European Journal of Foreign Language Teaching
ISSN: 2537 - 1754
ISSN-L: 2537 - 1754
Available on-line at: www.oapub.org/edu

doi: 10.46827/ejfl.v6i3.4432 Volume 6 | Issue 3 | 2022

USE OF DIGITAL TECHNOLOGY IN LEARNING FRENCH AND ITALIAN AS A FOREIGN LANGUAGE

Ariana Violić-Koprivec,
Zrinka Režić Tolj[i]
Language Center,
University of Dubrovnik,
Croatia

Abstract:
The implementation of digital technology changes the way how language is learned, and it enables various communication and interaction methods, both in and out of the classroom. This opens up new opportunities to increase student motivation which, as a consequence, facilitates better outcomes in foreign language acquisition. This research was conducted by using a questionnaire compiled by the authors of this paper. The participants of this research were students of philological and non-philological study programs who had been learning the French and Italian languages at Croatian universities (*N*=206). The aim of the research has been to develop and validate a scale for analyzing digital technology use in foreign language learning. The scale was used in order to analyze digital technology use in learning the French and Italian languages. The level of respondents' digital competence and the level of their language proficiency was determined, and the correlation of these two variables with digital technology use was examined in the total sample and on two sub-samples included in this research. The contribution of this research is the design of a valid measuring instrument to analyze digital technology use in foreign language learning.

Keywords: digital technology use in foreign language learning scale, digital competence, language proficiency level, French and Italian as a foreign language

1. Introduction

The ubiquity of digital technology in the modern world has an impact on its role in education in general as well as in learning and teaching foreign languages. Digital technology is used in education in order to make the learning process more efficient, attractive and easy. Technology commenced to be integrated into the teaching and learning of foreign languages in the 1960s as a mechanic tutor for repetitive language training. Due to the fast development of technology, its implementation in education

[i] Correspondence: email ariana.violic-koprivec@unidu.hr, zrinka.rezic@unidu.hr

became more and more widespread and present, especially after the advent of the World Wide Web (Li, 2017). Technology in general, and digital technology in particular, has been used to improve all aspects of the learning and teaching of foreign languages, especially the acquisition of language structures, skills and intercultural competence.

Digital technology includes numerous electronic tools, systems, devices and resources that create, store and/or process data, such as mobile phones, computers, laptops, tablets, multimedia, social networks, online gaming, various applications, etc. The implementation of digital technology changes the way how language is learned and facilitates various ways of communication and interaction both in and outside of the classroom. This opens up new possibilities to increase student motivation and, consequently, enables students to achieve better results in foreign language acquisition. Besides being broadly accessible, digital technology can adapt to the learning process and so, if teachers use it, they are able to change their teaching strategies and activities in order to use its potential as efficiently as possible. The preconditions to do that are the availability of digital technology and the digital competence of teachers and students; if present, attitudes towards digital technology use will play a crucial role with respect to its efficient use.

In 2013, the European Commission published A Framework for Developing and Understanding Digital Competence (Ferrari, 2013, p. 11), which describes the areas of digital competence in detail.

> "*Digital competence is the set of knowledge, skills, attitudes, strategies, values and awareness that are required when using ICT and digital media to perform tasks; solve problems; communicate; manage information; collaborate; create and share content; and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure, participation, learning, socializing, consuming & empowerment*." (Ferrari, 2012, p. 30).

Digital competence is an important precondition for the use of all opportunities offered by digital technology in the learning and teaching process.

Although we can refer to the generations of today as technophiles, they still lack some technical and conceptual knowledge of the applied type to be able to also use digital technology in the educational context more adequately (Gałan, 2021, p. 175). The implementation of digital technology in didactic activities varies from simple to creative use that prioritises the interactive and participative nature of digital technology. Through his SAMR model, Puentedura (2013) differentiates four levels of implementation and integration of digital technology: substitution, augmentation, modification and redefinition. Usage levels may vary, nevertheless, the implementation of digital technology represents today a vital characteristic in the foreign languages learning and teaching process. Its importance is that much bigger because it enables independent learning, irrespective of the time and place of learning. Pupil and student generations of today, called "digital natives", have grown up with digital technology, they are exposed to it every day and all the time, and they use it constantly. This is why their way of

learning also differs from the way of learning of the previous generations. Today, as Li (2017, p. 6) points out, in our work with the generations that have already integrated technology into their everyday lives we are faced with the challenge of how to use new technologies in the teaching and learning of foreign languages.

2. Literature review

Numerous research has analyzed the correlation between the use of information and communications technology (ICT), i.e., digital technology and foreign languages learning. Research has been focused on various aspects of digital competence in learning and teaching foreign languages, on analyzing student preferences relating to the use of various technologies and technology-mediated activities in foreign languages learning, on analyzing student attitudes towards technology use and its advantages in foreign languages learning, e.g. in the development of the four language skills, on analyzing teachers' perception about the effectiveness of ICT in foreign language teaching, etc. (e.g. Alakrash & Razak, 2021; Alsulami, 2016; Ayers, 2002; Chapelle, 2003; Ghavifekr & Rosdy, 2015; Guarda, 2012; Guichon, 2012; Hafner, 2015; Koua, 2013; Son, Park & Park, 2017; Stepp-Greany, 2002; Weinberg, Peters & Sarma, 2005). Research has shown that the use of ICT has numerous beneficial effects, e.g., it fosters the learning process, improves communication, boosts creativity and imagination, enables higher activity and engagement of students during classes, i.e., "*the use of ICT enhances students thinking and enables them to think out of the box and make the best use of their learning process*" (Ghavifekr & Rosdy, 2015, p. 183). However, some research has highlighted the negative impact of technology on students' learning. E.g., Ushida (2005, p. 69) mentions students' procrastination in doing their assignments, which the use of digital technology and its flexibility enables, Ghavifekr & Rosdy (2015, p. 183) refer to teachers' attitudes that the use of the internet and social networks makes students pay less attention and makes it harder for teachers to control the classroom. Baldani (2021, p. 8) points out that, although enabling students to search for information and find solutions quickly, the use of the internet and social networks causes students to be superficial.

When it comes to the use of ICT in foreign languages learning, the consulted literature refers to various research, numerous topics and different measuring instruments that have been created by some authors for the needs of their particular research. The prevailing opinion is that the role of ICT in foreign languages learning is positive, and the majority of research relates to the English language. According to the results of the research carried out at a global level, students mostly have a positive attitude towards the use of ICT in learning English as a foreign language (e.g., Alsulami, 2016; Bećirović, Brdarević-Čeljo & Delić, 2021; Guillén-Gámez, Romero Martínez & Ordóñez Camach, 2020; Liu, 2009; Son, Park & Park, 2017). Some of the research analyzing the use of ICT in learning and teaching other foreign languages relate to the French language (e.g., Aukrust & Uvsløkk, 2013; Chenoweth & Murday, 2003; Deloy, 2020; Karabulut et. al., 2012; Emaish, 2016; Weinberg, Peters & Sarma, 2005) and the

Italian language (e.g. Baldani, 2021; Biasini & Proudfoot, 2018; Giglio, 2014; Maggini, 2001; Paulišić, 2019; Pichiassi, 2007; Quaggia, 2013; Santalucia, 2010).

In the Croatian educational context, some research has analyzed the implementation of digital technology in education in general (e.g. Mueller & Varga, 2019; Lasić-Lazić, Špiranec & Banek Zorica, 2012; Nadrljanski et al., 2017; Mateljan, Širanović & Širanović, 2007; Mrkonjić, Vlašić & De Zan, 2000), while other research has analyzed the role of digital technology in the learning and teaching of foreign languages (e.g. Janjić, Librenjak & Kocijan, 2015; Paulišić, 2019; Velički, 2006; Velički & Topolovčan, 2017).

Whether people will use digital technology in foreign languages learning and to what extent depends on their personal attitudes towards digital technology. A positive attitude is a precondition for successful work and the use of digital media. However, one must point out that other factors may also have an impact, such as equipment, i.e., the technical environment in general as well as the digital competences of teachers and students.

3. The study

The aim of the study is to develop and validate a scale for analyzing the use of digital technology in foreign language learning in curricular and extracurricular activities. Based on this scale, the use of digital technology in learning the French and Italian languages was analyzed. After determining the digital competence level and language proficiency level of the respondents, the correlation of these two variables with digital technology use was tested. Two sub-samples (students who had been studying the French language and those who had been studying the Italian language) were compared according to these variables. The following research questions are posed and investigated in this study:

Q1: Is there a correlation between digital technology use in learning French and Italian as a foreign language with the digital competence and language proficiency level?

Q2: Is there a difference between the two sub-samples (students who have been learning French and students who have been learning Italian) with respect to digital technology use in learning these foreign languages?

Q3: Is there a difference between the two sub-samples with respect to the correlation of digital technology use and language proficiency?

4. Methodology

4.1. Participants

206 students from philological and non-philological study programs of the University of Dubrovnik, University of Split, University of Zadar and University of Zagreb, who had been learning French and Italian as a foreign language, participated in this study. 106 participants had been learning the French language (51.5%), and 100 the Italian language (48.5%). The majority of participants were students of humanities (53.4%), which included students of the French and Italian languages (18.9% of the total sample). The rest of the research participants (46.6%) were students of social and artistic study

programs, and only one participant was a student of maritime studies. Out of the total number of respondents, 84% were undergraduate students and 16% were graduate students.

4.2. Data collection & instruments

Our research was conducted online in 2021, by using two versions of the questionnaire, i.e., the questionnaire for the students who had been learning the French language and the questionnaire for the students who had been learning the Italian language. Both versions of the questionnaire were essentially the same. The questionnaire was compiled in Google Forms in the Croatian language. Upon receiving the approval to conduct the research, foreign language lecturers from the aforementioned universities were contacted and kindly asked to forward the link with the questionnaire to their students. The research was unanimous and student participation was voluntary. Data collection lasted four weeks.

The questionnaire consisted of two parts, the first part being related to general data with self-assessment of digital competence and language proficiency, and the second part being the measuring instrument, i.e., the scale for measuring digital technology use in foreign language learning. In the first part of the questionnaire, the participants gave their general information (gender, age, study program). They stated precise information about their gender and age; the age information was stated by choosing an age from 18 to 25, and the participants older than 25 freely entered their age by themselves. Among the offered study programs[ii], students were able to choose their study program, and, if their respective study program was not available in the multiple-choice responses, they were able to enter the precise name of their study program by themselves.

Students were also asked to assess their digital competence. For the purposes of this research, the self-assessment of students' digital competence was based on the levels stated in the European Commission's *Digital Competence Framework* (Carretero, Vuorikari & Punie, 2017). The DigComp 1.0 scale was used, which consists of four levels, and it relates to the ability to filter information, communication, content creation, safety and problem-solving. Digital competence proficiency levels according to the *Digital Competence Framework* are as follows: level 1 – foundation user (able to solve simple tasks, with guidance), level 2 – intermediate user (able to solve non-routine problems, independent), level 3 – advanced user (able to filter digital content, align the use of appropriate collaboration tools and evaluate), level 4 – highly-specialized user (able to resolve complex problems with many interacting factors, proposes new ideas). Except for their digital competence, respondents needed to also evaluate their French and Italian language proficiency according to the language proficiency levels referred to in the Common European Framework of Reference for Languages. They did so by selecting one of the following language proficiency levels: A1 – elementary user, A2 – pre-intermediate

[ii] Tourism and Hotel Industry, Media and Communications, Artistic Studies, Economics and Management.

user, B1 – intermediate user, B2 – upper-intermediate user, C1 – advanced user, C2 – proficient user.

The second part of the questionnaire contained the measuring instrument, i.e. the scale. Initially, the scale consisted of 7 items measuring the use of digital technology in foreign language learning. On a Likert scale from 1-5, students had to evaluate how much a certain item relates to them, by choosing their response according to the following legend: 1=it does not relate to me at all; 2=it mostly does not relate to me; 3=I cannot state that it either relates or does not relate to me; 4=it mostly relates to me; 5=it fully relates to me.

5. Results

5.1. Digital technology use in foreign language learning scale

Since digital technology use in foreign language learning scale was designed for the purposes of this research, analyses to test the psychometric characteristics of the scale were first done. In order to do this, a sample of 206 respondents was randomly divided into two equal parts, each sub-sample including 103 respondents, irrespective of the foreign language that they had been learning. The first sub-sample included 86 women (83.5%) and 17 men (16.5%), with their ages ranging from 19 to a maximum of 47 years, and their mean age being 22 years (21.92 +/- 3.53). The second sample included 90 women (87.45) and 13 men (12.6%). Exploratory factor analysis by principal axis factoring method was run on the first sub-sample, followed by confirmatory factor analysis on the second sub-sample.

The initial scale for digital technology use in foreign languages learning, i.e., the French and Italian language, was comprised of 7 items. Participants evaluated all items on a 5-point scale (1=it does not relate to me at all, 5=it fully relates to me). All items were formulated in such a manner that the agreement with an item indicated a higher level of digital technology use in foreign language learning.

The Kaiser-Meyer-Olkin (KMO) test was first carried out to check sample adequacy for factor analysis, and the result was .77. After that, the Bartlett test of sphericity was carried out ($\chi 2=279.76$, df=28, p=.000). Both tests indicated that the matrix was adequate for factoring. The statistical significance of the Bartlett test indicates that the matrix of values differs from the identity matrix according to which the correlations between variables are null. The KMO test value was higher than .60, which, according to Tabachnick and Fidell (2013), is the desired precondition to implementing the factoring procedure.

The implemented initial exploratory factor analysis by the principal axis factoring method showed the existence of one factor with the characteristic root value of 2.37, and the percentage of the variance explained by that factor amounted to 37.81%, while the percentage of the total variance explained amounted to 49.6%. Upon analyzing the factor structure and factor loadings of particular items on the scale, it was determined that two items, i.e., item 5 (“Digital tools for voice recording help me improve my French/Italian speaking skills”) and item 6 (“By corresponding on social networks, I improve my

French/Italian writing skills"), disrupted the scale's factor structure. Also, item 7 ("I have been improving my language skills by using French/Italian language software or applications (e.g., Duolingo, Memrise, TripLingo).") had a too low loading on the first factor (the loading was at 0.201). According to Comrey and Lee (1992), factor loadings greater than .71 are deemed excellent, loadings greater than .63 very good, loadings greater than .55 good, loadings greater than .45 appropriate, and loadings lower than .32 are deemed week and should not be interpreted (Comrey & Lee, 1992). Therefore, the aforementioned items were removed from the scale. After that, an exploratory analysis was run once more, and it also showed the existence of one factor with the characteristic root value of 2.25, and the percentage of the variance explained by that factor amounted to 56.32%. This percentage was also the percentage of the totally explained variance since a clean factor structure was obtained. Table 1 shows items in the final digital technology use in the foreign language learning scale (DTUFLLS) and their respective factor loadings.

Table 1: Digital technology use in foreign language learning scale (DTUFLLS)

Item	**Factor loading**
1. I like to use digital technology (computer, smartphone, internet, Facebook, language software) in learning the French/Italian language.	.689
2. Digital technology helps me to advance my learning of the French/Italian language.	.914
3. Digital technology use makes it easier for me to acquire various language skills (speaking, reading, writing and listening) in the French/Italian language.	.849
4. Watching video recordings in the French/Italian language motivates me to learn.	.470

Note: Factor analysis carried out by principal axis method, *N*=103.

After that, confirmatory factor analysis (CFA) was carried out with the AMOS software program on the other sample (*N*=103), whereby several indices of fit were used, including chi-square index (χ^2), chi-square/degrees of freedom ratio (χ^2/df), comparative fit index (CFI), Tucker-Lewis index (TLI) as well as root mean square error of approximation (RMSEA). The recommended values for an acceptable model fit (Hair, Black, Babin, & Anderson, 2010; Schumacker & Lomax, 2010) are as follows: for χ^2/df, a value below 3.0 is considered acceptable; the value of the CFI and TLI indices should be higher than or equal to .90, and the RMSEA value should be lower than or equal to .08. An analysis to estimate the multivariate normality was first carried out in order to determine the total kurtosis index. Byrne (2010) suggests that multivariate kurtosis values higher than 5 are indicative of a deviation from the multivariate normality. The resulting value for multivariate kurtosis amounted to 7.53, which is why bootstrapping procedure in 200 samples was carried out. The resulting value of χ^2 amounted to 2.403, χ^2/df=1.2017, p=.301. The CFI index was .996; the TLI index was .988; the RMSEA value was 0.045. One can generally conclude that the results of the confirmatory factor analysis indicate that the scale has factorial validity.

In order to verify the reliability, Cronbach's alpha coefficient was used. The resulting reliability index for the first sub-sample amounted to .81, which indicates a

good reliability of the internal consistency type. Reliability was also checked for the second sub-sample and it amounted to .72, which also indicates good reliability.

5.2. Descriptive statistics

Based on the designed scale, digital technology use in the second foreign language learning, i.e., French and Italian in this concrete case, was first analyzed. The highest agreement level in the total sample was recorded for item 2 "Digital technology helps me to advance my learning of the French/Italian language." (*M*=4.01), followed by item 3 "Digital technology use makes it easier for me to acquire various language skills (speaking, reading, writing and listening) in the French/Italian language." (*M*=3.97). The highest agreement level in the French language sub-sample was recorded for item 1 "I like to use digital technology (computer, smartphone, internet, Facebook, language software) in learning the French language." (*M*=4.04), followed by item 2 "Digital technology helps me to advance my learning of the French language." (*M*=4.01). With respect to the Italian language sub-sample, the highest agreement was recorded for the mentioned item 2 (*M*=4.01) and item 3 "Digital technology use makes it easier for me to acquire various language skills (speaking, reading, writing and listening) in the Italian language." (*M*=4.00) (Table 3). The resulting mean for the entire sample (*M*=3.94), as well as for the sub-samples for the French language (*M*=3.99) and Italian language (*M*=3.88) is above the theoretical median of the scale. This shows that respondents use digital technology to a larger extent, i.e., that their digital technology use is at a higher level (Table 2).

Table 2: DTUFLLS per items

DTUFLLS	**Total sample (N=206)**		**Sub-sample for the French language (N=106)**		**Sub-sample for the Italian language (N=100)**	
Item	M +/- SD	Actual range	M +/- SD	Actual range	M +/- SD	Actual range
1. I like to use digital technology (computer, smartphone, internet, Facebook, language software) in learning the French/Italian language.	3.91 +/- 0.94	1.00 – 5.00	4.04 +/- 0.93	1.00 – 5.00	3.77+/- 0.93	1.00 – 5.00
2. Digital technology helps me to advance my learning of the French/Italian language.	4.01 +/- 0.86	1.00 – 5.00	4.01 +/- 0.87	1.00 – 5.00	4.01 +/- 0.86	1.00 – 5.00
3. Digital technology use makes it easier for me to acquire various language skills (speaking, reading, writing and listening) in	3.97 +/- 0.96	1.00 – 5.00	3.94 +/- 1.04	1.00 – 5.00	4.00 +/- 0.87	1.00 – 5.00

the French/Italian language.						
4. Watching video recordings in the French/Italian language motivates me to learn.	3.85 +/- 1.03	1.00 – 5.00	3.95 +/- 0.95	1.00 – 5.00	3.75 +/- 1.10	1.00 – 5.00
DTUFLLS total	3.94 +/- 0.73	1.75-5.00	3.99 +/- 0.70	1.75-5.00	3.88 +/- 0.76	2.00 –5.00

One of the aims of this paper was to examine the digital competence of students. Almost a half of the respondents (48.1%) assessed their digital competence as level 3 – advanced user, and one-third (32%) assessed their digital competence as level 2 – intermediate user (Figure 1).

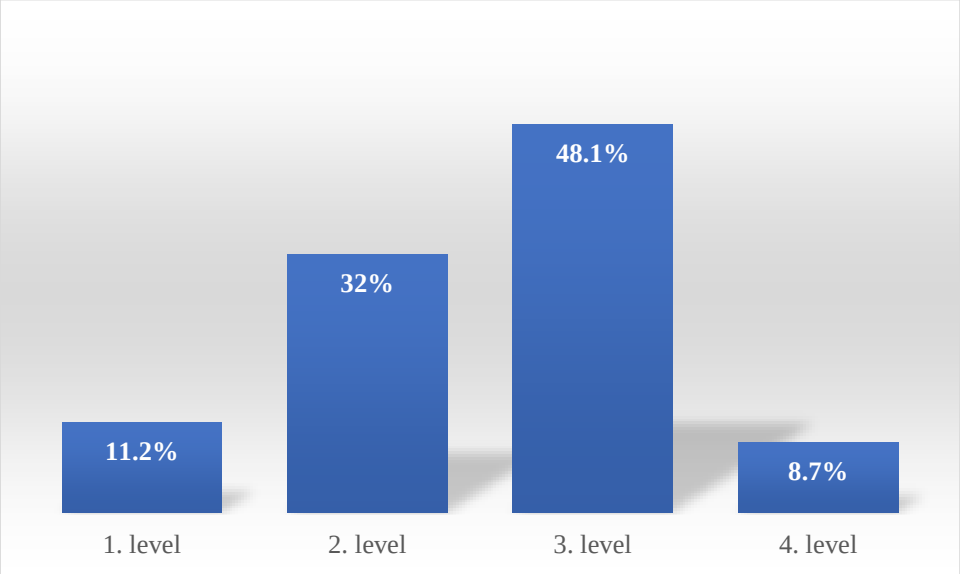

Figure 1: Respondents' digital competence self-assessment (*N*=206)

According to the self-assessment results in the sub-samples, 11.3% of the respondents in the French group assessed their digital competence as level 1, 30.2% as level two, 47.2% as level three and 11.3% as level four. In the Italian group, 11% of the respondents assessed their digital competence as level one, 34% as level two, 49% as level three and 6% as level four.

The research also examined students' language proficiency. The biggest proportion of students was at level A1 (31.1%), followed by equal levels of A2 (23.8%) and B1 (23.8%). B2 proportion was lower (18.9%), while C level proportion was the lowest (C1 1.9%, and C2 0.5%) (Figure 2).

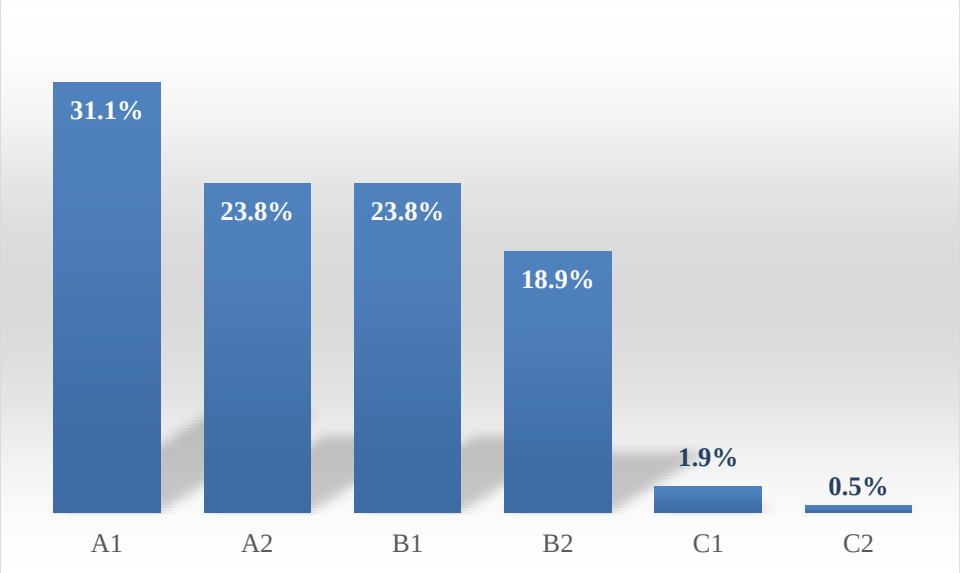

Figure 2: Participants according to language proficiency level (*N*=206)

According to the language proficiency self-assessment results in the sub-samples, 36.8% of the respondents in the French group assessed their language proficiency level as A1, 28.3% as A2, 18% as B1, 16% as B2, 0.9% as C1, and none of the participants assessed their French language proficiency as level C2 (0%). In the Italian group, 25% of the respondents assessed their language proficiency level as A1, 19% as A2, 30% as B1, 22% as B2, 3% of the respondents assessed their Italian language proficiency as level C1, and 1% as level C2.

5.3. The correlation between digital technology use in the French and Italian language learning with digital competence and language proficiency levels

By comparing the two sub-samples, it was established that there was no statistically significant difference in the DTUFLLS results between the students who had been learning the French language and the students who had been learning the Italian language ($t=1.02$, $df=204$, $p>.05$). This means that the students in both sub-samples use digital technology equally in learning French, i.e., Italian language.

Digital competence was almost equal for both groups, i.e., in both groups, the majority of participants assessed their digital competence as level three ($hi^2=1.941$, $df=3$, $p>.05$), which relates to advanced users who are able to filter digital contents, align the use of appropriate collaboration tools and make evaluations. Although students' digital competence self-assessment does not necessarily need to reflect their actual competence level since self-assessment is a subjective evaluation, it certainly speaks enough about their general knowledge of digital technologies in the student context and about their expectations. The groups who had been studying French and Italian languages showed no difference in the self-assessment results about their language proficiency level either ($hi^2=10.48$, $p=.063$), although the materiality level approaches the 5% risk criterion.

The correlation between digital technology use with the self-assessment of language proficiency level and digital competence level was examined for the total sample and for each sub-sample. After analyzing the correlation between digital

technology use in foreign language learning and digital competence in the total sample, a low, statistically significant correlation with digital competence was found, in the expected positive direction (r=.15, p<.05). One can conclude that students with higher digital competence level use digital technology in learning French and Italian language more. A correlation between digital technology use and foreign language proficiency level was not established (Table 3).

Table 3: DTUFLLS correlation with digital competence and language proficiency level (*N*=206)

DTUFLLS	r	p
Language proficiency	.01	.867
Digital competence	.15	.034*

***p<.001, **p<.01, *p<.05

The correlation between digital technology use in learning French and Italian language and digital competence as well as language proficiency levels was also tested on the sub-samples. On the sub-sample of the respondents who had been learning the French language, the DTUFLLS results were not connected either with their language proficiency level (r=-.07, p>.05) or with their digital competence (r=.15, p>.05). The DTUFLLS results for the sub-sample of the respondents who had been learning the Italian language was not connected with their language proficiency level (r=.11, p>.05) or digital competence (r=.14, p>.05) either (Table 4). Consequently, a statistically significant correlation was not confirmed for either sample.

Table 4: DTUFLLS correlation with digital competence and language proficiency level in the sub-sample for the French language (*N*=106) and the sub-sample for the Italian language (*N*=100)

DTUFLLS	**Sub-sample for the French language**	**Sub-sample for the Italian language**
	r	r
Language proficiency level	-.07	.11
Digital competence	.15	.14

**p<.01, *p<.05

When comparing the results for the total sample with the results for the sub-samples, it can be established that the results for the total sample match the results for the sub-samples. They only differ with respect to the correlation between digital technology use in foreign language learning and digital competence, for which a low statistically significant correlation in the positive direction was found in the total sample only.

6. Discussion

Students of today have grown up surrounded by digital technology and they use it every day. Therefore, digital technology use in foreign language learning meets their unconscious expectations and "*enables them to use the means and way how they normally search for information, communicate, exchange experiences and participate in events on a daily*

basis" (Troncarelli, 118). It is thus not surprising that the current global research on learning English as a foreign language has shown that students mostly have a positive attitude towards ICT use in the learning process (e.g., Alsulami, 2016; Ayres, 2002, p. 247; Bećirović, Brdarević-Čeljo & Delić, 2021; Liu, 2009; Son, Park & Park, 2017). The results of the research conducted by Alsulami (2016, p. 13) on the attitudes of female students from Saudi Arabia (*N*=36) towards the impact of technology on learning English as a foreign language showed that 97.2% of participants enjoyed using technology in the English language learning, and that 94.7% of students preferred technology to use to improve their speaking, reading, writing and listening skills.

Analyzing digital literacy and digital technology use of students learning English as a foreign language in two different educational contexts, Japanese and Australian (exchange students of various nationalities)[iii], Son, Park & Park (2017) determined that respondents from both groups had positive attitudes towards digital technology use. Students from both groups stated that they enjoyed using digital technology and that they felt comfortable using it. They expressed their readiness to learn more about digital technology as well as the opinion that it was important for them to improve their digital fluency and that their learning could be improved through the use of digital tools and resources (Son, Park & Park, 2017, p. 94).[iv] In their research conducted in Bosnia and Herzegovina, Bećirović et al. (2021) analyzed the perceptions of secondary school students (*N*=173) about learning English via technology, and the correlation of their perceptions with their school success, gender and learning context. They also analyzed the perception and attitudes of students about teachers' support in this entire process. They confirmed positive attitudes towards technology use in foreign language learning.

The research of Nadrljanski et al. (2017, p. 534-535), carried out in the Croatian educational context, showed that participants in the educational process demonstrate a positive attitude towards the social importance of digital media and their implementation in classes. A high number of teachers stated that digital media improved motivation, enabled independent work, and project work and that they made the organization of classes more interesting. Students expressed a more reluctant attitude. Their general evaluation of the mediatory function of digital media was that digital media were useful, however, they expressed doubts as to the role of digital media in improving motivation and individualizing the learning process. Velički & Topolovčan (2017, p. 187-188) analyzed the characteristics of foreign languages learning by means of various digital media. They established that students (*N*=236) think that the use of the so-called new media in foreign language classes is extremely important and that they particularly value the possibility to get quick feedback about their progress, while they evaluate the flexibility in learning with respect to time and place as least important.

[iii]The authors used the *Digital Literacy Questionnaire – Language Learners* (DLQ-LL) authored by Son (2015).

[iv]The stated questionnaire was consulted in the preparatory phase of this research, however, the level of its detailed elaboration went beyond the concepts of the authors of this research. It consists of 5 parts related to context; self-assessment of computing and digital skills; questions related to the use of digital technologies; digital literacy test; factors affecting the use of digital technologies for foreign language learning and personal views of the use of digital devices (Son, Park & Park, 2017, p. 80).

Our research has shown that Croatian university students use digital technology in learning the French and Italian languages to a considerable extent. Karabulut et al. (2012) determined in their research that students use different technologies in the French language learning (online dictionaries, grammar checker, chat, YouTube, and French websites) and they stated various reasons for adopting technology or refusing to adopt it. They pointed out that a part of students like using technology due to its efficiency, effectiveness and the ability to access authentic texts and listen to the French language as spoken by native speakers. On the other hand, they also stated some shortcomings, e.g., that technology use does not help to improve oral production. According to the results of our research, students at Croatian universities mostly agree that digital technology helps them improve their learning of French, i.e., Italian language (M=4.01), that it makes it easier for them to acquire language skills (speaking, reading, writing and listening) (M=3.97), and that they like using digital technology (computer, smartphone, internet, Facebook, language software) while learning these foreign languages (M=3.91). They least agreed with the item that watching video recordings in French, i.e., the Italian language motivates them for learning (M=3.85), although this result is also above the theoretical median of the scale. A statistically significant difference between the sub-samples for the French and Italian languages has not been determined.

The convergent validity of the scale has been tested in relation to the digital competence and language proficiency of the respondents. The correlation between digital technology use in learning French and Italian language and the self-assessed digital competence has been confirmed in the total sample. There exists a statistically significant, positive correlation between digital technology use and self-assessed digital competence (r=.15, p<.05), in such manner that a higher-level digital competence indicates a higher digital technology use in the French and Italian language learning. However, this correlation has not been confirmed in the sub-samples for the French and Italian languages. This could be explained by a low number of research participants, indicating that it would be good to carry out a similar research on a larger sample. In this context, one should mention the research of Alakrash & Razak (2021) on a sample of Malaysian students (N=150) and teachers (N=40); they determined a high level of digital technology use in English language learning as well as a high level of digital literacy among students and teachers. Their research showed that high digital technology use increases the digital literacy level.

Our research has also determined that there is no significant statistical correlation between digital technology use in learning French and Italian language and self-assessed language proficiency, either in the total sample or in the sub-samples. Consequently, foreign language proficiency level does not impact digital technology use during learning. One can conclude that irrespective of their proficiency levels in the French and Italian languages, students use digital technology in an equal manner in order to facilitate their acquisition of various language skills, increase their motivation for learning and advance their knowledge of the foreign language.

7. Conclusion

The advent of digital technology caused a revolution in all areas of life, including in education. In the context of learning and teaching foreign languages, changes are evident, and they relate both to the way how the generations of today learn foreign languages and to the way how foreign languages are taught. Digital technology use in foreign language learning enables greater flexibility in terms of time and space as well as in terms of adjustment to the needs of the students themselves, i.e., an increased personalization, autonomy and de-localization in foreign language learning.

According to the results of our research, students use digital technology in learning French and Italian as a foreign language considerably, and they like to use it. They believe that it helps them improve their learning and that it makes it easier for them to acquire language skills. A positive correlation between digital technology use and digital competence has also been established, in such a manner that a higher digital competence level refers to higher digital technology use in learning the French and Italian languages. Therefore, the conclusion is that, in modern society, it is necessary to actively work on developing the digital competences of all participants in the education process. The aim is to align the very process of learning and teaching foreign languages with the characteristics of the digital age. In order for students as well as teachers to be able to use the advantages of digital technology in learning and teaching foreign languages as much as possible, it is necessary to continually develop the digital competences of both parties included in the process of acquisition of language and intercultural content.

While learning how to find and use digital tools and resources, language learners also need to learn how to effectively use these tools and resources for the purposes of language learning (Son, Park & Park, 2017, p. 80). They need the help and support of language educators who have sufficient knowledge and experience in using digital technology for foreign language learning, and who share the attitude that their students need to be prepared for a globalized, multi-lingual world (Goodwin-Jones, 2016, p. 5).

An ever-increasing technology use in the learning and teaching of foreign languages in the last few decades has been accompanied by an ongoing research in order to determine all advantages and disadvantages that impact the foreign language learning process in the digital age. The scientific contribution of this research relates to designing a new, valid measuring instrument to measure digital technology use in foreign language learning, which has been tested on a sample of students who have been learning the French and Italian language, but which can also be used to analyze digital technology use in learning other foreign languages. Also, it can be combined with other existing measuring instruments in order to measure various variables, such as demographic, affective and cognitive as well as numerous other variables, depending on the interest of future researchers. The research presented in this paper and carried out in the Croatian educational context has two basic limitations: a small sample and the use of the questionnaire in the Croatian language, whose English variant has not been additionally verified in terms of measuring instrument validity. Therefore, future research that will

use the presented measuring instrument will need additional verification as to the scale validity if a version translated into another foreign language is used.

Conflict of interest statement

The authors declare no conflicts of interest.

About the Authors

Ariana Violić-Koprivec is a College Professor of French at the University of Dubrovnik, Croatia. She received her PhD in the postgraduate doctoral study in the History of Population at the University of Zagreb in 2018. She teaches French for specific purposes at different university levels and programmes. Her research interests are wide and relate to the French language, culture and history, LSP, individual differences in second language learning and Computer Assisted Language Learning (CALL). ORCID: https://orcid.org/0000-0002-4685-6555

Zrinka Režić Tolj is a Senior Lecturer of Italian at the University of Dubrovnik, Croatia. She earned a PhD in Cultural Anthropology from the University of Zagreb in 2012. She teaches Italian for specific purposes at different university levels and programmes. Her research interests are wide and relate to Italian language and culture, LSP, Computer Assisted Language Learning (CALL), Glotodidactics, Emergency Remote Teaching (ERT). ORCID: https://orcid.org/0000-0003-1628-5189

References

Alsulami, S. (2016). The Effects of Technology on Learning English as a Foreign Language Among Female EFL Students at Effatt College: An Exploratory Study. *Studies in Literature and Language*, 12 (4), 1-16.

Alakrash, H. M. & Razak, N. A. (2021). Technology-Based Language Learning: Investigation of Digital Technology and Digital Literacy. *Sustainability*, 13 (12304), 1-17.

Aukrust, K. & Uvsløkk, G. (2013). Les TIC et l'approche pratique dans l'enseignement du FLE en Norvège. *Synergies Pays Scandinaves*, 8, 141-150.

Ayres, R. (2002). Learner Attitudes Towards the Use of CALL, *Computer Assisted Language Learning*, 15 (3), 241-249.

Baldani, A. (2021). *Tecnologia e social network nell'insegnamento dell'italiano come lingua straniera*. Master's Thesis, Universidad de Salamanca. Available: https://gredos.usal.es/handle/10366/146902?show=full [Accessed: 14th April 2022].

Bećirović, S., Brdarević-Čeljo, A. & Delić, H. (2021). The use of digital technology in foreign language learning. *SN Social Sciences*,1, 246.

Biasini, R. & Proudfoot, A. (Eds.) (2018). *Using digital resources to enhance language learning – case studies in Italian*. Voillans, France: Research-publishing.net. Available: https://eric.ed.gov/?id=ED585224 [Accessed: 10th May 2022].

Byrne, B. M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed.). New York: Routledge.

Carretero, S., Vuorikari, R. & Punie, Y. (2017). *DigComp 2.1: the digital competence framework for citizens*. Joint Research Centre (European Commission).

Chapelle, C. (2003). *English Language Learning and Technology: Lectures on Applied Linguistics in the Age of Information and Communication Technology* (Vol. 7). Amsterdam: John Benjamins Publishing. Available: https://doi.org/10.1075/lllt.7 [Accessed: 11th March 2022].

Chenoweth, N. A. & Murday, K. (2003). Measuring student learning in an online French course. *CALICO Journal*, 20 (2), 285-314.

Comrey, A. L. & Lee, H. B. (1992). *A first course in factor analysis* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Deloy, A. (2020). *L'intégration des TIC en classe de FLE : apports, limites et rôles. Le cas de l'Institut Français de Finlande.* Master Thesis, Université d'Aix Marseille. Available: https://dumas.ccsd.cnrs.fr/dumas-02984179/file/Deloy_Antoine.pdf [Accessed: 25th March 2022].

Emaish, N. (2016). Information Technology in Teaching and Learning French as a Foreign Language at the University of Jordan. *European Scientific Journal, 12* (26), 399-409.

Ferrari, A. (2012). *Digital Competence in Practice: An Analysis of Frameworks*. Luxembourg: Publications Office of the European Union. Available: https://data.europa.eu/doi/10.2791/82116 [Accessed: 5th May 2022].

Ferrari, A. (2013). *DigComp*: *A framework for developing and understanding digital competence in Europe*. Luxembourg: Publications Office of the European Union. Available: https://doi.org/10.2788/52966 [Accessed: 5th May 2022].

Gałan, B. (2021). La classe de langue à l'ère du digital. Quelques réflexions sur l'intégration des compétences numériques en didactique des langues étrangères. *Czasopismo Polskiego Towarzystwa Neofilologicznego*, 56 (2), 169-184. Available: http://dx.doi.org/10.14746/n.2021.56.2.2 [Accessed: 17th February 2022].

Ghavifekr, S. & Rosdy, W.A.W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science* (*IJRES*), 1 (2), 175-191.

Giglio, A. (2014). Le tecnologie per la didattica per l'apprendimento dell'italiano L2: strumenti e attività pratiche. *Italiano a stranieri,* 17, 15-20.

Godwin-Jones, R. (2016). Looking back and ahead: 20 years of technologies for language learning. *Language Learning & Technology*, 20 (2), 5–12. Available: http://llt.msu.edu/issues/june2016/emerging.pdf [Accessed: 9th January 2022].

Guarda, M. (2012). La comunicazione mediata dal computer nella didattica delle lingue straniere. *Journal of e-Learning and Knowledge Society*, 8 (3), 17-30.

Guichon, N. (2012). *Vers l'intégration des TIC dans l'enseignement des langues*. Didier.

Hafner, C. A., Chik, A. & Jones, R. H. (2015). Digital literacies and language learning. *Language Learning & Technology*, 19 (3), 1-7. Available: http://llt.msu.edu/issues/october2015/commentary.pdf [Accessed: 9th February 2022].

Hair, J. F., Black, W. C., Babin, B. J. & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective* (7th ed.). Pearson.

Janjić, M., Librenjak, S. & Kocijan, K. (2015). Nastava stranih jezika: upotreba tehnologije. *Strani jezici*, 44 (4), 232-243.

Karabulut, A., LeVelle, K., Li, J. & Suvorov, R. (2013). Technology For French Learning: A Mismatch Between Expectations And Reality. *CALICO Journal*, 29 (2), 341–366. Available: https://doi.org/10.11139/cj.29.2.341-366 [Accessed: 29th March 2022].

Koua, V. (2013). The Internet in French Language Teaching and Learning: Positive and Negative Impacts. *Theory and Practice in Language Studies*, 3 (4), 564-571. Available: https://doi:10.4304/tpls.3.4.564-571 [Accessed: 9th January 2022].

Lasić-Lazić, J., Špiranec, S. & Banek Zorica, M. (2012). Izgubljeni u novim obrazovnim okruženjima – pronađeni u informacijskom opismenjivanju. *Medijska istraživanja*, 18 (1), 125-142.

Li, L. (2017). *New technologies and language learning*. Palgrave.

Liu, J. (2009). A survey of EFL learners' attitudes toward information and communication technologies. *English Language Teaching*, 2 (4), 101-106.

Maggini, M. (2001). Uso delle nuove tecnologie nell'insegnamento dell'italiano L2. *Fragmentos*, 21, 011-023.

Mateljan, V., Širanović, Ž. & Širanović, Ž. (2007). Načela oblikovanja edukativnog multimedijskog sadržaja u online sinkronom Web okruženju. In S. Seljan & H. Stančić (Eds.), *The Future of 65 Information Sciences INFuture2007: Digital Information and Heritage*. Zagreb: Odsjek za informacijske znanosti, Filozofski fakultet, 473-492.

Mrkonjić, I., Vlašić, Z. & De Zan, I. (2000). Informacijska i komunikacijska tehnologija u nastavi i učenju: stavovi nastavnika. In V. Rosić (Ed.), *Nastavnik i suvremena obrazovna tehnologija*: zbornik radova. Rijeka: Filozofski fakultet, 125- 131.

Müller M. & Aleksa Varga, M. (2019). Digital competences of teachers and associates at higher educational institutions in the Republic of Croatia. *Informatologia*, 52 (1-2), 28-44.

Nadrljanski, M., Nadrljanski, Đ. & Bilić, M. (2007). Digitalni mediji u obrazovanju. In S. Seljan & H. Stančić (Eds.), *The Future of 65 Information Sciences INFuture2007: Digital Information and Heritage* (pp. 527-537). Odsjek za informacijske znanosti, Filozofski fakultet, Zagreb. Available: https://infoz.ffzg.hr/INFuture/2007/pdf/7-08%20Nadrljanski%20&%20Nadrljanski%20&%20Bilic,%20Digitalni%20mediji%20u%20obrazovanju.pdf [Accessed: 11th April 2022].

Quaggia, R. (2013). La lingua 2 nel Web. Prospettive digitali per la didattica dell'italiano a stranieri. *Italiano LinguaDue*, 1, 128-159.

Paulišić, E. (2019). L'applicazione delle nuove tecnologie nell'insegnamento della lingua italiana. Master's Thesis, University of Rijeka. Available: https://repository.ffri.uniri.hr/islandora/object/ffri%3A1864 [Accessed: 5th May 2022].

Pichiassi, M. (2007). *Apprendere l'italiano L2 nell'era digitale. Le nuove tecnologie nell'insegnamento e apprendimento dell'italiano per stranieri.* Guerra Edizioni.

Puentedura, R. R. (2013). *SAMR: Moving from enhancement to transformation* Available: https://eddl.tru.ca/wp-content/uploads/2018/12/SAMREnhancementTo Transformation-Puentedura-2013.pdf [Accessed: 18th June 2022].

Santalucia, D. (2010). Strumenti e tecnologie in rete per l'insegnamento e l'apprendimento della lingua, *Italiano Lingua Due, 2* (2). Available: https://doi.org/10.13130/2037-3597/824 [Accessed: 2nd January 2022].

Schumacker, R. E. & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling* (3rd ed.). Routledge/Taylor & Francis Group.

Son, J.-B. (2015). *Digital literacy*. Available: http://drjbson.com/projects/dl/ [Accessed: 19th January 2022].

Son, J.-B., Sang-Soon Park, S.-S. & Park, M. (2017). Digital literacy of language learners in two different contexts. *The JALT CALL Journal, 13* (2), 77–96. Available: http://doi.org/10.29140/jaltcall.v13n2.213 [Accessed: 19th January 2022].

Stepp-Greany, J. (2002). Student Perceptions on Language Learning in a Technological Environment: Implications for the New Millennium. *Language Learning & Technology*, 6, 165-180.

Tabachnick, B. G. & Fidell, L. S. (2013). *Using multivariate statistics* (6th ed.). Pearson.

Troncarelli, D. (2014). L'insegnamento dell'italiano per scopi specifici con le tecnologie di rete. In I. Fratter & E. Jafrancesco (Eds.), *Insegnare italiano con le TIC* (pp. 99-129). Aracne.

Ushida, E. (2005). The Role of Students' Attitudes and Motivation in Second Language Learning in Online Language Courses. *CALICO Journal* 23 (1), 49-7.

Velički, D. (2006). Medijska kompetencija i upotreba novih medija u nastavi stranih jezika. In J. Granić (Ed.), *Jezik i mediji - jedan jezik: više svjetova* (pp. 723-732). HDPL.

Velički, D. & Topolovčan, T. (2017). Net-generacija i učenje stranih jezika uz pomoć digitalnih medija. In M. Matijević (Ed.), *Nastava i škola za net generacije* (pp. 173-192). Učiteljski fakultet Sveučilišta u Zagrebu.

Weinberg, A., Peters, M. & Sarma, N. (2005). Learners' preferences for the use of technology in learning languages/Preferences des apprenants face à l'utilisation de la technologie dans l'apprentissage des langues. *Canadian Journal of Applied Linguistics/Revue canadienne de linguistique appliquee*, 8 (2), 211-231.