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FROM THE EDITOR

by **Jarosław Krajka**
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"Technology opens infinite opportunities for teachers" – this is a cliché which has been repeated over and over again for more than 30 years now. We are constantly seeking new and innovative tools and technologies to achieve whatever seemed impossible before. We hope to see technology help and assist not only in the general process of language acquisition, but also we strive to find more specific technology-based instructional procedures to tackle actual classroom problems.

At the same time, many teachers are still wary of the use of technology in language education, fearing that it will change the accepted teacher-learner balance, will undermine the position of the teacher or will expose learners to unwanted input from unsolicited interactions.

Therefore, what seems crucial after those thirty years of researching computer-based instruction is to help learners and teachers harness technology and to make them empowered in the learning and teaching processes via skilful mastery of selected tools.

Hence, the major topic tackled in contributions contained in the January issue of *Teaching English with Technology* is learner autonomy and empowerment in computer-mediated settings. To start with, it is useful to see how learners' independence and self-direction can and should be fostered in open and distance learning contexts, naturally inclined to fostering autonomous learning. This problem is tackled by **Daniel Ginting, Patrisius Istiarto Djiwandono, Ross Woods** and **Debra Lee** (Indonesia) in their article "*Is Autonomous Learning Possible for Asian Students? The Story of a MOOC from Indonesia?"* As the research proves, even though there is a correlation between autonomy and academic achievement, it cannot be taken for granted that autonomous environments such as MOOCs will naturally foster learners' self-direction. Much more is needed, most importantly, strategy training.

Hence, the concept of learning strategy training as essential in CALL and MALL research is addressed by **Gyoomi Kim** and **Jiyoung Bae** (South Korea). The authors clearly prove that understanding the learning process and strategy use patterns is critical to make

students strategic learners in a digital English learning context and eventually to develop their digital English abilities.

Some forms of technology-assisted learning make even greater demands on learners in terms of their awareness and self-management. This is the case not only with distance learning in MOOCs, but also flipped learning inside the classroom. **Yudhi Arifani, Slamet Asari, Khoirul Anwar** and **Langgeng Budianto** (Indonesia) pondered upon that issue in the context of English writing skills. The study showed the effect of flipping (i.e. reversing) individual and collaborative instruction using the *WhatsApp* application on the cohesive ability of learners. An interesting conclusion is that it is not only the tool or computer program (here, *WhatsApp*) that makes a difference, but rather an innovative instructional procedure (collaborative learning in flipped instruction) mediated via a particular technology.

Once learners grasp essential digital learning strategies and become aware of how learning can be enhanced by technology and media, we can see how their digital and media competences are growing. **Francisco Javier Palacios Hidalgo, M.ª Elena Gómez Parra** and **Cristina A. Huertas Abril** (Spain) reconsider the concepts of competences necessary for successful functioning in the digital world of today.

Even well-familiar tools such as Audacity, which have been with us for quite a few years, can find their innovative didactic application in the process of fostering learner autonomy and increasing their language proficiency. This is the case with the use of *Audacity* for pronunciation practice, as advocated by **Carmen Benitez-Correa, Paola Cabrera-Solano, Lida Solano** and **Veronica Espinoza-Celi** (Ecuador).

Similarly, the use of selected computer-based methods is advocated for teaching elementary writing skills (**Nasibeh Mahi Gharehblagh** and **Najmeh Nasri** from Iran) and incorporating learners with disabilities in English language instruction (**Leticia Blázquez Arribas, María Amor Barros Del Río, Elena Alcalde Peñalver** and **Concetta Maria Sigona** from Spain). These authors show how to effectively teach and empower learners in need, either due to low language level or special educational needs.

An incredibly rich mix of topics, approaches, technologies and procedures will surely satisfy the expectations of our readership all over the world, at all levels of education, practitioners and researchers alike. We wish you good reading!

IMPROVING PAST TENSE PRONUNCIATION OF REGULAR VERBS THROUGH THE USE OF AUDACITY: A CASE STUDY OF EFL UNDERGRADUATE STUDENTS IN ECUADOR

by **Carmen Benitez-Correa, Paola Cabrera-Solano, Lida Solano**
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Abstract

This study examined the use of Audacity software to improve the pronunciation of regular verbs in the past tense. The participants were 30 advanced English as a Foreign Language (EFL) students of the English major of Universidad Tecnica Particular de Loja (UTPL), Ecuador. A mixed-method approach was used to gather qualitative and quantitative data from the participants by means of surveys, tests and audio recordings through Audacity. The intervention process took eight weeks. During this time, students were first instructed on the use of Audacity. Then they were taught the three pronunciation rules of regular verbs in the past tense and were asked to record a total of 10 audios per student in isolation and in context. Three-hundred audios were analyzed in total. After analyzing the data, the results indicate that Audacity is an effective tool that not only improves learners' pronunciation, but also favors the practice of English language in a free and relaxed environment.

Keywords: pronunciation; Audacity; regular verbs; past tense; EFL teaching

1. Introduction

Pronunciation is a significant component when learning EFL since sounds are important for messages to be fully understood. In fact, being conscious of the English language pronunciation rules helps students to produce intelligible speech, which, according to Long and Huang (2015), is influenced by word choice, rate of speaking and grammar use, as well as the general coherence of the speaker's discourse.

Although pronunciation is of paramount importance in EFL learning, limited attention has been devoted to how to adopt it in curricular planning and formally teach it (Hismanoglu, 2009). According to Celce-Murcia, Brinton, Goodwin and Griner (2010), pronunciation is mostly taught in de-contextualized contexts where students just listen to and repeat language

utterances. In addition to the aforementioned problems, Seferoglu (2005) affirms that EFL teachers are wrongly convinced that their students will develop their pronunciation by completing all the activities planned in the syllabus and do not directly focus on teaching it. Another fact that affects teaching pronunciation is the non-native instructor's lack of phonological competence in this field (Hismanoglu, 2009). Furthermore, as Harmer (2001) points out, many students prefer to use their own accent due to identity facts, which prevents them from reaching a native-like accent in the target language.

As it was previously mentioned, EFL students encounter several difficulties while trying to achieve native-like English pronunciation, especially in terms of using the rules for pronouncing the past tense of regular verbs, which is commonly poor among Ecuadorian university students. In this context, Liang (2015) asserts that poor pronunciation in English reduces the possibility of good oral-auditory interaction. Considering these issues, it is worth mentioning that nowadays there are many technological tools and resources that can help students to overcome pronunciation problems. One of these tools is Audacity, which assists development of learners' pronunciation in the target language because it is very practical, easy to use, and can be employed for various purposes in different educational fields (Gómez, 2010).

Even though some studies have employed technological software to teach English pronunciation (Saito, 2007; Yangkland, 2013; Mao, Mardano and Meyer, 2013, and Ducate and Lomicka, 2009), limited research has been conducted on the use of Audacity for teaching past tense pronunciation of regular verbs. Based on these aspects, the research questions to be addressed in this study are the following:

- What are students' pronunciation problems regarding past tense of regular verbs?
- Does the use of Audacity improve the pronunciation of regular verbs in the past tense among EFL learners at Universidad Tecnica Particular de Loja?
- How do EFL learners perceive the use of Audacity in their improvement of pronunciation?

2. Literature review

2.1. The importance of pronunciation in language teaching and learning

Acquiring English as a second language involves not only reading, writing, listening and speaking skills but also pronunciation, which plays a significant role as a sub-skill since it enables effective communication and helps avoid misunderstandings (Gowhary, Azizifar & Rezaei, 2016). In addition, through effective pronunciation, second language learners can be

understood by native or non-native speakers avoiding distractions during speech (Yoshida, 2016). According to Maniruzzaman (2008), pronunciation is a fundamental aspect of second and foreign language learning because it directly influences students' communicative competence as well as performance to a substantial extent. In fact, Goodwin (2001) points out that L2 proficiency is most likely judged through the speakers' pronunciation; for this reason, intelligible pronunciation plays a significant role for L2 learners because it helps them communicate successfully (Saito, 2007), and it is considered as an essential component of communicative competence (Morley, 1991). Even when learners produce minor inaccuracies in vocabulary and grammar, they are more likely to communicate in an effective way when they have good pronunciation and intonation in the target language (Burns & Claire, 2003).

2.2. The effectiveness of Computer-Assisted Pronunciation

Computer-Assisted Pronunciation (CAP) refers to the use of technology for learning and teaching segmental and suprasegmental features of the sound system (Rostron and Kinsell, 1995). In addition, CAP focuses on two major areas: evaluation and instruction of the different aspects of pronunciation (Raux & Kawahara, 2002).

Regarding the advantages of CAP, Neri, Cucchiarini and Strik (2002) state that it offers students the opportunity to access vast amount of input through the use of computer software and it can also provide personalized feedback for users. CAP provides learners with a variety of interactive software packages to perceive and practice pronunciation (AbuSeileek, 2007). In this concern, through pronunciation software (PS) learners can gain access to infinity of authentic L2 input automatically and instantaneously (Neri, Cucchiarini & Strik, 2002). In addition, PS also creates for students a stress-free environment in which they can practice any time (Hismanoglu, 2006). LaRocca (1994) also claims that the high quality sound that digitized pronunciation software packages offer allows learners to look at the articulatory movements when producing sounds.

2.3. Pronunciation rules for the simple past tense of regular verbs

Regarding the rules for pronouncing the *-ed* ending of regular verbs in simple past, there is an agreement among authors (Celce-Murcia et al., 2010, Fraizer and Mills, 2015, Schoenberg, 2015) about the way of pronouncing them. According to these authors, the rules are as follows:

Rule number one states that when the verb base ends in a voiced sound, except /d/, the *-ed* ending sounds like /d/. The /d/ is blended together with the previous consonant and not

pronounced as an extra syllable. A voiced sound occurs when your vocal cords vibrate. English voiced consonant sounds are: /b/, /v/, /g/, /z/, /j/, /ð/, /l/, /m/, /n/, /r/, and all the vowels.

The second rule mentions that when the verb base ends in a voiceless sound, except /t/, the *–ed* ending sounds like /t/. The /t/ is blended together with the previous consonant and not pronounced as an extra syllable. A voiceless sound is like a whisper, where your vocal cords do not vibrate. Voiceless consonant sounds are: /p/, /f/, /k/, /s/, /ʃ/, /tʃ/, /ʧ/, /θ/.

Finally, rule three indicates that when the verb base ends in a /t/ or /d/ sound, the *–ed* ending sounds like /ɪd/ or /əd/, and is pronounced as an extra syllable. Table 1 shows some examples related to the aforementioned rules.

Table 1. Examples of regular verbs in past tense

Rule 1 **/d/**	**Rule 2** **/t/**	**Rule 3** /ɪd/ or /əd/
widow**e**d	wor**k**ed	star**t**ed
mo**v**ed	drop**p**ed	gradua**t**ed
return**e**d	fini**sh**ed	deci**d**ed
sta**y**ed	divor**c**ed	separa**t**ed
studi**e**d	stop**p**ed	nee**d**ed
marri**e**d	lau**gh**ed	atten**d**ed

2.4. Audacity in language teaching and learning

According to Gómez (2010), Audacity is a free-open software that is used for recording and editing sound. It allows users to cut, copy and splice sounds together as well as change the speed or pitch of a recording (Swanson, 2014). It can be used as a traditional lab where students can record themselves and save their recordings into their computers without Internet connection (Ramani, 2016). Additionally, this tool brings a great contribution to both teachers and students since the audio material can be used inside or outside the classroom; so its use in the EFL classroom is unlimited and just depends on teachers' and students' creativity (Gómez, 2008).

As it was previously mentioned, Audacity provides a wide range of benefits for students and even more for language teachers, since it allows them to optimize their work. In fact, the use of Audacity guarantees better quality of sound and simple management of files which helps teachers to compare, analyze and provide feedback on students' recordings (Dettori & Lupi, 2010). According to Gómez (2010), through the use of Audacity, teachers can speed up or slow down recording, considering students' level when teaching pronunciation. Gómez also claims that teachers can create short listening activities as supplementary material which are new and

suitable for students' preferences, level and needs. He also indicates that teachers can record short chunks of language in order to get students focused on aspects of spoken English that they may find difficult. Additionally, teachers can record words or phrases that are difficult for students to pronounce by taking into account the pauses, so students can repeat it afterwards; later, they can record their pronunciation and listen to it in order to compare both the teacher and theirs.

Although there is little formal research on the use of Audacity, there are some studies that address the use of audios for teaching EFL. Saito (2007) conducted an experimental study for showing the efficacy of explicit phonetic instruction in Japan. The participants were 6 EFL learners who were classified into an experimental (4 students) and control group (2 students). The methodology consisted of the use of computer-generated visual feedback which involved the use of an acoustic speech analysis method through the computer software Praat. The results revealed that explicit phonetic instruction led the students of the experimental group to improve their pronunciation dramatically while the students who were part of the control group did not show a significant improvement. Additionally, explicit phonetic instruction helped students to become more aware of their pronunciation than when being exposed to the natural speech production of the target language.

Yangkland (2013) carried out experimental research to investigate the improvement of English stress and intonation pronunciation after using an e-learning program. Forty randomly-selected English majors at Nakhon Ratchasima Rajabhat University were considered as sample. Before using the e-learning program, students answered a pre-test with the aim of being classified according to their pronunciation abilities, then they were taught how to pronounce stress and intonation in English from the e-learning program during a period of 4 weeks, and finally a post test was applied to survey students' pronunciation. The results show that participants enhanced their pronunciation after using the e-learning program.

Mao, Guardado and Meyer (2013) conducted a study to examine how podcasting enhances the English learning experience of students in an English as a Second Language (ESL) course. Information was taken from two case studies carried out in a teacher training university (SRTTU) in Iran. Results were obtained by triangulating students', instructors' and program coordinators' perceptions. Findings indicated that even though students showed some apprehension, lack of confidence, nervousness and fear of using Audacity at the beginning, later they felt that the Audacity audio, repetition and recording actually helped them to learn the language and pronounce correctly; however, this tool did not influence the level of apprehension. It was also found that cultural background did not influence using podcasts.

Finally, it is important to note that students did not make use of all the functions of the software, but they also realized that if they had used them all, productivity in learning would have increased.

AbuSeileek (2007) conducted a study with the purpose of evaluating the efficacy of computer-based pronunciation instruction through Mouton Interactive Introduction to Phonetics and Phonology software for EFL learners in advanced English language classes at a university level. It was also aimed to perceive and produce correct stress patterns. The sample of this study consisted of 50 Saudi EFL male learners who were divided into control and experimental groups. A survey was used in order to gather students' personal information; then, a pre-treatment pronunciation test was administered to students to identify their pronunciation level. Next, a pre-test and a post-test were employed to test the effectiveness of computerized or traditional instruction in both groups (control and experimental). In addition, a questionnaire and an interview were applied to students from the experimental group, which permitted to know the effectiveness of computer-assisted pronunciation instruction. At the end, it was confirmed that computer-assisted pronunciation instruction was effective in improving the EFL learners' ability to produce and perceive different stress patterns in words, phrases, and sentences.

Ducate and Lomicka (2009) helped students to improve their L2 pronunciation through the use of audio recordings and examples of self-awareness activities and self-analysis projects. The main participants of this study were American English speakers learning German (12 students) and French (10 students) aged 18 to 22 years old. Throughout the semester, students made 5 pronunciation recordings; after that, they created 3 extemporaneous podcasts. Students also answered a pre- and post-survey based on Elliott's (1995) Pronunciation Attitude Inventory, which permitted to find out their perceptions regarding pronunciation. Although students found the podcast project positive due to the feedback they received, they did not significantly improve their pronunciation in regards to accentedness or comprehensibility, because the time was not sufficient to foster significant improvement and there was no in-class pronunciation practice.

3. Methodology

3.1. Setting and participants

This study comprised 30 EFL undergraduate students and a teacher of the English major of UTPL. In addition, four university teachers were in charge of conducting this research during a period of eight weeks.

3.2. Instruments

Instructional software

The main instrument employed to collect data was Audacity, which is an open-source recorder software available for Mac OS X, Microsoft Windows, GNU/Linux, and other operating systems. Through the use of Audacity, it is possible to record and edit any sound (voice, music, audio playing on the computer, among others), as well as to download the recording (Gómez, 2010). Concerning this study, the only extra resources students needed to use this software correctly were a computer, a set of earphones, a microphone and a jack-to-jack cable. Figure 1 shows an example of a student recording done through the use of Audacity software.

Figure 1. Student's Audacity recording

Activities

The activities and tasks that students performed during the immersion project are described as follows.

Activity 1: Getting trained in the use of Audacity

Students were explained how to use the Audacity platform and then they could perform some exercises in order to verify if they understood the steps to use this software; all these activities were carried out in the English language laboratory.

Activity 2: Explanation of the rules for pronouncing the past tense of regular verbs

This activity was done every two weeks during class time. Students were given some handouts with the list of verbs corresponding to rule 1, 2 and 3 accordingly. The teacher explained and modeled the pronunciation of the current rule, after that, students practiced all the verbs in the list alone and in pairs.

Activity 3: Recording the verbs in isolation using Audacity software

After class-time, the instructor sent the students a list of verbs by the university platform, students were required to repeat all the verbs in the list, once they had practiced enough, they recorded the verbs one by one.

Activity 4: Writing a paragraph in past tense

After recording the verbs students needed to use them to write a paragraph in the past tense, the topic did not matter but coherence and cohesion was observed. The paragraph needed to be long enough for a two-minute recording.

Activity 5: Recording the paragraph using Audacity software

After writing the paragraph, students needed to record it. They were told to pay much attention to the pronunciation of the verbs in the Simple Past tense. Students were required to verify their pronunciation to make sure they had pronounced the verbs correctly. In case they noted they had made some mistakes, they recorded again to improve their pronunciation. Once they made sure their pronunciation was accurate, they downloaded the audio files and sent them to the instructor.

Activity 7: Feedback

Students received feedback from the instructor based on the mistakes found in the recordings.

Tests

- Two diagnostic tests were administered to all the participants in order to identify students' pronunciation problems regarding the use of the Simple Past tense of regular verbs. One of these tests consisted of Audacity recordings of verbs in isolation and the other one was intended to gather written samples of the way students used the Simple Past tense in context.
- Two post-tests were employed at the end of the intervention in order to verify students' improvement while using the three rules of the past tense.

Rubrics

Rubrics were used to measure students' pronunciation performance with regards to the use of the three rules of verbs in the past tense. The main aspects considered in the rubrics were the number of errors students committed while pronouncing the verbs.

Survey

An exit survey including multiple-choice questions was applied in order to gather information on students' perceptions about the use of Audacity.

3.3. Procedure

A mixed-method approach was used to gather qualitative and quantitative data from the participants. According to Cresswell (2015), the use of these kinds of data together allows the researcher to have a clearer overview of the research problem to be investigated. Two diagnostic tests were used to identify students' pronunciation problems regarding the use of the Simple Past tense of regular verbs. One of these tests consisted in Audacity recordings in which students had to use 45 regular verbs in the Simple Past tense. In addition, learners were asked to write a paragraph and record it using 10 regular verbs in Simple Past. This stage also included a written test in which students demonstrated their previous knowledge about the rules for pronouncing the *-ed* ending of those verbs. It is important to mention that students were trained in the correct use of Audacity before working with it.

The study started by providing onsite explanations and examples about the three rules for pronouncing the *-ed* ending of the past tense. After each explanation, students had to record 10 verbs in isolation by using the three rules; they were also asked to use the same verbs to write a paragraph in the past tense and record it using Audacity software. In order to analyze students' recordings (300 audios in total), rubrics were applied to identify pronunciation errors and get statistics of students' pronunciation performance. These results also allowed to provide personalized feedback regarding each pronunciation rule. At the end of the study, students were given a post-test, which consisted of recording 45 regular verbs in the Simple Past tense in order to find out their progress. In addition, students were asked to complete a survey to identify their perceptions.

3.4. Results

The results of the written diagnostic test showed that 67% of students were not aware of the rules for pronouncing the past tense of regular verbs. In fact, it was observed that any student

could provide correct examples, some students confused grammar rules with pronunciation rules, and pronunciation with intonation. The remaining 33% partially knew the rules for correct pronunciation of regular verbs. Regarding the audio recordings, it was found out that students' knowledge about pronunciation of Simple Past verbs in isolation and in context was weak. Indeed, out of a total of 45 verbs that were pronounced in isolation (15 verbs per rule), there was a mean of 19 mistakes among 30 participants. The mean score obtained was 4.33 out of 10 points (see table 1). As regards pronunciation of verbs in context, the results show that the average score was 2.87 out of 10 points. It is important to mention that when making a comparison between verbs used in isolation with verbs used in context, the scores reflect an important variation of 1.46 points.

Table 1. Diagnostic test results

	n	**Mean**	**Standard deviation**
Verbs pronounced in isolation	15	4.33	2.32
Verbs pronounced in context	15	2.87	1.64

After the intervention stage, the post-test results revealed an improvement in pronunciation. In fact, after using Audacity, students got an average score of 5.53 points out of 10 in the first rule, 8.93 points in the second rule and 9.5 in the third one when pronouncing verbs in isolation (see Table 2). As regards the pronunciation of verbs in context, the results of the mean scores evidenced that they were not always aware of their pronunciation errors, even though they produced verbs in isolation correctly.

Table 2. Students' pronunciation of verbs in isolation

	Pronunciation rule 1	**Pronunciation rule 2**	**Pronunciation rule 3**	**Pronunciation of verbs in isolation**
Mean	5.53	8.93	9.5	7.97

Table 3. Students' pronunciation of rules in context

	Pronunciation rule 1	**Pronunciation rule 2**	**Pronunciation rule 3**	**Pronunciation of verbs in context**
Mean	5.2	8.5	9.21	7.64

As far as learners' perceptions about the use of Audacity tool for recording audios in English are concerned, 42.9% scored it as very good, 28.6% as excellent, and 14.3% as regular and good. When students were asked if Audacity favors the practice of English pronunciation, 92.9% of them affirmed that this tool is useful for this purpose. As regards feedback, 64.3% perceived it as satisfactory and 35.7% rated it as very satisfactory. As for the limitations that students found while completing their tasks through Audacity, they mentioned their poor knowledge of the pronunciation rules and the lack of practice that hindered their performance. After receiving the pronunciation lessons, students mentioned that the first rule was the most difficult one to use, followed by rules 2 and 3 with lower percentages as it can be seen in Figure 2.

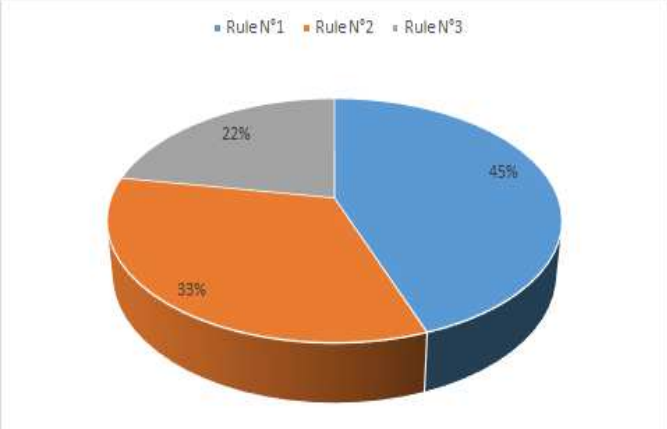

Figure 2. Students difficulties when using the three pronunciation rules of the Simple Past tense

4. Discussion

As regards the pronunciation of the three rules in isolation and in context, rule one was the most difficult because for Spanish native students learning English, it is not easy to produce two voiced consonants together (e.g. lived /lɪvd/, appeared /əˈpiːɹd/; belonged /bɪˈlɔŋd/; burned /ˈbɜː(ɹ)nd/: called /kɔːld/). In fact, they tend to devoice (produce voiced sounds without the voicing that characterizes them) voiced /d/ and pronounce it as /t/, especially at the end of syllables (Green, 2002; and Roach, 2010). It can also be mentioned that when pronouncing the *-ed* ending of regular past verbs, there is a case of deviation of the pronunciation rule (Weinreich, 1953). On the other hand, students faced a few problems with the second rule mainly because the subglottal pressure is lower in voiceless sounds in English (Ladefoged, 1963). In terms of the third rule, when Spanish native speakers pronounce verbs that end in a "*t*" or "*d*" sound, it is easier for them to pronounce "ɪd" or "əd" as extra syllables because the

last syllable has a vowel in it and the whole syllable is pronounced, which is common for Spanish speakers.

As far as the use of Audacity is concerned, the results obtained after the intervention showed that the students' mean performance increased for all the rules in comparison to the results achieved in the pre-test. In this concern, this tool helped students to listen to themselves first and then to become aware of their weaknesses in terms of pronunciation of past tense of regular verbs. These results are correlated with the findings of Mao, Guardado and Meyer (2013), who claimed that students felt that the use of Audacity, repetition and recording actually enhanced their pronunciation and better production of the language.

In terms of students' perceptions about the use of Audacity in the improvement of their pronunciation, most of the learners mentioned that this tool is very easy to use for practicing this sub-skill, and it actually helps them to produce better utterances regarding the past tense of regular verbs. Furthermore, they identified the first rule as the most difficult one to use, which is consistent with the results of the post-test. These results are aligned to Gomez's (2010) findings, who mentions that Audacity is an easy-to-use tool that provides numerous opportunities for practicing the language.

5. Conclusions and implications for the future

Students faced difficulties in the use of the three pronunciation rules of the past tense in context and in isolation with an emphasis on the first one, because for Spanish native speakers learning English as a foreign language it is difficult to produce two voiced consonants together. On the other hand, rule three was the easiest to apply because extra syllables containing a vowel are common for Spanish speakers.

The use of the three rules of the past tense was more difficult when verbs were pronounced in context. In fact, when learners use the language in context they pay more attention to what they say than to how they say it. On the contrary, when verbs are pronounced in isolation, learners are more conscious of the aforementioned rules.

The use of Audacity greatly influenced the improvement of learners' pronunciation since students felt that, through its use, they were able to listen to themselves and this made them conscious of their weaknesses when pronouncing the past tense of regular verbs.

Students asserted that the use of Audacity is highly beneficial for recording audios in English, which favors the practice of the rules for pronouncing the past tense of regular verbs. This allows learners to record as many times as they need in order to practice the target language in a free and relaxed environment.

This study proved to be really gratifying in terms of helping students improve English pronunciation. In fact, there were no technical or administrative limitations; however, the only difficulty to be mentioned is the lack of previous studies focused on this topic. In addition, the revision of students' audio recording demanded too much time, especially when students recorded audios in context.

Although this study has provided insights into the way students can improve their pronunciation through Audacity software, further research into how teachers can provide immediate feedback with the use of this tool should be conducted.

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Appendix 1

Rubric for diagnostic test

Pronunciation rule No. 1

Needs Improvement 10 – 16	**Good 5 - 10**	**Excellent 0-4**
Participant makes more than 10 pronunciation errors. Needed full support and practice	Participant makes from 5 to 10 pronunciation errors. Needed some support and practice	Participant makes fewer than 4 pronunciation errors. Needed little support and practice

Pronunciation rule No. 2

Needs Improvement 10 – 16	**Good 5 - 10**	**Excellent 0-4**
Participant makes more than 10 pronunciation errors. Needed full support and practice	Participant makes from 5 to 10 pronunciation errors. Needed some support and practice	Participant makes fewer than 4 pronunciation errors. Needed little support and practice

Pronunciation rule No. 3

Needs Improvement 9 – 13	**Good 4 - 8**	**Excellent 0-3**
Participant makes more than 9 pronunciation errors. Needed full support and practice	Participant makes from 4 to 8 pronunciation errors. Needed some support and practice	Participant makes fewer than 3 pronunciation errors. Needed little support and practice

Rubric for pronunciation of verbs in context

Needs Improvement 8 – 10	**Good 3 - 7**	**Excellent 0-2**
Participant makes more than 8 pronunciation errors. Needed full support and practice **0-2 points/10**	Participant makes from 3 to 7 pronunciation errors. Needed some support and practice **3-7 points/10**	Participant makes fewer than 2 pronunciation errors. Needed little support and practice **8 - 10 points/10**

Appendix 2

UNIVERSIDAD TÉCNICA PARTICULAR DE LOJA

English Major

Objective: The purpose of this questionnaire is to gather information about your level of satisfaction on the use of Audacity software for development of pronunciation skills in the English language.

Part 1: Demographic data

1. Gender:

Woman ( )

Man ( )

2. Age

17-20 ( )

21-25 ( )

More than 26 ( )

Part 2: Previous knowledge

1. Before receiving classes, how would you rate your level of pronunciation in the English language?

Excellent ( )

Very good ( )

Good ( )

Regular ( )

2. Before receiving classes, how would you rate your knowledge regarding the pronunciation of past tense of English regular verbs?

Excellent ( )

Very good ( )

Good ( )

Regular ( )

Part 3: Audacity use

3. How would you rate the Audacity tool for audio recording in the English language?

Excellent ( )

Very good ( )

Good ( )

Regular ( )

4. Do you think that the Audacity tool favors the practice of pronunciation in the English language?

Yes ( )

No ( )

Why?

_____

_____

_____

5. **Which of the following aspects do you consider most difficult to develop tasks through Audacity? Choose only one answer.**

   Lack of knowledge about pronunciation rules ( )
   Technical difficulties for using the Audacity tool ( )
   Lack of practice and familiarization with this tool ( )
   Low English level ( )
   There were no difficulties ( )
   Others: Specify: ( )

   _____

   _____

Part 4: Pronunciation

6. **After receiving the pronunciation classes, which of the following rules do you consider the most difficult?**

   Rule No. 1 ( )
   Rule No. 2 ( )
   Rule No. 3 ( )

7. **After receiving these classes, how would you rate your pronunciation regarding the past tense of English regular verbs?**

   Excellent ( )
   Very good ( )
   Good ( )
   Regular ( )

8. **How important is pronunciation is for the development of English speaking skills?**

   Very important ( )
   Important ( )
   Little important ( )
   Not important al all ( )

9. **How do you feel with the feedback received by the teacher to improve your pronunciation regarding the past tense of regular verbs?**

   Very satisfied ( )
   Satisfied ( )
   Little satisfied ( )
   Nos satisfied at all ( )

12. What aspects would you suggest for the application of the Audacity tool in other subjects of the English Major?

_____

_____

_____

_____

THANK YOU

A STUDY INTO STUDENTS' USE OF DIGITAL ENGLISH LEARNING STRATEGIES IN TERTIARY EDUCATION

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Abstract

The purpose of this study is to investigate EFL university students' learning strategies used in a digital English learning environment, and to analyze the interrelations between their use of learning strategies and individual learner factors, such as gender, English proficiency levels, learning experiences, and the duration of using the digital learning environment. The participants of the study were 400 students selected from two universities located in South Korea. A questionnaire was developed to examine the use of digital English learning strategies (DELS) based on Oxford's (1990) SILL and was distributed in an online survey form. Data collected in the present study was statistically analyzed to show that, first, the most frequently used strategy category was compensation strategies, and this was followed by memory and metacognitive strategies. Second, learner factors included in this study showed statistically significant relationships with the use of DELS, but the duration of using digital devices was not related to DELS usage. From these findings, the study concludes that understanding the learning process and strategy use patterns is very critical to make students strategic learners in a digital English learning context and eventually to develop students' digital English abilities. The suggestions and implications for further study are also discussed.

Keywords: digital English learning environment; digital learning strategy; learner factors

1. Introduction

In the age of information and globalization, English has become an important means to acquire and utilize a myriad of useful information. In addition, Information and Communication Technologies (ICT) and digital devices have been used in various fields of education and have enabled a paradigm of technology-enhanced language learning (TELL) in the field of language learning. Computer-Assisted Language Learning (CALL) has become a major field of language education. More recently, Mobile-Assisted Language Learning (MALL), which is based on

using mobile devices such as notebooks, podcasts, MP3s, and smartphones, has been constantly promoted in the field of language education research. From this, the possibilities and effectiveness of language teaching and learning using various digital devices have been widely discussed and shown through research.

Ever since Prensky (2001) introduced the term "digital natives", which refers to a new generation that has grown up with technologies, it has appeared in numerous studies (Bennett, Maton, & Kervin, 2008; Jones, Ramanau, Cross, & Healing, 2010; Yot-Domínguez & Marcelo, 2017) through the use of such terms as "digital generation", "new generation", "net generation", etc. Specifically, a "digital native" is defined as a member of a generation where digital technologies and the Internet are a part of everyday life (Thomas, 2011, p. 2). Therefore, Prensky (2001) insisted that teachers should recognize that today's learners have different and distinct characteristics from learners in the past. Teachers should try to understand learners' characteristics and adapt their teaching approach to their learning strategies because the learners nowadays may acquire information differently and perform many functions in different ways. Especially, it is crucial for teachers to understand the way that learners react like using learning strategies to digital technologies in their learning (Teo, 2013).

The use of digital devices in language learning can enhance learners' learning motivation and attitudes. This is because the digital device enables differentiation according to the learners' language proficiencies or characteristics, as well as providing immediate feedback and active interactions. Additionally, it enables learner-centered education that allows the learners to plan, manage, and evaluate the process of their learning independently. In the past, many studies in the field of CALL and MALL have reported on the effective nature of digital language learning environments for learner-centered language learning (Jung, 2012; Kim & Lee, 2017; Kim & Rha, 2014; Kukulska-Hulme & Shield, 2008; Ogata & Yano, 2005).

So far, research on CALL and MALL has focused on verifying the effects of using various digital devices on language learning and examining learners' attitudes and perceptions towards digital language learning. However, it has been rather rare to observe how learners actually use digital devices in the context of digital language learning, or how the characteristics of a digital environment lead to the use of learning strategies in a learner's learning process.

In the field of English language education, research about learners has been actively pursued in the study of learning strategies since the 1990s, and tools for measuring the lists or categories of learning strategies have become increasingly fragmented and systematized (Li, 2005; McGroarty & Oxford, 1990; Oxford, 1990; Symons, Richards, & Greene, 1995). Based

on these previous studies, the use of learning strategies has been shown to be highly affected by language learning contexts, as well as individual learner factors such as gender, age, nationality, English ability, previous learning experiences, motivation, attitude, and beliefs towards language learning.

With rapid advancement and wide use of digital technologies, the recent research trends of English education have shifted in the direction of language teaching and learning using various digital devices. By reflecting these trends, this research aims to identify the learning strategies that constitute digital English learning. This study not only explores the types of digital English learning strategies (DELS) the language learners use but also the relationship between the use of DELS and learner factors such as gender, levels of English proficiency, English language learning experiences, and the duration of using digital learning environment.

Although the CALL and MALL studies conducted in the field of English education have defined digital English proficiency in different approaches, there was little research to comprehensively classify the learning strategy factors constituting digital English learning and to visualize their effect on the learner factors. Therefore, this study aims to bridge this gap in order to understand the learning process of English learners in a digital environment. The study will attempt to investigate key elements which support development of learners' digital English ability in English teaching and learning contexts.

2. Literature review

2.1. Language Learning Strategies

Learning strategies have been seen as tools that language learners can use to accelerate or assist their second language learning. Rubin (1981) defined language learning strategies as the techniques or devices that a learner could utilize to acquire language. Learning strategies were also understood as "any sets of operations, steps, plans, routines used by the learner to facilitate the obtaining, storage, retrieval, and use of information" (Wenden & Rubin, 1987, p.19). On the other hand, Richards, Platt, and Platt (1992) insisted that using learning strategies in learners' learning process could be an intentional behavior and thoughts for them to understand, learn, or remember new information better. Based on various definitions of learning strategies from the earlier studies, thus, learning strategies can be described as special and intentional ways of processing information in order to improve learners' comprehension, learning, or retention of new information.

Past studies on learning strategies tried to classify language learning strategies according to various approaches among scholars. Above all, according to O'Malley and Chamot's (1990) cognitive theory, learning strategies are distinguished cognitive strategies that facilitate learning processes, meta-cognitive strategies that organize and assess learning, and socio-affective strategies that influence social and affective learning. On the other hand, Oxford (1990) classified direct and indirect strategies according to their direct relevance between language learning strategies and target language learning. Direct learning strategies involve memory strategies, cognitive strategies, and compensation strategies, while indirect learning strategies include metacognitive strategies, affective strategies, and social strategies. Oxford's classification of learning strategies has been universally accepted as the most comprehensive measure (Brown & Lee, 2015; Ellis, 1994; Li, 2005). After that, Oxford (2002) included communicative strategies additionally into the type of compensation strategies, and she offered the updated version of Strategies Inventory for Language Learning (SILL), which can measure learners' language learning strategies, widely used in various fields so far.

Learner factors influencing the use of learning strategies and target language achievement in language learning include motivation, attitude, belief, age, cultural background, major field, gender, language level, learning style, and duration of target language learning (Hwang, Choi, Shin, & Lee, 2016; Oxford, 2002). It has been reported that the learner factors have a meaningful correlation with the effects of learning strategy trainings and a significant effect on learners' selection and use of learning strategies (Dreyer & Oxford, 1996; Griffiths, 2003; Ham, 2005; Lee, 2001; Nisbet, Tindall, & Arroyo; 2005). However, related studies of learning strategies left it unanswered which learner factors were influential in determining patterns of learning strategy use that contribute to either successful or unsuccessful learners' language learning (Salahshour, Sharifi, & Salahshour, 2003; Wharton, 2000).

Due to technological advancement various digital devices have been applied in various educational environments and have enabled development and usage of numerous useful learning programs and educational software. The development of various mobile technology devices has recently opened up more interactive and useful language teaching and learning activities to many language professors, teachers, and learners, along with the establishment of wired and wireless network systems. Thus, language learners can use language learning materials that are meaningful and comprehensible whenever and wherever they want (Kukulska-Hulme & Shield, 2008; Lyddon, 2016). Additionally, social network sites and the Internet have recently been used to train students in digital English learning strategies with positive results in the digital learning environment (Alias, Manan, Yusof, & Pandian, 2012;

Kim, 2017; Rahimi & Katal, 2012; Yoon, 2014). In this way, the use of digital environment has become a necessity for language learners, which is different from conventional language learning. Thus, English learners need to use particular learning strategies in digital English learning environment, so-called DELS (Digital English Learning Strategies).

2.2. Language Learning Strategies in Digital English Learning Environments

CALL and MALL studies have been conducted based on the existing classification of learning strategies and applied in digital learning environment. A general language learning strategy is defined as a variety of social and cognitive activities that learners use consciously in the process of understanding, storing, remembering, recalling, and using new information or skills when they learn a specific language (Wenden & Rubin, 1987). Accordingly, DELS includes the types of English language learning strategies that are used by learners to search effectively for vast amounts of information and select materials that meet their English learning goals. Ultimately, learners can learn new language information and contents on their own. Therefore, DELS supports learners' self-directed learning, and, in this process, they are asked to use various types of conscious and unconscious strategies at the same time (Liang, 2009; Zhou & Wei, 2018).

As stated earlier, research into general language learning strategies has been utilized in the research field of digital language learning environment (Bae & Kim, 2018; Jung, 2012; Khabbaz & Najjar, 2015; Kim, 2002; Kim, 2017; Lee & Kwon, 2007; Liang, 2009). Based on these studies, learners tend to apply various digital devices and wired/wireless Internet access in their language learning, and in this process, they are most likely to use cognitive strategies such as conceptualization or deductive reasoning with reference to online materials (Bae & Kim, 2018; Lee & Kwon, 2007). It has been also revealed that learners use many of the metacognitive strategies such as planning, organizing, and self-monitoring, etc., and reading strategies such as skimming, scanning, understanding topics, and inferring during web browsing (Bae & Kim, 2018; Jung, 2012; Kim, 2002; Lee & Kwon, 2007; Oh, 2014).

Meanwhile, Kim (2017) indicated that the use of compensation strategies and metacognitive strategies has increased through mobile-assisted listening practices and strategy training. According to her study, English learning in the digital environment is helpful for self-directed learning as it allows learners to use particular strategies, such as finding out other means of helping learners' deficiencies or planning, monitoring, and evaluating their learning process in order to become strategic learners. Similarly, Bae and Kim (2018) investigated the use of DELS by Korean high school students in digital English learning environment and

analyzed the interrelations between the use of DELS and learner factors. The result of the study suggested that learners tended to use direct strategies more frequently in the process of digital English learning, and most learner factors are highly related to the use of DELS.

The previous research into the digital learning strategies has been limited to describe the learning process and strategies in the digital environment in terms of cognitive and affective domains. There is also a limit in revealing the interrelation between various learning strategies and the learners' variables that may affect the use of learning strategies. However, in view of the wide spread of the recent digital environment and the possibility and realistic trend of the digital language learning, it seems important that DELS should be considered as the integral concept including cognitive, metacognitive, and socio-affective strategies, etc. Moreover, it is critical to identify how DELS interacts with the learner's individual factors in the actual learning process in the digital English learning context.

Therefore, the current study investigated the overall language strategy use of Korean university students enrolled in the digital English learning context. In addition, it also examined the relationship between DELS usage and individual learner factors and investigated the differences of digital learning strategy use depending on such learner variables as gender, level of English proficiency, duration of English learning, and experience of using digital devices (or digital learning environment). Two research questions are presented to be answered as follows:

1. What kind of learning strategies do Korean university students use when learning in a digital English language environment?
2. Are there any differences in the use of digital language learning strategies depending on learner characteristics?

3. Methodology

3.1. Participants

The participants of this study were 448 students from two universities located in the middle province of Korea. Out of these, 48 students who did not complete the survey and the whole research procedures were excluded; so the final participants of the present study were 400 cases of the data. Out of the total of 400 university students, 141 (35.3%) students were male and 259 (64.8%) students were female, and their age ranged from 20 to 29. They were from various majors: the largest percentage was in English education (20.4%), and the rest of them were from nursing (8.8%), clinical pathology (9.0%), social education (6.6%), aerial service, hotel management, and so on.

As regards the total duration of English study, the participants have studied English at least for one year (22.0%) to more than ten years (38.5%). Regarding the duration of use of digital devices, most students (76.8%) had more than five years of experience; however, only 18.5% had less than five years of studying English with digital devices, and the majority of students (53.8%) had less than one year of digital English learning experience. As regards self-evaluation of English proficiency, 48.3% marked themselves as beginning level, followed by intermediate level (45.8%) and only 6.0% as advanced level. Table 1 displays demographic information of 400 participants and individual variables used for the present study.

Table 1. Participants' background information and characteristics

Variables	**Categories**	**N**	**%**
Gender	Female	141	35.3
	Male	259	64.8
Duration of English learning	below 1 years	88	22.0
	1 ~ 3 years	46	11.5
	3 ~ 7 years	41	10.3
	7 ~ 10 years	71	17.8
	over 10 years	154	38.5
Duration of using digital devices	below 1 year	40	10.0
	1-2 years	15	3.8
	2-3 years	13	3.3
	3-4 years	25	6.3
	over 5 years	307	76.8
Duration of digital English learning	below 6 months	169	42.3
	6 months - 1 year	46	11.5
	1-3 years	68	17.0
	3-5 years	43	10.8
	over 5 years	74	18.5
Self-evaluation of English proficiency	beginning	193	48.3
	intermediate	183	45.8
	advanced	24	6.0

3.2. Instruments

To answer the two research questions presented above, the study developed a questionnaire for the DELS survey based on several previous studies (Bae & Kim, 2018; Oxford, 1990, 2002; Lee & Kwon, 2007). The original idea of the DELS survey was based on Oxford's (1990) Strategy Inventory for Language Learning (SILL), which has been employed as a key instrument in numerous studies (Hong-Nam & Leavell, 2006; Kim, 2002; Lee, 2001; Lee & Kwon, 2007; Liang, 2009; Wharton, 2000). The original SILL was a self-reported questionnaire containing 50 question items designed to assess language learning strategies. It was adapted for this study by adding and modifying some items to fit the research aims. In other words, since the current study focused on the learning strategy use in digital English learning environments, the statements of several items were modified and some items were

added according to the previous studies that examined learning strategies in computer-assisted and/or digital language learning contexts (Bae & Kim, 2018; Lee & Kwon, 2007; Liang, 2009).

The questionnaire for the DELS survey was divided into two parts. The first part included some initial questions that collected the participants' demographic information. The second part consisted of 60 question items that referred to various learning strategies used for digital English learning. Then, as Oxford (1990, 2002) pointed out, all of the 60 learning strategies were grouped into six categories; memory (Mem) strategies, cognitive (Cog) strategies, compensation (Comp) strategies, metacognitive (Meta) strategies, affective (Aff) strategies, and social (Soc) strategies. In addition, the questionnaire used 5-point Likert scale, ranging from 1 (never) to 5 (always), and asked the participants to respond to each item honestly about their learning strategy use.

Once the DELS survey was drafted, it was validated by a group of 20 students randomly selected from one university, and checked for the level of reliability. Two question items that influenced lower internal consistency were found and revised. After all questions of the questionnaire were finalized, the online survey form was designed in order to be distributed to the participants. Survey Monkey, which is an online platform that allows public users to create, publish, and implement free online survey, was chosen for the present study, paying a certain fee. In order to measure the reliability of the DELS survey, Cronbach's alpha coefficient was calculated. The total internal consistency was 0.964, which was acceptable for the social scientific research (Bae & Kim, 2018; Kim, 2015). Table 2 displays the six categories of the DELS survey and the levels of reliability for each category.

Table 2. Instruments of DELS survey and analysis of the reliability scores

Strategy Category	**Description**	**Number of items**	**Reliability**
Mem	storing and retrieving information	8	.820
Cog	understanding and producing the language	14	.880
Comp	overcoming limitations in learning	8	.744
Meta	planning and monitoring learning process	13	.914
Aff	controlling emotions and motivation	8	.793
Soc	cooperating with others in learning	9	.889
Total		60	.964

3.3. Data collection and analysis

Once the online DELS survey form was completely designed, it was administrated by two researchers during a regular class hour. The researchers, as instructors of classes, explained the

purpose of the study and provided full descriptive instructions about the procedures of the survey. The students were told that there were no right and wrong answers to questions, and their responses were confidentially secured and used only for research purposes. After that, the address of online survey (URL) was sent to each student's mobile phone and the learners were asked the survey. The instructors walked around the classroom while implementing the DELS survey and answered to the student's questions if any.

After the data were collected through the online survey form, an Excel spreadsheet with all 448 cases and answers for each variable was generated. These data were automatically imported to a SPSS sheet to work with, and in this process, any errors contained in the data, such as wrong response, duplicated answers, and missing cases, were eliminated and edited before importing the information to SPSS. The quantitative data collected from 400 participants were analyzed using SPSS 23.0 version.

Data analyses included descriptive statistics to present demographic information of the participants and to calculate overall strategy use. The first research question focused on how university students use digital English learning strategies, and which types of learning strategies were preferred by the students. Therefore, the average frequency of each category of DELS was calculated and compared. The second research question was to examine the relations between the use of DELS and different individual variables. In order to determine any variation in strategy use relative to individual learner factors (gender, level of English proficiency, duration of English learning, experience of digital devices), the independent *t*-test and the analysis of variance (ANOVA) were conducted using these factors as independent variables and the six categories of strategies as dependent variables. The Bonferroni post-hoc test was used to find where any significant differences in strategy use lay. For all statistical analyses, the significance level was set at .05.

4. Results and findings

4.1. Digital English learning and overall learning strategy use

To answer the first research question, the descriptive statistical analysis was conducted to find out the students' preferences of overall learning strategy use. Based on the results, the most preferred learning strategy category were Comp strategies (M=3.26, SD=.57), which meant that the students of this study frequently used digital learning strategies when they encountered any difficulties in learning and needed to overcome their limitation of English abilities. Additionally, the students also preferred Mem and Cog strategies in similar levels of

frequencies (*M*=3.17, *M*=3.11, respectively). In contrast, the least used strategy category were Soc strategies (*M*=2.95), which indicated that the students rarely cooperated with others in the learning process. Table 3 shows the ranks of each category of DELS with mean scores.

Table 3. Overall results of digital English learning strategies (N= 400)

Strategy Category	***M***	***SD***	**Rank**
Mem	3.17	.67	2
Cog	3.11	.65	3
Comp	3.26	.57	1
Meta	3.08	.69	4
Aff	3.03	.66	5
Soc	2.95	.79	6
Total	3.10	.57	

On the other hand, Table 4 shows the ranks of individual strategy items with mean scores, and the results are presented in the descending order from the most to the least preferred learning strategies. As shown in Table 4, the most preferred strategy by the university students was a cognitive strategy "*Using digital devices to search words/meanings*" (*M*=3.94). The least preferred strategy item was an affective strategy "*Practicing English with foreigners*" (*M*=2.42). Out of all the 60 DELS items, the highest ranked strategies (*M*=3.50 or above) were three Cog strategies, two Comp strategies, and one Mem strategy. Other strategies were reported medium usage of frequencies (they ranged from 2.50 to 3.49), and only one Aff strategy fell within the low usage of range (*M*=2.49 or below).

Table 4. Frequency and ranks of Digital English Learning Strategies

Strategy Category	**Strategy No.**	**Statement of items**	**Rank**	**Mean**
High Preference (*M*=3.50 or above)				
Cog	18	Using digital devices to search words/meanings	1	3.94
Cog	10	Practicing repeatedly by digital tools and programs (for speaking/writing)	2	3.65
Comp	28	Using alternatives to unavailable words	3	3.59
Comp	23	Guessing unknown words from contextual clues	4	3.58
Mem	3	Memorizing new words as to sounds/rhymes	5	3.56
Cog	19	Skimming whole texts quickly to understand overall meaning first	6	3.52
Medium Preference (*M*=2.50~3.49)				
Soc	52	Asking for clarification or repetition	7	3.48

Mem	2	Associating new concepts to things already known	8	3.42
Cog	13	Watching English video materials	9	3.36
Comp	25	Using unrelated clues to guess the meaning of words	10	3.35
Meta	34	Looking for new methods to practice English in digital contexts	11	3.35
Cog	11	Using words in varied ways through digital programs/applications	12	3.34
Meta	37	Seeking better digital programs/applications to fit the learning objectives	13	3.34
Meta	36	Having clear goals and targets for studying English	14	3.33
Comp	29	Making conversation with familiar topics	15	3.33
Comp	26	Anticipating while watching or reading digital materials	16	3.30
Mem	5	Searching for sentences with new words	17	3.30
Aff	46	Coping with emotional difficulties in the learning process	18	3.29
Mem	4	Memorizing new words by visualizing situation	19	3.26
Meta	40	Noticing mistakes so as to improve	20	3.26
Aff	44	Trying to relax when being afraid of using English	21	3.26
Soc	60	Trying to learn about target cultures	22	3.25
Aff	45	Self-minding positively to continue English learning	23	3.22
Mem	7	Reviewing regularly	24	3.21
Cog	9	Practicing repeatedly using digital contents (for reading/listening)	25	3.20
Aff	48	Noticing tension in learning or using English	26	3.19
Meta	33	Paying attention while learning in digital contexts	27	3.14
Cog	17	Avoiding word-by-word translation	28	3.13
Cog	12	Seeking patterns of English through digital resources	29	3.12
Comp	27	Looking up similar words in mother tongue	30	3.11
Meta	38	Planning proper digital activities to achieve the goals	31	3.11
Meta	35	Planning to ensure enough time for English	32	3.10
Aff	53	Seeking help from natives	33	3.08
Meta	32	Avoid distraction by not activating unnecessary programs or browsers	34	3.05
Aff	55	Looking up others' experience or texts to correct errors	35	3.04
Aff	47	Rewarding oneself when doing well	36	3.04
Mem	6	Searching for related words to remember new words	37	3.04
Meta	43	Self-evaluating on the efficiency	38	3.01
Meta	31	Building associations to entire contents	39	3.01
Meta	39	Seeking chances to use English with digital tools	40	2.99
Comp	24	Guessing unknown words from linguistic clues	41	2.98
Mem	8	Memorizing new words by using digital programs/applications	42	2.88
Cog	20	Using digital translators to read in depth	43	2.88
Aff	56	Sharing information with fellow learners	44	2.87
Comp	30	Making up new words when needed	45	2.83

Aff	49	Using self-reflection check-list	46	2.83
Soc	58	Participating in collaborative work to improve English	47	2.83
Cog	21	Marking (or Recording) a favorite list to look up things when needed	48	2.80
Cog	22	Summarizing the information on electronic notes or word programs	49	2.78
Meta	42	Self-evaluating on the improvement	50	2.75
Aff	54	Asking teachers or professors through online access	51	2.73
Aff	50	Writing diaries to record feelings about learning English	52	2.71
Cog	16	Using digital messengers to talk in English	53	2.71
Aff	51	Talking to others about how you feel in learning English	54	2.71
Mem	1	Classifying new words by using digital tools	55	2.69
Aff	57	Practicing English with fellow learners	56	2.68
Meta	41	Self-reflecting on the progress in learning	57	2.65
Cog	15	Reading digital texts for fun	58	2.62
Cog	14	Using social network system (SNS) to practice with natives	59	2.59
Low Preference (*M*=2.49 or below)				
Aff	59	Practicing English with foreigners	60	2.42

4.2. Digital English Learning Strategy use by individual learner characteristics

The differences of digital learning strategy use depending on learner variables such as gender, levels of English proficiency, duration of English learning, and experience of using digital devices (or digital learning environment) were investigated to answer the second research question. First of all, to analyze the data grouped by gender, the independent *t*-test was conducted to reveal statistically significant differences in the use of DELS. Table 5 shows the results of the use of DELS with the participants grouped by gender. With regard to overall strategy use, female students (*M*=3.13) engaged in strategy use more frequently than male students (*M*=3.05), but this mean difference was not statistically significant (*t*=-1.33, *p*=.09). However, there was a statistically significant difference in the use of Mem strategies between males and females (*t*=-2.40, *p*=.02), and females (*M*=3.23) reported higher use of memory strategies than males (*M*=3.06). With regard to mean scores of each strategy category, male and students favored the use of Comp strategies (*M*=3.22) the most while Soc strategies (*M*=2.93) the least. Female students reported using Comp (*M*=3.28) and Mem strategies (*M*=3.23) the most while Soc strategies (*M*=2.96) the least.

Table 5. Results of Digital English Learning Strategy use by gender

Strategies	Male		Female		*t*	*p*
	M	*SD*	*M*	*SD*		
Mem	3.06	.72	3.23	.64	-2.40	.02*
Cog	3.07	.72	3.15	.61	-1.15	.25
Comp	3.22	.65	3.28	.53	-1.10	.27
Meta	3.05	.75	3.10	.66	-.71	.48
Aff	3.03	.72	3.04	.62	-.19	.85
Soc	2.93	.79	2.96	.79	-.36	.72
Total	3.05	.63	3.13	.53	-1.33	.09

*p<.05

Secondly, the data were collected and grouped by the self-evaluated levels of English proficiency (beginning, intermediate, advanced) and the ANOVA test was conducted to reveal statistically significant differences in the use of DELS. Table 6 summarizes the ANOVA results for the six categories of DELS use grouped by three levels of English proficiency.

Table 6. Results of Digital English Learning Strategy use by English proficiency

Variables	Beginning		Intermediate		Advanced		*F*	*Sig.*	Difference*
	M	*SD*	*M*	*SD*	*M*	*SD*			
Mem	2.99	.68	3.29	.60	3.73	.70	19.46	.00*	Beg.<Int. Int.<Adv. Beg.<Adv.
Cog	2.89	.62	3.28	.56	3.74	.78	31.59	.00*	
Comp	3.10	.62	3.38	.49	3.66	.47	18.16	.00*	Beg.<Int. Beg.<Adv.
Meta	2.89	.69	3.18	.63	3.80	.60	24.68	.00*	Beg.<Int. Int.<Adv. Beg.<Adv.
Aff	2.82	.64	3.17	.61	3.72	.45	30.56	.00*	
Soc	2.68	.72	3.12	.74	3.81	.71	33.98	.00*	
Total	2.90	.56	3.23	.49	3.81	.43	38.82	.00*	

Beg.=Beginning, Int.=Intermediate, Adv.=Advanced

*p<.05

With regard to DELS use by level of English proficiency, overall digital learning strategies were used more by the Advanced level (M=3.81) than the Beginning level (M=3.23) and the Intermediate level (M=2.90), and the differences between groups were statistically significant (F=38.82, p=.00). In addition, statistically significant differences were also found in each category of strategies; the Advanced level of students used digital learning strategies the most, the Beginning level of students used them the least, while the Intermediate students used more strategies than Beginners. For comprehension strategy category, there was no significant difference found between Intermediate and Advanced levels.

As described above, the majority of the participants had more than 10 years of English learning experience. Table 7 displays the results of the DELS use when the participants were grouped by the duration of English language learning. In terms of the overall use of digital learning strategies divided according to five groups of English learning duration, the longer the English learning experience of students, the more strategies they used. In addition, statistically significant differences were found in all categories of DELS. However, although the difference in strategy use was statistically significant among the groups, the results of the Post-hoc test showed that there was no statistically significant difference found in the use of most strategy categories. Only Cog and Comp strategies showed significant differences between groups. In case of Cog strategies, there was a significant difference between ~1 year group (*M*=2.99) and 10~years group (M=3.23) at the .05 level (*p*=.048). Additionally, in the case of Comp strategies, ~1 year group (*M*=3.11) used fewer strategies than 7~10 years group (*M*=3.43) and 10~years group (*M*=3.34), and these differences were statistically significant (*p*=.01, *p*=.03, each), and the difference between 1~3 years group (*M*=3.11) and 7~10 years group (*M*=3.43) was also significant (*p*=.03).

Table 7. Results of participants' usage of DELS by the duration of English learning

Strategies	**Duration**	***N***	***M***	***SD***	***F***	***p***	**Post-hoc**
Mem	A	88	3.02	.77	3.02	.02*	
	B	45	3.14	.59			
	C	41	3.00	.58			
	D	71	3.27	.56			
	E	153	3.27	.67			
Cog	A	86	2.99	.77	3.02	.02*	A<E
	B	46	2.99	.48			
	C	39	3.00	.53			
	D	70	3.18	.63			
	E	152	3.23	.64			
Comp	A	87	3.11	.68	5.08	.00*	A<D, E B<D
	B	46	3.11	.50			
	C	41	3.15	.64			
	D	71	3.43	.47			
	E	153	3.34	.54			
Meta	A	86	2.97	.72	2.54	.04*	
	B	45	2.95	.59			
	C	41	2.95	.59			
	D	70	3.13	.67			
	E	153	3.20	.73			
Aff	A	88	2.93	.70	2.48	.04*	
	B	46	2.95	.54			
	C	41	2.86	.63			

	D	70	3.12	.71		
	E	154	3.13	.64		
Soc	A	85	2.86	.72	2.82	.03*
	B	46	2.73	.63		
	C	41	2.78	.67		
	D	69	3.06	.80		
	E	152	3.07	.87		
Total	A	84	2.98	.64	3.69	.01*
	B	44	2.99	.37		
	C	39	2.95	.51		
	D	67	3.20	.55		
	E	147	3.20	.58		

A=less than 1 year, B=1~3 years, C=3~7 years, D=7~10 years, E=more than 10 years

*p<.05

The participants' use of DELS was then compared with students' experiences of digital devices as well as the duration of English learning through digital devices. In terms of the experiences of digital devices, there was no statistically significant difference in the use of DELS, which meant that it had no effect on the students' use of learning strategies, no matter how long and/or how much they have used any kinds of digital devices such as computers, notebooks, and smartphones, etc.

On the other hand, the participants' use of DELS was also compared among the groups of their digital English learning experience. As Table 8 shows, the majority of the participants had less than 6 months of digital English learning experience. Moreover, all categories of DELS as well as the overall use of DELS showed a significant difference at the .05 level. The detailed analysis of ANOVA results by each category of strategies shows that the students who had longer experience of digital English learning tended to use more DELS than those who had shorter experience of digital English learning. For instance, 5~years group used more strategies than other four groups. They reported the most use of Cog, Comp, Meta, Aff, and Soc strategies (M=3.56, M=3.58, M=3.56, M=3.35, and M=3.43, respectively) whereas ~6 months group reported the least use of these strategies (M=2.91, M=3.12, M=2.83, M=2.88, and M=2.74, respectively). Additionally, overall use of DELS showed a significant difference between groups of students' digital English learning experience (F=16.46, p=.00). According to the results of the post-hoc test, the differences were found in 5~years group (M=3.50) and ~6 months group (M=2.91), 6 months~1 year group (M=3.01), 1~3 years group (M=3.12) as well as ~6 months group (M=2.91) and 3~5 years group (M=3.26).

Table 8. Results of Digital English Learning Strategy by the digital English learning experience

Strategies	**Duration**	***N***	***M***	***SD***	***F***	***p***	**Post-hoc**
Mem	H	168	2.96	.73	13.73	.00**	H, I < J, K, L J < L
	I	46	3.02	.60			
	J	66	3.27	.51			
	K	43	3.31	.56			
	L	73	3.58	.56			
Cog	H	165	2.91	.68	14.96	.00**	H, I, J, K < L H < K, L
	I	45	3.08	.56			
	J	67	3.11	.49			
	K	43	3.23	.50			
	L	73	3.56	.61			
Comp	H	168	3.12	.62	10.01	.00**	H, I, J < L H < K
	I	46	3.15	.54			
	J	67	3.24	.49			
	K	43	3.41	.46			
	L	74	3.58	.51			
Meta	H	169	2.83	.71	17.66	.00**	H, I, J, K < L H < J, K
	I	45	2.97	.65			
	J	66	3.17	.44			
	K	43	3.20	.57			
	L	74	3.56	.66			
Aff	H	169	2.88	.69	8.82	.00**	H, I, J < L H < K
	I	46	2.95	.64			
	J	68	3.00	.47			
	K	42	3.26	.62			
	L	74	3.35	.63			
Soc	H	165	2.74	.78	11.23	.00**	H, I, J < L
	I	46	2.86	.67			
	J	67	2.91	.65			
	K	42	3.10	.72			
	L	73	3.43	.83			
Total	H	161	2.91	.60	16.46	.00**	H, I, J < L H < K
	I	45	3.01	.51			
	J	63	3.12	.35			
	K	41	3.26	.45			
	L	71	3.50	.54			

H= ~6 months, I= 6 months~1 year, J= 1~3 years, K= 3~5 years, L= 5~years
**p<.01

5. Discussion

With the rapid development of various digital devices and wide spread of Internet networks and Wi-Fi access, the adoption of digital technology is no longer a choice but a necessity. In most educational settings, including schools and institutes, the infrastructure for a digital environment has already been established, and therefore, both language teachers and students are now exposed to, and are able to utilize, a wide range of digital materials. At the same time,

students have the opportunity to learn and practice language through interactions in a more natural setting. For this reason, it is critical to have deep understanding about language learners' use of learning strategies in a digital learning environment.

The pedagogical implications of this study are as follows. First of all, in order to effectively utilize the digital English learning environment in contemporary education, systematic guidance is needed so that learners can clearly understand the characteristics of digital English learning and the advantages of the digital learning environment to adapt it into their learning process appropriately. The digital environment provides English learners with various opportunities to take the desired quantity and quality of learning activities anytime and anywhere, and this environment facilitates immediate interaction and cooperative learning for English learners (Kim & Rha, 2014; Kukulska-Hulme & Shield, 2008; Ogata & Yano, 2005). Thus, English teachers should provide students with clear guidelines on how to use DELS, so as to act as facilitators to help them select, train, use, and check proper DELS.

Secondly, as the present study revealed, the individual learner factors showed significant influence on usage of DELS. This is highly related to the fact that the digital English learning environment provides an appropriate educational environment for differentiated learning or self-directed learning, which is tailored to the learner's individual features (Kim & Lee, 2017; Kukulska-Hulme & Shield, 2008). In order to effectively perform individualized self-directed learning, the learner needs to practice using requisite learning strategies, and it is necessary for students to select, develop, and use appropriate learning strategies to regulate their own learning (Yot-Domínguez & Marcelo, 2017). In particular, university students, nowadays, are in a digital generation which is naturally exposed to the digital environment. To enable them to use vast amounts of information and learning materials enabled by digital technologies, such as search functions, interactive SNS tools, and collaborative activities, it is important for the students to cultivate appropriate learning strategies for actively planning, selecting, managing, controlling, and evaluating their individual learning. In this process, the teachers should not only understand individual learner's differences but also carry out teaching activities taking various individual learner factors into account. In addition, teachers need to continuously develop and present individualized digital learning strategies to improve their students' digital English achievement (Meltzer & Hamann, 2005).

6. Conclusion

The current study investigated the use of DELS based on the survey data that was collected from Korean university students and examined the interrelations between the use of DELS and

different learner factors. Above all, considering the overall use of DELS, the university students who participated in the current study reported using comprehension, memory, and cognitive strategies more frequently than metacognitive, affective, and social strategies during their digital English learning. This was partially consistent with the results of several previous studies that investigated learning strategy use in CALL or digital learning contexts (Bae & Kim, 2018; Kim, 2002; Kim, 2017; Lee & Kwon, 2007; Oh, 2014). Based on these studies, ESL students, particularly Korean students, were shown to be more familiar with certain strategies to overcome their limitations in learning, and frequently relied on rote memorization to store and retrieve information. This might be explained by the students' upbringing and previous language learning experience which has impacted their behavior in the digital learning context. The participants of this study also used these strategies more frequently and tried to practice and produce English language with the help of digital technology tools (Alias, et al., 2012; Kim, 2002). However, the least favored strategies by the participants were social and affective strategies, which indicated that the participants of this study showed less preference for cooperative learning and discouraged discussion of their feelings with others (Reid, 1987; Wharton, 2000).

With regard to interrelations between DELS use and learner factors, gender, level of English proficiency, duration of English learning and digital learning experience were significantly related to the use of DELS. On the other hand, duration of using digital devices had no effect on DELS usage. As shown in many previous studies, the results of this study also revealed that females tended to use more DELS than males (Green & Oxford, 1995; Hong-Nam & Leavell, 2006; Oxford, 1990; Oxford & Ehrman, 1995), and there was a statistically significant difference in memory strategy use between two genders. Thus, female students utilize particular strategies when storing and retrieving information more frequently than male students.

Next, it has been demonstrated that the advanced learners showed more strategy use than beginner learners. In addition, more experienced learners used more strategies. These findings were partially consistent with previous research, demonstrating a positive linear relationship between strategy use and English proficiency level (Dreyer & Oxford, 1996; Green & Oxford, 1995; Wharton, 2000). Lastly, this study also found that the duration of digital learning experience was related to DELS use, and the longer students experienced digital English learning, the more they utilized all categories of DELS. However, the periods of using digital devices did not affect digital English learning or strategy use (Bae & Kim, 2018; Lee & Kwon, 2007; Oh, 2014; Yot-Domínguez & Marcelo, 2017).

Despite the above research findings, this research has some limitations. First, the study did not consider participants' English learning proficiency based on the scores of certified exams, so it was insufficient in measuring the effect of DELS use by different language proficiency levels and to suggest the effective methods of the strategy training. Another limitation is that learners' affective domains, such as motivation and attitude toward English learning, are not included among the individual variables in the study. Finally, the questionnaire of DELS survey presented in this study does not allow qualitative analysis of individual learning strategy because it measures only the type and frequency of approximate strategy use. By complementing these limitations, future research should be able to investigate the actual effects of DELS as well as the analysis of DELS use patterns. In-depth research is needed into the use of learning strategies that characterize differentiated students with diverse learner factors.

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DIGITAL AND MEDIA COMPETENCES: KEY COMPETENCES FOR EFL TEACHERS

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Abstract

The usefulness of ICT in language learning is unquestionable nowadays. There are many digital educational resources available for foreign and second language teachers, materials which are progressively acquiring an important role in the teaching-learning process.

In order to respond to the increasing presence of such technologies in the classroom, teachers need to acquire digital and media competences, two key elements for lifelong training process. However, these are superficially addressed in teacher education. In this light, both in-training and in-service educators demand more skills and specific training to be able to teach students how to use technologies and, ultimately, help them develop their own digital and media competences.

Following an exhaustive bibliographical revision of scientific literature in the field, this theoretical paper seeks to revise the concepts of digital and media competences as well as to reflect on how superficially they are addressed at universities and teacher-training centres. After this, the importance of both competences as key elements for teachers is brought to light, as well as some useful suggestions to help foreign and second language teachers acquire and develop them and, simultaneously, teach them to their students.

Keywords: ICT; digital competence; media competence; ESL/EFL teachers; teachers' professional needs

1. Introduction

Education has evolved driven by the economic, political and social development of nations all around the world. At this juncture, new technological paradigms have emerged (Sanz & Pantoja, 2015). Although these transformations and changes have always been present at schools, their strength has dramatically increased during the last years due to forces re-configuring the economic and social reality of the world (Caldevilla, 2011; Casani & Rodríguez, 2015). In this context, both developed and developing countries are investing large

amounts of money, time and effort in improving their education systems by changing curricula and training programs, improving facilities and supporting educational research, among other actions (Baglieri, Baldi & Tucci, 2018; Munari, Sobrero & Toschi, 2018).

Technology is an important construct for 21st-century citizens. In this light, the research line *Educational Technology* has emerged with the objective to respond to the needs of this new society and the use of Information and Communication Technologies (ICT). This so-called field seeks to integrate ICT in the teaching-learning process as a support tool combined with the new teaching methodologies where the teacher acts more as a guide for students than as a mere presenter of contents (Rodríguez & Gómez, 2017). In this context, education cannot be understood without the help of technology anymore (Tejada & Fernández, 2018).

This theoretical paper seeks to revise the concepts of digital and media competences by following an exhaustive bibliographical revision of scientific literature in the field. It also aims to reflect on how superficially they are addressed at universities and teacher-training centres and, ultimately, to propose some useful suggestions that help foreign and second language teachers acquire and develop them and, simultaneously, teach them to their students.

2. The role of competences in the 21st century

As stated by the European Parliament and the Council (2006) and the Instituto Cervantes (2012), *digital competence* is one of the key competences of lifelong learning and second/foreign language teaching. However, what is understood by the word "competence"?

> A competence is more than just knowledge or skills. It involves the ability to meet complex demands, by drawing on and mobilising psychosocial resources (including skills and attitudes) in a particular context. For example, the ability to communicate effectively is a competence that may draw on an individual's knowledge of language, practical IT skills and attitudes towards those with whom he or she is communicating (OECD, 2005, p. 4).

In the last decades, competences have become essential elements at all stages of education, both formal and non-formal (Gutiérrez & Serrano, 2016). In this sense, current Spanish educational legislation establishes that a curriculum must include "the competences and capacities for the integral application of the contents proper to each teaching and education stage in order to ensure the appropriate performance of activities and the effective resolution of problems" (LOMCE, 2013, translated in Gutiérrez & Serrano, 2016, p. 51).

These competences can be numerous (Peklaj, 2015); nevertheless, some of the essential competences that teachers in the 21st century need are: subject and teaching skills, the ability to

link theory with practice, co-operation and collaboration with other colleagues, self-confidence, leadership, continuous learning and digital knowledge (Hepp, Prats & Holgado, 2015, p. 33).

Knowing what a competence is, and considering the types mentioned above, it is necessary to think about which competences teachers need in order to not only become digitally literate (i.e. having the knowledge of how to use digital technology appropriately), but also to be able to integrate ICT into their teaching (Esteve-Mon, Gisbert-Cerbera & Lázaro-Cantabrana, 2016, p. 39). In this respect, despite the diverse definitions due to different agendas (Fraser, Atkins & Richard, 2013; Gutiérrez, Prendes & Castañeda, 2015; Hepp, Prats & Holgado, 2015; Masanet, Contreras & Ferrés, 2013; Nogueira-Frazão & Martínez-Solana, 2018; Scolari, Masanet, Guerrero-Pico & Establés, 2018), *digital competence* and *media competence* seem to be two of the most relevant (Maldonado, 2018). Evidence suggests, however, that teacher education institutions still have some ground to break before they completely include these into their practice (cf. Benson & Filippaios, 2015; Benson, Morgan, & Filippaios, 2014; Moreno, Navarro, Trench, & Zerfass, 2015; Novakovich, Miah, & Shaw, 2017). For this reason, this paper aims at reflecting on the concepts of *digital competence* and *media competence,* to show how superficially they are usually addressed at universities and teacher-training centres. Ultimately, proposals to facilitate their acquisition and development English as a Second/Foreign Language (ESL/EFL) teachers are also presented.

3. The study

To respond to the objective of the study, specific data collection and analysis methods were adopted.

3.1. Data collection

The revision was focused on ESL/EFL teachers and intended to reflect on the concepts of digital and media competences, and the way universities and teacher-training centres develop them in their syllabuses. In order to ensure the relevance of the review, selection of papers were carried out by considering seven main criteria: (1) works published in the last decade (period 2009-2018) and (2) indexed by Google Scholar, Scopus and Dialnet; (3) both empirical and non-empirical studies such as literature reviews and conceptual papers were analysed; (4) the keywords used were “digital competence”, “digital literacy”, “media competence”, “media literacy”, “teacher competences” and “21st century competences”; (5) studies both in Spanish and English were included for this review; (6) studies related to the fields of language

education, teacher training and educational technology were utilized; and (7) books, book chapters, journal articles, official documents and reports were used.

The papers were analysed by the three researchers in three different phases in order to guarantee that all were triple-checked. In particular, research methods, study foci, and results were analysed. In case of disagreement, the three researchers discussed and negotiated the results of each phase of the analysis until they reached a consensus about the relevance of the paper. The study included a total of 68 relevant papers. Table 1 shows the distribution of texts by type, including number and percentage:

Table 1. Distribution of texts by type (own elaboration)

	No. of Texts	**%**
Books	8	11.76
Book chapters	8	11.76
Journal articles	40	58.83
Official documents, reports and others	12	17.65

3.2. Data analysis

As mentioned before, the papers under analysis were published between 2009 and 2018. 3 out of 70 articles (4.41%) were published in 2009; 4 (5.88%) were published in 2010; 6 (8.82%) were published in 2011; 5 (7.35%) in 2012; 7 (10.29%) in 2013; 2 (2.94%) in 2014; 9 (13.24%) in 2015; 11 (16.18%) in 2016; 9 (13.24%) in 2017; and 12 (17.65%) in 2018. Figure 1 shows the distribution of texts per year.

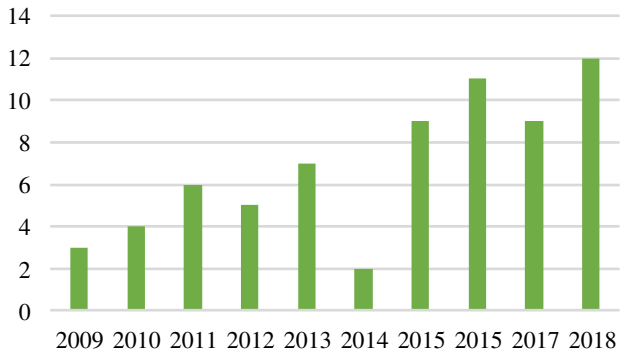

Figure 1. Distribution of texts per year (own elaboration)

Researchers assessed the quality and relevance of the papers using a four-point Likert scale: they graded papers from 1 to 4 (1 = the paper addresses either the concept of digital

competence or media competence from a general perspective; 2 = the paper addresses either the concept of digital competence or media competence in relation to teacher training; 3 = the paper addresses either the concept of digital competence or media competence in relation to EFL/ESL teaching/learning; 4 = the paper addresses either the concept of digital competence or media competence in relation to EFL/ESL teacher training) to determine whether the documents should be used in the study. Papers with a minimum mean score of 3 were selected for the study (except for those which had received a score of 1 by at least one of the researchers, which were directly excluded).

Microsoft Excel software was used for analysing information of the selected studies and content analysis technique (Bardin, 2013) was applied in order to categorise the selected papers and facilitate drawing conclusions: data was reduced by means of coding and thematic organization according to six areas of interest: (i) analysis of digital competence from a general perspective; (ii) analysis of media competence from a general perspective; (iii) analysis of digital competence in relation to EFL/ESL teaching/learning; (iv) analysis of media competence in relation to EFL/ESL teaching/learning; (v) analysis of digital competence in relation to EFL/ESL teacher training; and (vi) analysis of media competence in relation to EFL/ESL teacher training. Then, a descriptive analysis of each paper was carried out.

3.4. Results

To clarify the results obtained, this section is organised in two sub-sections: definition of the competences and presence of the competences within EFL/ESL teachers' training curricula.

3.4.1. Teachers' competences for 21st century

1. Digital Competence

The concept of "digital competence", also known as "digital literacy" (Ala-Mutka, 2011; Pérez & Delgado, 2012; Sefton-Green, Nixon & Erstad, 2009) or "computer literacy" (Tafazoli, Gómez & Huertas, 2017), has been deeply addressed in research on education, with manifold experts, international bodies and institutions supplying definitions and approaches (CRUE-TIC & REBIUN, 2009; Fraser, Atkins & Richard, 2013; Gutiérrez, Prendes & Castañeda, 2015; ISTE, 2017; Janssen, Stoyanov, Ferrari, Punie, Pannekeet & Sloep, 2013; OECD, 2011; Suárez, Almerich, Gargallo & Aliaga, 2013). In this context, Hepp, Prats & Holgado (2015, p. 38) give an understandable clarification of what it is: the sum of knowledge and strategies that helps an individual to solve problems associated with the digital world by using digital support.

The European Parliament and the Council of 18 December 2006 on key competences for lifelong learning defines this competence as follows:

> Digital competence involves the confident and critical use of Information Society Technologies (IST) for work, leisure and communication. It is underpinned by basic skills in ICT: the use of computers to retrieve, assess, store, produce, present and exchange information, and to communicate and participate in collaborative networks via the Internet (European Parliament and the Council, 2006, p. 6).

In other words, this competence allows individuals to properly use digital and technological resources available online and, in general, to face the challenges ICTs pose to the 21st-century society.

In the case of teachers, Claro, Salinas, Cabello-Hutt, San Martín, Preiss, Valenzuela & Jara (2018, p. 164) go beyond this definition by saying that teachers' digital competence includes "the information and communication skills and knowledge that teachers should have to perform their professional work (e.g., plan and prepare lessons) in a digital environment".

Ferrari (2013, p. 11) in the DigComp 1.0, Vuorikari, Punie, Carretero & Van den Brande (2016, pp. 8-9) in the DigComp 2.0, and Carretero, Vuorikari & Punie (2017, p. 21) in the DigComp 2.1 claim that digital competence can be categorized into five areas: i) information and data literacy; ii) communication and collaboration; iii) digital content creation; iv) personal safety; and v) problem-solving.

According to the Common Digital Competence Framework for Teachers (INTEF, 2017), the first area alludes to the ability to select, organize and analyse digital information as well as to assess its relevance according to the purpose why it has been selected. This scope combines three main capabilities: i) browsing, searching and filtering digital content (i.e. using different information sources and searching strategies to find relevant data); ii) evaluating it (i.e. assessing data critically); and iii) managing it (i.e. organizing data for future use). Communication and collaboration relates to sharing resources through online platforms and participating in online communities and networks. It includes: i) interacting, sharing and collaborating using digital technologies (i.e. devices, applications and platforms) appropriately; ii) engaging in citizenship using them (i.e. searching for new opportunities to empower oneself and for citizen participation); and iii) internet conventions of politeness (i.e. awareness of diversities of all types and consciousness of the rules for virtual and online participation). Digital content creation refers to the design of new content and the re-elaboration of previous knowledge to make new artistic and multimedia productions (i.e. creation of online digital teaching resources such as interactive activities, websites and/or virtual classrooms). Teachers

also need to develop personal safety, which is concerned with protecting personal information and data when using digital and online resources. It includes: i) protection of devices and content (i.e. being able to understand and identify exposure to online dangers and solutions for possible problems); ii) protection of privacy and health; and iii) protection of the environment (i.e. considering the possible side effects of technology in the physical world). Finally, problem-solving implies identifying needs in the creative use of technology and making decisions when technical problems arise.

2. Media Competence

Bearing in mind that not only technology but also social media are becoming more and more important in every sphere of our globalized world, digital competence seems to be insufficient for teachers (in general) and English teachers (in particular) to cope with the challenges of the present. Besides this, technology has profoundly changed in relation to the way we produce, transmit and receive information; such renovations require changes in education in order not to be isolated from reality (Aguaded-Gómez, 2012; Masanet, Contreras & Ferrés, 2013; Ramírez-García & González-Fernández, 2016; Sandoval-Vizuete, Calvopiña-Osorio & Cevallos-Viscaíno, 2018).

> These changes require new technical and interpretation skills for creating and accessing knowledge, as well as expertise in new symbol systems. The integration of texts, sounds and images in multimedia documents, along with interactivity, make this a special language that forces us to consider now a «multimedia», «digital» or «media» alphabet, which might be a prerequisite nowadays, but will become unavoidable in the near future (Gutiérrez, 2010, p. 172).

As Gutiérrez (2010) pinpoints, digital competence is not enough considering the number of requests the current reality demands of 21st-century teachers. Media competence, also known as "media literacy" (Ala-Mutka, 2011; Ferrés & Piscitelli, 2012; Masanet, Contreras & Ferrés, 2013; Nogueira-Frazão & Martínez-Solana, 2018; Pérez & Delgado, 2012; Scolari, Masanet, Guerrero-Pico & Establés, 2018; Verbitskaya & Ivanova, 2011) goes far beyond digital competence; and it can be defined as an interrelated and complex set of knowledge, skills and attitudes that allows efficiently to face the media environment of today by adapting to constant changes and different contexts (Velasco, 2016), which is considerably becoming more and more relevant (Marta-Lazo, 2018; Pérez & Delgado, 2018; Ramírez, Renés & González, 2018).

Ferrés & Piscitelli (2012) consider media competence as a combination of six dimensions organized into two big fields: analysis and expression. These six dimensions are: language, technologies, processes of interaction, production and diffusion, beliefs and values,

and aesthetics; all of them must be accounted for in the ongoing world. On their part, Verbitskaya & Ivanova state that "at present time media competence is becoming one of the most important qualities of modern teacher's personality and its formation is one of the urgent problems of general pedagogics" (2011, p. 1652).

Some differences have been historically established between media and digital competences. According to Pérez & Delgado (2012, p. 27), the former focuses "on the knowledge, skills and attitudes related to the mass media and audiovisual language", while the latter connects with "searching abilities, processing, communication and information dissemination with technologies". However, a distinction between these two cannot be made as both are intrinsically linked to teachers' information literacy (i.e. capability of knowing when information is required, and having the ability to identify, assess, and work with it in order to solve a problem (Álvarez & Gisbert, 2015).

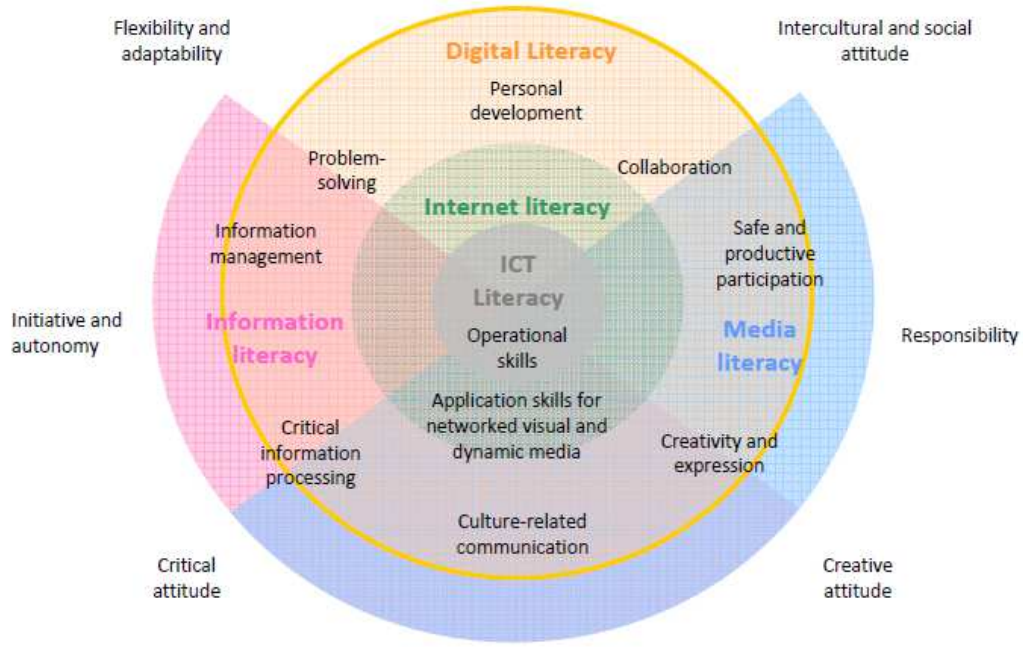

Figure 2. Digital competence, media competence and information literacy (Ala-Mutka, 2011, p. 44)

3.4.2 Digital and Media Competences within ESL/EFL teachers' training curricula

The use of technology brings quality to the classroom and, in this sense, the literature on the relevance of digital and media competences in teacher training and practice is profuse (Fernández-Cruz & Fernández-Díaz, 2016; Pérez-Escoda, Castro-Zubizarreta & Fandos-Igado, 2016; Pérez-Mateo, Romero & Romeu-Fontanillas, 2014; Romero-Martín, Castejón-Oliva,

López-Pastor & Fraile-Aranda, 2017). Similarly, ICTs also have a positive effect on the English classroom. According to Fritz (2016), integrating technology into the teaching of a foreign language implies adopting a constructionist paradigm where the student is the centre of the learning process. In this sense, in the 21st-century English classroom, ESL/EFL teachers must put their digital and media competences into practice, so that it can happen.

For the last fifty years, technology has been present in language classrooms with the use of listening exercises, films, recordings, labs, etc. However, along the years, a technological revolution has started in the language teaching field, which is proved by the huge amount of publications on the area: Carrió, 2016; Gargiulo, Gargiulo & Fernández, 2016; Hampel & Stickler, 2015; Martín-Monje, Elorza & García, 2016; Tafazoli, Gómez & Huertas, 2018. Unfortunately, ICTs are internationally used in teacher education in a superficial way (Røkenes & Krumsvik, 2016) despite the importance given by international bodies. In fact, many in-training teachers inform they feel unprepared for teaching with ICTs and report that innovative ICT approaches are not promoted in teacher training as they really should (Sang, Valcke, Braak & Tondeur, 2010).

For many years, teacher training faculties have made efforts preparing pre-service teachers to integrate ICTs into their future teaching practices. To do so, courses to enhance teacher's digital and media competences courses have been added to university curricula, and computer availability and support for classroom use have also increased in this setting (Ferrari, 2012; Voogt, Erstad, Dede & Mishra, 2013).

ICTs are integrated into teachers' initial training curricula only in specific areas which are not cross-disciplinary; besides, teachers' digital and media competences are present as specific objectives in few syllabuses and they are reduced into cursory activities such as learning how to use a computer. As a consequence, pre-service teachers are generally not prepared to integrate the fostering of digital/media competence in their teaching even when they graduate. Definitely, the problem for in-training teachers does not consist in learning how to use ICTs but in how to integrate them into their future teaching careers (Brun & Hinostroza, 2011).

Looking at the constant changes of technologies and how they can be applied in the classroom, teacher education needs to reflect on what is understood by digital and media competences, how they are addressed in syllabuses and, ultimately, reformulate the way they are treated.

4. Discussion and conclusion

The changing tendency of the current social, economic and educational context due to technological advances is undoubtable. In this setting, new knowledge is being created and, as a consequence, modern training methods are required of teachers to help students develop necessary competences for 21st century.

The usefulness of technologies in the classroom is unquestionable nowadays. There are many resources available for teachers (videos, MOOCs, gaming tools, wikis, edublogs, WebQuests, podcasts, online games, social media) and their advantages for learning languages are well-known due to the communicative nature of the subject. However, students will not get the most out of these if teachers are not able to integrate them in a proper way.

Much has been written on the power and possibilities of ICTs and e-learning for teacher training and learning in general. In fact, it has been proven that both have become a reality in every field of education (even in ESL/EFL learning and teaching). However, universities and teacher-training centres should provide in-training teachers with plenty of information about these in order to become fully digitally competent so that they are able to train 21st-century students in how to use technology in a safe way. To do so, a series of considerations should be taken into account:

1. Inclusion of media competence in syllabuses is essential as 21st-century society requires a more comprehensive perspective to face the challenges of the media environment.
2. A simplification of the concepts of teachers' digital and media competences is needed as it seems difficult to arrive at a simple and contextualized clarification of what teachers should acquire with such ambiguous definitions.
3. An efficient model for teachers' digital and media competences development is required. In this sense, Põldoja, Väljataga, Tammets & Laanpere (2011) offer a model which consists of five areas: i) prepare and inspire students in a digital environment; ii) design and develop learning experiences and a learning environment; iii) model and design work environments; iv) promote and model digital democracy and accountability; and v) participate in professional development. These five dimensions are closely related to digital competence areas as shown in Table 2.

Table 2. Model for teachers' digital/media competences development and digital competence areas (own elaboration)

Areas of digital competence	**Põldoja, Väljataga, Tammets & Laanpere's model**
Area 1: information and data literacy	Promote and model digital democracy and accountability
Area 2: communication and collaboration	Model and design work environments
Area 3: digital content creation	Design and develop learning experiences and a learning environment
Area 4: personal safety	Prepare and inspire students in a digital environment
Area 5: problem-solving	Participate in professional development

4. A periodical evaluation of teacher-training centres is essential in order to diagnose the ICT culture prevailing at them, as well as the infrastructure and services provided.
5. A development of awareness during initial teacher training is also necessary.

These ideas need to be translated into practical actions. ESL/EFL instructors must develop their ability to use digital resources effectively if they want to promote students' learning and their own professional development as teachers. Consequently, they need to reflect about the different technological resources they can use and how to get the most out of them, as well as to integrate them in their teaching practice so that language use and proficiency are promoted in the classroom (Botella & Galindo, 2017; Instituto Cervantes, 2012).

Proficiency in the target language is not the only requirement for ESL/EFL teachers, since acquiring teaching skills to help their students develop their own competences is also necessary (Murray & Christison, 2010; Christison & Murray, 2010; Christison & Murray, 2014). For this reason, universities should take into account how using ICTs in general and the Internet in particular may help pre-service and in-service teachers in their work. Among all the possibilities, social networks are possibly the most beneficial tool due to their social power and their potential for the creation of relationships as teachers' collaboration is key to a good teaching practice (Nelson, 2009; Van Houten, 2015). In this sense, universities should consider including social networks in their curricula and syllabuses so that pre-service ESL/EFL teachers (and teachers in general) could have a clear idea of their potential for building and sharing knowledge and so they could share knowledge and experiences (Hershkovitz & Forkosh-Baruch, 2017; Tuzel & Hobbs, 2017).

Definitely, training centres must provide ESL/EFL teachers with ample instruction to develop their digital and media competences, so that they can promote active use of languages

among students, motivate them towards learning, and help them become fully-prepared citizens of the 21st century.

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IS AUTONOMOUS LEARNING POSSIBLE FOR ASIAN STUDENTS? THE STORY OF A MOOC FROM INDONESIA

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Abstract

An autonomous learning attitude is crucial in determining the successful completion of an online program. Such an attitude is not always easy. Students in online programs need to strike a balance between online studies tasks and their other work, maintain motivation, and consistently follow all the stages of the program. It remains to be seen whether these attitudes prevail in some Indonesian MOOC (Massive Open Online Course) students. This paper was a descriptive sketch of learning autonomy among thirty-seven students of an Indonesian MOOC. Only a small percentage of students was genuinely autonomous, while most were not, and experience difficulty in completing the MOOC program. The study found a correlation between autonomy and academic achievement, but did not demonstrate a cause-effect relationship.

Keywords: autonomous learning; online learning; MOOC; independent learning

1. Introduction

The purpose of this study is to compare indicators of autonomy with indicators of academic success in a Massive Open Online Course (MOOC). Several factors gave rise to the increasing popularity of MOOCs. First, more students wanted access to educational services. Second, information technology has advanced at an impressive pace, enabling educators to modify and

enhance courses to cater for more students and their individual preferences. Third, MOOCs by definition have been open, that is, been free of fees and admission prerequisites.

The advent of MOOCs was a substantial support for individual learning, but it remains to be seen how well students manage their MOOC-based learning so they can learn autonomously and benefit significantly from them. Indeed, autonomous learning has been the focus of many studies, but, as Carini, Kuh & Klein (2006) noted, those studies were conducted in conventional classes and studies of autonomy in online settings have yet to be carried out more frequently.

MOOCs were first introduced in 2008. The word "massive" in MOOC means that the course can accommodate very large numbers of students. The word "open" means that the learning resources are available to the public free of charge (An & Wu, 2015). The words "online course" obviously mean that instruction was conducted over the internet. Consequently, MOOC students need to be able to learn autonomously.

MOOCs are a form of distance learning. Distance learning is primarily defined as the range of teaching systems where students live at a distance from their education providers. It has used a wide variety of media, starting from print correspondence and gradually shifting to more modern technologies such as CD-ROM, internet-based classes, digital video, and desktop conferencing (Kobelera & Strongman, 2011). E-learning is defined as "instructional content or learning experiences delivered or enabled by electronic technology" (Bonk & Dennen, 2003) and MOOC e-learning usually requires online presence. This accords with Benson's (2006) opinion that distance learning necessitates autonomous learning.

2. Literature review on autonomous learning in online environments

The concept of "autonomy"" has been widely reviewed and developed since its inception by Holec (1981: 48), who stated that autonomy is "the ability to take charge of one's own learning". Subsequent authors elaborated on his preliminary idea and specified other elements that make up autonomy.

Benson (2006), for example, suggested that it also includes the element of self-regulation and motivation. Little (2009) maintained that it includes the ability to take charge of one's own learning, developing a capacity for critical reflection, making decisions, and taking independent actions relevant to the learning tasks in hand. In a similar vein, Siemens & Downes (2008) argued that MOOCs require students to be autonomous. They believed that the students' success in MOOCs lies in their independence and willingness to search for new information from various sources from the Internet or other offline sources.

Following those concepts, in this paper autonomy is framed as a construct that encompasses commitment, self-management, motivation and time management. To these, language proficiency and media literacy are added as elements that promote the first four aspects. Ideally, MOOC students should adopt an autonomous attitude that enables them to complete the course. Yet, as An and Wu (2015) pointed out, despite the teacher's efforts to encourage students to independently search relevant materials, some learners still need the teachers' explicit guidance. This stifled the development of autonomous learning in MOOCs.

Petra, Jaidin, Perera & Linn (2016) conducted a recent study on autonomous learning in Brunei. They used a Web-based Inquiry Science Environment system to engage students in a science subject. The system encouraged the students to search for relevant materials and discuss them with their classmates. Students were encouraged to collaborate with classmates in understanding complex photosynthesis and cellular respiration processes. The findings suggested that the students could complete collaborative work autonomously with minimal teacher guidance. This was an important finding with regard to our research as it also investigated autonomy. However, they promoted their area of autonomous learning by group work and face-to-face interactions, while our research focused more on autonomy in distance learning. Our research, then, sought findings that might enrich the dimension of autonomous learning.

Morgan (2012) conducted another study on autonomous learning. He did a qualitative research that elicited data by survey and diary entries. He found that although the young generation, labelled Generation Y, is adept at utilizing Web 2.0, they still need explicit teaching that guides them to use it successfully as a learning tool. In other words, this generation, although techno-savvy, lacks autonomy in using the internet to enhance their learning.

Lo (2010) reported a similar finding in a study of 101 Taiwanese students. Most students could not learn autonomously, that is, they lacked skills in decision-making and self-management. Students still needed the tutors' supervision and instructions to become more autonomous. Whether the same finding holds true with Indonesian students has yet to be seen, and our research embarked on that area.

Rabe-Hemp, Woolen & Humiston (2009) conducted another relevant study. They studied 283 college students and found a strong correlation between autonomous learning, student performance and student satisfaction. It indicated that the better the students performed academically and the more satisfied they were, the more likely they were to be autonomous. Their finding is important to our research because it could explain how high achievement contributes to the degree of autonomy of the students.

Completing an online program is not an easy thing to do for participants. Coursera, for example, had the completion rate of 7% only (Daniel, 2012). The rest 93% failed the online program. In Indonesia, a local university once conducted a MOOC and ended up with the completion rate of 16% (Belawati, 2019). Still this result indicates that the online course is challenging. Khalil and Ebner (2014) mention some causes of low retention rate in MOOCs such as shortage of time, low learners' motivation, feelings of isolation, lack of interactivity, insufficient background and skills and hidden costs. In addition to insufficient time, Swan (2005) also mentions difficulty with the subject matter and unchallenging activities that make MOOC's retention rate low. While high drop rates prove that the online program is challenging, the important questions to answer are who are those who successfully complete the program and what qualities make them successful participants.

Autonomous learning, "the ability to take charge of one's own learning" (Holec, 2001: 48), is a current issue which is considered as a factor contributing to the success of the completion of online programs. This sort of self-directed learning is needed due to the nature of semiotic features such as multimedia in online learning that make the participants take over the tasks initially carried out by teachers such as determining learning objectives, finding their own learning resources or trying new tools to make sure they work well (Rita, 2011). Online programs that have limitations in interaction result in problems that participants have to overcome. For example, immediate feedback or support needed by participants are not immediately obtained in online programs. Very often, the students encounter difficulties in comprehending course content that is technical, quantitative or scientifically oriented (Baker, 1986). They have to seek information and try to complete tasks independently.

Interestingly, other writers such as Ramadhiyah & Lengkanawati (2019) emphasized that autonomous learning is also related to participants' cultural perspectives. They conducted a case study on Indonesian learners' autonomy by examining the teachers' and the students' perceptions. They found that the teachers were cognizant that autonomy requires that the students carry out activities outside the classroom. They also realized they had to make necessary efforts to promote autonomy although they had yet to provide a wide variety of authentic materials. The students, however, perceived autonomy rather differently; they associated the concept with activities that were mostly still teacher-centered. Thus, it can be inferred from their study that learners' autonomy is a function of the culture in which the teaching-learning process operates. Their result could the basis of the discussion of result of the present study.

Kirmizi & Kirac (2018) conducted a similar study with a larger number of sample. Their study involved 100 students who were classified into two groups, namely conventional class and distance learning class. They were asked to answer a questionnaire presenting questions along several dimensions of autonomy. The results suggested that distance learning students perceived readiness for self-direction, importance of teacher, teachers' role in explanation and supervision, as well as assessment and motivation as vital in their learning. They also found positive correlation between learner autonomy and readiness for self-direction, independent work, importance and role of teacher, objective evaluation, and motivation. This finding could be the starting point for our study because it highlighted a number of important factors which are more or less closely associated with learner autonomy in a MOOC setting.

Autonomous learning is intertwined with motivation (Mackness, Waite, Roberts & Lovegrove, 2013). Motivation is an element that drives human behavior if people manage to solve the challenges or avoid them, or they are willing to develop their skills effectively or vice versa (Dweck, 1986). Dörnyei (2001) mentions three elements of motivation namely why people choose certain activities, how long they really persevere to complete the task and how much effort they spend on the task. Intrinsic motivation deriving from self is the primary force for participants to successfully complete the online program. Participants with intrinsic motivation have a strong determination to take responsibility for completing their own tasks and obligations (Rita, 2011). Several studies (Masgoret & Gardner, 2003; Singh, Granville & Dika, 2002) have proved that motivation greatly impacts achievement, time spent and performance.

3. The study

3.1. The research context

This paper is a preliminary study of a pilot project of an Indonesian MOOC. In the first stage of implementation, program leaders socialized this online program to prospective students using both online social media such as Facebook and Twitter, and through offline media in the form of invitations to schools and colleges. To be accepted, prospective students had to provide their identities and demonstrate computer literacy skills on a Google form, and to upload their essays in English with the theme "Teachers and Technology." Students were then selected based on criteria such as their educational background (English pre- and in-service teachers), computer literacy, and English writing skills.

Several aspects of the selection process are notable. First, the course was not open access as a normal MOOC. The selection procedure gave a basic assurance that all accepted students (the population of the research) had the ability to complete the MOOC successfully. Although the population was not homogenous, the selection procedure at least reduced its heterogeneity. Second, it probably accounted for the completion rate, which was very high for a MOOC, where completion rates are normally about 6%. (Reich, n.d.)

3.2. Participants

The selected students, who became the subjects of the present study, were thirty-seven pre-service teachers (33%) and in-service teachers (67%). They came from various cities across Java such as Malang (70%), Kediri (3%), Surabaya (21%), Jakarta (3%) and Bandung (3%). The MOOC lasted for eleven weeks, starting from February 20, 2017 to April 29, 2017. The first week, known as the pre-course, was a general orientation to the MOOC: navigation techniques for the Canvas platform, the instructional objectives, and the graduation requirements. In the ten weeks after orientation, students were required to complete all tasks on five MOOC modules: Autonomous Learning (Module One), Digital Literacy (Module Two), Mobile Devices (Module Three), Video Use for Autonomous Learning (Module Four) and Making Videos for Teaching (Module Five).

3.3. Data collection and analysis

The data for the present study consist of the tasks in the modules (see Table 1): discussions (20%), movies (17%), projects (14%), peer review (8%) and multiple choice questions (6%). Scores from all assessments (discussion, project and multiple choice) served as a basis to divide the students into high, medium and low achievers. The range value was 98. The calculation to determine the interval of the three groups of MOOC students was as follows: 98/3 = 33. At the end of the MOOC, qualitative observations were made of students' feedback and of their work submitted during the MOOC.

Table 1. the modules, instructions and tasks in the MOOC

Module title	Instructions		Tasks				Total activities
	Readings	Movies	Multiple choice	Discussion	Peer reviews	Projects	
Autonomous Learning	4	0	1	5	1	2	13 (18%)
Digital Literacy	6	2	2	4	1	2	17 (24%)

Mobile Devices	6	5	1	3	1	2	18 (25%)
Video Use for Autonomous Learning	5	4	0	2	1	1	13 (18%)
Making Videos for Teaching	4	1	0	0	2	3	10 (14%)
Total	25 (35%)	12 (17%)	4 (6%)	14 (20%)	6 (8%)	10 (14%)	71 (100%)

Table 2. Descriptive statistics of the students' final scores

Scores of the MOOC	
N	37
Mean	59.86
Median	74.19
Mode	0
Std. Deviation	33.740
Range	98
Minimum	0
Maximum	98

As evidenced in the data in Table 2, MOOC students were divided based on achievement whether they were high (67-98), medium (34-66), or low achievers (0-33). (See Table 4.) These groups were subsequently divided into three categories: low, medium and high autonomy. These categorizations were based on the extent to which students demonstrated autonomy during the MOOC. A 'yes' answer was scored 0, and a blank answer was also scored 0.

Table 3. Factors of autonomy and indicators

Factors	**Indicators**	**Response**	
		Yes (1)	**No (0)**
Self-Management	Always submit the assignments on time and complete the program with final score ≥ 70		
Active Participation	Post the ideas at least three times in all the discussions		
Commitment	Provide enough time to learn online (average 0.45 hours/day)		
Digital Literacy	Select relevant sources and include citation sources in discussion tasks		
Language Proficiency	Have good writing skills based on essay projects		

The data were statistically analyzed in three stages. First, the analysis dealt with the descriptive statistics. Second, this present study used the chi-square test of a distribution of different categories. Third, following the chi-square computation, the data were analyzed by means of cross-tabulation statistical technique.

Table 4. MOOC students of the present study

Achievement category	Freq.	%
High (67-98)	21	57
Medium (34-66)	6	16
Low (LA) (0-33)	10	27

Table 5**.** Categorization of autonomy

Total Score	Percentage of Checklist Items	Category
0-2	45-55	LA
3-4	64-73	MA
5-6	82-100	HA

The chi-square technique was used to check for significant differences among the variables under investigation: the degree of autonomy in low, medium and high achievers of the MOOC. This study found that the value of the asymptotic significance (two-sided) Pearson chi-square was .003, which was smaller than the significance alpha (α) .05. As such, the approximately significant (.024) <.05 indicated that the null hypothesis (H0) was rejected. Hence, it was concluded that there was a significant difference in terms of the degree of autonomy in low, medium and high achievers of the MOOC.

Next, cross-tabulation was done to indicate the frequency with which the corresponding categories of the categorical variables co-occur. Based on Spearman Correlation, the sig. value of .00 was smaller than alpha .05. This indicated null hypothesis was rejected and there was significant correlation between the degree of autonomy in low, medium and high achievers of the MOOC. As can be seen in Table 6, the majority of the MOOC students (54%) were categorized as Low Autonomous learners (LA) category, followed by 14% as Moderately Autonomous learners (MA) category and 32% as Highly Autonomous learners (HA).

Table 6. Tabulation analysis of autonomous learning

		Achievement			Total	%
		Low	Medium	High		
Degree of autonomy	Low	9	7	4	20	54
	Moderate	0	0	5	5	14
	High	0	0	12	12	32
Total		9	7	21	37	100

Table 6 shows the same kind of polarization as Table 4. Only fourteen students were

categorized as Moderately Autonomous (MA) while 86% were categorized as either Low or High Autonomy (LA or MA). The reasons for this polarization are again unclear.

3.4. Findings

Student autonomy correlated with success in MOOC completion. Autonomous students showed initiative in finding ways to solve the problems they faced. They could find and read relevant literature on the internet, watch videos, discuss with colleagues, or consult their instructors. This study used five indicators of autonomy: self-management, contributions to discussions, amount of time online in the MOOC, digital literacy, and language proficiency.

Thirty-two percent (32%) of students were categorized as HA (Highly autonomous), while the remaining students fell into MA (Moderately autonomous) (14%) and LA (Low autonomy) categories (54%). Five factors contributed to this finding: self-management (0.43), active participation (0.49), commitment (0.57), digital literacy (0.65), and language proficiency (0.78).

Table 7. Analysis of autonomous learning

		Digital literacy	Commitment	Active participation	Self-management	Proficiency
N	Valid	37	37	37	37	37
	Missing	0	0	0	0	0
Mean		.65	.57	.49	.43	.78
Median		1.00	1.00	.00	.00	1.00
Mode		1	1	0	0	1
Std. deviation		.484	.502	.507	.502	.417

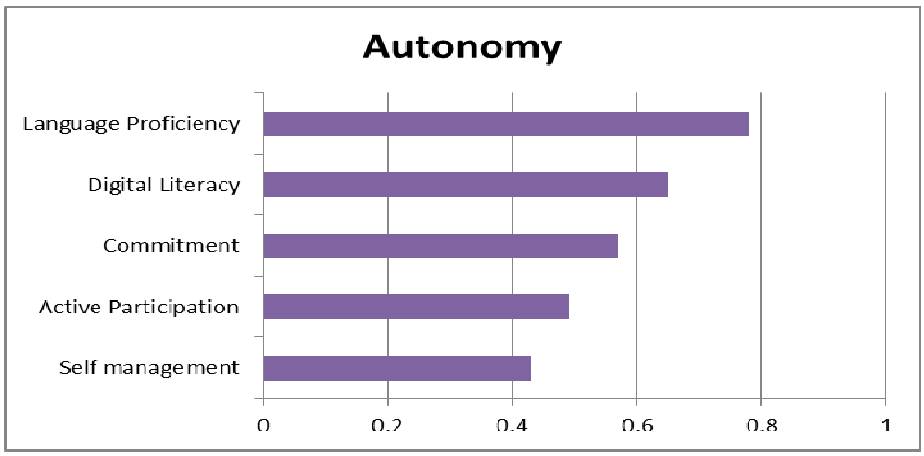

Figure 1. factors affecting autonomy in the present study

3.4.1. Self-management

The aim of the first part of the checklist was to find out whether students had self-management strategies. Self-management referred to students' attempts to work on assignments. In most

cases, LA and MA as majority groups (62%) were often late submitting work. When asked why they were late, they said they had workplace responsibilities: helping their students to prepare for the national examinations. Besides classroom teaching, secondary school teachers were required to give extra teaching to their students outside school hours. They also had to provide time for their children at home in the evening. Their free time was later at night when they had less energy to participate in the MOOC.

Table 8. Self-management

		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	No	23	62.2	62.2	62.2
	Yes	14	37.8	37.8	100.0
	Total	37	100.0	100.0	

High Autonomy students always completed all tasks just in time. Unlike MA and LA who were mostly in-service teachers, most HA were pre-service teachers in universities and had campus obligations. Some were doing internship programs at schools or in companies. They enjoyed the tasks if they had enough time and generally did the tasks two or three days before the deadline. They also reported that information the instructors shared through WhatsApp instant messenger was very helpful, reminding them about the assignment schedules. Later, they put the information on the calendar or typed it on their notepads. Canvas also had a calendar of task deadlines, but students felt that WhatsApp was more helpful than Canvas. In fact, they also relied heavily on WhatsApp for all their other communication.

> The reminders in the WhatsApp group helped. I just wish Canvas mobile app functioned better to give us instant notification of new assignments. (Student A)

> I kept in my mind that I had a deadline on a particular date. I put the information on the notepad or the calendar on the android. Though I didn't work on it long before the due date, I had started thinking about the answers. Therefore I could manage almost all the assignments pretty well. (Student B)

> I paid attention carefully on the deadline. If the task is hard, I did not do it suddenly. Maybe 2 or 3 days before the deadline. (Student C)

> I kept checking the upcoming assignments so that I could make the right timing to do the assignments. (Student D)

3.4.2. Active participation

Lack of active participation was the second biggest inhibiting factor affecting the completion of the MOOC. This referred to the degree to which students were willing to be involved in the fourteen interactive discussions throughout the MOOC. The criterion was at least three posts of ideas in every discussion. Table 9 shows that most (57%) students did not meet this criterion.

Table 9. Active participation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	21	56.8	56.8	56.8
	Yes	16	43.2	43.2	100.0
	Total	37	100.0	100.0	

LA often performed passively during discussions. The numbers of their posts were relatively unstable; they posted their ideas more than three times in some discussions but frequently did not post anything in others. Unlike LA, MA posted more frequently than LA. However, the ideas in their posts did not reflect the substance of the discussion; they only posted to meet the minimum requirements to get scores.

HA performed better than the other two groups. The numbers of their posts were relatively stable from one discussion to another, and they were higher than those of MA and LA (see Figure 2). They usually met the discussion requirements, posting their ideas at least three times, and their ideas also reflected comprehensive understanding of the topics.

HA always took initiative to find their own solutions to the problems. Before conveying their ideas in the discussion, they carefully read all the information provided in the modules, and if not satisfied with it, they sometimes searched for information from other sources. They were willing to ask their colleagues or instructors if they still did not understand the questions or certain ideas in the discussions.

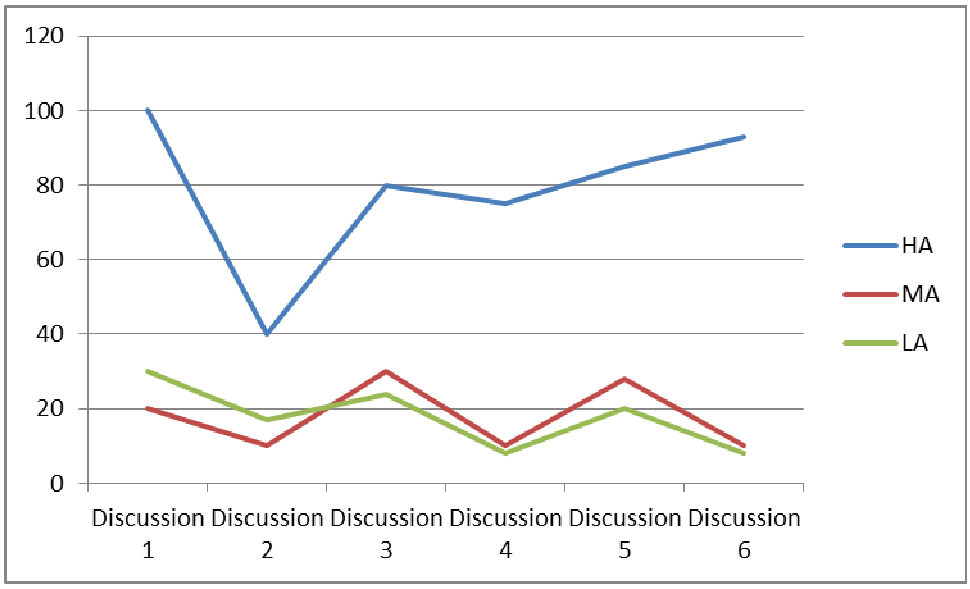

Figure 2. The discussion post patterns among the HA, MA and LA

Table 10. Total discussion posts among the groups of students

Facilitator	Discussion 1	Discussion 2	Discussion 3	Discussion 4	Discussion 5	Discussion 6
HA	100	40	80	75	85	93
MA	20	10	30	10	28	10
LA	30	17	24	8	20	8
	150	67	134	93	133	111

> First, I'm going to dig in by reading some references which are usually given or attached prior to the assignment itself. In case I still have no clear pics, I'll read the forum or discussion. The last step is that I'll contact my advisor (Student A).
>
> I would ask in the Whatsapp group. The tutor and other MOOC students were supportive (Student B)
>
> I usually discussed with other students. If they could not answer my question, I decided to ask the instructor. (Student C)

3.4.3. Time commitment

Completing all tasks in online programs is challenging when students also face other commitments, and they must often sacrifice one of the two. The MOOC required students to commit time to understand the content of each module through reading text, watch tutorial videos, complete quizzes and work on projects. It was assumed that students could complete all tasks in the MOOC if they had made a strong commitment, and this study used the amount of time online as an analogous measure of commitment to serious learning. It was found that students had different hour totals for completing the MOOC. On average, students spent about fifteen hours online in the MOOC throughout the ten-week period, or an

average of about only twenty-two minutes per day. Most students (54%) spent less than fifteen hours.

Table 11. Commitment to learn

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	20	54.1	54.1	54.1
	Yes	17	45.9	45.9	100.0
	Total	37	100.0	100.0	

A comparison of average times spent by the three groups reveals different patterns. HA tended to have spent more time than MA and LA. Compared to the other two groups, HA frequently accessed the MOOC to discuss topics with their peers, complete quizzes and work on projects. They found such apps as Socrative, Rubistar, Canva useful especially when it came to teaching their students in language courses or schools. They said that their students found applications effective stimulation to learn English. They also said that getting the certificate was another important factor that motivated them to complete the MOOC. Pre-service teachers wished to have better job opportunities while for in-service teachers the certificate would be used as complementary document for their certification report.

MA and LA students spent less time online in the MOOC than HA students. They prioritized their work as teachers, and were required to prepare their students to be successful in the national examinations. Nevertheless, they said that the MOOC materials for learning English, in particular the Android apps, were appropriate for classroom use. Most of their students were familiar with the internet, but its use was limited to communication tools (WhatsApp, Hangout, Telegram) and social media (Facebook, Twitter). Even if they were busy, they still accessed the MOOC to read certain topics or to watch movies relevant to their needs.

Table 12. Learning hours spent by the students

Category	N	Module One (hour/week)	Module Two (hour/week)	Module Three (hour/week)	Module Four (hour/week)	Module Five (hour/week)
HA	12	3	4	3	4	3
MA	5	2	1.5	2.5	1.5	2.5
LA	20	0.45	0.225	0.375	0.375	0.5

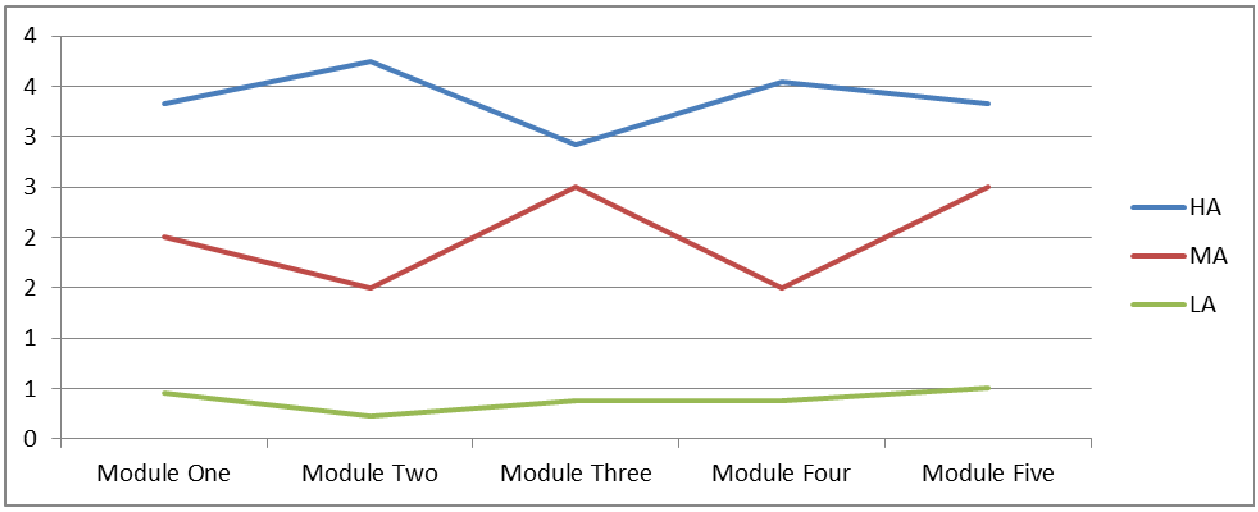

Figure 3. Learning hours spent by HA, MA and LA

3.4.4. Digital literacy

In the context of this research, digital literacy is understood as the students' ability to assess, select and allocate information when expressing their opinions in a discussion forum. Interestingly, the LA and MA groups (68% of students) had identical features. They made minimal contributions and their posts did not reflect the subject matter of the discussions. Their posts tended simply to complement other students' post by typing "Yes, I agree with you" or "You have very good ideas." They generally did not explain the reasons for their agreement. When citing other sources, they often failed to give references.

Table 13. Digital literacy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	25	67.6	67.6	67.6
	Yes	12	32.4	32.4	100.0
	Total	37	100.0	100.0	

HA as the minority group (32%) showed excellent digital literacy capabilities. To support their ideas, they cited other authors and gave references to their sources. Their ability to navigate the LMS was also very good. This was evident from the discussion posts that included images and links that were very relevant to the discussion. When asked why they included references, they said that they were obliged to include sources of the ideas of others, and added that they carefully selected the source text on the internet. Here is an example from a student's discussion of the most important aspect of digital literacy:

> The three most important aspects of Digital Literacy to me are. The ability to perform tasks effectively in a digital environment. Literacy itself means the ability to read and interpret media, to reproduce data and images through digital manipulation, and evaluate and apply new knowledge gained from digital environment (from The University Library of The University of Illinois). As in the words of Kern (2006, p.194), "the Internet (a) introduces multimedia dimensions that go beyond print textuality, (b) alters traditional discourse structures, (c) introduces new notions of authorship, and (d) allows users to participate in multicultural learning communities", being literate does not only entail the ability to comprehend and construct texts. Learners need to be able to correctly interpret materials, have a critical eye on the validity of claims, and acknowledge online sources tactfully. Gruba (2008) suggests that learners need to be proficient in the use of hypertext to incorporate different modes (texts, graphics, audio, and video) into their linguistic production when online…. (script from student A)

Another example is from student B.

> Prior to an opinion, I am going to write here, I mostly refer it to a blog by Leah Anne Levy, (2016). This is the link for you to read. I found this information very enlightening. Please help yourself read it for more details. To me, as a teacher who happens to live and teach in the 21st century, we are forceful to fit in this century and to equip ourselves with digital literacy skills. Digital literacy, cited in American Library Association (ALA), is defined as ability to use information and communication technology to find, evaluate, create and communicate information, requiring both cognitive and technical skills.
>
> Here are the three most important aspects: **Critical thinking**. It means that teachers should be able to provide students with the additional skills to bring the answer to the next level. Here the students are able not only to search an answer with a search engine, Google for instance but also to understand why it is the answer (deep learning). Teachers' job is to teach students to evaluate and question their sources. Furthermore, they also have to teach students how to draw a strong conclusion…

3.4.5. Language proficiency

To check the writing language abilities of the students, the authors examined two essay assignments of seventy sample essays and assessed their proficiency level using the American Council on the Teaching of Foreign Language (ACTFL) standard. Most students (65%) were LA and MA and classified as Intermediate Low to Mid Intermediate. A small proportion (35%) were HA and were categorized as Intermediate High to Advanced High.

Table 14. Language proficiency

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	24	64.9	64.9	64.9
	Yes	13	35.1	35.1	100.0
	Total	37	100.0	100.0	

The Low to Mid Intermediate students had the following characteristics. First, those students were able to meet some limited practical writing needs with short, simple, conversational-style sentences in basic word order, written almost exclusively in the present tense. Writing tended to consist of a few simple sentences, often of a repetitive structure. Second, vocabulary was adequate to express elementary needs. Third, they made basic errors in grammar, word choice, punctuation, spelling, the formation and use of non-alphabetic symbols. Fourth, their writing would be understandable by native speakers who are accustomed to the writing of non-native speakers, although it would require additional effort.

The HA group had varied levels of written language proficiency. Most were classified as High Intermediate and a small percentage demonstrated features of Advanced. Writers at the Advanced level were characterized by the ability to write routine informal and some formal correspondence, as well as narratives, descriptions, and summaries of a factual nature. They can narrate and describe in the major time frames of past, present, and future, using paraphrasing and elaboration to provide clarity. Advanced level writers produced connected discourse of paragraph length and structure. At this level, writers showed good control of the most frequently used structures and generic vocabulary, allowing them to be understood by those unaccustomed to the writing of non-native speakers.

4. Discussion

The study showed that only a relatively small percentage of students was genuinely autonomous. Most were not, and had difficulty completing the MOOC program. In the light of the reviewed studies discussed in the previous section, this result could be attributed to the learning culture in which the subjects learn. As Ramadhiyah & Lengkanawati (2019) stated, Indonesian students are used to a learning culture that is predominantly teacher-centered. They tend to follow the teachers' instructions and decisions regarding materials, learning activities, duration of studies and evaluation. Thus, when left without teachers' constant monitoring and supervision, they perhaps felt disoriented and soon lost the drive to learn autonomously. For some respondents, their low language proficiency and high work load compounded the matter, rendering them passive in the online activities.

As Kirmizi and Kirac (2018) found, even distance learning students feel that teachers' role in explanation and supervision is vital in maintaining the motivation for such a mode of learning. In the case of our findings, the subjects may not have felt a strong presence of those teacher-related aspects and thus failed to perform more autonomously.

The statistical analysis shows a correlation between autonomy and academic achievement. However, it does not demonstrate a cause-effect relationship. The correlation could mean that autonomy results in better academic achievement. Yet, Dincer, Yesilyurt and Takkac (2012) mention that there is significant and positive correlation between autonomy-supportive climates and learners' achievement. In autonomy-supportive climate, students have a positive feeling in themselves as competent individuals (Rita, 2011). The feeling of self-confidence in these students creates motivation to learn and train the material provided. As a result they become skillful.

However, the opposite is also worth noticing: autonomy resulting in better academic achievement could also mean that students are more autonomous if they find the course easy and less autonomous if they find the course difficult. In short, the achievement made by an autonomous group of participants can be influenced by various factors such as no intention to complete, course difficulty and lack of support, bad experiences, starting late, expectations, peer review, level of difficulty, timing and lack of digital and learning skills (Sinclair and Boyatt, 2014). In other words, autonomous participants who have this achievement are those who are ready in terms of learning skills, digital literacy skills compared to those from the non-autonomous groups.

This study evidenced that only a relatively small percentage of students was genuinely autonomous. This shows that most participants of this study are not fully prepared by autonomous learning. These problems are more acute when MOOCs are intended as a replacement for traditional teaching.

5. Limitations of the current study and final conclusions

The polarization pattern, where scales of achievement and autonomy both had few students in the medium classification, is as yet unexplained. In a normal group, it would be most natural for scores to follow a normal curve but exactly the opposite occurred. A sliding scale could have been expected if the MOOC had experienced the same very high dropout rates of other MOOCs. Further research with a larger population of students might explore the reasons.

Moreover, English proficiency acted as an intervening variable. Students' academic results tended to follow their ACTFL proficiency level; students with better English tended to

do better than less proficient students. This suggests the hypothesis that, in a course on teaching English, better English causes students to be more autonomous and to attain higher academic achievement. For example, one could hypothesize that students with lower English proficiency find it more difficult to assess, select and allocate information (digital literacy), post complex comments in a discussion forum (active participation), or complete well-done assignments on time (self-management). They might also experience language fatigue; that is, they might have difficulty engaging in English for long periods (commitment/time spent online). Consequently, time commitment might not be a suitable measure of motivation.

Motivation is another intervening variable. Students were found to be driven by a mix of extrinsic and intrinsic motives. It is implied that intrinsic motivation was stronger and more determinative of MOOC success, but this is not completely clear. It is possible that students with high levels of intrinsic motivation found the course difficult and did not do well.

To sum up, there are a few points that encapsulate the essence of this report. First is the role of culture. Learner autonomy is shaped by the culture in which the students live. In the case of Indonesian students, teachers are still seen as dominant figures who determine the mode, the materials, the pace of learning and the evaluation. Students' degree of autonomy hinges more or less on the roles that their teachers play. Secondly, motivation plays a significant role in shaping learner autonomy. In the spirit of fostering learner independence, educators should strive to create a learning climate that is conducive to motivation.

Another factor with potential influence is the course difficulty. It was conjectured that the more the students had to struggle in doing their tasks, the less motivated they become, let alone be autonomous in their learning. Course difficulty and other potentially stifling hindrances such as busy schedule and high workload call for students who are good at managing their energy and establishing priorities in their daily schedule. Educators may consider some non-academic instructional programs aimed to strengthen these soft skills in their students. It is also implied in the report that the downside of MOOC is that it deprives the learners of healthy social interaction with their peers and helpful direct guidance from their teachers. In short, students cannot be left alone in their efforts to learn. Blended learning, which combines online session and face-to-face interactions, may be considered as a solution to this problem. Taken as a whole, the study has sketched the potential areas of MOOC as well as some influencing factors that should be taken care of in the efforts to promote learning autonomy.

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TEACHING ENGLISH TO ADULTS WITH DISABILITIES: A DIGITAL SOLUTION THROUGH EN-ABILITIES

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Abstract

This article analyzes the current situation of English language teaching (more particularly TESOL) to adults with Special Educational Needs (hereinafter SEN) in Spain from a double perspective. On the one hand, a qualitative study on teaching experiences with adult students with some type of disability is presented. The conclusions of this study shed light on the difficulties detected and the strategies implemented for teaching English. On the other hand, the resources most commonly used in the field of virtual teaching to increase and improve the skills of these students are reviewed. Finally, the authors describe an on-going European project that implements a Virtual Learning Environment (hereinafter VLE) where the principles of Universal Design are incorporated to facilitate the formative access to learning English as a second language to adult students with SEN.

Keywords: TESOL; ICT; disability; Universal design; EFL learners

1. Introduction

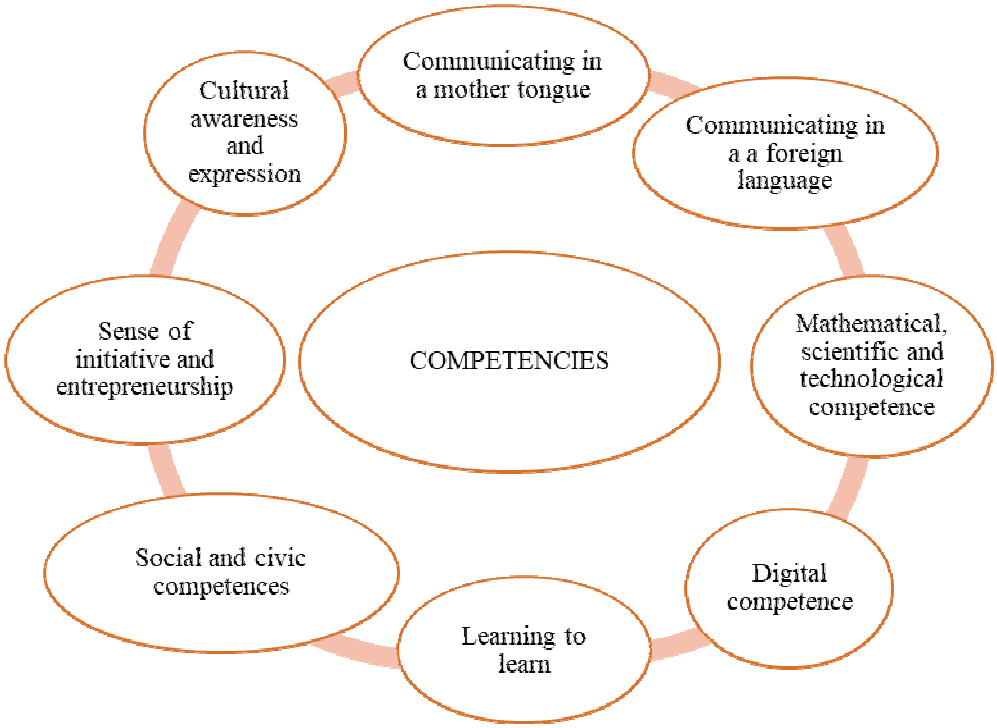
The educational integration of students with Special Educational Needs (hereinafter SEN) in the Spanish education system is generally accepted among students and administrative staff, especially at the levels of early childhood and primary education,

although it is more problematic at the secondary level, especially in terms of pedagogical application (Marchesi, Martín, Echeita and Pérez, 2005, Cardona, 2001). There are generic guidelines for the adaptation of resources and content aimed at people with disabilities, such as the ones designed by the Spanish Support Network for Persons with Disabilities at University (SAPDU) (Rodríguez Infante and Arroyo Panadero, 2017), the Accessible Educational Technologies Resource Guide (CERMI, 2015) and the Project on Accessibility and Adaptation for All in Higher Education (A2UN @, 2009-2012)[1]. Recently, Information and Communication Technologies (hereinafter ICT) have been incorporated as an essential resource that can facilitate universal access to training. They are considered a valuable tool to enhance the independence and education of people with SEN and to increase their participation and inclusion in society (Aguilar-Tamayo, 2004, Cullen & Alber-Morgan, 2015, Gutiérrez-Recacha & Martorell-Cafranga, 2011, Rodríguez & García, 2010, Toledo & Llorente, 2016).

According to the current legislation, the Recommendation of the European Parliament and of the Council of 18 December 2006 (2006/962 / EC), and afterwards, the Recommendation of the European Council of 22 May 2018 (2018/C 189/01), lay down the so-called European Framework of Key Competencies for Lifelong Learning. These are eight competencies that are defined as a combination of knowledge, skills and attitudes appropriate to the context that all people need for personal development, community participation, social inclusion and employment. The last Recommendation highlights permanent, inclusive and quality education and learning to ensure opportunities to all students independently of their characteristics (Recommendation of the European of the Council of 22 May 2018, p. 189/4) (See Figure 1).

[1] This project was created by the Spanish National Distance Education University and the University of Girona, with the collaboration of the Polytechnic University of Madrid, to create a general framework of ICT to support the development of lifelong learning services required to attend the needs for adaptation and accessibility for all in Higher Education. For more information, see Fabregat et al. (2010).

Figure 1. Key competencies for lifelong learning adapted according to the Framework of the European Union of Key Competencies for Lifelong Learning (2006, 2018).



The learning of a foreign language is essential to improve proficiency linguistic aspects, participation and social integration, employability or mediation, as well as intercultural understanding. As reflected in the Framework of the European Union of Key Competencies for Lifelong Learning (2006, 2018) and stated by other authors (Castro, 2012), one of the main barriers to the social integration of people with some type of disability is the lack of competence in foreign languages. Thus, as Leahy and Dolan (2010) and Fernández Portero (2018) claim, social exclusion can be reduced or eliminated if a proper use of new technologies, and especially of resources that are based on universal design, is extended. In addition, Computer-assisted Language Learning (CALL), originally defined by Levy (1997), can now be used with optimal success results (Powers, 2019).

In particular, when it comes to Teaching English to Speakers of Other Languages (hereinafter TESOL), the three principles of universal design become necessary to ensure accessibility and promote motivation which decreases anxiety during the learning period (Sigona & Barros del Río, 2016) and increases the possibilities of success for school, social and job integration (Rose & Meyer, 2002). The first principle provides multiple means of engagement and some of its strategies are related to individual choice and autonomy, relevance, value and authenticity or self-assessment

development. The second principle provides multiple means of representation (options for perception, language and comprehension) and some of its strategies offer ways to customize the way information is displayed or alternatives for auditory and visual information. The third principle provides options for response and navigation so as to allow users to have access to multiple media for communication and tools to manage information and resources.

Considering the aforementioned conditions, this article analyzes the current situation of teaching English to adults with SEN in Spain based on a qualitative study of teaching experiences with adult students with some type of disability. The resources that are most commonly used in the field of virtual teaching are also reviewed to increase and improve the skills of these students. The conclusions of this study shed light on the difficulties detected and the strategies implemented for teaching English. Finally, the authors describe an on-going European project that implements a Virtual Learning Environment (hereinafter VLE) incorporating the principles of Universal Design to facilitate the formative access to learning English as a second language to adult students with SEN.

2. Analysis of the difficulties and needs of teachers of English with adult students with SEN

In order to better investigate the current situation of TESOL in relation with adults with disabilities in Spain, a survey was conducted with a representative sample of teachers at the national level (see Appendix). The aim of the survey was to explore such issues as attitudes towards disabilities, beliefs about the importance of teaching a foreign language to this type of students, and the strategies chosen to adapt the contents to the needs of these students. At the same time, it was intended to provide a clear vision of the knowledge the teaching staff has about ICT and VLE and the use they made of new technologies in teaching English.

The structure of the survey was divided into three sections: sociodemographic information, teaching experience with students with disabilities and, finally, knowledge levels of ICT and its use and implementation in the classroom. For the collection of information, the survey was sent to 31 English Philology departments of Spanish universities and 14 Official Language Schools.

The survey had 54 participants aged between 29 and 62 (M=44.70, SD=8.83). Most of the participants were female (70%) and had been working at the tertiary level

for more than 15 years, with a C2 level of English according to the Common European Framework of Reference (CEFR) and whose teaching methodology was applied among students who were between 18 and 49 years old (M=30.38, SD=9.30). In the next section the results of the survey will be given.

2.1. Experience, attitudes and strategies used to teach English as a foreign language to students with disabilities

Table 1 shows that 35 teachers mentioned having experience, at least occasionally, with students with some type of disability. This means a 65% of teachers acknowledging their awareness of teaching SEN students.

Table 1. Do you teach English to people with special educational needs?

Item		Yes	No
Do you teach English to people with special educational needs?	N	35	19
	%	65	35

Table 2 shows the most common disability in the classroom was the auditory one (20 teachers said to have worked occasionally with these students). The least recurrent disabilities were the autism spectrum disorder (47 teachers responded that they never or rarely had taught English to this group), intellectual disability (39 of them replied that they never or rarely had taught it to this group) and visual impairment (41 of them answer that they never or rarely had taught it). Following these statements, the most common curricular adaptations were aimed at students with sensory disabilities. However, some general strategies aimed at acquiring knowledge such as a more frequent use of dynamic games or manipulative activities were also mentioned. This was the case of memory games with cards to develop vocabulary or activities to listen to music and sing songs. Another strategy is to invest more time to adapt materials (e.g. typing notes and exercises in word format in the case of visually-impaired students so that ONCE, National Organization of the Blind in Spain, can translate them into Braille) and doing more tutorials with learners. Besides, in class SEN students are encouraged to work with somebody else so as to help each other. Moreover, modified evaluation criteria, including extra time granted during exam sessions, flexibility in task delivery and/or the application of oral evaluation are other strategies useful when teaching these students.

Table 2. How often do you teach English to persons with some special education needs?

Item		Score					Mean
		Users(n=54)					
		Never	Rarely	Occasionally	Frequently	Very frequently	
How often do you teach English to people with visual impairment?	N	25	16	11	2		0.81
	%	46	30	20	4		
How often do you teach English to people with hearing impairment?	N	16	17	20	1		1.11
	%	30	31	37	2		
How often do you teach English to people with intellectual disability?	N	29	10	12	2	1	0.81
	%	54	18	22	4	2	
How often do you teach English to people with autism?	N	35	12	5	2		0.52
	%	65	22	9	4		
How often do you teach English to people with motor disorder?	N	19	20	13	1	1	0.98
	%	35	37	24	2	2	
How often do you teach English to people with dyslexia?	N	19	19	12	3	1	1.04
	%	35	35	22	7	2	
How often do you teach English to people with communication disorder?	N	23	18	10	2	1	0.89
	%	43	33	18	4	2	

In general, the study highlights teachers' positive attitudes towards students with SEN and shows their awareness of the importance and need for this group to learn a foreign language. However, certain doubts are also raised when dealing with people with severe intellectual disabilities, mental illness or brain damage. Table 3 shows that only 16 of the people that were surveyed completely agreed to teach English to people with severe intellectual disability, 23 to those with mental illness, and 20 to those with brain damage. These results are very different if compared to the range of 51 teachers who had no doubt about the usefulness of English among people with visual impairment, 44 of whom had auditory and 52 physical disabilities. This type of responses are in line with numerous research studies indicating that students with severe disabilities are usually excluded from training programs in a foreign language (Harry et al., 1995; Zetlin, Beltran, Salcido, Gonzalez & Reyes, 2011; Mueller, Singer & Carranza, 2006).

The attitudes inferred from the survey also show similarities with the results obtained in various studies which point to a lack of teacher training on how to teach the same content through different channels based on the principles of universal design and respecting individual capabilities (Mueller et al., 2006; Shyyan, Thurlow & Liu, 2008; Zetlin et al., 2011). For this reason, it is important to work in teacher training as recommended by Castro (2012). This author states that it is necessary for the teaching team to be aware of support technologies and know how to use them adequately so that students with functional, sensory or intellectual problems can also achieve curricular objectives. Likewise, Rogers-Adkinson, Ochoa and Delgado (2003) insist on the need for these students to have the necessary support to mitigate the difficulties they face and achieve social and behavioral expectations.

As our study shows, more than half of the participating teachers admitted having had some experience in the English classroom with students with disabilities, although they were not clear about the usefulness of teaching English to students with severe disabilities and with great impact on intellectual functioning. The generalized positive attitude they showed towards methodological adaptation should be highlighted, regardless of physical or sensory disabilities. However, this determination decreases in the case of severe intellectual disability, mental illness and brain damage, which directly affect the learning of a foreign language.

Table 3. What extent you agree with the idea that students with the following disabilities should learn English as a foreign language? (Continue)

Type of disability		**Score**					
		Users (n=54)					**Mean**
		Completely Disagree	**Disagree**	**Neutral**	**Agree**	**Completely Agree**	
Delayed speech and language development	N		7	11	10	26	4.02
	%		13	20	19	48	
Specific learning disabilities	N		6	9	9	30	4.17
	%		11	17	17	55	
Mild intellectual disability	N		3	10	16	25	4.17
	%		5	18	30	46	
More severe forms of intellectual disability	N	7	6	18	7	16	3.35
	%	13	11	33	13	30	
Attention deficit hyperactivity disorder (ADHD)	N	1	1	15	8	29	4.17
	%	1	1	30	15	53	
Visual impairment	N			3	9	42	4.72
	%			6	17	78	

Table 3. What extent you agree with the idea that students with the following disabilities should learn English as a foreign language?

Type of disability		**Score**					
		Users (n=54)					**Mean**
		Completely Disagree	**Disagree**	**Neutral**	**Agree**	**Completely Agree**	
Hearing impairment	N		3	7	11	33	4.37
	%		6	13	20	61	
Physical disabilities	N			2	3	49	4.87
	%			4	5	91	
Mental illness	N	1	3	17	10	23	3.94
	%	2	6	32	12	42	
Behavioural disorders	N	3		13	12	26	4.07
	%	6		24	22	48	
Brain injury or neurological disorders	N	3	8	12	11	20	3.69
	%	6	15	22	20	37	
Autism spectrum disorder	N	2	4	12	9	27	4.02
	%	4	7	22	17	50	

2.2. Use of ICT in the classroom

Based on the conviction that the use of ICT in the classroom can contribute to the inclusion of students with disabilities and improve their learning process, it is necessary to highlight the use of technology in the classroom. Table 5 shows that the use of technology varies among teachers: 23 of respondents claim they use new technology in their classrooms between four and six hours a day, 18 teachers only use it between one and three hours and 9 of them between seven and nine hours, maybe they also work at home with ICT.

Table 5. Hours using technology each day

Hours	N	%
1-3 hours	18	33
4-6	23	43
7-9	9	17
More than 9 hours	4	7

Table 6 shows that 26 of the respondents declare that they know how to use it and even consider themselves expert users.

Table 6. How experienced are you in using virtual learning environment for teaching English?

Experience	N	%
No experience	5	9
Inexperienced	4	7
Neutral	19	35
Experienced	17	32
Very experienced	9	17

However, when asked about their experience using VLE (for example, Moodle, Duolingo or other similar platforms), despite showing positive attitudes towards its use, 49 of teachers acknowledged not knowing how to use it specifically with groups with SEN. Table 7 shows that more 90% of professionals need more training using VLE with students with special needs.

Table 7. Do you require more training in using VLE with students with SEN?

Item		Yes	No
Do you require more training in using VLE with students with SEN?	N	49	5
	%	91	9

In the light of these results, we deem it necessary to promote knowledge about VLEs to improve teachers' educational competences, since technologies should be aimed not only at students but also at teachers in order to improve dynamics in their classroom (Castro, 2012). This means that technology should be easy to use and allow them to interact with their peers. These needs are in line with those stated by Toledo (2008), according to whom every teacher should facilitate students' access to ICT through hardware and software devices, as ICT eases educational accessibility and accessibility to contents. According to Beacham and Rouse (2012) as well as Toledo and Llorente (2016), many teachers are not aware of the positive influence of ICT in inclusive education. Added to this, they affirm that most teachers have very low levels of training in relation to cognitive disabilities. Equally, Beaven et al. (2020), Flórez, Ramírez and Ramírez (2015), Luque-Parra and Luque-Rojas (2012) as well as Rodríguez (2012) emphasize the importance of using ICT to favor social inclusion, individualized learning, self-reflection and learner autonomy.

In summary, the group of informants recognized the importance of ICT in education, but they were not able to exploit all the functionalities in teaching English to adult students with SEN through VLE. Therefore, this situation requires greater theoretical and practical training both in the use of VLE and in the pedagogical guidelines needed to distinguish different learning styles and strategies for adapting content and teaching methods to SEN students.

3. SEN and virtual English teaching

When it comes to improving strategies that encourage and facilitate the acquisition of foreign language skills of people with SEN such as speech clarity, straightforward language, and repetition of instructions, it is necessary to review the resources most commonly used and the effects these produce. Most teachers deal with unidirectional physical, visual and auditory disabilities, given that they are the most common ones among the adult population, both at universities and other training centers. Virtual resources can be very effective thanks to their versatility, their transformability and the possibility of interrelating different contents (Rose & Meyer, 2002) facilitating literacy and foreign language improvement (Guan, 2015). Another significant peculiarity is the opportunity to explore the Multimodal or Multimodality Interaction, which implies a joint semiotic interaction (auditory, visual, tactile and gestural) from any place and at any time, using any device in an accessible way, thus facilitating interaction (Beaven et

al., 2010; Castro, 2012). In what follows, these resources are analyzed according to the specific group at which they are addressed.

3.1 Physical disability

People with physical disabilities may need physical support devices, such as wheelchairs, crutches, seat lifts, etc. Although this equipment does not interfere in the design and programming of the virtual teaching platform, it must be considered when establishing the period to carry out a specific task since, for example, a certain physical disability may require a longer period of time for the execution of activities.

Regarding the optimization of the digital platform, the challenge usually lies in facilitating access to established contents. There are different support devices that require adaptation or compatibility with the virtual platform to help improve learners' autonomy and motivation and, in turn, facilitate access to the digital platform. Among these, the following stand out: Camera Mouse[2], EyeWriter[3], No'Keys or Click-N-Type[4], Switch Scanning Methods[5], Microsoft Accessibility Options tools such as StickyKeys[6], MouseKeys[7] or FilterKeys[8]) (Fernández Portero, 2018, p 260). For these and all the new devices that the market makes available to physically-challenged users, it will be necessary to constantly implement the relevant software adaptations in the virtual platform. An example is the PROJECT FRESSA 2015, coordinated by Jordi Lagares (CERMI, 2015), which attempts to facilitate learning and education in an accessible way through a set of applications related to voice control and computer access.

3.2 Visual disability

The most current project is Accessible Design for the Learning of Languages in the Network (ADOLL), coordinated by the University of Granada. This project consisted of

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[2] This software allows people with reduced mobility to control the mouse with the movement of their head.
[3] This software allows people to write with their eyes. This process is carried out through glasses that include a camera that captures the movements of the iris and the pupil.
[4] The No-Keys software displays a keyboard on the screen of a computer so that users can write using a traditional mouse, a ball or other similar devices to point. It is normally used by people with reduced mobility or with language problems, such as children with autism.
[5] These programs offer students with eye-hand coordination, fine motor skills or mobility problems the opportunity to write sentences through a system that scans the selected words in the desired order.
[6] This tool allows people who have difficulty to press two or more keys simultaneously to access certain commands or actions through another shortcut or alternative key.
[7] This option allows the use of a keyboard to move the cursor instead of using a mouse.
[8] This Windows tool is designed for people with hand tremor so that they can type better by ignoring repeated pressings of the same key or command.

a multilingual application accessible to users with no sight or with severe visual impairment. The aim of the project was to allow these users to acquire basic foreign language skills. In the process of developing the application, the recommendations of the Web Content Accessibility Guidelines (WCAG 2.0) (World Wide Web Consortium 2008) were followed. This is the most important document of the Web Accessibility Initiative (WAI) because its main function is to guide the design of web pages to reduce possible barriers to training (CERMI, 2015). Four principles related to the components of the interface were mentioned (ADOLL, 2018; World Wide Web Consortium 2008) (See Table 8):

1. Information and user interface must be presentable to students in ways they can perceive. The following guidelines are described:
   - Provide alternative text for any non-text so that it can be changed into other forms that people need, such as large print, braille, speech, symbols or simpler language.
   - Provide alternatives for time-based media.
   - Create content that can be presented in different ways (for example simpler layout) without losing information or structure.
   - Make it easier for users to see and hear content including separating foreground from background.
2. User interface components and navigation must be operable. The following guidelines are described:
   - Make all functionality available from a keyboard.
   - Provide users with enough time to read and use content.
   - Do not design content in a way that is known to cause seizures or physical reactions.
   - Provide ways to help users navigate, find content and determine where they are.
3. Information and the operation of the user interface must be understandable. The following guidelines are described:
   - Make text content readable and understandable.
   - Make web pages appear and operate in predictable ways.
   - Help users avoid and correct mistakes.
4. Content must be robust enough so that it can be interpreted by a wide variety of user agents, including assistive technologies. It is necessary to maximize compatibility with current and future user agents, including assistive technologies.

Table 8. Principles and guidelines recommended by the Web Content Accessibility Guidelines (WCAG 2.0) (World Wide Web Consortium 2008)

PRINCIPLE	GUIDELINES
1. PERCEIVABLE	1.1. Alternative text
	1.2. Multimedia content dependent on time
	1.3. Adaptable
	1.4. Distinguishable
2. OPERABLE	2.1. Accessible keyboard
	2.2. Enough time
	2.3. Epileptic attacks
	2.4. Navigation
3. UNDERSTANDABLE	3.1. Readable
	3.2. Foreseeable
	3.3. Assistance to data entry
4. ROBUST	4.1. Compatible

Other projects worth mentioning are the Research, Development and Application Center for the Blind (CIDAT) (CERMI, 2015), and the Educational Resources Center (CRE). Both belong to ONCE (National Organization of the Blind in Spain) and can offer guidelines to improve accessibility.

3.3. Hearing impairment

In relation to the studies on language teaching for adult students with hearing disabilities, the one developed by Escabias and Ordoñez (2015) stands out because it highlights the need to develop English teaching materials that are inclusive for this category of disabled students. Domagała-Zyśk (2010) and Marlene (2016) criticize the idea of exempting this group from studying foreign languages in schools and universities, since this knowledge offers them the opportunity to learn more about the world around them, participate in society, get a full education and find a good job.

In relation to the methodological approaches adopted for the teaching of this group, Escabias and Ordoñez (2015) recommend multimodal teaching, in which verbal and non-verbal communication are considered to generate and transmit meaning together with the use of presentations with more explicit grammatical elements and vocabulary cards with images. The result was successful and future challenges were proposed to adapt classes–and official examinations of the Association of Language Centers in Higher Education (ACLES).

In 2016, a conference on the intelligibility of speech in a foreign language for people with hearing disabilities was held at the State Reference Center for Personal Autonomy and Technical Assistance (CEAPAT) in Madrid (Spain). This conference

facilitated that this group could improve their understanding of English, its implications at the socio-cultural level or access to training throughout life.

These studies focus on the adaptation of materials for face-to-face classes but not for online learning. This situation, which has been developed in other countries such as Poland (Domagała-Zyśk, 2010), is still a pending issue in the Spanish context due to national language policies which reaffirm the need to implement the use of accessible VLE for the learning of a foreign language among the adult population with SEN.

4. Looking forward: the EN-ABILITIES project

In the recent years, there has been an emphasis on Spanish teachers' constant concern about the evident lack of resources to help people with SEN in their learning processes. To solve this situation, the European project EN-ABILITIES (enabling inclusive education through technology) proposes a comprehensive tool based on the principles of Universal Design. In line with the objectives and challenges of the ERASMUS+ Program, EN-ABILITIES promotes the equality and inclusion of adults with SEN with the goal of developing tools to promote autonomous language learning in formal and non-formal educational environments, implementing a VLE in accordance with the guidelines of the World Wide Web Consortium (W3C).

EN-ABILITIES is created with the main objective of developing an accessible VLE according to the comments of W3C and the principles of Universal Design. Hence, specific objectives are to improve and increase adapted learning opportunities to individual support needs, and to increase linguistic competence, employability, citizen participation, mobility and social inclusion at a European level. Currently, there is no online tool to learn English that complies with the main European guidelines in terms of accessibility and design for all. The implementation of the innovative methodology that supports the VLE provides personalized routes to all students and a compilation of virtual learning resources. It is not only intended for adult students who want or need to improve their language skills, but also to have an important impact on teachers and software programmers to create and adapt accessible resources for language learning.

Considering that the target group usually achieves levels A1, A2 and B1 (according to the Common European Framework of Reference for Languages, CEFR), a multi-tiered online course has been created. Each level includes ten lessons with ten units where users can practice their grammar, vocabulary and listening skills. There are eight exercises per each unit, which makes a total of 80 exercises per level. The type of

activities created also fits the needs of SEN students as they range from drag and drop and drop-drown kind, through multiple choice to matching questions. All contents are presented with alternative texts, images, videos and audios to ensure accessibility to all learners. Finally, and to ensure accessibility, the platform is free for all users to facilitate social inclusion. This goes in line with directive (EU) 2016/2102 of the European Parliament and Council, of October 26, 2016 which aims to make websites and applications for mobile devices of public bodies more accessible. In this sense, the tools provided by the EN-ABILITIES project are expected to help public and private schools to adapt their English courses online in accordance with this EU requirement based on Universal Design.

In short, EN-ABILITIES deploys a significant, sequenced and autonomous learning process adapted to each student. The project seeks to improve language and communication skills among students with SEN and, consequently, seeks to expand their opportunities for employability, their participation in society, their mobility and their social inclusion.

5. Conclusions

It is generally acknowledged that language learning offers an opportunity to improve social relations and opens the door to better working conditions for all people. However, people with disabilities or learning difficulties are often excluded from language education in spite of the numerous documents that address the need to improve public policies in relation to diversity, educational inclusion and real equality in society.

The educational integration of students with SEN in the Spanish educational system is generally welcomed by society. Furthermore, Spanish legislation explicitly recognizes and defends their rights, emphasizing that all people, including students with SEN, have the right to acquire a number of competencies for lifelong learning. This article focused on two competencies that are important to personal development: linguistic competence and digital competence.

As the teachers' perception of their teaching practice with adult students with SEN collected in this research demonstrate, most of them do not show a negative attitude; however, their level of interest varies depending on the type of disability. Naturally, people with disabilities need extra support in their learning process. In fact, learners with SEN suffer a triple discrimination due to different learning styles, lack of

expertise in foreign language and digital illiteracy. The more complex the support needed, the fewer the opportunities this group has to advance in their learning process.

As inferred from a survey tailored to analyze the difficulties and needs of teachers of English with adult students with SEN, they very frequently do not know how to adapt the contents of the curriculum appropriately and lack knowledge of and practice in the use of the new technologies for teaching purposes with adult students with SEN. They generally agree that VLE can promote self-directed learning, but they do not know how use it for this specific purpose. Added to this, the existing resources to teach English to people with sensory or physical disabilities, especially online ones, indicate lack of adaptation to the abilities of each student, making it difficult for this type of students to learn in a significant way.

Hence, EN-ABILITIES offers support to people with disabilities who want to learn or improve their English. The platform is compatible with support devices such as special keyboards and mice, Head Wands, and Switches. Also, students with hearing or visual impairment, communication disorders, intellectual disabilities, behavioral or neurological disorders can benefit from the spell checker button while writing in a plain text form, the magnifiers button to increase or decrease the size of text, the font button for font and line spacing changes, and the text-to-speech button to have highlighted text read aloud. Furthermore, it is possible to change the background color of the platform to facilitate reading to learners with visual impairment.

All in all, the solution offered by EN-ABILITIES is an important innovation when it comes to facilitating the learning of English as a foreign language among users with disabilities through a VLE based on universal design and the parameters set by W3C. Its implementation, now in its final phase, will facilitate the learning of English to all people, especially those with SEN or learning difficulties. Added to that, the platform will facilitate the work of teachers and software programmers, reinforcing their strategies to create or adapt the existing curricula and make their contents accessible, versatile and transformable. It is our belief that EN-ABILITIES will contribute to true social inclusion for people with SEN.

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Appendix. Questionnaire for teachers of English

EN-ABILITIES

This questionnaire is anonymous. The obtained results will be used for the purpose of the project "Accessible Online environment for encouraging autonomous English language learning aimed at people with disabilities" (EN-ABILITIES). The questionnaire consists of three parts: Demographic Information Questionnaire, Questionnaire on using ICT, and Questionnaire on Support Needs.

DEMOGRAPHIC INFORMATION

What is your age? _____.

What is your gender?

☐ Female

☐ Male

I acquired formal education in TEFL during my:

☐ Undergraduate studies

☐ MA studies

☐ PhD studies

☐ Other: _____.

How long have you been teaching?

☐ Less than 1 year

☐ 1-5 years

☐ 6-10 years

☐ More than 15 years

I currently teach English to students who are (you can choose more than one answer):

☐ Under 6 years of age

☐ 7-14 years of age

☐ 15-18 years of age

☐ Adults over 18 years of age

I teach English at (you can choose more than one answer):

☐ A university

☐ A foreign language school

☐ A regular school

☐ A special school

☐ Other: _____.

How often do you teach English to persons with some special education needs?

	Never	Rarely	Occasionally	Frequently	Very frequently
Visual impairment	☐	☐	☐	☐	☐
Hearing impairment	☐	☐	☐	☐	☐
Autism	☐	☐	☐	☐	☐

Motor disorder	☐	☐	☐	☐	☐
Dyslexia	☐	☐	☐	☐	☐
Communication disorder (dysphasia, stuttering, articulation disorder)	☐	☐	☐	☐	☐

If in the previous question you teach English to students with another type of disability that was not mentioned, please specify it here:

_____.

How do you adapt your teaching methods to students with special needs? Please list all instructional modifications that you make for these students:

_____.

On a scale from 1 (completely disagree) to 5 (completely agree), please indicate to what extent you agree with the idea that students with the following disabilities should learn English as a foreign language

	1	2	3	4	5
Students with a delayed speech and language development	☐	☐	☐	☐	☐
Students with specific learning disabilities (e.g. students with specific difficulties in reading, writing, mathematics, …)	☐	☐	☐	☐	☐
Students with mild intellectual disability	☐	☐	☐	☐	☐
Students with more severe forms of intellectual disability	☐	☐	☐	☐	☐
Students with ADHD	☐	☐	☐	☐	☐
Students with visual impairment	☐	☐	☐	☐	☐
Students with hearing impairment	☐	☐	☐	☐	☐
Students with physical disabilities	☐	☐	☐	☐	☐
Students with mental disorders	☐	☐	☐	☐	☐
Students with behavioral disorders	☐	☐	☐	☐	☐
Students with brain injury/neurological disorders	☐	☐	☐	☐	☐
Students with autism spectrum disorder	☐	☐	☐	☐	☐

USING ICT

How many hours a day do you use technology?

☐ Less than 1 hour

☐ 1-3 hours

☐ 4-6 hours

☐ 7-9 hours

☐ More than 9 hours

How tech-savvy would you describe yourself on a rating scale from 1 (I do not know how to use it) to 5 (I am very good at using it)?

	1	2	3	4	5
I do not know how to use it	☐	☐	☐	☐	☐

How would you describe yourself in terms of using technology for learning and instruction?

☐ Innovator (techies, guaranteed to adopt technology as a pedagogical tool)

☐ Early adopter (visionaries, will adopt technology earlier than majority)

☐ Early majority (pragmatists, will adopt technology as soon as the majority of teachers do)

☐ Late majority (skeptical, reluctant to adopt technology)

☐ Laggard (unlikely to adopt technology as a pedagogical tool)

How experienced are you in using virtual learning environment for teaching English (e.g. Moodle, Duolingo, etc.)?

☐ No experience (I have never used it)

☐ Inexperienced (I rarely use it)

☐ Neutral (I occasionally use it)

☐ Experienced (I frequently use it)

☐ Very experienced (I use it very frequently)

On a scale from 1 (completely disagree) to 5 (completely agree), please indicate to what extent you agree or disagree with the following statements about using virtual environment in teaching English to students with special education needs:

	1	2	3	4	5
Using VLE enhances their learning and educational goals	☐	☐	☐	☐	☐
VLE enables a teacher to meet the needs of individual students	☐	☐	☐	☐	☐
VLE distracts students from the content of the lesson	☐	☐	☐	☐	☐
VLE encourages autonomous language learning	☐	☐	☐	☐	☐
VLE provides more job opportunities	☐	☐	☐	☐	☐
VLE encourages social inclusion	☐	☐	☐	☐	☐

SUPPORT NEEDS
Do you require more training in:

	Yes	No
Using information and communication technologies	☐	☐
Using VLE	☐	☐
Adapting teaching methods to students with special needs	☐	☐
Learning styles of students with special needs	☐	☐

If you have any comments, please write them down in the space below:

_____

DEVELOPING EFL ELEMENTARY LEARNERS' WRITING SKILLS THROUGH MOBILE-ASSISTED LANGUAGE LEARNING (MALL)

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Abstract

This study aimed to investigate the effect of Mobile-Assisted Language Learning (MALL) as compared to paper-based instruction in the development of Iranian EFL elementary learners' writing skills. The research purpose was threefold: 1) to investigate the effect of MALL on elementary learners' writing skills; 2) to make a comparison between the obtained results of MALL and pencil-and-paper methods, and 3) to assess elementary students' attitudes about learner involvement in collaborative learning (CL) settings through mobile phone (MPh) interactions. For this purpose, 30 Iranian EFL elementary students were selected and randomly assigned to two groups: one experimental and one control. While the experimental sample received mobile-based instructions on their writing assignments, the students in the placebo group were provided with only paper-based instruction. The findings revealed that the participants in both groups showed considerable improvement on the immediate and delayed writing post-tests; however, on average, those in the experimental MALL group were shown to have outperformed the students in the control group significantly. Not surprisingly, the learners in the treatment group had made fewer errors on the targeted grammatical structures like the use of adjectives, possessives and simple present tense compared to those in the control sample. Finally, the results of the post hoc interview reflected that MALL learners felt positively about the utility of mobile technology in writing classes. Essentially, the findings could be of great help to EFL teachers, EFL learners, and course designers.

Keywords: MALL; mobile technology; m-learning; writing skills

1. Introduction

Dramatic advances in globalization and technology have not only had a great bearing on the development of written communication, but they have also affected the way people of different languages, cultures, and occupations communicate (Weigle, 2005). Notably, modern communication technologies including mobile devices have changed people's preferences significantly altering their mode of communication with other individuals through the global

network (McNeill & McNeill, 2003). Mobile-learning (m-learning) has received increased attention lately (Grunwald Associates LLC, 2013) because it offers a new approach to meeting the needs of contemporary society (Moura & Carvalho, 2009). As a new concept, m-learning bears upon learner mobility, "in the sense that learners should be able to engage in educational activities without the constraints of having to do so in a tightly delimited physical location" (Kukulska-Hulme, 2005, p. 1).

It is essential to remember that changes in pedagogical paradigms have similarly undergone a dramatic transformation in terms of both design and development, making educational materials available to anyone that wants to learn (Moura & Carvalho, 2009). Taking the above into consideration, since the principal aim of English language teachers is to relate the learners' lives to their real language needs, thanks to certain features of mobile phones and other mobile devices, mobile learning can potentially offer practical gains, making language learning possible for everyone at their convenience (Kukulska-Hulme, Morris & Donohue, 2015).

On this basis, the present study sought to create a technology-based and collaborative learning environment to support and improve elementary learners' writing skills in an Iranian educational context. To this end, a range of activities was used to develop elementary learners' writing focusing on specific rules of usage such as comparative/superlative, possessive and simple present tense structures. Ultimately, a focused group interview was used to assess the learners' attitudes about the potential benefits of mobile application in writing classes.

2. Literature review

Predetermined location and time are two essential aspects of formal instruction which inadvertently constrain the scope of learning. Devices like clay tablets, scrolls, and eventually printed books were introduced to deal with these limitations. However, it was the flexibility offered by desktop computers, laptops, notebooks and web-based applications which enhanced accessibility to language learning materials in the later part of the 20th century (Burston, 2013). The use of handheld computer-based devices such as pocket electronic dictionaries, personal digital assistants (PDAs), MPhs, MP3 players, and the most recently, ultra-portable tablet PCs serving as mobile technologies (MTs), has been one of the deciding factors affecting the m-learning programs – specifically in the domain of mobile-based initiatives concerning teaching writing skills (Burston, 2013).

Related studies addressing the application of mobile technology in developing writing in different contexts are all illustrative of the fact that writing has indeed a collaborative

nature and mobile devices can provide both teachers and learners with practical ramifications facilitating the process.

In one study, Zarei (2015) investigated the extent to which advanced L2 learners gained mastery of targeted structures after being given written corrective feedback to see whether a provision of written corrective feedback on Telegram would help advanced learners increase their level of writing accuracy. The findings revealed that the experimental group significantly outperformed the control group.

Wikis, Google Docs, and the Writing Portal were the most prevalent online technologies used in the studies conducted by Wang (2015), Abram (2016), Bikowski and Vithanage (2016), as well as Lee, Said and Tan (2016) to consider the potential effects of computer-supported collaborative tasks on learners' writing gains. The results revealed that increasing involvement in the writing processes led to a much better chance of self-reflection, confidence, and learners' linguistic knowledge simply because interaction and collaboration outside the classroom enabled learners to improve writing proficiency.

Employing collaborative learning, Amiryousefi (2017a) examined the differential effects of collaborative vs. individual prewriting planning on computer-mediated L2 writing: transferability of task-based linguistic skills in focus. Three types of prewriting planning conditions were used in this study. The results indicated that 1) promoting different dimensions of the participants' computer-mediated L2 writing was effective, 2) linguistic abilities were transferred differently to the network by the participants in different groups, and 3) teachers' monitoring and redirecting students' performance were among the factors which draw students' attention toward specific dimensions of L2 production influencing both the quality of their L2 writing and learning transfer.

Several researchers have also investigated the students' attitudes and perceptions on the development of their writing skills through social media. As an illustration, Li, Chu, Ki and Woo (2010) employed a collaborative approach to investigate students' and teachers' attitudes and perceptions toward collaborative writing with a wiki in a Chinese primary classroom. The results reflected an improvement in their writing attitudes after engaging in collaborative writing via wikis.

In a different study, Li, Chu, Ki and Woo (2011) investigated students' and teachers' attitudes and perceptions toward a wiki-based collaborative process writing pedagogy (WCPWP) in a Chinese primary classroom. The results revealed that improving motivation to write, increasing group interactions and developing writing skills were all beneficial effects of WCPWP.

Similarly, Yunus and Salehi (2012) examined students' perceptions of the effectiveness of Facebook groups in teaching writing. The findings indicated that Facebook was an effective tool that improved the students' writing skills.

In a more recent study, Akhiar, Mydin and Shaidatual (2017) studied students' perceptions and attitudes' toward the use of Instagram in English language writing. The authors claimed that Instagram was a good predictor of both promoting community-centeredness and supporting the dissemination of authentic content.

In another study conducted in Iran, Aghajani and Adloo (2018) examined the effect of online cooperative learning on students' writing skills and attitudes through the Telegram application. The results depicted that students had positive attitudes toward cooperative learning within the Telegram.

Drawing on the insights of the study carried out by Zarei (2015), an attempt was made to examine the learners' performance on the immediate and delayed writing post-tests to examine whether a noteworthy difference existed between the targeted experimental and control groups. Notably, the findings of this study were also consistent with all earlier studies mentioned in the literature. In this study, learning can be rooted in CL. Naismith, Sharples, Vavoula and Lonsdale (2004) noted that mobile devices (MDs) offer tremendous opportunities for communicating easily with others using the same devices. The ability to share data, files and messages are just a few examples of activities using mobile phones in learning. Additionally, MPhs offer enhanced possibilities for communication with connection to a shared data network.

Clearly, this study like other similar studies concerning the use of digital applications in a teaching/learning context was influenced by certain drawbacks and limitations listed below:

- The students are difficult to manage using MPhs (Clark, 2007).
- Inappropriate use of mobile devices by students may negatively impact their learning in a mobile learning environment (Kukulska-Hulme, 2005).
- There is a suspicion about the motivation behind the students' participation in m-learning, i.e. novelty is the main reason for participation, not interaction (Jacobs & Polson, 2006).
- There will be some disruptions to the class while the work is in progress using MDs (Clark, 2007).
- The students may violate the rules of using Telegram and cheat (Roschell, 2003).

3. Study

3.1. Aims of the study

This study aims to close the existing gaps. Due to the paucity of research in implementing a mobile-based approach for teaching writing to elementary students in Iran, the present study gains significance. Thus, the following three research questions were addressed in this study:

1) Is there any difference between the traditional approach (pencil and paper method) and mobile-based instruction on the development of Iranian EFL elementary learners' writing skills?
2) To what extent does mobile-based instruction help Iranian EFL elementary students fix their errors of comparative/superlative adjectives, possessives, and Simple Present forms?
3) Are Iranian EFL elementary learners' attitudes towards and perceptions of developing elementary learners' writing skills positively affected by involvement in a CL setting through an MPh?

3.2. Participants

The participants of this study were two groups of 15 elementary students (6 females and 9 males in the experimental group; 11 females and 4 males in the control group) studying English at an Iranian Language Institute. The participants' age ranged between 12 and 15. To ensure homogeneity of the students before the treatment, the Oxford Solutions Placement Test was administered to the participants. At the end of the treatment (after a full semester), out of the 15 students in the experimental group, 10 students (6 males and 4 females) were interviewed in order to assess the elementary students' attitudes and perceptions about collaboration and involvement offered by mobile-based application.

3.3. Data collection

Data collection was carried out through a pre-test, an immediate test and a delayed writing post-test followed by an interview. In the pre-test, the subjects in both groups were given an in-class comparison and contrast writing task. In the post-test, to probe any significant differences and detect any improvement in the writing accuracy of the two groups, they were required to write on the same topic used in the pre-test. Subsequently, to compare the lasting

effects of mobile-based instruction with paper-based teaching, a delayed post-test was run. In this test, the participants were once again required to write on a comparison and contrast topic. An interview was also conducted to gauge the elementary students' attitudes and perceptions regarding the effects of CL through MPhs. The interview aimed at asking the participants about the effects of the mobile phone on developing writing skills. The interviews conducted in Persian were recorded and then translated into English.

3.4. Data collection and analysis

In the first four sessions, the learners in experimental and control groups were provided with teaching materials that had been designed to develop new activities related to their special needs. The training sessions were organized around full and precise descriptions of punctuation, use of capital letters, word order in sentences and questions, use of contract forms, recognizing nouns, adjectives, and verbs tailored to suit the needs of each learner in both experimental and control groups. To start taking lessons, nine original texts from the *Reading and Writing* series by Thompson (2009) and Casey (2009) were used in this study. The number of texts and their difficulty levels were carefully considered. Each unit in *Reading and Writing* includes new vocabulary, a reading text along with comprehension questions as well as relevant writing assignments. Owing to the importance of reading in building up the learners' competence in a wide range of skills such as reading comprehension, writing style, vocabulary, spelling and advanced grammatical competence (Krashen, 1999), the students initially focused on a reading text to gain access to the required input. Then, the students were given a series of meaningful comprehension activities to develop writing skills. To do the English writing exercises, the students in the control group were given writing activities on paper, but those in the experimental group incorporated the Telegram application as a collaborative tool to reflect on the exercises. The students in both groups were also expected to have self-created opportunities for coping with the related activities.

Subsequently, several strategies (modelled, shared, interactive and independent writing) were utilized to help the students put their ideas into actual practice. To set up the learning goal, the students in the experimental and control groups received exposure to authentic writing input. The students were first exposed to the text model through the Telegram and the teacher explained how the model worked for everyone involved. Consequently, facts or details about the situation, a particular style or type of words, different parts of sentences were provided for the students to foster their understanding of the text.

These helped students elicit the essential information they required to write for a range of purposes.

The shared writing stage promoted discussion among the students as well as between the students and the teacher and increased massive opportunities for interaction with other language learners.

In guided writing, the teacher contributed to the learners' reconstruction of the text and provided the students with feedback related to the redirecting and expanding ideas. In this stage, the students and the teacher worked hand in hand. The students in the control group composed a text on paper and those in the experimental group did the same using Telegram.

In independent writing stage, the main intention was to encourage the students to write about a topic. It was deemed necessary that the students use their skills and ideas from the shared writing stage to finalize their production. Whereas the students in the control group agreed to present their writing tasks through pencil-and-paper in the class, those in the treatment sample used Telegram for delivering their writing assignments. To control the time on the task and access to a resource, certain restrictions were introduced:

- The students were asked to use the mobile phones under the control of their parents.
- They should avoid indulging in social networking and communicating with each other all the time.
- They were asked to send their writing compositions within a specified time and use just their skills and ideas from the shared writing stage to finish the writing tasks.

It is worth noting that the participants first discussed the writing problems with their peers prior to sending and receiving feedback on the received tasks in the Telegram group, and then the teacher provided assistance with any problems that may arise. It should be noted that specific statistical computation techniques were used considering the errors they had made in the use of comparative/superlative adjectives, possessives, and simple present tense. These techniques were:

1) The total number of correct uses of the simple present;
2) The total number of incorrect uses of comparative/superlative adjectives and possessives;
3) The total number of correct uses of comparative/superlative adjectives and possessives;
4) The total number of errors in Simple Present forms;

5) The ratio of correct usage of comparative/superlative adjectives and possessives to the number of comparative/superlative adjectives and possessives used ("Ratio1");
6) The ratio of correct use of the simple present to the total number of simple present forms ("Ratio2").

The statistical calculation involved analyzing the coded data, transferring them onto the data sheets and feeding them to the computer using the SPSS package. The raw score was interpreted as the computed ratio for each student concerning the percentage of correct usage of each target variable. As such, the obtained data could be quantified and measured. In the further step, the raw score was computed for each student, in each group and for each variable separately. The means of the two groups were compared to check whether they were at the same level at the beginning of the study. Analyzing the data, the researcher computed the descriptive statistics for the two raters and their average writing scores. To compare the performance of the two groups (the experimental and the control groups) – that is, to check whether they were at the same level at the beginning of the study, the means of the two groups were compared. Two judges marked the collected scores on the pre-, immediate and delayed post-tests evaluating writing tasks. The obtained data were analyzed through a repeated measure ANOVA.

3.5. Results

The descriptive statistics concerning the mean scores belonging to the experimental and control groups in pre-, post-, and delayed post-test in terms of the eight components presented in Table 1 indicated that the mean scores were higher on the post-test than the pre-test. Additionally, the mean scores of the students regarding the topic, organization, spelling, sentences, and vocabulary in the delayed post-test were considerably higher than those on the immediate post-test. Finally, except for grammar, the mean scores on the delayed post-test were higher than those in the immediate post-test.

In the control group, despite the increase in the mean scores of the post-test in topic, organization, paragraph, sentences, vocabulary, grammar and spelling, it was almost unchanged in punctuation. Moreover, despite the decrease in topic, organization, paragraph, sentences, vocabulary, punctuation and spelling in the mean scores of the delayed post-test, it was almost unchanged in grammar.

Table 1. The mean scores gained by two groups in the pre-, post-, and delayed post-test in writing components

Component	Group	N	pre-test		Post-test		Delayed test	
			M	SD	M	SD	M	SD
Topic	Experimental	15	1.53	.52	2.13	.35	2.87	.52
	control	15	1.53	.52	1.67	.49	1.60	.63
Organization	Experimental	15	1.27	.46	2.40	.51	2.93	.70
	control	15	1.40	.51	1.73	.46	1.60	.63
Paragraphs	Experimental	15	1.33	.49	2.33	.49	2.60	.74
	control	15	1.07	.26	1.40	.51	1.53	.64
Sentences	Experimental	15	1.60	.51	2.80	.56	2.87	.74
	control	15	1.53	.52	2.00	.38	1.80	.41
Vocab	Experimental	15	1.60	.51	2.07	.26	2.80	.68
	control	15	1.87	.35	1.87	.52	1.80	.41
Grammar	Experimental	15	1.53	.52	2.87	.64	2.73	.59
	control	15	1.47	.52	2.00	.53	2.00	.38
Punctuation	Experimental	15	2.20	.56	3.20	.56	2.93	.46
	control	15	2.13	.74	2.13	.64	1.87	.74
Spelling	Experimental	15	2.27	.59	3.40	.51	3.47	.52
	control	15	2.53	.83	3.07	.88	2.47	1.06

The results of repeated-measure ANOVA (RM ANOVA) related to the writing scores of the two groups and three-time measures displayed in Table 2 indicated that the interaction of measuring time and the experimental group in the overall writing scores of the students was significant (P<0.05). Therefore, the effect of Telegram on the writing skills of the experimental group had changed over time. The main effect of measuring time and the experimental group was also significant at the level of 5% error in writing scores (P<0.05).

Table 2. The results of RM ANOVA in comparing writing component scores in two groups and three-time measures

Component	Source	Effect	SS	df	MS	F	p	ηp^2
topic	Within-group	Time	7.356	2	3.678	14.215	<.001	.337
		Group×Time	6.156	2	3.078	11.896	<.001	.298
		Error	14.489	56	.259			
	Between-group	Group	7.511	1	7.511	28.506	<.001	.504
		Error	7.378	28	.263			
Organization	Within-group	Time	14.489	2	7.244	26.305	<.001	.484
		Group×Time	8.089	2	4.044	14.686	<.001	.344
		Error	15.422	56	.275			
	Between-group	Group	8.711	1	8.711	23.965	<.001	.461
		Error	10.178	28	.363			
Paragraphs	Within-group	Time	12.356	2	6.178	22.240	<.001	.443
		Group×Time	2.756	2	1.378	4.960	.010	.150
		Error	15.556	56	.278			
	Between-group	Group	12.844	1	12.844	40.059	<.001	.589
		Error	8.978	28	.321			
Sentences	Within-group	Time	12.867	2	6.433	24.942	<.001	.471
		Group×Time	4.022	2	2.011	7.797	.001	.218
		Error	14.444	56	.258			

	Between-group	Group	9.344	1	9.344	27.769	<.001	.498
		Error	9.422	28	.337			
Vocab	Within-group	Time	4.867	2	2.433	12.413	<.001	.307
		Group×Time	6.156	2	3.078	15.700	<.001	.359
		Error	10.978	56	.196			
	Between-group	Group	2.178	1	2.178	7.795	.009	.218
		Error	7.822	28	.279			
Grammar	Within-group	Time	16.267	2	8.133	25.814	.000	.480
		Group×Time	2.756	2	1.378	4.373	.017	.135
		Error	17.644	56	.315			
	Between-group	Group	6.944	1	6.944	29.966	<.001	.517
		Error	6.489	28	.232			
Punctuation	Within-group	Time	3.756	2	1.878	7.940	.001	.221
		Group×Time	5.000	2	2.500	10.570	<.001	.274
		Error	13.244	56	.237			
	Between-group	Group	12.100	1	12.100	17.208	<.001	.381
		Error	19.689	28	.703			
Spelling	Within-group	Time	10.867	2	5.433	15.384	<.001	.355
		Group×Time	6.022	2	3.011	8.526	.001	.233
		Error	19.778	56	.353			
	Between-group	Group	2.844	1	2.844	2.757	.108	.090
		Error	28.889	28	1.032			

The mean scores gained by the two groups in the pre-, post-, and delayed post-test in Ratio1, as reflected in Table 3, reveal that the mean of Ratio1 had increased in the post-test in comparison to the pre-test in the experimental group but not between immediate and delayed post-tests. The mean of Ratio1 was higher in the post-test than in the pre-test and in the delayed post-test than the post-test in the control group.

Table 3. The mean scores gained by the two groups in the pre-, post-, and delayed post-test in Ratio1

Group	**N**	**pre-test**		**Post-test**		**Delayed test**	
		M	SD	M	SD	M	SD
Experimental	15	.04	.13	.74	.23	.73	.23
control	15	.14	.35	.59	.38	.61	.38

The results of RM ANOVA in comparing Ratio1 in two groups and three-time measures displayed in Table 4 indicated that the interaction of measuring time and the experimental group was not significant in the scores of Ratio1 (P>0.05). Therefore, the effect of the experimental group changed over time.

Table 4. The results of RM ANOVA in comparing Ratio1 in two groups and three-time measures

Source	**Effect**	**SS**	**df**	**MS**	**F**	**p**	ηp^2
Within-group	Time	6.643	2	3.322	49.206	.000	.637
	Group×Time	.292	2	.146	2.161	.125	.072
	Error	3.780	56	.068			
Between-	Group	.082	1	.082	.635	.432	.022

group	Error	3.627	28	.130

Although the main effect of the experimental group in Ratio1 was also not significant at the level of 5% error (P>0.05), the effect of measuring time was significant at the level of 5% error (P<0.05).

Table 5 shows that the mean of Ratio2 increased in the post-test than the pre-test in both groups and it decreased in the delayed post-test as compared to the immediate post-test.

Table 5. The mean scores gained by the two groups in the pre-, post-, and delayed post-test in Ratio2

Group	**N**	**pre-test**		**Post-test**		**Delayed test**	
		M	SD	M	SD	M	SD
Experimental	15	.42	.27	.82	.27	.79	.33
control	15	.39	.74	.63	.30	.48	.28

The results of RM ANOVA in comparing Ratio2 in two groups and three-time measures displayed in Table 6 indicated that in Ratio2 scores the interaction of measuring time and the experimental group was not significant (P>0.05). Therefore, the effect of the experimental group had not changed over time. Although the main effect of the experimental group in Ratio2 at the level of 5% error was also not significant (P>0.05), the effect of measuring time at the level of 5% error was significant (P<0.05).

Table 6. The results of RM ANOVA in comparing Ratio2 in two groups and three-time measures

Source	**Effect**	**SS**	**df**	**MS**	**F**	**p**	ηp^2
Within-group	Time	1.617	2	.809	6.308	.003	.184
	Group×Time	.298	2	.149	1.163	.320	.040
	Error	7.179	56	.128			
Between-group	Group	.700	1	.700	3.037	.092	.098
	Error	6.454	28	.231			

4. Discussion

Having compared the mean of Ratio1 in the mobile-based group with that of the paper-based group, one can infer that there was no significant difference between Ratio1 (the ratio of correct use of possessives, comparative/superlative adjectives to the number of possessives, comparative/superlative adjectives used) and Ratio2 (the ratio of correct use of Simple Present forms to the total number of Simple Present forms used) and both groups significantly changed over time.

The findings of this research highlighted a significant difference between the experimental and the control groups. In this study, the group exposed to mobile use

experienced greater interaction and collaboration. Hence, the findings provided evidence that CL considers group work as a determining factor for the better performance of the participants in the experimental group. The findings are also in line with Vygotsky's sociocultural psychology (Naismith et al., 2004). Mobile devices (MDs) act as a practical additional communication medium and an electronic portable means of sharing information (Kukulska-Hulme, 2005). In this study, the teacher enabled and even encouraged the students to collaborate and share their information through MPhs. Thus, mobile technology (MT) is an example of conversational learning that provides a shared conversation space (Naismith et al., 2004). Furthermore, the students were positively influenced by CL in some stages of the writing process, including discussing their writing, sharing additional words and ideas and producing better texts in terms of grammatical accuracy. Alternatively, CL is highly beneficial to critical thinking and problem-solving skills since the students' involvement in various social contexts and interaction is a rich source of feedback fostering learners' progress in writing (Albesher, 2012).

The results of the interviews conducted with 10 elementary learners to answer the third research question are as follows:

The interviewees were first asked whether they liked CL through MPhs. They were all satisfied.

> In my idea, mobile devices (MDs) facilitated exchanging information in a limited time and kept getting information fresh and interesting for everyone. (Student D)

> Um… MPh was a major opportunity to present a new and exciting method for developing our writing skills. Before that, learning happened within the classroom walls. (Student I)

> I think CL through MPhs allowed us to access new content on demand. There was a large degree of overlap in this strategy, insofar as it helped us to improve our writing, to realize our mistakes and to correct them in our next writing. (Students B and C) … Besides, the students were not under stress since this method generated a high level of interest and enthusiasm (Student C)

The above excerpts resonate with Kukulska-Hulme (2006), who believed that MALL paves the way for getting access to language learning material and communicating with others at anytime and anywhere. This way, the students were provided with the opportunity for social interaction and negotiation of meaning while communicating with peers outside class, regardless of time and place (Kukulska-Hulme et al., 2015).

Amiryousefi (2017b) concluded that Telegram tended to be regarded as a social technology beneficial for encouraging students in collaborative activities. The preference for this technological device lies in the fact that communication through Telegram causes less stress.

Another area investigated in this interview were the benefits of learning to write through MPhs using CL strategy to increase the satisfaction of the students. Interviewees all found CL useful, satisfactory and efficient.

> Yes, MPhs offered a tremendous opportunity to make learning more engaging and pleasurable. (Students A, D, and G)

> Um… learning new words, getting new information, and using them in our writing was a learning experience for all students and often gave rise to opportunities to learn together (Student D)

> Um… Um… When MDs were used by the students, the opportunity also existed for them to learn new words, new sentences, and to use them. Writing about different topics became a part of any lesson involving the student which was notable. (Student J)

> MPhs facilitated getting new words, learning structures, and correcting mistakes. (Students B, E, and F)

> The flexibility offered with MDs enabled the students to write anywhere. (Student C)

According to Kukulska-Hulme (2005), collaborative learning involves a situation in which the students intend to enhance their learning process, foster their appreciation and improve learning. Compared to conventional settings, Telegram can create a friendly, inviting, and motivating environment in which learners can work at a higher level of CL with a high quality of interaction (Amiryousefi, 2017b).

The third question considered whether completing the drafting stage collaboratively through MPhs would be better. The results were in favour of completing the drafting stage collaboratively. The participants thought the students of any background might have the chance to gain information on the topic. Its impact had also been as great as we expected learners to write better in the next stage.

> If we were asked to write individually about a topic without any help from others, we would not know how to write and how to start. But MDs offered huge opportunities to harvest required information about the topic. (Students E and I)

These findings are in line with Oloruntoba (2006), who remarked that m-learning provides learners with increased flexibility and interaction.

The last question concerned whether or not collaboration during revising and editing through MPhs could help learners to overcome difficulties such as correcting mistakes, restructuring ideas, finding the right vocabulary, etc.

> Yes, CL through MPhs involved the constant repetition of corrections and continually refreshing the correct forms. This way, the correct forms of our mistakes stock in our minds. (Student A)

> MDs brought competition among the students and improved our writing tasks (Students I and C)

> By communicating through an MD, the students do not see each other anymore and this gave us excitement and made the communication more effective. (Student C)

MPhs allow exchanging language data. Transferring data and agreeing and disagreeing with someone come into sharp focus (Kukulska-Hulme et al., 2015).

By using MDs, the learners were made aware of their performance. They could also develop and improve their accuracy. Furthermore, MDs bring the practice of 'noticing the gaps' in their knowledge and communication skills to learners' attention. The answers they get from the teacher or their peers help them with onward learning (Kukulska-Hulme et al., 2015). By communicating through a MPh, students do not arouse the attention of their peers as they get something to work on, and they are not under the eyes of a teacher anymore (McQuiggan, MvQuiggan, Sabourin & Kosturko, 2015)

5. Limitations of the current study and directions for further investigations

Essay scores and interviews were two instruments of data collection for the current study. No direct analysis of the essays themselves was conducted, instead, people's judgments about them were used only. The third research question of this study was answered through an analysis of data obtained from interviews. Other functionally related instruments such as diaries and observations were not used.

Another limitation of this study was that the main focus of this research was on quantitative methodology with the addition of a small amount of qualitative research. Video and audio recording, open response questions, and questionnaires as other qualitative methods were not used in this study. Besides, the study encompassed only nine sessions to work on elementary students' writing skills, while further research should be carried out for longer times of instruction, for example, a semester.

6. Conclusion

The present study aimed to investigate the effect of MALL as compared to paper-based instruction on the development of EFL elementary learners in the Iranian English Language Institute concerning 1) the investigation of the effect of MALL on elementary learners' writing skills; 2) the extent to which mobile-based instruction helps students fix their errors of comparative/superlative adjectives, Simple Present forms, and possessives; 3) the consideration of the elementary students' attitudes and perceptions about involvement in collaborative learning settings through a mobile phone.

When looking at the results (Table 2), it can be seen that no significant difference was reported between the experimental and the control groups in topic, organization, paragraph, sentences, grammar, and punctuation in the pre-test ($p>0.05$), but in the post-test and the delayed post-test, the mean scores of the experimental group were significantly higher ($p<0.05$).

This study could have important implications for teachers, students, and educators. First, since there is an inherent motivation for EFL students to use MPhs, one may need not to encourage students to use these devices or try to make them interested (Liu, Navarrete, Maradigeue & Wivagg, 2014). Moreover, it can be concluded that education has also benefited from m-learning. Mobile technologies offer a novel approach to improving communication and education. It enables tracking of educational administration growth and makes communication between schools, teachers, students and parents more effective (Kraut, 2013).

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INDIVIDUAL OR COLLABORATIVE *WHATSAPP* LEARNING? A FLIPPED CLASSROOM MODEL OF EFL WRITING INSTRUCTION

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Abstract

Flipped classroom innovation has attracted the attention of English Language Teaching (ELT) researchers to examine its effectiveness. This inquiry, therefore, elaborates on the effect of flipping (i.e. reversing) individual and collaborative instruction using a *WhatsApp* application on the cohesive ability of English as a Foreign Language (EFL) learners as one of the essential elements of writing skills. A quasi-experimental study with a non-equivalent control group and a pre-test/post-test design was implemented to find any significant difference between the two combinations. The first group (N=25) was treated using 5 to 10 minutes of cohesion-based video materials and tasks from the *WhatsApp* group activities of the group members. Meanwhile, the second group (N=25) was treated similarly using individual *WhatsApp* activities. The findings reveal that the mean score from the collaborative group at 66.17 is higher than the mean score of individual ones at 50.19 with a level of significance <0.05. This means that teaching the topic of cohesion in writing using a flipped approach instruction model through the *WhatsApp* group turns out to be more effective than the individual one. The results suggest that teaching cohesion using a flipped approach through collaborative *WhatsApp* learning activities may serve as one of the suitable alternatives to improve EFL learners' cohesion in writing.

Keywords: flipped instruction; collaborative writing; WhatsApp; cohesion

1. Introduction

Presently, classroom teaching utilizing technological tools and applications has become a necessity for teachers to adapt to worldwide challenges in teaching. This phenomenon also occurs in both EFL and ESL teaching models. Flipped classroom as one of the teaching models requiring electronic devices or media has gained considerable popularity among language

teaching researchers (Akçayır & Akçayır, 2018; Arifani, 2019: Hsieha, Wu & Marek, 2017; Nouri, 2016; Suranakkharin, 2017). In EFL teaching, flipped classroom has been increasingly regarded as an important model to improve both teaching quality and learning output, so that it is considered as an alternative instructional model for teachers to implement. Furthermore, Hamdan, McKnight, McKnight and Arfstrom (2013) suggest that the flipped classroom approach has a great impact on the fields of education and technology and may subsequently become a standard for teaching and learning practice. The flipped classroom approach in EFL and ESL settings shapes teaching and learning activities employing technological tools such as playing a video to be watched during the in-class teaching and out-of-class teaching process (Herreid & Schiller, 2013). The requirement of watching a video makes learners take extensive notes based on audio-visual materials and leads to activities autonomously involving either other learners or their own group during out-of-class activities. As Sales (2013) reveals, this type of flipped class encourages students to take responsibility for their learning process when watching videos in order to organize this process all by themselves.

Many researchers agree that student-centered learning theories such as active learning and collaborative learning can be fully accommodated in flipped classrooms (Lin & Hwang, 2016). Bishop and Verleger (2013) claim that student-centred learning realizes several theories encompassing active learning, peer-assisted learning and collaborative learning. These notions provide shreds of evidence that flipped classroom enlivens the teaching and learning process by centralizing the independent and collaborative learning process of the students.

In the context of English language teaching, flipped classroom has also been a major concern for researchers. For instance, Suranakkharin (2017) studied the effect of the flipped-classroom model on Thai learners' knowledge of English collocations, comparing this instructional design with traditional instruction. He found that the traditional approach to studying English collocations and the flipped classroom approach show similarity in terms of scores. He also observed that learners were more joyful and collaborative when they watched the video outside the classroom. This study could yield an unexpected result since the teacher does not actually monitor the flipped class.

Another study conducted by Arifani (2019) indicates that flipped classwork is very effective, as shown by the monitoring process of collaboration between students, whose scores are higher than the ones reached by students receiving individual instruction. Nonetheless, the principal aspect of collaboration remains invisible, especially during the out-of-class activity that cannot be optimally monitored. Moreover, the chat history is not indicated, either. These

two factors do not emerge in the teaching of writing skills when it comes to the specific aspect of cohesion.

Therefore, this current study attempts to investigate whether the flipped classroom model involving small groups via *WhatsApp* used for writing activities in small groups can improve EFL learners' cohesion more effectively than the individual flipped model via *WhatsApp* for individual writing activities.

2. Literature review

2.1. Cohesion

Cohesion deals with the use of linguistic devices that function to join sentences together such as conjunctions, references, ellipsis, substitution and lexical devices (Halliday & Hasan, 1976). This went on to become the foundation or the "grand theory" of Cohesion in English. Cohesion enables written or spoken texts to run coherently and be unified. This is accomplished by stringing words, phrases, clauses, sentences, or even paragraphs together to create relationships among these elements so that the flow of a text shows clarity and logic. As Grabe and Kaplan (2014) state, cohesion encompasses relationships between grammatical and lexical elements in producing written texts. The role of cohesion in writing is crucial. Enkvist (1990: 126) states that "Writing must have surface cohesion as well as overall coherence".

The term 'cohesion' cannot be separated from its counterpart, which is called coherence. These two terms are used all the time to tie together words, phrases or even sentences to create unity of a text or unified whole. However, the two terms are not the same. According to Clark (2006), cohesion is seen when sentences connect. Meanwhile, coherence exists if large parts of the text fit. Coherent writing produces sequential ideas and points logically and smoothly. Arranged cohesively, the relationships of ideas and points across words, phrases or sentences can be easily comprehended. Due to their important role in writing, it is a must for a text to be cohesive and coherent (Harmer, 2001). However, this study focuses its concern only on the cohesion aspect of writing since learners often have problems with using markers to create coherent texts. Markers used to signify reference, substitution, ellipsis, conjunction, and lexical cohesion are handicaps mostly encountered by EFL learners. A study conducted by Cox, Shanahan and Sulzby (1990) shows that the writing quality of EFL learners shows significant relationships with cohesion. Consequently, cohesive writing can assist EFL learners who find it difficult to develop a well-organized text.

Cohesion devices in learners' written assignments need to be assessed appropriately employing a particular assessment tool. Struthers et al. (2013) developed such a cohesion assessment instrument in the forms of a checklist to determine learners' ability to use cohesive devices. This instrument was developed to avoid subjectivity that many people encounter in cohesion scoring. Compared with two existing instruments of cohesive assessment, namely Oral and Written Language Scales (OWLS) (Carrow-Woolfolk, 1996) and Test of Early Written Language (TEWL) (Shanklin, 1989), this instrument is more comprehensive in assessing the cohesive ability of the learners since it attempts to measure five elements of cohesion in detail which could not be accomplished with the two previous models.

2.2. Flipped classroom writing model

Currently, research on education is focusing a considerable amount of attention on demonstrating the analysis of flipped classrooms related to learners' academic performance enhanced by advanced technology. This cannot be denied because the flipped classroom model develops the cognitive strategy of learners such as comprehension, elaboration, retention and information restructuring (Fooladvand, Yarmohammadian & Zirakbash, 2017; Ganbari-Taleb, Yousefi & Bothlani, 2013). The activities carried out following flipped classroom models (such as watching a video, making a presentation and participating in a discussion) prompt learners to actively comprehend, elaborate and transform information among them and substitute the role of the teacher in the learning process. As a result, independent and autonomous learning processes are automatically created. In the flipped classroom model, the teachers involve their students in both in-class and out-of-class activities. Classroom discussion and group activities are formed to build interaction among students as follow-up to activities that take place outside the classroom.

Concerning the practice of the flipped classroom model for writing skills classes/courses, this has been applied to English language teaching not only by way of teaching practice but also as a research object with a variety of research approaches. This implementation involves learners in watching a video and grasping its underlying concept during the out-of-class activity. Learners are subsequently engaged in classroom discussions during the in-class activity (Afrilyasanti et al., 2016; Ekmekci, 2017; Farah, 2014; Leis, Tohei & Cooke, 2015; Ling, 2015). The classes use the flipped model for writing skills providing a consistent framework that is appropriate and relevant for this present study that offers a class based on the flipped learning model that is more lively and involves more interaction during the EFL writing course.

Even though the flipped classroom model has become the object of research in the EFL context by using electronic devices or media, in practice the use of mobile phone applications for teaching writing skills is not yet fully established. Thus, this study has adapted the flipped learning instruction model proposed by Hamdan, McKnight, McKnight and Arfstrom (2013) and Suranakkharin (2017) to occupy the niche.

According to these researchers, there are four major principles in implementing the flipped instruction model. Nonetheless, this study only selected two out of these four. The first one consists of a flexible learning atmosphere where both the *WhatsApp* group and the individual one receive materials about cohesion in the form of a short video with project guidelines via *WhatsApp*. In this situation, the learners discuss the cohesion video materials with their small *WhatsApp* groups and submit their discussion results through *WhatsApp* as well.

This is applied to individual learning in a similar way. The flexible setting in this study was facilitated through the existence of the *WhatsApp* mobile application so that the writing skills teacher can monitor the out-of-class discussion in more flexible ways when compared to the usual flipped classroom model observed in the previous studies. The second principle comprises the intentional linguistic content. The two aforementioned principles serve as a theoretical foundation for the teachers of Writing Skills in applying an effective flipped classroom model for their academic subject. The third principle is language learning culture. It aims to create a learner-centred classroom. In the flipped learning approach, learning materials are delivered through electronic means outside of class session, while in-class time is implemented to construct learners' knowledge and to trigger their active classroom participation in more meaningful activities. Therefore, during in-class time, the learners are exposed to richer English input. Step by step, it will also create English learning culture out-of-class. The last principles deals with professional teachers. In the flipped classroom, teachers are more responsive to provide learners with meaningful and supportive feedback. In addition, learners' linguistic performance and language progress should also be monitored and assessed comprehensively. These activities would create professional English teachers.

2.3. Collaborative learning

Collaborative learning plays a significant role in building the quality of learning that all learners deserve and gives them the same opportunity to acquire it. Collaborative learning (CL) can be defined as a set of teaching and learning strategies promoting student collaboration in

small groups (two to five students) to maximize their own and each other's learning (Johnson & Johnson, 1999).

In the context of the present study, learning in small groups refers to a learning activity involving a small number of learners to bring up a particular issue in EFL settings to encourage or promote the development of learners' responsibility and roles as well as Foster their critical thinking towards their group members. The communicative and social competences of learners are expected to grow and develop through a learning activity in a small group.

Collaborative learning has become increasingly important for contemporary learning environments and the merits of the conventional teaching method can responsively accommodate this environmental learning situation. However, without diminishing respect to the merits of the conventional teaching and learning method, the implementation of collaborative teaching with its small group involvement with either EFL or ESL teachers has been practised on a vast scale considering its significant contribution to teaching and learning to attain better pedagogical outcomes. Several studies indicate that collaborative teaching has shown a positive effect on learners' writing skills (Arifani, 2019; Suranakkharin, 2017) and learners' speaking performance (Muslem, Mustafa, Usman & Rahman, 2017).

The implementation of collaborative teaching through small group learning still needs to be monitored and carried out very carefully since the focus of learners might rely on the communicative aspect instead of the written form. As Hyland (2000) and Liang (2010) suggest, collaboration in writing classes in small groups creates a limited activity where learners only collaborate during the pre-writing activity, and rely on peer correction during the post-writing activity.

Thus, the objective of small-group collaboration in the process of developing writing skills was found to be impractical and ineffective. The discussion activity did not effectively occur as learners tend to form face-to-face collaboration patterns. This present study attempts to cover this weakness by applying *WhatsApp* to build collaborative learning more effectively when it comes to developing the aspect of cohesion in academic writing.

2.4. Individual learning

The concept of individual learning is associated with autonomous learning, independent learning or 'learner-centred learning' that maximizes the ability of teachers, allowing them to use more various methods of teaching than one single method. This, consequently, shifts the role of teachers to become facilitators (Crumly, Dietz & D'Angelo, 2014). The concept of individual learning puts more emphasis on every learner's competence than group target

attainment because of its characteristic that empowers the ability of individuals to experience personal growth in interactions with the world around them, which, in turn, has an impact on knowledge development (Maxinus, 2004: 14).

The role of the teacher in this context is more prominent compared to small group learning. The teacher must ascertain that learners are actively engaged and involved in the teaching and learning process to make learners more autonomous and to assist teachers to achieve the learning objective. Masouleh and Jooneghani (2012) make the point that autonomous learning does not stress individuality but rather emphasizes the way learners interact with other learners in achieving the individual learning objective.

The important aspect of foreign or second language learning consists of the teacher tapping into learners' awareness of their learning styles and strategies to exploit their strengths and to work on their deficiencies. Focusing on individual learning strategies is quite urgent, as found in a study conducted by Farrell and Jacobs (2010), which reveals that awareness of learning strategies makes the learner more successful in language learning.

Moreover, various studies into individual learning have also been reported to enhance the speaking and writing skills of learners. Through the use of individual learning strategies, learners tend to be more active in classroom conversation to share their ideas in classroom discussions and practise writing skills more using computer-aided learning and the flipped model (Afrilyasanti et al., 2016; Chou & ChanLinh, 2015; Sullivan & Lindgren, 2002).

2.5. WhatsApp in language learning and teaching

Lately, applications related to instant messaging and social media have gained great popularity. *WhatsApp* has become one of the most used mobile-based social media with various features offered. Although there are many similar applications available on the market, *WhatsApp* is still a favourite choice for instant messaging. This is due to its collaborative features such as exchange of videos, text messages, images, and voice notes, supporting the interaction of up to 50 group members, along with unlimited messaging, cross-platform engagements, offline messaging, no charges involved, and pins and user names (Annamalai, 2019).

In the context of English language teaching and learning the use of *WhatsApp* has proved to be an effective tool to support language learning. Quantitative research using *WhatsApp* through collaborative learning has shown effective results, leading to the improvement of learners' reading comprehension and essay writing (Castrillo, Barcena, & Martin Monje, 2014; Hazea & Alzubi, 2016). Similarly, a qualitative study conducted by Annamalai (2019) in Malaysia indicates that the use of *WhatsApp* to extend learning in a

blended classroom context positively facilitates students' interaction, academic growth and self-efficacy. However, a negative impact of using *WhatsApp* is also reported from the above quantitative study. The use of *WhatsApp* in essay writing could not facilitate deep learning because it was only applied to change information, tasks, and exam procedures. Therefore, no deep learning gain was reported in the study. Next, a study using *WhatsApp* conducted by Plana et al. (2013) in Spain indicates that the students' motivation and enthusiasm for reading texts in English as a foreign language increased. Although many studies have scrutinized the merits and demerits of *WhatsApp* in EFL/ESL instructions, relatively few studies have investigated the use of *WhatsApp* to monitor collaboration during teaching and learning activities. Therefore, this study aims at elaborating how this mobile application can enhance students' collaborative writing activities during out-class session.

3. The present study

3.1. Research question

As this study is designed to measure the effect of the individual and collaborative *WhatsApp* approach using a flipped instruction model on EFL learners' cohesion, the following question is posed: Will there be any significant difference in the ability of EFL learners' cohesion after the implementation of individual and collaborative cohesion activities in *WhatsApp* using the flipped instruction approach?

3.2. Design

This quasi-experimental design herein is classified as quantitative, involving a non-equivalent control group and pre-test/post-test design. The objective of this study aims to to find any significant difference in terms of mastery of cohesive writing skills between individual and collaborative groups. Two different quasi-designs were classified. The first cohort was categorized as a collaborative group. Each collaborative group was assigned collaborative cohesion activities in their *WhatsApp* using the flipped instruction model. Each group consisted of 4 to 5 learners. The second one was attributed to an individual group. Each learner was assigned individual cohesion activities in his or her individual *WhatsApp* using the flipped instruction model as well. The instructional design for both groups is presented in Table 1.

Table 1. Summary of teaching cohesion in WhatsApp using a flipped approach

Stage	Collaborative cohesion activities in *WhatsApp* using a flipped approach	Individual cohesion activities in *WhatsApp* using a flipped approach
Stage 1: Introduction	1. Students are assigned to create *WhatsApp* groups consisting of 4 to 5 students in each group. 2. Pre-test for both groups	1. Each student is assigned to create an individual *WhatsApp*.
Stage 2: Learning materials	5 to 10 minutes of cohesion-themed videos are prepared for each group. They deal with: 1. Reference 2. Substitution 3. Ellipsis 4. Conjunction 5. Lexical Cohesion	5 to 10 minutes of cohesion-themed videos are prepared for each student. They deal with: 1. Reference 2. Substitution 3. Ellipsis 4. Conjunction 5. Lexical Cohesion
Stage 3: WhatsApp Flipped Implementation (week 1 to 6)	**1. Outside Class** (a) Each week, the teacher sends a cohesion video to the students' *WhatsApp* groups. (b) Discuss the cohesion video from their *WhatsApp* group. (c) Each collaborative group watches and discusses the concept of each cohesion topic from their *WhatsApp* group. (d) Each week, every group completes 10 items of cohesion exercises. (e) Submit the exercise to the teacher's *WhatsApp* each week **2. In Class (60 minutes)** (a) Every week, the collaborative group holds a classroom discussion and makes a group presentation to clarify the cohesion concept and its related exercises. (All 5 collaborative groups make a group presentation) (b) The teacher provides feedback and comments.	**1. Outside Class** (a) Each week, the teacher sends a cohesion video to each student's *WhatsApp*. (b) Each week, every student watches and studies the cohesion video individually. (c) Every student learns about the concept of each cohesion topic individually (d) Each week, every student completes 10 items of cohesion exercise. (e) Each student hands in their exercise to the teacher's *WhatsApp* individually **2. In Class (60 minutes)** (a) Every week, a classroom discussion and an individual presentation are employed to clarify the cohesion concept and its related exercises. A random individual presentation selection is appointed (5 individual presentations are arranged). (b) The teacher provides feedback and comments.
Stage 4: Assessment (Week 7)	Post-test	

3.3. Participants

The population consists of all the seventh-grade learners of *Sekolah Menengah Pertama Muhammadiyah (SMPM) 1 Gresik,* East Java, Indonesia (a private Islamic Junior High School in Gresik) which comprises five classes. Two of the seventh-grade classes had been selected as the sample of the study. To find the two homogeneous classes, the researcher had assessed the English scores reached by the learners using an English placement test designed by the school.

Next, the English teacher was asked to confirm and clarify matters to be convinced of their equivalent English mastery. Based on the above considerations, two classes from 7-3 with 25 learners, and 7-4 with 25 learners, were labelled. The first label of class 7-3 with 25 pupils (11 male and 14 female) was the collaborative cohort, which was assigned collaborative cohesion activities in *WhatsApp* using the flipped instruction approach (henceforth referred to as the "collaborative" group). The second label of class 7-4 with 25 pupils (12 male and 13 female students) was attributed individual cohesion activities in *WhatsApp* using a flipped approach (henceforth referred to as the "individual" group).

Two tests, namely the pre-and post-test, were administered in the study. The researcher prepared a writing test for the pre-test and post-test. During the pre-test and the post-test activities, the learners' writing score was measured using a cohesion rubric adapted from Halliday and Hasan (1976) and Struthers et al. (2013). The elements of cohesion that were assessed comprised reference, conjunction, lexical cohesion, substitution and ellipsis. To address the issue of validity and reliability of research findings, the researcher and the evaluator evaluated the students' writing portfolio and examined their cohesion development. Each evaluator assessed the students' cohesion score using the cohesion rubric (Halliday & Hasan, 1976; Struthers et al., 2013). Cohen's Kappa statistical analysis was employed to measure inter-rater reliability. This ranged from -0.1 to + 1.0.

The collected data were subsequently evaluated and subdivided into three phases. In the first phase, the Kolmogorov-Smirnov normality test was conducted to establish the normality of the data distribution, and a homogeneity test was also administered to determine the variance occurring in the research data. In the second stage, the researcher measured the average score. The pre-test and post-test results from both groups were analyzed to obtain the average score in each writing test. In the next step, a hypothesis test was carried out using a t-test.

3.4. Results

The results of normality and homogeneity of collaborative groups and individual ones were statistically calculated in the following table:

Table 2. Normality tests between the two groups

Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Collaborative Group (CG)	.139	25	.206*	.734	25	.266
Individual Group (IG)	.169	25	.157	.749	25	.159

Group	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Collaborative Group (CG)	.139	25	.206*	.734	25	.266
Individual Group (IG)	.169	25	.157	.749	25	.159

*Significant at $p < .05$.

Table 2 reveals the results of the normality test derived from the collaborative and individual groups. Since the results of the normality test derived from the two groups are beyond Alpha 5% with $p = .206$ and $p = .157$, the data from both CG and IG groups have been normally distributed.

Table 3. Homogeneity test

Levene's Statistics	df1	df2	Sig.
2.178	1	.67	.146

*Significant at $p < .05$.

Table 3 illustrates the result of the homogeneity test derived from CG and IG groups. Levene's statistical computation amounts to 2.178. Meanwhile, the P-value (sig) from the homogeneity test amounts to 0.146 > .05 Alpha level. Since the result of the *p*-value is bigger than the alpha level (5%), the data are convincingly homogeneous.

Table 4. Mean score comparison between the two groups

	N	Pre-test Mean	Post-test Mean	Change	Std. Deviation	
					Pre-test	Post-test
Collaborative Group	25	40.72	66.17	22.24	5.30	10.78
Individual Group	25	38.55	50.19	11.64	7.57	12.79
Difference	0	.217	15.86	+9.60		

Table 4 illustrates the result of the pre-test and post-test mean score comparison between the CG and IG groups. It was found that the learners from the Collaborative Group reached a mean score of 40.72 in the pre-test with standard deviation or SD = 5.30 and the mean score of the post-test was 66.17 with SD = 10.78. On the other hand, the learners who were taught in the Individual Group model reached a mean score of 38.55 with SD = 7.57, and their mean score in the post-test amounted to 50.19 with SD = 12.79.

Table 5. Mean score comparison

	Collaborative Group			**Individual Group**		
	Pre-test	**Post-test**	**Change**	**Pre-test**	**Post-test**	**Change**
Reference	2. 37	3.66	1.26	1. 86	2.36	0.50
Substitution	2. 08	3.24	1.16	1. 92	2.34	0.65
Ellipsis	2.14	3.24	1.10	2.07	2.69	0.62
Conjunction	2.34	3.56	1.22	1.64	2.84	1.20
Lexical cohesion	1.70	2.75	1.05	1.02	1.67	0.42
Total score	10.63	16.45	5.79	8.51	11.70	3.39

Table 5 illustrates the mean scores of learners who were taught in the Collaborative Group (16.45) with a mean change score (5.79) that was higher than the mean scores of those learners who were taught in the Individual Group's flipped model (11.70) with a mean change score (3.39) in overall elements of cohesion obtained namely reference, substitution, ellipsis, conjunction and lexical cohesion. It could be said that both collaborative and individual groups' cohesion score gains increased from the pre-and post-test. Although both collaborative and individual groups attained their positive score improvement, the score gain of the collaborative group was higher than those individual ones. This may serve to illustrate that the EFL learners' mastery of Cohesive Writing Skills could be fostered by implementing collaborative *WhatsApp* group (consisting of 4 to 5 learners) activities using the flipped instruction approach.

More specifically, the finding for the collaborative group indicates that out of all five cohesion elements, the reference topic proved to be the most familiar for the learners. This is why their reference score reveals the highest score gain (1.26) among the other cohesion elements. Meanwhile, learners' scores gains in the category of lexical cohesion are the lowest among the other cohesion elements (1.05). This indicates that lexical cohesion was the most problematic topic for them to grasp. It could be asserted that the collaborative *WhatsApp* group significantly contributes to the score improvement of the English reference and conjunction categories in developing Cohesive Writing Skills.

On the other hand, the results of the individual group indicate that out of all five cohesion elements, the topic of English conjunctions proved to be the most familiar for this group. Therefore, the score gain in this particular category ranks as the highest among other cohesion elements (1.20). Conversely, in the individual group, the topic of English lexical cohesion is considered to be the most challenging topic for its members. As a result, their score gain on lexical cohesion is very low (0. 42). This indicates English lexical cohesion is the most

problematic for this individual group as well. It could be affirmed that the individual *WhatsApp* activities significantly contribute to the score enhancement in the categories of English conjunctions and substitutions.

Table 6. Independent t-test results

	Levene's test					
	F	**Sig**	**T**	**Sig. (2-tailed)**	**Mean Score**	**Mean Difference**
Equal variances assumed	2.157	.146	5.028	.000	66.17	15.86
Equal variances not assumed			5.049	.000	50.19	15.86

Table 6 illustrates the results of an independent t-test. As evidenced in the above table, at the significance level (sig. 2-tailed) .000 < 0.05 H_0 is convincingly rejected and H_a accepted. It could be explained that there was a significant difference between the cohesion test results of learners who were taught collaboratively using the flipped instruction approach in *WhatsApp* group activities compared to the cohesion scores attained by learners who were taught using individual ones.

4. Discussion

The present study aimed at drawing a comparison between the effect on EFL learners taught using the collaborative *WhatsApp* model and the individual *WhatsApp* model (both adopting the flipped instruction approach) in activities to develop Cohesive Writing Skills. The results reveal that the EFL learners who were taught video materials on cohesion using the collaborative *WhatsApp* model achieved significantly higher scores than those using the individual *WhatsApp* model. The results also show that EFL learners' post-test scores for writing skills within the collaborative *WhatsApp* groups are statistically higher than their pre-test scores. The result of the study provides different notions toward the implementation of the flipped classroom wherein the traditional flipped approach video discussion and task activities carried out outside the classroom are accomplished through face-to-face discussion. One of the potential limitations is that when one of the learners cannot attend the face-to-face discussion model because of non-academic factors such as inclement weather, distance, or even limited time for the discussion meeting, the flipped classroom model will be far from optimal. Therefore, based on this study, by combining the flipped approach using the *WhatsApp* application, learners can discuss the video through their *WhatsApp* group without any boundaries or obstacles.

WhatsApp collaborative instruction is highly advantageous for its ubiquitous merits. In the experimental study of Suranakkharin (2017) on the collocation mastery of Thai EFL learners using a traditional flipped approach, the mastery of English collocations achieved by

Thai EFL learners who had been taught using the flipped classroom approach had significantly increased. Ironically, neither the experimental nor the control group responded positively to the flipped classroom model. One of the possible causes is the limitation of the traditional flipped classroom model in the out-of-class discussion and task activities. By applying the flipped approach using *WhatsApp* in this study, the researcher affirms that *WhatsApp* affords more flexible and unlimited space (without boundaries) in the out-of-class activities. In short, the learners' autonomy can also be enhanced through the *WhatsApp* mobile application in teaching Cohesive Writing Skills. Alzubi and Singh (2018) investigated the impact of social strategies using a smartphone on EFL Saudi learners' socio-cultural reading autonomy. The result of the study reveals that the implementation of smartphone applications promotes learners' reading autonomy.

It is also evident that the collaborative *WhatsApp* group writing activities support key principles in effective collaborative learning in the flipped writing class. As proposed by Raja and Saeed (2012), Arnold-Garza (2014), and Hazea and Alzubi (2016), the principle of collaborative learning, the flexibility of the flipped model and *WhatsApp* were the foundation for the current research. The flipped model through *WhatsApp* media allows the learners to view the concept of cohesion by way of lecture videos through their *WhatsApp* including reference, substitution, ellipsis, conjunction and lexical cohesion resulting in more flexible, dynamic and interactive classroom activities. Consequently, this leads to a higher level of ability in Cohesive Writing Skills among Indonesian EFL learners. Reports of this nature have been provided by several researchers. For example, Afrilyasanti et al. (2016) report that a flipped model situation enables EFL learners to succeed in writing using computer-aided flipped learning conditions.

Regarding collaborative learning, it seems that the small group *WhatsApp* flipped model in writing instruction has a positive effect on learning about cohesion. This result corresponds with the findings of Muslem et al. (2017) in the study of small group and individual learning approaches. These researchers claim that small group learning activities make a stronger impact on the speaking performance of EFL learners. However, it is challenging to determine how strong the impact of the collaborative learning in small groups is and whether it directly affects the learners' mastery of cohesion in writing. Besides, a previous study (Muslem et al., 2017; Raja & Saeed, 2012) demonstrates that collaborative learning has a positive effect on mastering English. The implementation of small group activities fosters the speaking ability of the grouip members because they can interact and share their ideas with others during the learning process in meaningful ways. It is also implied that collaborative *WhatsApp* activities outside the

classroom assist the learners' ability to write and speak cohesively. In the small group discussions about writing, the learners can discuss, share ideas, explore the concept through video and reflect on their thoughts so that their critical thinking can be fostered as well.

Writing materials specifically discussing elements of cohesion such as reference, substitution, ellipsis, conjunction and lexical cohesion derived from the flipped model via *WhatsApp* make a beneficial impact on the learners' development of cohesion. The finding of this study corresponds with that of Suranakkharin (2017), who used flipped instruction to develop the learners' mastery of English collocations. This researcher concluded that learning materials that have been designed based on the flipped model produces a positive impact on the way EFL learners perceive the learning situation and how they are exposed to the process of learning in more flexible and ubiquitous ways. The finding implies that the Cohesive Writing Skills materials or sources designed concerning video lectures and exercises through a *WhatsApp* mobile phone application greatly assist learners in the learning proces every time and everywhere, both inside and outside of the class time schedule.

More specifically, as shown in Table 4 above, the EFL learners attained the lowest mean scores in the category of mastering lexical cohesion. The result also illustrates that out of the five elements of cohesion (reference, substitution, ellipsis, conjunction and lexical cohesion) lexical cohesion ranks as the most difficult aspect of cohesion. This finding is supported by Suranakkharin (2017), who remarks that collocation mastery is one of the most difficult central aspects of communicative competence to express ideas fluently and accurately among Thai undergraduate learners. This is due to the fixed patterns of lexical cohesion in the native English context, whereas most EFL learners study English in a different setting and context. Consequently, it is quite difficult for them to produce proper lexical cohesion in their writing. This study offered EFL learners a chance to learn lexical cohesion from the video lecture shared by the teacher via their *WhatsApp* so that they could learn about lexical cohesion more authentically and obtain the real contexts of lexical cohesion.

5. Conclusion and recommendations for the future

This research was conducted to compare whether the learners taught by flipped models involving small groups via *WhatsApp* with writing activities carried out by small groups turn out to be more successful in writing cohesive paragraphs in terms of reference, substitution, ellipsis, conjunction and lexical cohesion than those taught according to the individual flipped model via *WhatsApp* with different writing activities. Overall, the findings reveal that learners'

scores for this category of Cohesive Writing Skills improved significantly. The results also demonstrated that learners who were taught using the flipped model involving small groups via *WhatsApp* performed better than those trained using the individual flipped model via *WhatsApp*.

It is recommended that the teacher of Writing Skills should implement the combination of the flipped classroom approach and *WhatsApp* as a supporting learning medium through small group discussion models in the teaching and learning process and should integrate this combination with the regular EFL/ESL curriculum. The findings also show that the learners reached the lowest score in the cohesion category based on lexical cohesion (word reiteration, superordinates, synonyms and collocations). Those lexical cohesion elements were considered to be the biggest stumbling-block. Consequently, further research to investigate one of the aforementioned lexical cohesion elements would be worth conducting.

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