Jin and Deifel, 2013, p. 515), as they help language learners understand new words’ meanings, (contextual) usage, and grammatical features. With the creation of online dictionaries, students can now not only read and/or try to guess the pronunciation, intonation, and stress patterns of the words they encounter, but can also listen to and practice saying them. Jin and Deifel, in their 2013 study, claimed that “the emergence of online dictionaries has noticeably influenced the way students learn a foreign language” (p. 515).

Despite these benefits and claims, online dictionaries and thesauruses were not listed among the crowdsourcing materials students had used to learn foreign languages in our first study. This picture changed dramatically in P2, where they were the second most frequently mentioned group of resources (see Table 4). Students listed 18 online dictionaries and thesauruses in total, and more than half of the students in POL (N=20, 66.6%), TUR (N=34, 56.7%) and B&H (N=54.3%) said they were using these to learn foreign languages. The exceptional group was the RNM students, among whom only three (6.1%) listed any online dictionaries and thesauruses.

A closer look at the types and characteristics of the listed dictionaries shows that students not only consulted the “known”/“global” sources (e.g., *Cambridge*, *Oxford*, *Longman*), but they also started depending more on locally created online dictionaries (e.g., *Tureng* for TUR students, *DIKI* for the POL group) where entries related to language-/culture-specific terms, idioms and phrases, usually missing from the “general” sources, are included. Two such examples are the *Tureng Online Dictionary* (<https://tureng.com/tr/turkce-ingilizce>) initiated by a Turkish translation company, and *DIKI: Słownik Angielsko-Polski, Słownik Angielski Online* (www.diki.pl), whose webserver is in Warsaw,

Poland. *Tureng* was the second most frequently used dictionary by TUR students after the *Cambridge Online Dictionary*, and as shown in Figure 2 it includes translations for language-specific idiomatic expressions such as “*Ellerine sağlık*”. This phrase, whose literal translation is “*Health to your hands*”, is a speech act that native speakers of Turkish use to compliment and express gratitude to their interlocutors simultaneously. Entries related to such phrases are included in *Tureng*, and if the speakers of the language think that their translations, definitions, and explanations should be broadened and/or refined, they can do that via a specific tab/function on the platform (see Figure 2). This, in turn, means that language learners have dictionaries on which they can rely

Table 4: *Online Dictionaries used for language learning in P2*

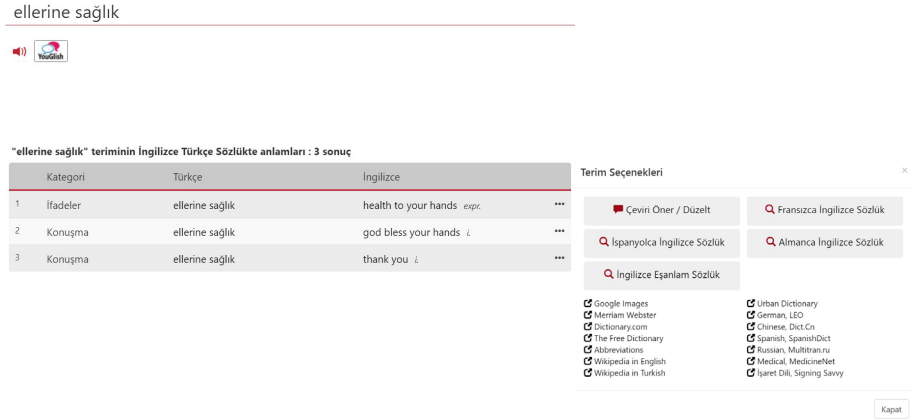
Tools			TUR		B&H		MAC		POL		ALL	
			n	%	n	%	n	%	n	%	n	%
1.	3.	BAB.LA					1	2.0			1	0.5
2.	10.	Cambridge (Online) Dictionary	13	21.7	2	4.3					15	8.1
3.	13.	Diki							6	20.0	6	3.2
4.	20.	English idioms and phrases			1	2.2					1	0.5
5.	29.	Glosbe			5	10.9			1	3.3	6	3.2
6.	39.	Linguee							1	3.3	1	0.5
7.	41.	Longman (Online) Dictionary	1	1.7	1	2.2					2	1.1
8.	51.	One Look Thesaurus (online)	2	3.3							2	1.1
9.	52.	Online dictionaries	4	6.7	12	26.1			9	30.0	25	13.6
10.	54.	Oxford Online Dictionary	3	5.0	4	8.7					7	3.8
11.	55.	Ozdic	2	3.3							2	1.1
12.	58.	Pons							2	6.7	2	1.1
13.	64.	Relatedwords.org	1	1.7							1	0.5
14.	69.	SpanishDict					1	2.0			1	0.5
15.	75.	TheFreeDictionary	1	1.7							1	0.5
16.	76.	Tureng (online dictionary)	7	11.7							7	3.8
17.	82.	Urban Dictionary					1	2.0			1	0.5
18.	88.	Word Reference							1	3.3	1	0.5
ALL			34	56.7	25	54.3	3	6.1	20	66.7	82	44.3

for translating phrases that they frequently use in their first language, want to use in their target language texts, but usually are not found in other dictionaries. Such dictionaries save time and maybe allow them to complete their work faster.

Another essential characteristic of some of the dictionaries listed by the students was that they were based on and/or benefited from the research done in corpus linguistics (e.g., *Ozdic*, *Relatedwords.org*, *Bab.la*, *English Idioms and phrases*). These new generation dictionaries are based on available corpora (e.g., the British National Corpus), and are regularly updated using internet searches to ensure “the most up-to-date usage for fast changing areas of language”². Another advantage of these dictionaries is that they present easily searchable information related to **collocations** which are words or phrases that are

often used with another word or phrase, in a way that sounds correct to people who have spoken the language all their lives but might not be expected from the meaning, e.g., “*a hard frost*” but not “*a strong frost*” in English. (Cambridge Online Dictionary)³

ellerine sağlık



The screenshot shows a search result for the Turkish phrase "ellerine sağlık". The results are displayed in a table with columns for 'Kategori', 'Türkçe', and 'İngilizce'. There are three entries: 1. İfadeler, 2. Konuşma, and 3. Konuşma. To the right of the table is a 'Terim Seçenekleri' (Term Selections) panel with a search bar and a list of various online dictionaries and translation services, including Google Images, Merriam Webster, Dictionary.com, The Free Dictionary, Abbreviations, Wikipedia in English, Wikipedia in Turkish, Urban Dictionary, German, LEO, Chinese, Dict.Cn, Spanish, SpanishDict, Russian, Multitran.ru, Medical, MedicineNet, and Smart Dik, Signing Savvy. A 'Kapat' (Close) button is at the bottom right of the panel.

Kategori	Türkçe	İngilizce
1 İfadeler	ellerine sağlık	health to your hands expr. ...
2 Konuşma	ellerine sağlık	god bless your hands i. ...
3 Konuşma	ellerine sağlık	thank you i. ...

Figure 2: TURENG Dictionary.⁴

Such information is essential for language learners, since research shows that even advanced learners of English have problems mastering collocations (Laufer and Waldman, 2011).

2 <https://ozdic.com/>

3 <https://dictionary.cambridge.org/dictionary/english/collocation?q=collocations>

4 <https://tureng.com/en/turkish-english>

In addition to the above, this new generation of dictionaries (e.g., *Ozdic*) present the material in context with grammar and register information (e.g., daily/informal vs academic vs formal writing) as well as natural word combinations and alternatives. All of these help learners write using more “native-like language”, and they are able to access and check that information quickly and for free.

All these features of the online dictionaries combined with the effects of “forced partial or complete isolation” during the second COVID-19 online learning period can explain the sharp increase in the use of these sources. Deprived of access to their teachers, peers and libraries, students had to find new, fast and reliable means to help them with the tasks at hand. Rundell (2014, p. 1) argues that “with easy access to numerous free reference sites, users searching for lexical information have a huge variety of options”, and they choose online dictionaries because they include all the information contained in paper dictionaries but also materials that go “far beyond the traditional focus of ‘the dictionary’” (Rundell, 2014, p. 6). That is, they include,

language games, pedagogically-oriented videos, downloadable teaching materials, a weekly column on new words, and an active blog with regular contributions on a variety of language issues from both Macmillan’s own editors and over a hundred guest bloggers. (Rundell, 2014, p. 6).

Stated differently, online dictionaries include many essential features that paper dictionaries, peers and lecturers provided in some way or another during the face-to-face teaching periods.

Besides the listed advantages of online dictionaries for language learners, another reason for using such a considerable number and wide variety of these resources might be the heavy course load, and the high number of homework projects assigned to students during the semesters taught online. In a study conducted in TUR, B&H and RNM (Delibegović Džanić et al., in press), students complained about the much heavier workload with the online teaching model, and how they struggled to complete their assignments even though they were studying much harder (see Example 3).

Example 3: *TUR Student 20*

I was studying regularly, but now, it is hard for me to focus on my homework not only because it is online, but also I have more course load than before. It is hard for me to catch up with all of the courses.

During the online teaching periods, students were deprived of the systems they knew well and worked well for them (i.e., face-to-face classes where they worked closely with their lecturers and peers). They were on their own, and had a greater workload to deal with. Rundell (2014) and Trinh et al. (2021, p. 29) compared paper and digital dictionaries and argued that one specific advantage of the latter is that their “users can access and search large amounts of information quickly”. Similarly, Li and Xu (2015) maintain that online resources would gradually replace bulky and outdated paper dictionaries, because with digital dictionaries the information retrieval rate is fast and using them is less time-consuming.

In short, during the first COVID-19 period the students did not use online dictionaries, and perhaps did not even know about many of them. However, it looks as if the combination of factors such as lack of access to known and reliable sources and an increase in workload during the second COVID-19 period forced students to look for new resources that would help them complete their assignments in a quick, reliable and high-quality manner, and thus they turned to online dictionaries.

4.3 Professional Development and Collaboration Platforms (PDCP)

Platforms that aim to or can support (pre-service) language teachers with their development as educators were included in the ‘professional development and collaboration platform’ (PDCP) category. These platforms had either one, a combination of or all of the content and characteristics listed below:

- (i) Include resources (e.g., lessons, videos, interactive learning modules, texts) that directly support users in acquiring knowledge and skills.

- (ii) Allow users to build online courses on various topics.
- (iii) Contain course development tools that platform users can use to upload materials that foreign language learners might find helpful (e.g., texts, audios, videos, PowerPoint presentations, PDFs, ZIP files, source code for developers).
- (iv) Allow users to engage and interact with each other via online discussion boards.

In P2, students listed 28 different PDCP platforms, which formed 15% of all crowdsourcing resources (see Table 3 and Appendix B). Apart from *Wikipedia* and *Fizskoteka*, none of the remaining 26 PDCP were listed in our P1 study. Among the 28 platforms, TUR students stated that they used 15 (e.g., *Udemy* (N=2), *Wordwall* (N=2) and *Fandom* (N=2)), POL informants six (e.g., *Anki* (N=2), *Fizskoteka*), the B&H (e.g., *Eng Vid*, *FunEasyLearn*) and RNM (e.g., *Coursera*, *Flocabulary*) groups five each.

There were a large number of platforms listed in P2 (N=28), but apart from *Wikipedia* (N=32, 17.3%), which the participants in all four countries named, each of the other resources were only mentioned by informants from one country. In our opinion, this emphasizes once more not only the richness of such resources (Chen et al., 2020; Kansal et al., 2021), but also the search of students for materials that best suit their needs. It thus looks as if the second COVID-19 period was a period of self-discovery, context discovery and switching from a teacher dependent to a more autonomous learner profile (also see Hatipoğlu et al., 2022).

In TUR, B&H, and POL the students were pre-service language teachers, and they all had to create high-quality work rapidly and by themselves in the second and third COVID-19 semesters. Each country followed, however, different rules and regulations regarding teaching policies at the tertiary level (Miloshevska et al., 2020) and practicum courses (Ersin et al., 2020; Krajka, 2021) during the lockdown periods. The participants in our study were also in a unique position, since while trying to expand their knowledge and English skills they also had to think about the best resources to help them develop the most suitable materials for the students in their practicum classes. Additionally, there were native language and cultural differences between the participant

groups and the students with whom they were expected to interact in their school practice classes. Therefore, each group of students were on their own journey of discovery. They had to assess and understand what was required from them in their unique contexts, and then search for and identify the resources that catered best to their needs. Because of the lack of recommended platforms by the various ministries of education (Krajka, 2021), it is likely that the novice users of crowdsourcing platforms did not get it right the first time and had to search for and find something that would better fit their needs. Hence the large number of platforms listed in this category.

A closer look at the platforms employed by the students showed that they were varied in quality (i.e., from the most general to the more specific ones), content, information presentation, teaching and assessment styles and practices. The first category (i.e., **General Resources**) of PDCP included electronic libraries and encyclopedias (*Wikipedia*), where students could find entries on numerous topics, academic and non-academic journals, and educational and general-interest books. The materials from these platforms were then either used in students' projects or as texts that could be taken and adapted to the needs of students in their practicum classes as they were of different ages and had different proficiency levels.

The second group of **PDCP** were the '**Job specialized platforms**' that allow users to create courses and materials tailored to their students' needs. These are platforms like *Udemy*, where educators have a comprehensive collection of tools (e.g., videos, source code for developers, PowerPoint presentations, PDFs, audio, ZIP files and any other content that learners might find helpful) that they can use to build online courses on specific topics. These platforms also allow course/material creators to engage and interact with their students and colleagues via online discussion boards.

The richest sub-group of PDCP was Group 3, which included tools with which materials for more specialized purposes could be created. These aim at developing particular types of knowledge (grammar, vocabulary) or skills for foreign language learners (speaking, writing, test-taking skills), and include platforms such as *Worldwall*,⁵

5 <https://wordwall.net/>

Spike Notes,⁶ *Easy Languages*,⁷ *engVid*,⁸ *FunEasyLearn*,⁹ *Coursera*,¹⁰ *Flocabulary*,¹¹ *Vocaroo*,¹² *Fizskoteka*¹³ (for the full list see Appendix B). The list of platforms in this group was the longest, proving once again that students were trying to find the ones that fit their needs the best.

What is more, depending on the severity of the pandemic in the examined countries and the level of access of the students to the internet and the required equipment (e.g., PC computers, laptops, smartphones), the various ministries of education planned and organized education in K-12 and tertiary education differently. In TUR, for instance, after it became clear that a considerable number of K-12 students had either no or limited access to the internet, in addition to strengthening the infrastructure of the already existing Educational Informatics Network (EBA) and introducing EBA-TV, the Ministry of National Education collaborated with the Turkish Radio and Television Corporation (TRT) and started airing the K-12 lessons on TRT channels (Özer, 2020). This change in policy forced pre-service teachers to prepare different materials for different modes of practicum applications, which in turn required the usage of a bigger number of crowdsourcing materials.

4.4 Game-based Platforms

Kahoot was the only game-based platform listed by the students in P1 (Miloshevska et al., 2021). It was a popular tool in all of the studied countries. Overall, it was used by 63% of the participants, but it was a particularly popular platform in POL and TUR, where respectively, 93.1% and 83.7% of the students stated that they had used it to learn languages (see Appendix A).

In P2, game-based platforms were the fourth most frequently used resource, while in P1 they formed only 13.9% of all mentioned resources (see Table 3). For P2 the participants listed nine platforms,

6 <https://www.sparknotes.com/>

7 <https://www.easy-languages.org/>

8 <https://www.engvid.com/>

9 <https://www.funeasylearn.com/>

10 <https://www.coursera.org/>

11 <https://www.flocabulary.com/>

12 <https://vocaroo.com/>

13 <https://fizskoteka.pl/>

among which *Kahoot* was the most frequently mentioned one once again. However, when compared with P1, it can be seen that both overall and for individual countries, *Kahoot*'s popularity dropped significantly. In P2, it was used overall by 3.7 times fewer students and by only 25% of TUR, 20% of the POL, 17.4% of the B&H and only 6.1% of RNM students (see Table 5).

Table 5: Game-based platforms used in P2

Tools	TUR		B&H		RNM		POL		ALL	
	n	%	n	%	n	%	n	%	n	%
1. 28. Gamepedia	1	1.7	1	2.2					2	1.1
2. 34. Kahoot	15	25	8	17.4	3	6.1	6	20	32	17.3
3. 44. Minecraft			1	2.2	1	2			2	1.1
4. 53. Online games	1	1.7	5	10.9	11	22.4	2	6.7	19	9
5. 60. Quizizz	1	1.7							1	0.5
6. 67. Scrabble			3	6.5					3	1.6
7. 71. Steam language games	1	1.7							1	0.5
8. 83. Video games	2	3.3			2	4.1			4	2.2
9. 89. Word search (Puzzles)			1	2.2					1	0.5
TOTAL	21	35	19	41.3	17	34.7	8	26.7	65	35.1

Another sub-category listed by participants in all four countries was the generic 'online games' group (N=19.9%). The category with the third highest percentage was a generic one, too – 'video games' (N=4, 2.2%). The presence of these two categories in the collected corpus was interpreted as the respondents saying "there are many online and video games that we use but not one, in particular, that is worth mentioning here". The remaining six games were mentioned by three or fewer students.

It has been known for a while now that online and video games can be effective language-learning tools (Hung, 2019; McNeil, 2020; Thorne and Reinhardt, 2008), since they offer benefits such as engaging dialogues, the opportunity to listen to various accents in English/ the target language, exposure to a variety of grammar structures, new vocabulary, stress relief, and also the possibility of making new friends all at once. Therefore, in a study done before the COVID-19 pandemic, Hung (2019) argued that the "use of learning games in educational

contexts has expanded significantly, leading to the emergence of game-based learning as a recognized field of study” (p. 89). However, it looks as if, at least for this specific group of students, the situation changed with the outbreak of the pandemic. The changed conditions led to the replacement of online or video games with online dictionaries, grammar-checking programs, (digital) TV channels and social media platforms. In our opinion, this shift happened because the latter group of platforms responded to the overwhelmed students’ needs faster, and provided a richer set of materials.

4.5. (Digital) TV Channels and News Media Websites

In P1, *YouTube* and ‘movies and books’ were entries listed by one B&H and one TUR student, respectively, while ‘news media websites’ were not mentioned at all. Stated differently, ‘(digital) TV channels and news media websites’ (TVC&NMW) was an almost non-existent category in the pre-COVID-19 study. The picture changed in P2 when a total of twelve TVC&NMW were listed 62 times (13.2% of all mentioned resources) (see Table 6). Overall, 33.5% of the participants stated that they used one or a combination of these to learn languages.

When the lists of (digital) TV channels and news websites were compared, we saw that TV channels were used much more frequently. They formed 89% of the TVC&NMW resources (N=55), and websites comprised the remaining 11% (N=7). The most popular digital channel, as well as a resource in this group, was *YouTube*. It was listed in all four countries and by 16.8% (N=31) of all students. There might be two reasons why *YouTube*, which was mentioned only once in P1, became such a popular resource during the pandemic. First, with its ever-growing content, *YouTube* has turned into an enormously rich library where users can easily find incredible amounts of information presented through multimodal means (Bloom and Johnston, 2010). In a period when not all teachers and institutions could supply all of the needed materials to their students, *YouTube* became a great alternative or supplement to books and lectures. Second, as early as 2013, Clarkson, in her book entitled *Usage of Social Network Sites amongst University Students*, argued that millions of people use platforms such

Table 6: TV Channels and New Media Websites used in P2 TV Channels and New Media Websites used in P2

		TUR		B&H		RNM		POL		ALL	
Tools		n	%	N	%	n	%	n	%	n	%
1.	5. BBC Learning English	1	1.7			1	2.0	1	3.3	3	1.6
2.	16. DW Deutsch lernen	2	3.3							2	1.1
3.	46. Movies					7	14.3			7	3.8
4.	48. Netflix	7	11.7			2	4.1			9	4.9
5.	49. News Websites	1	1.7							1	0.5
6.	57. Podcasts	2	3.3							2	1.1
7.	73. Ted Talks	1	1.7	1	2.2					2	1.1
8.	78. TV5monde	2	3.3							2	1.1
9.	79. Twitch.tv					1	2.0			1	0.5
10.	84. Voice of America (VOA)	1	1.7							1	0.5
11.	91. Younglish	1	1.7							1	0.5
12.	92. YouTube	14	23.3	9	19.6	6	12.2	2	6.7	31	16.8
ALL		32	53.3	10	21.7	17	34.7	3	10.0	62	33.5

as *Facebook* and *YouTube* to connect with each other based on shared interests, political views, or activities. That is, in a period of social isolation, *YouTube* became a safe space for learning communities “where everyone has a voice [and] anyone can contribute” (Educase Learning Initiative, 2006, p. 2).

Other popular resources in the TVC&NMW group were *Netflix* (N=9, 4.9%) and the generic category ‘movies’ (N=7, 3.8%). When discussing *Netflix*, some students listed generic categories such as ‘movies and/or series on *Netflix*’ while others specifically mentioned series like *A Life on Our Planet*, *Explained*, and *History 101* as beneficial resources for foreign language development. When discussing the benefits of watching movies and soap operas, Bhusal et al. (2020) argued that besides being “very good time passing activities”, they could also be good motivators and, when related to our areas of study, further help with learning some additional content. They can also help foreign language learners with their vocabulary, pronunciation and listening comprehension.

What is interesting about the specifically mentioned programs on *Netflix* is that they are typically short (e.g., *Explained* is less than 20 min long) but tackle some key topics (e.g., *A Life on Our Planet* follows David

Attenborough, who maps the sharp decrease in our planet's biodiversity; *Explained* focuses on issues such as money, the mind, and voting) that are also usually taught in foreign language classes. As such, one reason for the popularity of those programs could be their versatility. That is, by watching these programs, language learners can improve their target language knowledge, while pre-service language teachers might also use them as teaching materials in their practicum classes.

Four news media websites (including *BBC Learning English* and *Voice of America*) were mentioned by the students in P2, and they formed 3.8% (N=7) of all resources. The number of these sites is relatively small, but keeping in mind that they were not mentioned at all in P1, it is encouraging to know that the students were searching for and exploring new resources that have been proven to help others with their foreign language proficiency development. In a study conducted with Indonesian students learning English at the tertiary level, Barella and Linarih (2020) asked participants to listen to the news on various news websites as an extensive listening activity twice a week, and to keep listening logs where they note the names of the websites, the types and lengths of the news shows, and ask and answer questions related to the content of the material they listened to. Similarly to the participants in our study, Indonesian students found *VOA Learning English* and *BBC News*, as well as the *CNN* and *National Geographic* websites, useful sources in helping them develop their foreign language skills. Ninety percent of the students in Barella and Linarih's (2020) study stated that learning English while listening to the news increased their motivation and made learning fun. They also argued that the extensive listening exercises helped improve their listening and speaking skills and expanded their vocabulary.

A close look at the data also showed that there were important differences between the four studied countries in the use of TVC&NMW. Within the TUR group, 53.3% of all students stated that they had used TVC&NMW to learn languages, and listed 10 of the 12 resources in this group. In the remaining three countries, both the number of tools listed and the percentages of the students who employed them were much lower. The RNM group listed three sources, while the B&H and POL groups listed only two. When the percentages of the students helped by these tools are compared, it can be seen that 34.7% of the RNM,

21.7% of B&H and only 10% of POL students listed those resources. Once again, it can be seen that online teaching had a different effects in the examined countries.

4.6 Translation and Grammar Monitoring Programs

Writing in a foreign language is a complex and challenging task (Uluçay and Hatipoğlu, 2017). To write acceptable texts in their non-native language, students must know the target language's spelling, punctuation, and grammar (Hatipoğlu and Algi, 2018). They must also master the register and genre-specific vocabulary and use them appropriately (e.g., collocations, idioms, proverbs). Finally, after creating the first draft, they must revise, reorganize, and edit their texts, keeping in mind language and culture-specific rhetoric rules (Bakry and Alsamadani, 2015; Sokolik, 2003).

Because of all these difficulties associated with writing in a foreign language, and due to the increased rate of communication in English in the last few decades, several companies and research groups have created and developed various pieces of software that can help learners of foreign languages with their grammar, translation and paraphrasing in their target language. Some popular programs are *Google Translate*, *Grammarly*, and *ReversoContext*.

Table 7: Translation and Grammar Monitoring Tools used in P2

Tools	TUR		B&H		RNM		POL		ALL	
	n	%	n	%	n	%	n	%	n	%
1. 11. Conjugato							1	3.3	1	0.5
2. 30. Google Translate	8	13.3	16	34.8	16	32.7			40	21.6
3. 31. Grammarly	5	8.3			3	6.1	1	3.3	9	4.9
4. 59. Quillbot (paraphrasing tool)					1	2.0			1	0.5
5. 65. ReversoContext							6	20.0	6	3.2
6. 77. Turnitin (feedback)	1	1.7							1	0.5
ALL	14	23.3	16	34.8	20	40.8	8	26.7	58	31.4

However, in P1, *Grammarly* and *Google Translate* were listed by just one student and from only one country (TUR). None of the other

translation and computer-mediated corrective feedback digital tools were mentioned. That is, before and during the first emergency COVID-19 period, such tools were not among the ones students in the studied countries were (often) using to learn or improve their foreign languages. This was not the case in P2 (see Table 7), when, overall, 31.4% of students started utilizing translation and corrective feedback tools to improve their target languages. In the second study, those tools were listed by 40.8% of RNM, 34.8% of B&H, 26.7% of POL and 23.3% of TUR students. The participants in the second study listed six tools, and *Google Translate* was the most popular one in TUR, B&H and RNM. The preferred translation tool for the POL students was *Reverso-Context*, which was listed by 20% of them.

One explanation for why students started using translation programs more during the second COVID-19 period, as mentioned above, could be the need to create good-quality papers in a short time, and research in the field shows that such programs can help in this regard. Tsai (2019) worked with native speakers of Chinese learning English and asked them to (1) write an essay in Chinese, (2) draft the same essay in English, (3) translate the Chinese essay into English using *Google Translate*. When the self-written and Google translated texts of the students were compared, it was found that the ones created using *Google Translate* “presented a number of components of significantly higher writing quality than those of students’ SW (self-written) texts, by having more words, fewer mistakes in spelling and grammar, and fewer errors per words” (Tsai, 2019, p. 510). There were also more advanced-level words in the texts created with *Google Translate*.

The most popular grammar monitoring program in the examined countries was *Grammarly*, which was listed by TUR, RNM and POL students (N=9, 4.9%). *Grammarly* is a cloud-based typing assistant that identifies duplicate content and reviews grammar, vocabulary, mechanics (spelling, punctuation errors), as well as language style and delivery mistakes (Bailey and Lee, 2020; Barrot, 2020). One of the more critical advantages of this program mentioned in the literature is that it reduces the errors related to “vocabulary usages (diction), language use (grammar), and mechanics of writing (spelling and punctuation)” (Ghufron and Rosyida, 2018, p. 395; also see Bailey & Lee,

2020; Barrot, 2020). However, it is usually found to be less effective in improving “the content and organization of students’ EFL writing” (Ghufron and Rosyida, 2018, p. 395). It thus looks as if the participants in our study employed *Grammarly* to quickly clean up their texts with regard to problems related to vocabulary, grammar usage, spelling and punctuation in order to concentrate more on the content and organization of their work, as well as on issues stemming from the possible influence of their cultural and first language norms of writing.

What is more, in a study done with Indonesian English education study program students, it was shown that when used to teach reading and writing in English as a foreign language, *Grammarly*, in combination with digital tools such as *Telegram*, *WhatsApp*, *Google Meet*, *YouTube*, and a *Plagiarism Checker*, made a positive contribution not only to the development of the students’ proficiency in their target language, but also to the improvement of their knowledge related to these new digital tools and their self-esteem and belief in themselves (Setyowati et al., 2021).

The lockdown periods during COVID-19 took students away from the known and conventional face-to-face classrooms and pushed them into the technology-based online instruction environment. With the uncertainty of when the pandemic would end, they had two options: to give up and freeze their semesters, or to adapt as quickly as possible and continue fighting and learning. From the information gathered in the current study, it looks as if many of the students chose the latter approach.

4.7 Social Media Messaging Apps

The ‘social media messaging apps’ (SMMA) category was a non-existent category in our first study. None of the 211 students in P1 mentioned any SMMA as tools they had used to learn foreign languages. In P2, the participants listed SMMA six times, accounting for 3.2% of all resources in the second study (see Table 8). Still, the number of learners who found them helpful in supporting their target language development was relatively small compared to the other categories in the current study.

Another important fact related to the use of this category is that, once again, the bulk of the students who treated them as foreign language learning tools were from TUR (four out of six students, 67%). Only one student from B&H and one from POL stated that they used *Reddit.com* and *Discord*, respectively, while none of the students from the RNM listed any SMMA. One possible reason for the observed difference could be the more positive approach to using SMMA in educational settings and teacher education in Turkey in the last two decades. Such applications are seen as an intelligent employment of existing technologies in the classroom (Mendez et al., 2009, p.1), and it is believed that teacher education can benefit from such applications in two ways. First, SMMA can be used to enhance (pre- and in-service) teachers' learning and preparation for the job, and second, in language classrooms, where social media tools could make the learning environment more engaging and benefit the teaching of the target language (Albion, 2008). Balçıkanlı (2010), who examined the effects of social networking on pre-service English teachers' metacognitive awareness and teaching practices in Turkey, found that they both were positively affected.

Table 8: *Messaging Apps used in P2*

		TUR		B&H		RNM		POL		ALL	
Messaging Apps		n	%	n	%	n	%	n	%	n	%
1.	8. Bottled	1	1.7							1	0.5
2.	14. Discord							1	3.3	1	0.5
3.	56. Plotagon	1	1.7							1	0.5
4.	63. Reddit.com	1	1.7	1	2.2					2	1.1
5.	68. Slowly (Twitter app)	1	1.7							1	0.5
ALL		4	6.8	1	2.2			1	3.3	6	3.2

The introduction of this new group of tools among the resources that students use to learn foreign languages could also be seen as a support for Chic and Benson's (2020) claim that online media awareness was particularly high during the COVID-19 pandemic, since most of the world had to adopt digital, online means of working. Language learners, like others, had to start reading, writing and learning online

(i.e., they had to start doing things differently), because this was the only way of accessing the information they needed during this time. What is more, they saw the SMMA, as Barlett-Brag (2006, p. 3) predicted and described, as a “range of applications that augments group interactions and shared spaces for collaboration, social connections, and aggregates information exchanges in a web-based environment”. Once again, students showed flexibility and initiative. When the world required them to change, young people analyzed the situation correctly and adapted accordingly.

5 Conclusions

Education systems around the world have changed because of the COVID-19 pandemic, but what about the learning of foreign languages in this context?

To contribute to answering a part of this important question, the current study focused on four distinct countries – TUR, B&H, RNM and POL – and tried to find answers to the following two research questions:

- (1) What digital crowdsourcing resources did students in TUR, B&H, RNM and POL know about and use to learn foreign languages in the pre- and first- COVID-19 (P1) versus late COVID-19 periods (P2)?
- (2) Were there any changes in the frequencies, attitudes, contexts of use, and habits related to crowdsourcing materials of language learners in TUR, B&H, RNM and POL in P2 when compared to P1?

The results of the study show that in general terms the answers to these questions are, respectively, “many and varied” and “yes”. The attitudes, knowledge and use of crowdsourcing materials by language learners changed from the beginning towards the later phases of the pandemic. Overall, the study’s findings show that the shift from face-to-face to online learning because of COVID-19 significantly affected the development and use of crowdsourcing materials in the studied countries.

In parallel to some earlier studies in the field (e.g., Krishnan et al., 2020), our findings show that the second COVID-19 period (P2) was marked by the use of a much richer range of digital resources when

compared with P1. This, in our opinion, points to three facts. One, as claimed in some previous studies (Chen et al., 2020; Kansal et al., 2021), the number of such resources increased, and the students could find, test, and select the ones that fit their needs better. Second, with the experience they gained in P1, students became more skillful in searching for, finding and using such resources. Learners now had a stronger technological literacy and could use not just one or two but many digital platforms. Three, the students became more autonomous learners, able to better understand their specific contexts and what was expected from them in these (i.e., create high-quality work within a short period of time on your own). There was a realization that they had to switch to a self-regulated learning program because they were the only people who knew what they needed. Therefore, they had to plan and monitor their own actions. They had to search for, find and use the platforms that they thought best fit their needs; and, in the end, they had to reflect on the outcomes of their actions. Since different countries had different expectations from their students, each group needed to follow different paths. Therefore, only a limited number of the listed resources overlapped among the examined countries. The results once again showed students' ability to read their contexts well, and their success in adapting accordingly.

It was also seen that there was not only an increase in the number of resources used, but there was also a change in the students' expectations from the platforms and, as a result, in their features. Resources that were popular in P1 (e.g., *Wikipedia*, *Kahoot*) became less popular in P2, and the ones that were not mentioned at all or very rarely mentioned in P1 came to the fore (e.g., online dictionaries, *YouTube*, social media platforms). There was a general shift from the more general resources to the more needs and country specific ones (e.g., the use of *DIKI* by POL and *Tureng* by TUR students). The ones that presented more tailor-made opportunities for the personal development of the students were the ones that were selected.

It looks as if the students' attitudes towards and expectations from crowdsourcing platforms also changed in P2. They were not only good sources of information for the students but also safe spaces where users were able to connect with people with similar interests and views,

and jointly work on different projects (i.e., they were spaces where “communities of practices” were formed, see Wenger, 1998). The study also seems to support the claim (Schunk and Zimmerman, 2001) that social interaction is a prerequisite for an increase in student motivation and progress in self-regulated learning. Platforms that did not allow for such collaboration lost popularity (e.g., *Duolingo* in P2). The results also showed that a combination of factors such as isolation, lack of access to familiar resources (e.g., teachers, peers, university libraries), increase in workload, and lack of support on the part of institutions might have led to this shift.

The study also found that when it comes to the use of crowdsourcing materials, the changes observed in TUR were much more noticeable than in B&H, RNM and POL. When compared with P1, in P2, TUR students listed the widest variety and biggest number of digital tools among the four groups of students. Factors that might have contributed to the observed differences could be varying policies related to the education practices in K-12 and tertiary education in the examined countries, and decisions related to practicum classes, workload requirements, and cultural differences.

It is hoped that the findings of the study will serve as potential guidelines for language teachers who plan to incorporate crowdsourcing activities into their in- and out-of-class activities in the future. However, they might also provide essential feedback to both groups of platform creators: the ones who aim to design resources that are valid cross-culturally and those who are seeking to create platforms that would cater to language learners with more specialized needs and interests. It is believed that incorporating crowdsourcing resources in language curricula can provide students with more in- and out-of-class collaboration opportunities and more active language learning, which, in turn, will lead to the development of more independent, active and confident language learners.

Despite the careful collection and analysis of the data sets discussed in this study, it should be mentioned that this research was based on questionnaire data gathered from relatively small and unequal (e.g., across countries and genders) samples of students in TUR, B&H, RNM and POL. Therefore, studies where bigger samples and additional

data collection tools (e.g., interviews, observations, exam results and student projects) are employed should be conducted to enhance our understanding of the real changes in the use of crowdsourcing materials for foreign language learning, not only in our four countries but also in others that had similar experiences during the COVID-19 pandemic. Studies where the viewpoints of university lecturers, teachers, university/school administrators or other stakeholders are examined should also be done so that we get a more detailed and realistic picture related to the shifts and/or changes that occurred with regard to the use of crowdsourcing tools in before and after COVID-19 in foreign language teaching and learning.

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Množičenje ter navade in prakse učenja jezikov v Turčiji, Bosni in Hercegovini, Republiki Severni Makedoniji in na Poljskem v predpandemskem in pandemskem obdobju

Priljubljenost spletnih množičenjskih platform za poučevanje in učenje jezikov je pred pandemijo COVID-19 počasi naraščala. Študije, izvedene v Turčiji, Bosni in Hercegovini, Republiki Severni Makedoniji in na Poljskem, so pokazale, da so jih učitelji uporabljali tako kot orodje pri pouku in izven njega. Po drugi strani pa so jih učenci uporabljali kot pomoč pri izpopolnitvi svojih spretnosti in znanja ciljnih jezikov ter da bi postali bolj avtonomni. Izobraževalni sistemi po vsem svetu ter ustaljene prakse poučevanja in učenja pa so se vendar spremenili s pandemijo covid-19. Ta raziskava si prizadeva odkriti, ali so se med pandemijo COVID-19 spremenila stališča, konteksti uporabe, frekventnost in navade učencev jezikov v Turčiji, Bosni in Hercegovini, Republiki Severni Makedoniji in na Poljskem, in če »DA«, kako.

Da bi primerjali uporabo orodij za množičenje pred in med pandemijo covid-19 pri učencih jezika v omenjenih štirih državah, smo ponovno uporabili medkulturno ustrezen vprašalnik, ki smo ga pred tem že uporabili v obdobju pred pandemijo. Zbrane podatke smo kvalitativno in kvantitativno preučili, da bi odkrili tudi najmanjša odstopanja. Postavili smo hipotezo, da so platforme za množičenje postale bolj razširjene med pandemijo zaradi znatnih sprememb, povezanih s poučevanjem in učenjem jezikov. Hipoteza je temeljila na ugotovitvah raziskave, ki je pokazala, da so bili učitelji v Turčiji, Bosni in Hercegovini, Republiki Severni Makedoniji in na Poljskem, podobno kot njihovi kolegi po svetu, prisiljeni uporabljati skoraj vsa digitalna orodja, ki so jih imeli na voljo, zlasti v kriznem obdobju selitve poučevanja na splet pomladi leta 2020. Obenem so bili učenci jezikov prisiljeni samostojno uporabljati številna orodja in platforme množičenja, da bi sledili zahtevam izobraževalnih ustanov.

Rezultati so pokazali, da je prehod z učenja v živo na spletno učenje zaradi covid-19 pomembno vplival na razvoj platform za množičenje po vsem svetu

in na uporabo virov za množičenje v državah, vključenih v raziskavo. Opaziti je bilo, da se ni povečalo le število uporabljenih virov, temveč so se spremenile tudi funkcije uporabljenih platform (tj. od bolj splošnih k bolj »prilagojenim potrebam in državam«). Rezultati so tudi pokazali, da je preplet dejavnikov, kot so sprememba načina poučevanja, manjša interakcija z učitelji in vrstniki, večja delovna obremenitev in pomanjkanje stalne podpore s strani izobraževalnih ustanov, privedel do tega, da so učenci sami prevzeli odgovornost za svoje učenje. Spoznali so, da so edini, ki vedo, kaj potrebujejo, in da so edini, ki si lahko pomagajo, zato so začeli iskati in uporabljati platforme, ki so najbolj ustrezale njihovim zahtevam. Ker so bila pričakovanja in potrebe učencev v preučevanih državah različna, so se število, pogostost in lastnosti priljubljenih platform od države do države spreminjali.

Upamo, da bodo izsledki raziskave služili kot morebitne smernice za učence in učitelje jezikov, ki nameravajo v svoje dejavnosti v razredu in zunaj njega vključiti dejavnosti množičenja. Rezultati bi obenem lahko predstavljali pomembne povratne informacije za ustvarjalce platform, ki si prizadevajo oblikovati vire, ki so medkulturno ustrezni, hkrati pa izpolnjujejo bolj posebne zahteve učencev jezikov v specifičnih okoliščinah. Menimo, da lahko vključitev množičenja v jezikovne učne načrte učencem omogoči več priložnosti za sodelovanje v razredu in zunaj njega ter učinkovitejše učenje jezika, kar bo posledično privedlo do razvoja bolj samostojnih, aktivnih in samozavestnih učencev jezika.

Ključne besede: množičenje, učenje jezikov, COVID-19, obdobje pred pandemijo, obdobje po pandemiji

Appendix A: Period 1: Crowdsourcing sites/tools used to learn foreign languages

Crowdsourcing tools	TUR		B&H		RNM		POL		ALL	
	%	n	%	n	%	n	%	n	%	n
1 Wikipedia	37	86	40	58.0	29	70.7	52	89.7	158	74.9
2 Kahoot	36	83.7	31	44.9	12	29.3	54	93.1	133	63.0
3 Duolingo	23	53.5	40	58.0	20	48.8	47	81.0	130	61.6
4 Khan Academy	9	20.9	8	11.6	23	56.1	9	15.5	49	23.2
5 Memrise	10	23.3	7	10.1	3	7.3	23	39.7	43	20.4
6 Busuu	9	20.9	3	4.3	2	4.9	7	12.1	21	10.0
7 Quizlet							19	32.8	19	9.0
8 Storybird	4	9.3	8	11.6	2	4.9			14	6.6
9 Writeandimprove.com	1	2.3	5	7.2	2	4.9			8	3.8
10 Anki							6	10.3	6	2.8
11 Speakandimprove.com	1	2.3							1	0.5
12 Grammarly	1	2.3							1	0.5
13 Movies and books	1	2.3							1	0.5
14 Rosetta Stone	1	2.3							1	0.5
15 Voscreen	1	2.3							1	0.5
16 Insta.ling							1	1.7	1	0.5
17 Wordreference							1	1.7	1	0.5
18 Fiskoteka							1	1.7	1	0.5
19 Lingo Hut							1	1.7	1	0.5
20 Kanji Study							1	1.7	1	0.5
21 Tandem language app							1	1.7	1	0.5
22 Flocabulary			1	1.4					1	0.5
23 Drops			1	1.4					1	0.5
24 English Club TV			1	1.4					1	0.5
25 Google translate			1	1.4					1	0.5
26 YouTube			1	1.4					1	0.5
27 None of them	0	0	10	14.5	4	9.8	0	0.0	14	6.6

Appendix B: Period 2: Crowdsourcing sites/tools used to learn foreign languages in alphabetical order

Crowdsourcing tools	TUR		B&H		RNM		POL		ALL	
	n	%	n	%	n	%	n	%	n	%
1 activelylearn.com	1	1.7							1	0.5
2 Anki							2	6.7	2	0.9
3 BAB.LA					1	2.0			1	0.5
4 Babble	1	1.7							1	0.5
5 BBC Learning English	1	1.7			1	2.0	1	3.3	3	1.4
6 blogs					1	2.0			1	0.5
7 Books					4	8.2			4	1.9
8 Bottled	1	1.7							1	0.5
9 Busuu	2	3.3							2	0.9
10 Cambridge (Online) Dictionary	13	21.7	2	4.3					15	7.1
11 Conjugato							1	3.3	1	0.5
12 Coursera					1	2.0			1	0.5
13 diki							6	20.0	6	2.8
14 Discord							1	3.3	1	0.5
15 Duolingo	26	43.3	16	34.8	19	38.8	14	46.7	75	35.5
16 DW Deutsch lernen	2	3.3							2	0.9
17 Easy Languages	1	1.7							1	0.5
18 EDX	1	1.7							1	0.5
19 Eng Vid			1	2.2					1	0.5
20 English idioms and phrases			1	2.2					1	0.5
21 eTutor							1	3.3	1	0.5
22 Fandom	2	3.3							2	0.9
23 Fiskoteka							1	3.3	1	0.5
24 Flocabulary					1	2.0			1	0.5
25 Forums	1	1.7							1	0.5
26 francaisfacile	1	1.7							1	0.5
27 FunEasyLearn			1	2.2					1	0.5
28 Gamepedia	1	1.7	1	2.2					2	0.9
29 Glosbe			5	10.9			1	3.3	6	2.8
30 Google translate	8	13.3	16	34.8	16	32.7			40	19.0
31 Grammarly	5	8.3			3	6.1	1	3.3	9	4.3
32 Hello talk	1	1.7							1	0.5

Crowdsourcing tools	TUR		B&H		RNM		POL		ALL	
	n	%	n	%	n	%	n	%	n	%
33 isl collective.com	1	1.7							1	0.5
34 Kahoot	15	25.0	8	17.4	3	6.1	6	20.0	32	15.2
35 Khan Academy	4	6.7			1	2.0			5	2.4
36 Learn Spanish	1	1.7							1	0.5
37 Lingodeer	1	1.7							1	0.5
38 Lingua	1	1.7							1	0.5
39 Linguee							1	3.3	1	0.5
40 Lingvist					1	2.0			1	0.5
41 Longman Dictionary	1	1.7	1	2.2					2	0.9
42 Memrise	1	1.7			2	4.1			3	1.4
43 Mentimeter	1	1.7							1	0.5
44 Minecraft			1	2.2	1	2.0			2	0.9
45 monDly							1	3.3	1	0.5
46 Movies					7	14.3			7	3.3
47 Nearpod	1	1.7							1	0.5
48 Netflix (e.g., series like History 101, Explained, movies, etc.)	7	11.7			2	4.1			9	4.3
49 News websites	1	1.7							1	0.5
50 None of them	1	1.7	3	6.5					4	1.9
51 One Look Thesaurus (online)	2	3.3							2	0.9
52 Online dictionaries	4	6.7	12	26.1			9	30.0	25	11.8
53 Online games	1	1.7	5	10.9	11	22.4	2	6.7	19	9.0
54 Oxford Online Dictionary	3	5.0	4	8.7					7	3.3
55 Ozdic	2	3.3							2	0.9
56 Plotagon	1	1.7							1	0.5
57 Podcasts	2	3.3							2	0.9
58 Pons							2	6.7	2	0.9
59 Quillbot (paraphrasing tool)					1	2.0			1	0.5
60 Quizizz	1	1.7							1	0.5
61 Quizlet	3	5.0			2	4.1	21	70.0	26	12.3
62 Reading power	1	1.7							1	0.5
63 Reddit.com	1	1.7	1	2.2					2	0.9
64 Relatedwords.org	1	1.7							1	0.5
65 ReversoContext							6	20.0	6	2.8

Crowdsourcing tools		TUR		B&H		RNM		POL		ALL	
		n	%	n	%	n	%	n	%	n	%
66	Rosetta Stone	1	1.7			1	2.0			2	0.9
67	Scrabble			3	6.5					3	1.4
68	Slowly (Twitter app)	1	1.7							1	0.5
69	SpanishDict					1	2.0			1	0.5
70	Spike Notes	1	1.7							1	0.5
71	Steam language games	1	1.7							1	0.5
72	Teamspeak							1	3.3	1	0.5
73	Ted Talks	1	1.7	1	2.2					2	0.9
74	Test English	1	1.7							1	0.5
75	TheFreeDictionary	1	1.7							1	0.5
76	Tureng (Online Dictionary)	7	11.7							7	3.3
77	Turnitin (Feedback)	1	1.7							1	0.5
78	TV5monde	2	3.3							2	0.9
79	Twitch.tv					1	2.0			1	0.5
80	Udemy	2	3.3							2	0.9
81	Uncharted	1	1.7							1	0.5
82	Urban Dictionary					1	2.0			1	0.5
83	Video games	2	3.3			2	4.1			4	1.9
84	VOA (Voice of America)	1	1.7							1	0.5
85	Vocaroo							1	3.3	1	0.5
86	Websites			5	10.9					5	2.4
87	Wikipedia	5	8.3	10	21.7	15	30.6	2	6.7	32	15.2
88	Word reference							1	3.3	1	0.5
89	Word search			1	2.2					1	0.5
90	Wordwall	2	3.3							2	0.9
91	Younglish	1	1.7							1	0.5
92	YouTube	14	23.3	9	19.6	6	12.2	2	6.7	31	14.7
93	Zlibrary			1	2.2					1	0.5
ALL		171		108		105		84		468	