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Opinions of German studies students about their professional competence in the use of information and communication technology in teaching

Matija Đurđek

matija.djurdjek@gmail.com

Faculty of Humanities and Social Sciences, University of Zagreb

Marija Lütze-Miculinić

mlmiculi@ffzg.hr

Faculty of Humanities and Social Sciences, University of Zagreb

This paper focuses on the opinions of MA students enrolled in German as a foreign language (GFL) teaching programmes with regard to their professional competence in the use of information and communication technology (ICT) in teaching and the presence of ICT-related topics in their study programme. For this purpose, two studies were conducted via online surveys: the first one in 2018 at four Croatian universities, and the second one in 2020 at the Faculty of Humanities and Social Sciences, University of Zagreb. The aim of both studies was to examine the following hypotheses: whether students consider themselves insufficiently educated in the use of ICT in teaching and whether they would prefer more ICT-related content and courses included in their study programme. The results of the two studies were analysed separately and comparatively. Both studies showed that, although a large number of graduate students consider themselves sufficiently prepared to use ICT in their future work, they would like to see more intense implementation of ICT-related topics in their GFL teacher-

education programmes. As a conclusion, the paper provides some suggestions for the improvement of GFL study programmes in the area of ICT. These suggestions are based on the results of this research.

Keywords: *German as a foreign language, teacher education, information and communication technology, students' opinions*

1. INTRODUCTION

In today's digital age, which is characterized by rapid technological progress, it is essential to adapt quickly to the constantly changing environment. Technology is being developed and adjusted to suit our accelerated lifestyles, as information and working tools must be available to us at all times. More than ever, especially since the beginning of the COVID-19 pandemic, we need devices and technologies that make this possible – computers, smartphones, tablets, and other modern technologies. With the growing impact of information and communication technology (ICT) on our professional and private lives, the demand for the use of ICT in education has increased as well, with ICT making an impact on the concepts of learning and teaching.

In order for ICT to be successfully and meaningfully integrated into teaching practice, some prerequisites must be met. As will be determined in Section 2, three preconditions seem to be indispensable: teachers must have access to technical equipment, a positive attitude towards the application of ICT, and professional ICT-competence. For the latter, it is essential for teachers to possess specific knowledge and skills for the successful application of ICT in teaching. To ensure better understanding of this topic, Mishra and Kohler (2006) developed a technology integration model which provides guidance on how to effectively integrate technology into teaching. Their model is based on the idea that teachers need to combine competence in technological, pedagogical, and content knowledge (abbreviated as TPACK) in order to successfully apply ICT in the teaching and learning processes. To this end, adequate university pre-service education in the use of technologies in teaching and learning should be ensured. The opinions on this matter of students in GFL teacher-education programmes will be the focus of our research.

This article presents a study conducted on two occasions (in 2018 and 2020) among students of GFL teacher-education programmes at several universities in Croatia. Intending to specify the actual theoretical starting position, Section 2 provides a brief overview of similar studies conducted in

Croatia and Europe. Section 3 presents the two studies carried out in 2018 and 2020. After an analysis of each individual study, the obtained results are analysed and discussed comparatively. Some practical implications of our findings are provided, pointing at the implementation of ICT in GFL teacher-education programmes. The article concludes with a discussion of future research.

2. PREVIOUS RESEARCH

The digital literacy competence of teachers and teacher-education students has been the subject of numerous studies in Croatia and around the world. In this section, we will present and single out studies from Croatia and Europe whose objective has been to explore the readiness and professional competence of students and teachers in the use of ICT in teaching.

A study conducted among teachers in Germany by the Verband Bildung und Erziehung (VBE, 2016) showed that teachers in Germany need and want further professional development, especially in the field of the application of digital media and other technologies in teaching. Seventy-three percent of the teachers surveyed were of the opinion that teaching programmes at universities should do a better job at preparing and educating future teachers in the use of digital media in the classroom. Furthermore, 82 percent expressed their wish for better professional development programmes, and 83 percent said they would like to attend courses and seminars related to the use of digital media in teaching (VBE, 2016).

In Croatia, Pejić Papak and Grubišić Krmpotić (2016) published the results of a similar study conducted among primary-school teachers and both undergraduate and graduate students of primary-school education at the Faculty of Teacher Education in Rijeka. Their study showed that 50% of students neither agree nor disagree with the statement that their study programme puts special emphasis on the education of their students in the use of ICT in teaching. It is worthwhile noting that more than a half of the students (55.2%) said that their university professors encourage them to apply interactive ways of learning. In addition, 83.5% of the students expressed their agreement with the statement that, nowadays, education concerning the use of ICT in teaching should be an indispensable part of the education of future teachers (Pejić Papak & Grubišić Krmpotić, 2016).

In the period from 2015 to 2018, as part of the e-School pilot project, the Center of Applied Psychology at the Faculty of Humanities and Social Sciences in Rijeka conducted a scientific study that, among other things,

examined the effects of the pilot project on the digital competence, attitudes, and experiences of teachers from 151 schools in Croatia. The results showed a significant correlation between the number of tutorials and workshops in which teachers participated and the changes in their digital competences. A greater change in digital competence was noticed among teachers who participated in more workshops. However, it should be noted that the obtained correlations were low (FFRI¹, 2018).

In another Croatian study, carried out by Lütze-Miculinić, Anđel, and Glovacki-Bernardi (2012), GFL teacher-education students were asked to didacticize a grammar topic for different target groups using modern technologies. Remarkably, the results showed that the creativity of these students was hampered by their limited digital skills and knowledge in using modern technologies.

In 2018, a study named the Teaching and Learning International Survey (TALIS) was conducted among OECD² countries. The survey showed that, on average, 43% of teachers throughout the OECD countries felt well or very-well prepared to use digital technologies for teaching, with significant differences among the EU countries. Croatia was below the average value, with 36% of its surveyed teachers feeling well or very-well prepared. The TALIS 2018 results revealed that only 56% of teachers across the OECD and 47% from Croatia had been educated in the use of ICT in teaching as part of their formal education or training. Furthermore, it was found that 60% of teachers across the OECD had recently participated in professional development activities that covered the use of digital technologies for teaching and learning, but, on average, 18% of them still reported a strong need for professional development in the area of ICT application in teaching (OECD, 2019).

Since the outbreak of the COVID-19 pandemic, much research has been conducted on the topic of ICT and digital media application in education. A study conducted in Croatia by Jokić Begić et al. (2020) on mental health during the COVID-19 pandemic showed that almost 60% of the students who participated in the study expressed concern about whether they would acquire sufficient knowledge for their future jobs, as they had to switch from traditional to fully online courses and distance learning.

¹ Official abbreviation of the above-mentioned faculty's official name in Croatian: Filozofski fakultet u Rijeci.

² Organisation for Economic Co-operation and Development.

Another study, conducted by Periša (2020) on the attitudes and opinions of primary-school teachers and prospective teachers from the Teacher Education study programme of the University of Split about their self-education and readiness for distance learning, which has been performed in all schools in Croatia since March 2020 as a result of the COVID-19 pandemic. Upon the switch from traditional to distance learning, both groups independently self-educated in the use of various technologies in teaching. According to the results, there is no statistically significant difference between the responses of the teachers and those of the prospective students concerning self-education in the use and application of various digital tools in education (Periša, 2020).

The 2020 School Barometer survey, conducted in Germany, Austria, and Switzerland among 7,116 participants (parents, students, school staff, school leaders, school authorities, and support system members), assessed and evaluated the school situation caused by COVID-19. "On average," report Huber & Helm, "school staff rated teachers' competencies related to the use of digital instructional formats as mediocre" (2020: 252). The results showed that, compared to their colleagues in Austria and Switzerland, teachers from Germany consider themselves to be significantly less competent in digital forms of teaching and learning. Interestingly, it turned out that the teachers' self-ratings of their competences are linked to the technical equipment available at their respective schools, which "suggests that teachers start to engage in digital teaching when appropriate technical resources are offered and teachers are more likely to claim to have appropriate technical equipment if they are competent in the use of digital instructional formats" (Huber & Helm, 2020: 252).

The transition to a new way of working online in the new digital environment has implied rapid (self-)education about new tools that had to be used. This has been demanding for many teachers in Croatia since the beginning of the COVID-19 pandemic. A study conducted by the Croatian Ministry of Science and Education³ (MZO, 2020c) among 3,791 teachers and associates for the period of distance learning from 16 March to 26 June 2020 showed that 11% of respondents are dissatisfied with their available technical equipment, which implies a general necessity to renew technical equipment at schools. Furthermore, as many as 82% of teachers believe that they are competent to teach online on their own. Of course, this does not

³ Official Croatian name: Ministarstvo znanosti i obrazovanja (MZO).

mean that there is no need for more support and education, because around 18% of the teachers expressed their wish for more guidance and support. Adapting to a new environment and different working methods requires time and additional training. However, the answers showed that as many as 95% of the teachers think that they managed to adapt to distance learning better than they had expected to before they started (MZO, 2020b).

In the studies described above, great similarity is observed among the target groups – which consist mostly of teachers and students. Unlike previous studies that examined the digital literacy of heterogeneous groups of teachers and students from different fields, our research was limited exclusively to students of GFL teacher-education programmes from universities in Croatia.

3. RESEARCH

3.1. Aim of the research

The main goal of the studies conducted in 2018 and 2020 was to determine whether graduate students in GFL teaching programmes at universities in Croatia consider themselves to be sufficiently educated in the application of technology in teaching. Furthermore, the aim was to examine how satisfied students are with their study programme's courses and other content relating to the use of technology in teaching.

3.2. Hypotheses

The studies from 2018 and 2020 were both based on the following hypotheses:

- H1: Graduate students in GFL teaching programmes consider themselves to be insufficiently educated in the use of information and communication technology in teaching.
- H2: Graduate students in GFL teaching programmes would like more content and courses included in the study programme related to the use of information and communication technology in teaching.

In order for future teachers to be able to successfully respond to the ever-growing demand for the use of ICT in education, they need to be professionally competent and possess sufficient digital skills. For this reason, adequate university pre-service education in the use of technology in teaching and learning is needed.

While forming the above hypotheses, we set off with the assumption that current GFL university programmes in Croatia do not reflect the need for

adequate education of future teachers in the field of the application of ICT in teaching and learning.

3.3. Methodology and participants

For the purpose of this study, a survey was created and conducted online via Google Forms on two different occasions:

- in 2018 (from May to October)
- in 2020 (from September to October)

The 2018 survey was completed by 55 first- and second-year graduate students in GFL teaching programmes at the following universities:

- (a) Faculty of Humanities and Social Sciences, University of Zagreb – 30 participants (10 participants in their first year of graduate study, 20 in their second year)
- (b) Department of German Studies, University of Zadar – 7 participants (2 participants in their first year of graduate study, 5 in their second year)
- (c) Faculty of Humanities and Social Sciences, University of Osijek – 6 participants (all 6 participants in their first year of graduate study)
- (d) Faculty of Humanities and Social Sciences, University of Rijeka – 12 participants (6 participants in their first year of graduate study, 6 in their second year)

The 2020 survey was conducted among students enrolled in the master's programme in GFL teaching at the Faculty of Humanities and Social Sciences in Zagreb (FFZG⁴). Given that in 2018 we had a relatively small number of respondents from the universities in Zadar, Osijek, and Rijeka, we decided to place an emphasis on students at FFZG in the 2020 study, in order to have a sufficient number of respondents for a well-founded comparison. The 2020 survey was completed by 19 first- and second-year graduate students.

The same questionnaire,⁵ divided into three parts, was used in both 2018 and 2020. The first part included questions about the general data of the respondents (e.g., faculty and year of study, whether they intend to work as a teacher after graduation, etc.) and introductory questions about their use of ICT:

⁴ FFZG stands for the Croatian name of the faculty: Filozofski fakultet u Zagrebu.

⁵ The questionnaire was in Croatian, but its questions were translated by the authors into English for the purpose of this paper.

- (1) How frequently do you use technology (e.g., mobile phone, computer) for the following purposes?
(Given purposes: calling, messaging, checking e-mails, accessing social networks, learning, entertainment, information retrieval; Given 5-point scale from "1 = never" to "5 = very frequently")
- (2) If you use technology when learning, how much does it make learning easier for you on a scale of 1 to 5?
(Given 5-point scale from "1 = not at all" to "5 = very much")
- (3) Did you attend courses related to the application of technology in teaching during your studies?
(Given answers: yes, no)

The answer to the latter question determined whether the second part of the questionnaire would be shown to the participants or they would be forwarded to the third (and final) part. If the participant chose the answer *yes* for this question and previously answered all the required questions, clicking on the *Next* button would open the second part of the survey, which contained two questions related to the courses and ICT-related content in the participants' German studies programme:

- (4) What courses related to the application of technology in teaching did you attend during your studies? Write their names.
(Open-ended question.)
- (5) How useful were the contents of these courses on a scale of 1 to 3?
(Given 3-point scale from "1 = useless" to "3 = very useful")

The questions of the third (and final) part of the questionnaire were intended to examine participants' opinions on their readiness and competence for the use of ICT in teaching and their satisfaction with their study programme's offer of content and courses related to the use of technology in teaching:

- (6) I am sufficiently educated about the application of technology in teaching.
(Given 5-point scale from "1 = completely disagree" to "5 = completely agree")
- (7) I would like to attend more courses related to the application of technology in teaching during my studies.
(Given 5-point scale from "1 = completely disagree" to "5 = completely agree")

- (8) Students in graduate teaching programmes should be offered more content and attend more courses related to the application of technology in teaching.
(Given 5-point scale from “1 = completely disagree” to “5 = completely agree”)
- (9) If students should be offered more content related to the application of technology in teaching, should this content be part of existing courses or should new ones be created and offered?
(Given multiple-choice answers: *within existing courses, create and offer new ones, other*)
- (10) If new courses should be offered, should they be obligatory or elective?
(Given answers: *obligatory, elective*)
- (11) Should your university during your studies provide you with education on the application of different technologies in teaching?
(Given answers: *yes, no*)
- (12) Would you rather like to be educated in extracurricular workshops outside the university instead of at university?
(Given answers: *yes, no*)
- (13) In your opinion, who is responsible (and to what extent) for your further professional development and education in the field of technology application in language teaching once you start working in education?
(Given answers: *“myself,” “school,” “Education and Teacher Training Agency,” “Ministry of Science and Education,” “Association of German Language Teachers,” “Faculty of Humanities and Social Sciences,” “Faculty of Humanities and Social Sciences – Department of German Language and Literature,” “Faculty of Humanities and Social Sciences – Department of Information and Communication Sciences”*;
Given 3-point scale: *“not at all,” “partially,” “completely”*).

3.4. Results analysis

The results of the 2018 and 2020 studies are presented in detail in the following sections. After an analysis of the studies, the obtained results are compared, contrasted, and discussed.

3.4.1. The 2018 study

The answers from the first part of the 2018 survey showed that almost 90% (49 out of 55) of graduate students in the GFL teaching programme intend to work in education after graduation (e.g., in a primary or secondary school, in a specialized foreign language school, or at a university).

Regarding the frequency of their personal use of ICT, most students said that they use it very often for calling, messaging, checking e-mails, accessing social networks, entertainment, and information retrieval. Furthermore, they often use ICT for learning purposes, although it should be noted that the results are almost equally distributed among the answers *very frequently* (30.9%), *frequently* (34.5%), and *occasionally* (30.9%), which can be seen in Figure 1.

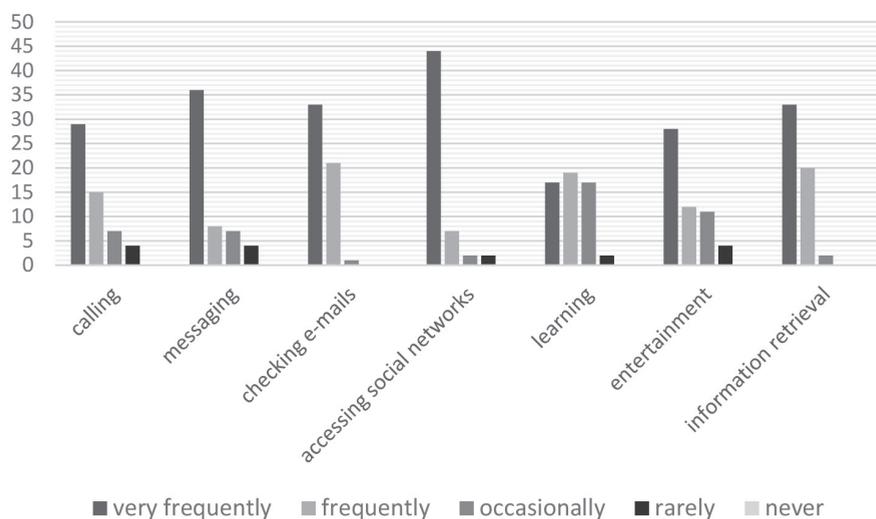


Figure 1. Answers of students to the question "How frequently do you use technology (e.g., mobile phone, computer) for the following purposes?"

From the structure of responses in Figure 1, it can be concluded that students use ICT mostly to access social networks. This is not surprising nowadays given the popularity of social networks and the benefits they provide, especially in terms of facilitating communication. In relation, the responses for calling and messaging are similar in structure to those for accessing social networks.

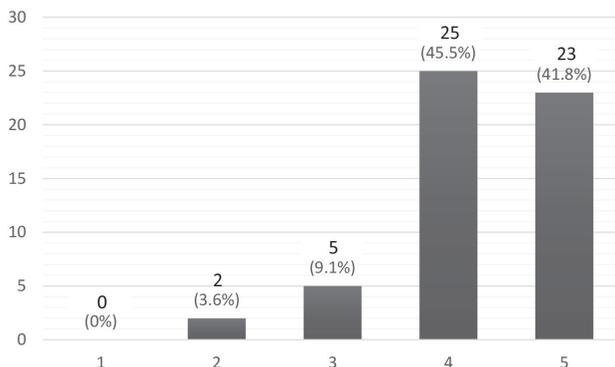


Figure 2. Answers of students to the question "If you use technology when learning, how much does it make learning easier for you on a scale of 1 to 5" (from "1 = not at all" to "5 = very much")

Besides the benefit of ICT enabling them easier communication with others, students often use information and communication technology while learning because ICT, in their opinion, facilitates the learning process (Figure 2). On a scale from 1 (*not at all*) to 5 (*very much*), most students chose answers 4 (45.5%) and 5 (41.8%), while only 3.6% of the respondents think that ICT does not help them much.

When asked about their education for the application of different technologies in teaching, 60 percent of students stated that they had not attended courses related to the use of ICT in teaching during their studies, while 40 percent of them had attended one or more (Figure 3). Looking only at the answers of students at the Faculty of Humanities and Social Sciences in Zagreb, the percentage of those who did not attend courses related to the use of ICT in teaching is as high as 73.3 percent.

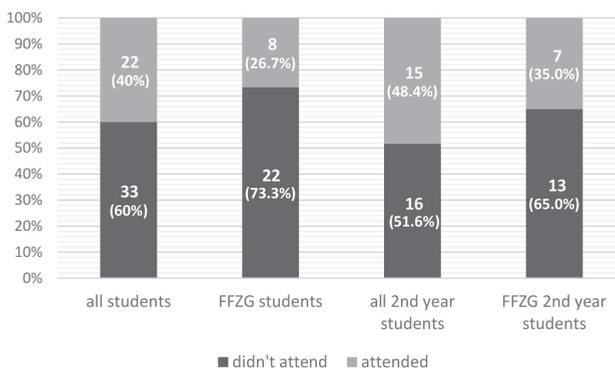


Figure 3. Percentage of students who attended courses related to the application of technology in teaching

It should be noted that a total of 24 respondents in their first year of graduate study participated in the study, so it is possible that they had not yet had the opportunity during their studies to attend courses related to the use of ICT in teaching, but might have subsequently attended them in their final year of graduate study. This might explain the smaller percentage of students (total: 51.6%; FFZG: 65.0%) who had not attended such courses at all during their studies when only second-year graduate students (who were about to complete their studies) were taken into consideration (Figure 3).

Out of the total number of students (22) who attended courses related to the use of ICT in teaching, 17 of them had attended only one such course, while 5 had attended two or more. The most frequently mentioned courses were Application of Computers in Teaching/Education, Information Technologies in Teaching/Education, Media in Teaching (German Language), Teaching Methodology (German Language)⁶, and others. Most of those who had attended ICT-related courses stated that they were useful (10 students) or very useful (7 students) to them, while 5 students felt the courses were not useful.

In the third part of the questionnaire, students provided their opinion on their professional competence for the use of ICT in teaching and expressed their level of (dis)satisfaction with their study programme's offering of courses and other content related to the application of technology in teaching. Most respondents (52.7%) neither agree nor disagree with the statement "*I am sufficiently educated in the application of technology in teaching*"; 32.7% of them moderately agree with this statement, while only 5.5% of the respondents completely agree with it, and 9.1% of them moderately disagree (Figure 4). The same structure of answers is obtained taking into consideration only the answers of students from FFZG: the majority (63.3%) neither agree nor disagree with the statement, 16.7% of them moderately agree, 3.3% of them completely agree, and 16.7% moderately disagree.

⁶ The names of these courses were translated by the authors from Croatian into English for the purpose of this paper. The original names of the courses in Croatian are, respectively, *Primjena računala u nastavi/obrazovanju*, *Informacijske tehnologije u nastavi/obrazovanju*, *Mediji u nastavi (njemačkog jezika)*, *Metodika nastave (njemačkog jezika)*.

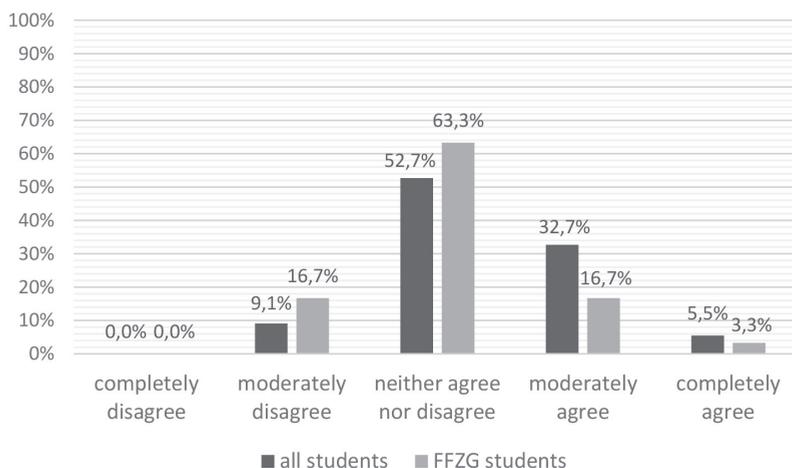


Figure 4. Answers of students to the statement "I am sufficiently educated about the application of technology in teaching."

Furthermore, the majority of students (56.4%) fully agree with the statement that they would like to attend more courses focusing on the use of ICT in teaching during their studies, 29.1% of them moderately agree with this statement, 9.1% of them neither agree nor disagree, 3.6% moderately disagree, and 1.8% do not agree with it at all. Almost equivalent results were obtained for the statement that students in graduate teaching programmes should in general attend more courses on the application of technology in teaching. The majority of students (58.2%) completely agree with this statement, 30.9% of them moderately agree, 7.3% neither agree nor disagree, 1.8% moderately disagree, and 1.8% completely disagree with it. Considering only the answers of students from FFZG, they are almost equal in distribution to the overall answers of all respondents, which means that most of them fully or moderately agree with both statements and would like to attend more courses focusing on the application of ICT in teaching.

When asked whether content on the use of technology in teaching should be part of existing courses or whether new ones should be created, students had the opportunity to choose multiple answers (*within existing courses, create and offer new ones*) and write their own suggestions (*other*).

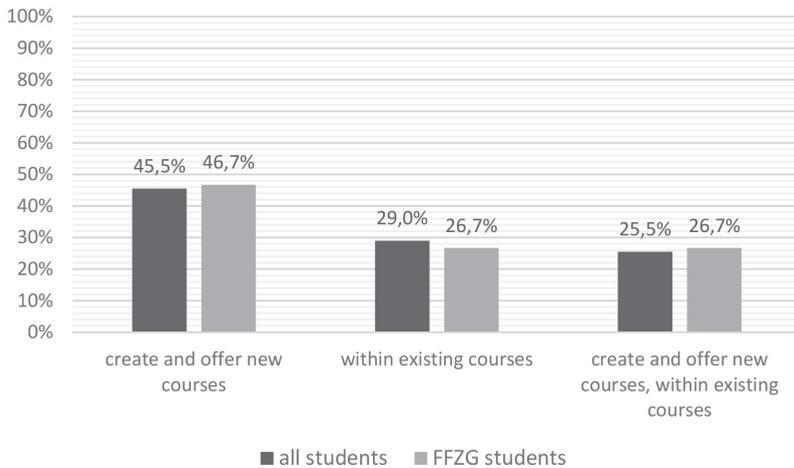


Figure 5. Answers of students to the question "If students should be offered more content related to the application of technology in teaching, should this content be part of existing courses or should new ones be created and offered?"

Figure 5 shows that most students (45.5%) answered that new courses should be created and offered as part of their study programme. 16 out of 55 (29.0%) answered that the content on the use of ICT in teaching should be integrated into existing courses. A quarter of the respondents (25.5%) chose both answers, meaning that they think that new courses should be created, but that content on the application of ICT in teaching should be added to existing courses as well. If only students from FFZG are taken into account, then the structure of the answers is as follows: 14 out of 30 students (46.7%) think that new courses should be offered, 26.7% think that the content should be incorporated into existing courses and 26.7% of them selected both answers. In addition, one respondent added his own opinion:

It doesn't matter; such content either could be integrated into existing courses or a new elective course could be created for this specific subject. I would offer such a course as an elective one and perhaps offer another completely opposite one, which would educate teachers to work in schools where computers and projectors are not available to them. It is risky to prepare teachers only to work with modern technology, considering that a significant number of schools are still not well enough technically equipped (P2018-25).⁷

⁷ The opinion of respondent P2018-25 was translated by the authors from Croatian.

Furthermore, respondents expressed their views on whether new courses on the use of ICT in teaching should be obligatory or elective (Figure 6).

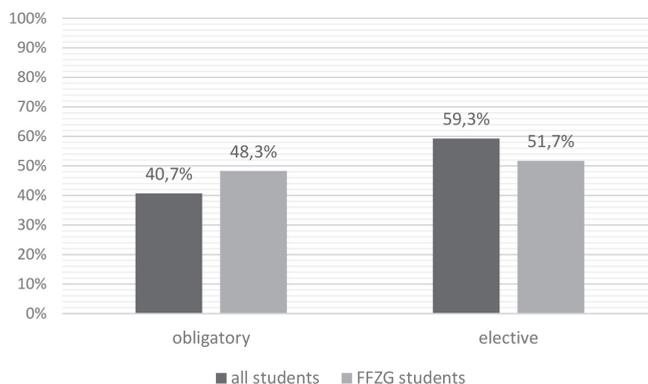


Figure 6. Answers of students to the question "If new courses should be offered, should they be obligatory or elective?"

Figure 6 shows that the majority of respondents⁸ (59.3%) think that new courses should be elective, while 40.7% of them think they should be an obligatory part of their study programme. Among the students from FFZG, the difference in percentage between the two answers is smaller: 15 students (51.7%) believe that new courses should be elective and 14 (48.3%) think they should be obligatory.

What almost all respondents (98.2%) agree on is that their university should provide them with sufficient education in the application of different technologies in teaching. Only one person stated that the university does not have to and is not obliged to provide its graduate teaching students with adequate training in the application of ICT in teaching during their studies.

Although most respondents would like to attend more courses focusing on the use of ICT in teaching during their studies, the results showed that the majority (72.7%) would not want to be professionally educated in extracurricular workshops. Only 27.3 percent of students expressed their desire for extracurricular education. Similar results are obtained if only respondents from FFZG are taken into consideration: 70% of them are not interested in education outside the university, while 30% would be willing to attend extracurricular workshops.

⁸ The question "If new courses should be offered, should they be obligatory or elective?" was not answered by all respondents as it was not obligatory. The question was answered by 54 out of 55 respondents.

In the last question of the questionnaire, the respondents were asked for their opinion on who is responsible (and to what extent) for their further professional development and education in the field of technology application in language teaching once they start working in education. The results are shown in Figure 7.

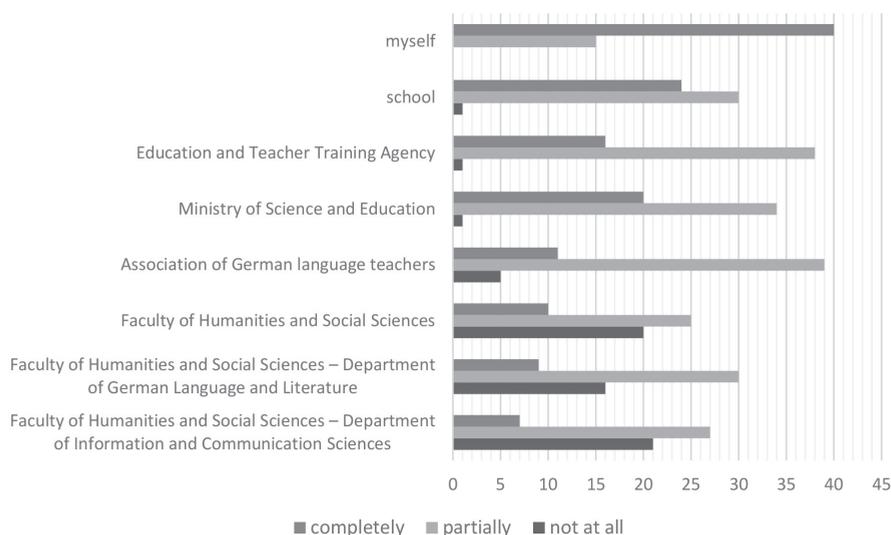


Figure 7. Answers of students to the question "In your opinion, who is responsible (and to what extent) for your further professional development and education in the field of technology application in language teaching once you start working in education?"

As can be seen in Figure 7, most respondents (40 out of 55) pointed out that they personally are entirely responsible for their further professional development regarding the use of ICT in teaching, while 15 (27.3%) of them think that they are only partially responsible for it. Furthermore, the respondents mostly answered that the given institutions from the question are partially responsible for their further development in terms of the use of ICT in language teaching. In addition, it should be noted that a large number of students answered that the Faculty of Humanities and Social Sciences in Zagreb and its departments (the Department of German Language and Literature and the Department of Information and Communication Sciences) are not in any way responsible for the professional development and education of their former students.

3.4.2. The 2020 study

The answers to the 2020 survey conducted among FFZG German studies students showed that 84.2% (16 out of 19) of students in the graduate GFL teaching programme intend to work in education after graduation.

Estimating the frequency of their personal use of ICT, most students said that they use it very often for calling, messaging, checking e-mails, accessing social networks, entertainment, and information retrieval. Notably, ICT is often used by more than a half of the respondents (52.6%) when learning, while 42.1% of them stated that they use ICT very often as a learning aid. These results can be seen in Figure 8.

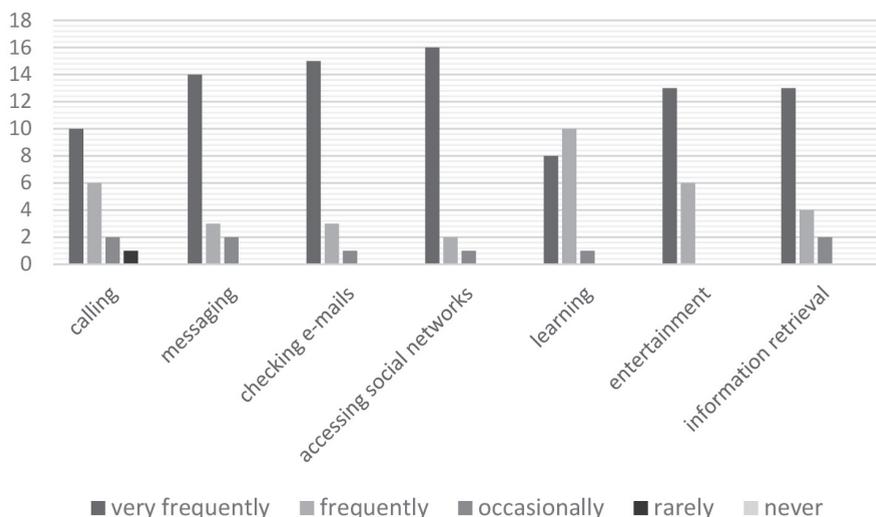


Figure 8. Answers of students to the question “How frequently do you use technology (e.g., mobile phone, computer) for the following purposes?”

In the opinion of the participants, ICT facilitates their learning process. On a scale from 1 (*not at all*) to 5 (*very much*), the vast majority of students chose answers 4 (52.6%) or 5 (47.4%), meaning that ICT makes the process of learning considerably easier for them (Figure 9).

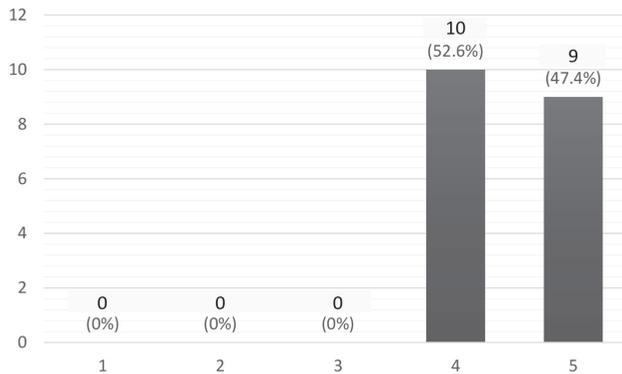


Figure 9. Answers of students to the question "If you use technology when learning, how much does it make learning easier for you on a scale of 1 to 5" (from "1 = not at all" to "5 = very much")

When questioned about their education in the application of different technologies in teaching, 57.9 percent of FFZG students stated that they had not attended courses related to the use of ICT in teaching during their studies, which is a lower percentage compared to the results from the 2018 study (Figure 10).

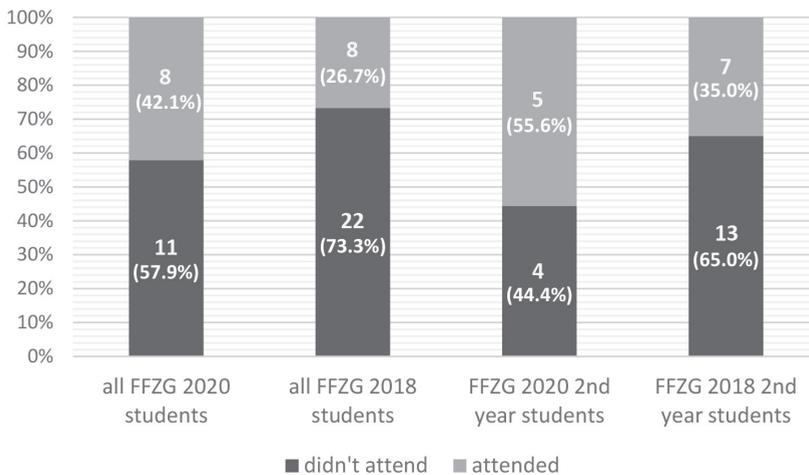


Figure 10. Percentage of students who had attended courses related to the application of technology in teaching

It should be pointed out that a total of 10 first-year graduate students participated in the 2020 study, so it is possible that, so far in their studies, they had not had the opportunity to attend courses related to the use of ICT in teaching, but that they might subsequently attend them in their final year

of graduate study. This corroborates the smaller percentage of second-year graduate students (44.4%) who had not attended such courses during their studies, which is a significant decrease compared to the 2018 results, when the percentage of that FFZG student group was as high as 65.0% (see Figure 3).

All students (8) from the 2020 study who had attended courses related to the use of ICT in teaching had attended only one course. The most frequently mentioned courses were Information Technologies in Education, Internet Culture, and Human Language Technologies⁹, while one participant stated that they had participated in a workshop organized by Goethe Institut in Croatia. A quarter of those who attended ICT-related courses reported that the courses were useful, 37.5% stated that they were very useful, and 37.5% felt they were not useful.

The third part of the survey questioned students about their opinion on their professional competence for the use of ICT in teaching. Furthermore, students expressed their level of (dis)satisfaction with their study programme's offering of courses and other content related to the use of technology in teaching. The results showed that almost half of the respondents (42.1%) neither agree nor disagree with the statement "*I am sufficiently educated about the application of technology in teaching*"; 26.3 percent of the surveyed students reported that they moderately agree with this statement, while 21.1% of respondents completely agree with it, and 10.5% of them moderately disagree (Figure 11). When analysing the results presented in Figure 11, a noticeable increase in the percentage of students who completely or moderately agree can be seen when comparing the 2018 and 2020 results of FFZG students.

⁹ The names of the courses were translated by the authors from Croatian into English for the purpose of this paper. The original names of the courses in Croatian are, respectively, *Informacijske tehnologije u obrazovanju*, *Internetska kultura*, and *Jezične tehnologije*.

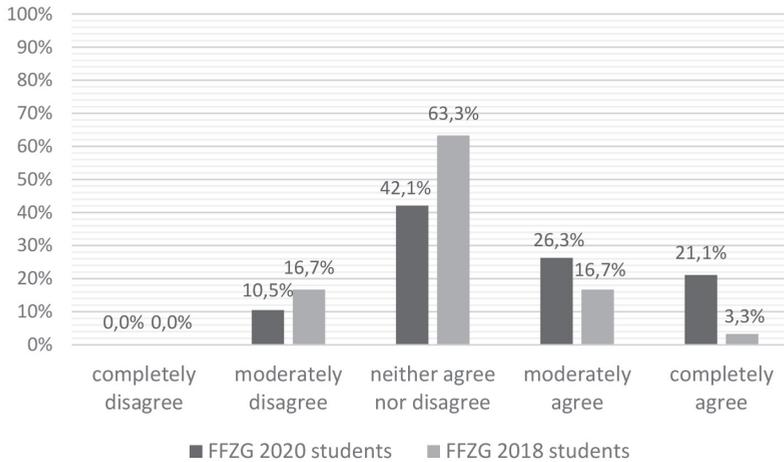


Figure 11. Answers of students to the statement "I am sufficiently educated about the application of technology in teaching."

Similar to the results of the 2018 study, the majority of FFZG students (57.9%) from the 2020 study fully agree with the statement that they would like to attend more courses on the use of ICT in teaching during their studies, 31.6% of them moderately agree, and 10.5% of them neither agree nor disagree. A similar structure of results was obtained for the statement that students in graduate teaching programmes should in general attend more courses on the use of technology in teaching. The majority of students (68.4%) fully agree with the statement, 21.1% of them moderately agree, and 10.5% neither agree nor disagree. Comparing the answers of FFZG students from the 2020 study with the 2018 answers of all respondents (see chapter 3.4.1), they are very similar in distribution, meaning that most students from both studies expressed a wish to attend more courses related to the application of ICT in teaching.

In addition, students were asked whether content on the use of technology in teaching should be part of existing courses or whether new ones should be created. They had the opportunity to select multiple answers (*within existing courses, create and offer new ones*) and to write their own suggestions (*other*). The results are graphically shown in Figure 12 in comparison to the results from the 2018 study.

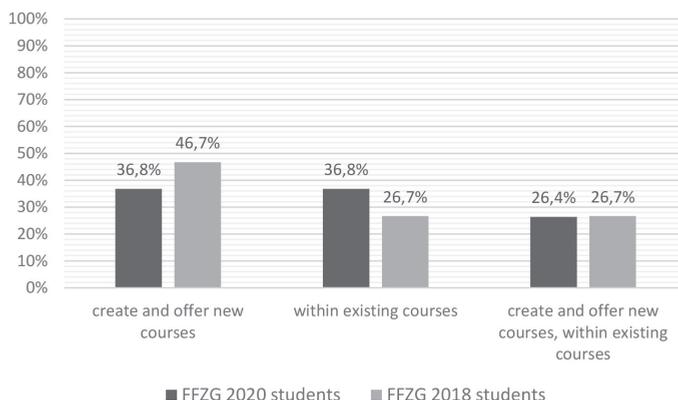


Figure 12. Answers of students to the question “If students should be offered more content related to the application of technology in teaching, should this content be part of existing courses or should new ones be created and offered?”

Figure 12 shows that 36.8% of the students from the 2020 study stated that new courses should be created and offered as part of their study programme. The same percentage of subjects (36.8%) answered that content on the use of ICT in teaching should be integrated into existing courses, while 26.4% of the respondents chose both answers, meaning that they think that new courses should be created, but content on the use of ICT in teaching should be added to existing courses as well. As can be seen in Figure 12, the structure of responses is similar to those of FFZG students from the 2018 study.

Furthermore, participants expressed their views on whether new courses on the use of ICT in teaching should be an obligatory or elective part of the study programme (Figure 13).

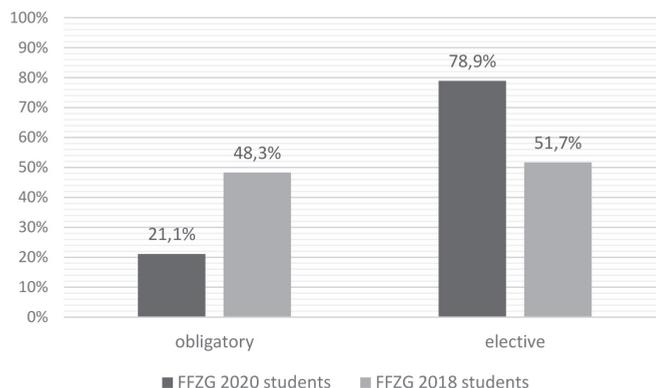


Figure 13. Answers of students to the question “If new courses should be offered, should they be obligatory or elective?”

The results displayed in Figure 13 show that the majority of respondents (78.9%) think that new courses should be elective, which is a significantly higher percentage than that of FFZG students (51.7%) from the 2018 study. In the 2020 study, only 21.1% of FFZG students think that the newly created courses should be an obligatory part of their study programme.

As in the 2018 survey (see chapter 3.4.1), what almost all respondents (94.7%) from the 2020 research agree on is that their university should provide them with sufficient education in the use of different technologies in teaching. Only one person stated that the university does not have to and is not obliged to provide its graduate teaching students with adequate training in the application of ICT in teaching during their studies.

Although most respondents would like to attend more courses related to the use of ICT in teaching during their studies, the results showed that the majority (73.7%) would not want to be professionally educated in extracurricular workshops. Only 26.3 percent of the students expressed their wish for extracurricular education. A similar distribution of responses was obtained in the 2018 study (see chapter 3.4.1).

The last question of the survey asked the students about their opinion on who is responsible (and to what extent) for their further professional development and education in the field of technology application in (language) teaching once they start working in education. The results are shown in Figure 14.

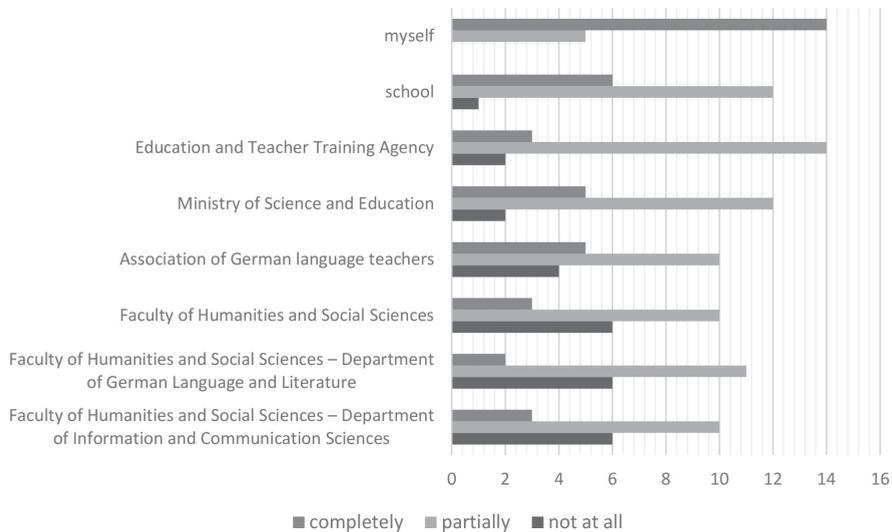


Figure 14. Answers of students to the question "In your opinion, who is responsible (and to what extent) for your further professional development and education in the field of technology application in language teaching once you start working in education?"

As illustrated in Figure 14, most respondents (14 out of 19) from the 2020 survey pointed out that they personally are entirely responsible for their further professional development regarding the use of ICT in teaching, while 5 (26.3%) of them think that they are only partially responsible for it. No significant difference was found between the 2018 and 2020 survey results. Similar to the results from 2018 (see chapter 3.4.1), the respondents mostly answered that the given institutions from the question are partially responsible for their further professional development in terms of the use of ICT in language teaching. In addition, it should be noted that almost a third of the participants (31.6%) from the 2020 study answered that the Faculty of Humanities and Social Sciences in Zagreb and its departments (the Department of German Language and Literature and the Department of Information and Communication Sciences) are not in any way responsible for the professional development and education of their former students.

3.5. Discussion – 2018 versus 2020

We are aware that our research may have limitations given the relatively small number of participants and the difference in sample size between the surveys from 2018 (55 participants from four universities) and 2020 (19 participants from one university). A larger participant sample would be required for a more precise and well-grounded comparison. As we had a relatively small number of respondents (25 in total) from the universities in Zadar, Osijek, and Rijeka in the 2018 study, we decided to place an emphasis on students at FFZG in the 2020 study, in order to have a sufficient number of respondents for a well-founded comparison.

A broadly experienced reliance on information and communication technologies on a daily basis in both private and business life has been affirmed by the results of our surveys from 2018 and 2020. Graduate students of GFL teaching programmes stated that they use ICT very often for various purposes – from entertainment to information retrieval and learning. Considering this reality and the fact that 51.6% of all respondents from the 2018 study (see Figure 3) and 42.1% of FFZG students from the 2020 study (see Figure 10) did not attend courses related to the professional application of ICT during their pre-service training, it seems consistent to suggest that future German language teachers should be given the opportunity to acquire appropriate knowledge and skills in ICT topics.

Returning to the first hypothesis posed at the beginning of this study, stating that “Graduate students in GFL teaching programmes consider

themselves to be insufficiently educated in the use of information and communication technology in teaching,” it is now possible to summarize that the results of the 2018 and 2020 surveys refute the initial H1 to a great extent. It was shown that more than a half of the students (52.7%) from 2018 and almost a half of them (42.1%) from 2020 neither agree nor disagree with the statement that they are sufficiently educated on the use of ICT in teaching, while almost a third of the respondents moderately agree with this statement (see Figures 4 and 11). Although a large number of students consider themselves to be sufficiently educated about the application of different technologies in teaching, most respondents would like to attend more courses on the use of ICT in teaching during their studies. Interestingly, the majority of respondents (58.2% in 2018 and 68.4% in 2020) stated that students of graduate teaching programmes should attend more courses related to the use of technology in teaching, but more than two thirds of them (72.7% in 2018 and 73.7% in 2020) are not willing to be educated in extracurricular workshops. In relation to this, it should be noted that almost all respondents (98.2% in 2018 and 94.7% in 2020) are of the opinion that their university should provide them with adequate education in the use of different technologies in teaching.

Based on the obtained results from 2018 and 2020, it can be concluded that graduate students of German studies teaching programmes in Zagreb, Zadar, Osijek, and Rijeka are dissatisfied with the offering of courses and other content on the application of ICT in teaching, which confirms hypothesis H2. Students expressed their wish for more ICT-related courses during their studies in order to be better educated in the use of different technologies in teaching and prepared for the challenges they will face in GFL teaching.

Our results share a number of similarities with the findings of similar studies conducted in Germany and Croatia (VBE 2016; Pejić Papak and Grubišić Krmpotić 2016), in which more than 80% of the participants expressed their agreement with the statement that education in the use of ICT in teaching should nowadays be an indispensable part of future teacher education. Similar to the results of the research carried out by VBE (2016), our results revealed as well that more than 80% of the participants would like to attend courses and seminars related to the use of digital media in teaching.

The transition from traditional teaching to distance learning has been demanding for a lot of teachers in Croatia since the beginning of the COVID-19 pandemic. In order to support teachers better and give them detailed guid-

ance and recommendations, the Croatian Ministry of Science and Education published several documents and plans, e.g., the “Action Plan for the Execution of Distance Learning”¹⁰ (2020a) and “Models and Recommendations for Working in Conditions Associated with the COVID-19 Disease”¹¹ (2020c).

Due to the crisis caused by the coronavirus, distance learning has become the most important educational practice not only in Croatia, but in Europe and throughout the world, as well. This has highlighted the urgent “need to improve digital education, as a key strategic objective for high-quality teaching and learning in the digital age” (European Commission, 2020). Therefore, the European Commission has adopted the Digital Education Action Plan (2021-2027) for the European region, which “proposes a set of initiatives for high-quality, inclusive and accessible digital education in Europe” (European Commission, 2020).

With regard to the implementation of ICT supported teaching, a comprehensive reform of the education system is in progress in Croatia. As a part of this, new subject curricula have been developed. In 2019, the Ministry of Science and Education introduced a new curriculum for the subject *German Language*. The content of this curriculum shows that ICT, and especially digital media, will be used more often in teaching and will be the subject of education within the recommended teaching topic *Technology and Media*. As pointed out in the curriculum, one must be aware of the fact that modern technologies are increasingly entering (German-language) teaching and their use contributes to the creation of a stimulating and productive environment. Furthermore, the digital environment offers countless opportunities for the adoption of new language knowledge and skills (MZO, 2019).

When it comes to the professional competence of future teachers concerning the application of technology in teaching and the development of their digital literacy, they need to be provided with quality education in the use of ICT because, as Bognar (2006: 7) notes in his article, “students must experience modern teaching in order to be able to perform it themselves.”¹²

¹⁰ Free translation by the authors from Croatian, originally “Akcijski plan za provedbu nastave na daljinu”

¹¹ Free translation by the authors from Croatian, originally “Modeli i preporuke za rad u uvjetima povezanima s bolesti COVID-19”

¹² Free translation by the authors from Croatian, originally “studenti moraju doživjeti suvremenu nastavu kako bi je i sami mogli izvoditi”

To ensure topical study designs, the Faculty of Humanities and Social Sciences in Zagreb has elaborated new strategies for the period from 2018 to 2023. According to the guidelines published in the *Development and Scientific Research Strategy*,¹³ the faculty intends to provide (future) teachers with a better education in the field of digital literacy by creating new courses on the application of available educational technologies in teaching (FFZG, 2018).

To sum up, it seems to be generally accepted that future generations of (GFL) teachers should be provided with quality education in the application of ICT in learning and teaching from the very beginning of their study programme, giving them the proficiency to decide which technology to choose and how to optimally integrate it in teaching.

4. CONCLUSION

As our research has revealed, the majority of students from both the 2018 and 2020 surveys stated that they would like to attend more courses on the application of technology in teaching and expressed their wish for their study programme to offer more ICT-related content within existing courses. Therefore, as a start, it would be recommendable that university professors of all graduate teaching programmes (and not only German studies) integrate ICT-related content to some extent into their existing obligatory (didactics) courses which are attended by all graduate students. In that way, future teachers would at least be engaged with the basics of ICT application in teaching.

Further on, new courses should be created and be optional to attend – which was also suggested by more than a half of the students from both the 2018 and the 2020 survey. Through these elective courses, interested students would develop their didactic-methodological competences for the application of ICT in teaching.

Depending on the students' opinions, needs, and wishes, new ICT training courses could also be integrated into the undergraduate programme or become an obligatory part of the study programme. This would give all students the opportunity to get better preparation on how to integrate educational software and other technologies into teaching.

However, it needs to be emphasized that this education in the application of ICT in teaching should be imbedded as an addition to the current

¹³ Free translation by the authors from Croatian, originally "Razvojna i znanstveno istraživačka strategija"

programme of study, which was also the opinion shared by of the participants in the 2018 survey (see chapter 3.4.1). The study period should in fact prepare future teachers for a variety of possible teaching environments (e.g., working in schools without technical equipment like computers, interactive boards etc.).

The results of our research can therefore be of interest for designing solutions that will modernize university education. Future studies among (future) teachers are necessary as well, in order to keep track of students' and teachers' attitudes towards their ICT competence for educational practice so that universities and other authorities can react and adapt their study programmes to new demands in a timely manner.

In summary, with regard to second-language didactics and methodology, more attention should be paid to adequate implementation of ICT in teaching, which requires cooperation, effort, and a positive attitude of all elements of the educational environment – the state, schools, teachers, students, parents, and the society in general. The future of education systems will largely depend on their ability to adapt to the rapid changes of the digital age.

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Mišljenja studenata germanistike o njihovoj stručnoj osposobljenosti za primjenu informacijsko-komunikacijskih tehnologija u nastavi

Matija Đurđek
matija.djurdjek@gmail.com
Filozofski fakultet Sveučilišta u Zagrebu

Marija Lütze-Miculinić
mlmiculi@ffzg.hr
Filozofski fakultet Sveučilišta u Zagrebu

Predmet su ovog rada mišljenja studenata nastavničkog smjera germanistike o njihovoj pripremljenosti i educiranosti za uporabu informacijsko-komunikacijske tehnologije (IKT) u nastavi njemačkog kao stranog jezika te prisutnosti tema povezanih s IKT-om u njihovom studijskom programu. U tu su svrhu provedena dva istraživanja putem *online* anketiranja – prvo 2018. godine na četirima hrvatskim sveučilištima, a drugo 2020. godine na Filozofskom fakultetu Sveučilišta u Zagrebu. Ciljevi istraživanja bili su ispitati postavljene hipoteze: smatraju li se studenti nedovoljno educiranima o uporabi IKT-a u nastavi te bi li željeli više sadržaja i tema povezanih s IKT-om u njihovom studijskom programu. Rezultati dvaju istraživanja analizirani su zasebno i usporedno. Premda su istraživanja pokazala da se velik broj studenata osjeća dostatno stručno osposobljenim za uporabu IKT-a u nastavi, većina bi željela veću prisutnost nastavnih sadržaja s područja IKT-a tijekom studija. U zaključku su ocrtni prijedlozi za uključivanje IKT sadržaja u studijske programe nastavničkog smjera germanistike. Prijedlozi se temelje na rezultatima dobivenim u okviru provedenih istraživanja.

Ključne riječi: *njemački kao strani jezik, izobrazba nastavnika, informacijsko-komunikacijska tehnologija, mišljenja studenata germanistike*