

DISCURSIVE REPRESENTATIONS OF DIGITAL ARTIFACTS IN AN EFL CLASSROOM: ANALYSING DISCURSIVE VOICES OF PRE-SERVICE TEACHERS OF ENGLISH

Oleksandr Kapranov^{1*}

¹Nordic Institute for Advanced Study - Strömstad Academy, Strömstad, Sweden

Abstract

The present article presents and discusses a study that seeks to analyse discursive representations of digital artifacts in the teaching and learning of English as a Foreign Language (EFL) by pre-service EFL teachers (henceforth – participants). The study involves a corpus of argumentative essays on a range of topics in EFL didactics written by the participants and their respective control group, which is comprised of non-teacher EFL students. The analysis of the corpus of essays reveals that whilst there are discursive representations of digital artifacts that are shared by the participants and their controls, there appear to be discursive representations of digital artifacts that are group-specific. These findings and their linguo-didactic implications are further described in the article.

Keywords: digital artifacts; English as a Foreign Language (EFL); EFL didactics; argumentative essays

* Assistant professor in English linguistics at Nordic Institute for Advanced Study - Strömstad Academy, Sweden. His research interests involve academic writing, cognitive linguistics, and psycholinguistics. After the completion of his PhD at the University of Western Australia in Perth (WA), he was a post-doctoral researcher at Lund University (Sweden) and at the University of Bergen (Norway). Dr Kapranov has worked at a number of universities in Norway and Sweden teaching English linguistics. He has published over 50 research articles and book chapters. His recent articles have been published in *Prague Journal of English Studies*, *Theory and Practice of Second Language Acquisition*, *Complutense Journal of English Studies*, etc. E-mail: oleksandr.kapranov@gmail.com. ORCID <https://orcid.org/0000-0002-9056-3311>.



1. Introduction

Given that the availability and use of digital artifacts have significantly increased in primary school settings over the past decade (Garcia, 2020; Lorenset & Tumolo, 2019; Salmerón et al., 2020; Tondeur, 2018), it seems pertinent to explore how future teachers of English as a Foreign Language (EFL) and English as a Second Language (ESL) perceive and represent digital artifacts in EFL and/or ESL classrooms (Lauricella et al., 2020). This article presents and discusses a study that seeks to analyse discursive representations of digital artifacts associated with the EFL teaching and learning in primary school in Norway. The discursive representations of digital artifacts are examined by means of analysing a corpus of argumentative essays in EFL didactics written by a group of pre-service EFL teachers (further in the article referred to as *participants*) and the respective control group that is comprised of non-teacher EFL students. The aim of the study is to identify and classify the participants' and controls' discursive representations of digital artifacts in relation to the teaching and learning situations in an EFL classroom in primary school.

The following notions are central in this study, namely i) digital artifacts, ii) discursive representations, and iii) digital literacy in the EFL teaching and learning contexts. I will briefly outline these notions in the introductory part of the article starting with the notion of a digital artifact. In general, an artifact refers to i) “a simple object (such as a tool or ornament) showing human workmanship or modification as distinguished from a natural object”, or ii) “a product of artificial character (as in a scientific test) due usually to extraneous (such as human) agency” (Merriam-Webster Dictionary, 2020). Based upon the definition of artifacts as human-made objects, digital artifacts are conceptualised as items or tools that are “designed to support humans in various activities that include technology, people and goal-oriented actions in which information is handled” (Viberg et al., 2020, p. 3). Digital artefacts are theorised to be dynamically co-constructed two dimensional digitally stored objects (Jones et al., 2020, p. 163). In instructional settings, digital artifacts are defined as electronic objects (i.e., images, sound and video files, as well as text files) that are produced and stored as digital versions for instructional purposes (Kessler, 2013). In line with the previous literature (Lauricella et al., 2020; Salmerón et al., 2020; Viberg et al., 2020), digital artifacts are analysed in the present study in conjunction with their hardware (for example, iPads), as well as streaming and archiving (e.g., YouTube) components.

The notion of digital artifacts in EFL instructional contexts appears to be associated with the teachers' and students' digital literacy. In this study, the notion of digital literacy is informed by the definition proposed by Gilster (1997), who argues that it involves “the ability to understand and use information in multiple formats from a wide range of sources when it is presented via computers” (Gilster, 1997, p. 1). This definition is commensurate with the view of digital literacy as a “set of technical, audio-visual, behavioural, critical and social skills that enable

users to learn, communicate, socialise and contribute in the digital space” (Reyna et al., 2018, p. 177). It is inferred from Gilster (1997) and Reyna et al. (2018) that a learner as well as a teacher should possess a range of skills in order to manipulate digital artifacts in socio-cultural instructional contexts. In this regard, Hennessy (2011) argues that digital artifacts are co-constructed by the learner and the teacher via the shared medium of digital literacy. In particular, Hennessy (2011) suggests that digital literacy facilitates the co-construction of digital artifacts by teachers and learners in a dialogic discursive space.

Similarly to the dialogic discursive nature of digital literacy that is discussed by Hennessy (2011), the notion of a discursive representation is regarded as a contextual socio-cultural entity (Dryzek & Niemeyer, 2008) that is constructed and co-constructed in a discursive situation. In the present study, I follow the view of a discursive representation that has been formulated by KhosraviNik et al. (2012), who argue that it involves pragmatic, rhetorical, as well as argumentative features that are comprised of “reference and nomination, predication, argumentation, perspectivation and involvement, and intensification and mitigation” (KhosraviNik, et al. 2012, p. 286). Based upon the contention made by KhosraviNik et al. (2012), discursive representations of digital artifacts in the present study are regarded as the nomination (i.e., naming and referencing) of persons, objects, events, processes, and actions that are emblematised by a digital artifact.

From a theoretical perspective, the notions of digital artifacts and discursive representations in this study are analysed through the lenses of the methodological framework described by Warschauer and Grimes (2007), who argue that digital artifacts are critically linked to the elements of language use and communication via audience and authorship, respectively. In particular, Warschauer and Grimes (2007) construe digital artifacts within the parameters of discursive spaces that are co-constructed by the audience and the author/authors in the dialogic unity that relates a digital artifact to the discursive community. Following this contention, the construal of authorship as far as the use of digital artifacts is concerned appears to be epiphenomenal, since the “authorship loses significance due to the unstable, partial, and multiple forms of meaning embedded in multivocal, multimodal artifacts” (Warschauer & Grimes, 2007, p. 4). This observation is evocative of the argument made by Bakhtin (1979, p. 33), who posits that “a photograph provides the basis for resemblance, and in the photograph we do not see ourselves, but merely our reflection without the reference to the person who took the photograph”. Assuming that a photograph is an analog equivalent of the digital artifact in the pre-digital era when Bakhtin wrote his essays on the aesthetics of discourse (Bakhtin, 1979), it is possible to infer from the Bakhtinian approach that a digital artifact (for instance, a digital image) is dialogically reconstructed from the surface representation to a semiotically meaningful entity that involves “the dialectical associations between discursive and nondiscursive, real and imaginary” (Gür, 2002, p. 237) that occur irrespective of the creator of the digital image.

Informed by the aforementioned theoretical considerations, the present study seeks to establish how digital artifacts are represented by the participants who are pre-service EFL teachers and their non-teacher controls in a set of argumentative essays written on a range of topics of EFL didactics. In particular, the study addresses the following two research questions:

RQ1: How the participants represent digital artifacts associated with an EFL classroom in primary school?

RQ2: Would there be differences in discursive representations of digital artifacts associated with an EFL classroom in primary school between the group of participants and the control group?

Further, this article is structured as follows. First, I provide a review of recent research publications that focus on digital artifacts in EFL contexts. Thereafter, I outline digital practices in EFL settings in Norway. Afterwards, the present study is introduced and discussed in conjunction with the major findings and their interpretation. Finally, the article is concluded with the summary of the findings and their linguo-didactic implications.

2. Literature review

There is a growing body of recent studies that seek to discover how digital artifacts are used in EFL/ESL instructional contexts (Aloraini, 2018; Cardoso, 2018; García-Pastor, 2020; Irwin, 2019; Kessler, 2013; Kusumaningputri & Widodo, 2018; Kustini et al., 2020; Norton, 2019; Shuang & Zhang, 2020; Thoms et al., 2018). These studies are characterised by several research foci that elucidate the issue of digital artifacts from the vantage points of i) EFL/ESL teachers (Cardoso, 2018; Thoms et al., 2018), ii) EFL/ESL students (Aloraini, 2018; García-Pastor, 2020; Irwin, 2019; Kusumaningputri & Widodo, 2018; Norton, 2019; Shuang & Zhang, 2020), and iii) EFL/ESL researchers (Kessler, 2013; Kustini et al., 2020).

The research focus on digital artifacts from the vantage point of EFL/ESL teachers is central in the studies conducted by Cardoso (2018), and Thoms et al. (2018), who develop this focus in relation to a) the use of digital artifacts as an open-access teaching resource by ESL instructors in the USA (Thoms et al., 2018) and b) the assessment of the role of digital artifacts and digital technology by EFL secondary school teachers in Portugal (Cardoso, 2018). By means of conducting a survey, Thoms et al. (2018) have found that the majority of American ESL teachers make use of such digital artifacts as YouTube videos in order to provide culturally appropriate instructional content. Specifically, they employ digital images and video lectures in order to facilitate both in-mural and extra-mural teaching, clarify examples and garner illustrative material. However, the use of the interactive digital games, digital simulations, and PowerPoint slides appears to be less popular among the ESL teachers in that study (Thoms et al., 2018).

In the same manner, Cardoso (2018) aims to discover how EFL teachers assess the role of digital artifacts and digital technology in secondary schools in Portugal. The results of the survey indicate that the EFL teachers in the study (Cardoso, 2018, p. 13) appear to use such digital artifacts as digital textbooks and electronic games. In addition, Cardoso (2018) has established that whilst digital technology is regarded as an intrinsic part of Portuguese EFL teachers' professional practice, it remains unclear whether digital artifacts are used by the teachers in order to aid innovative teaching or substitute innovation for traditional teaching methods that are interspersed with digital artifacts.

The research focus on the use of digital artifacts from the vantage point of EFL students is present in the studies by Aloraini (2018), García-Pastor (2020), Irwin (2019), Kusumaningputri and Widodo (2018), Norton (2019), and Shuang and Zhang (2020). These studies are organised around the following research themes, i.e. a) the use of digital artifacts in storytelling in an EFL classroom (García-Pastor, 2020; Irwin, 2019); b) the use of Instagram as a digital artifact in the EFL teaching and learning (Aloraini, 2018; Norton, 2019); c) the use of digital photography in teaching and learning intercultural communication in EFL settings (Kusumaningputri & Widodo, 2018); and d) the collection and storage of digital artifacts by EFL students (Shuang & Zhang, 2020).

The study conducted by García-Pastor (2020) aims at providing insight into the relationship between the use of digital artifacts in storytelling and an EFL student's identity in EFL contexts in Spain. García-Pastor (2020) has found that Spanish L1 EFL learners prioritise a combination of privacy and identity revelation in digital storytelling in English. García-Pastor (2020) argues that digital artifacts in storytelling are used by the EFL learners to construct their identities and share them with the audience. García-Pastor (2020) suggests that digital storytelling enables EFL learners to have a voice that provides them with more adequate opportunities for the EFL learning process. Likewise, Irwin (2019) has established that digital storytelling is associated with EFL students' personality traits. In particular, Irwin (2019) has discovered that digital storytelling seems to affect such personality traits as collaborative and consensus building skills. Irwin (2019) interprets these findings in light of the importance of EFL students' preparedness to collaborate when completing complex tasks.

Seen from the vantage point of an EFL learner, Aloraini (2018) and Norton (2019) shed light on how digital artifacts, in particular Instagram, are used in EFL university settings in Saudi Arabia and Japan, respectively. Aloraini (2018) has discovered that the use of Instagram in an EFL lesson leads to positive gains in Arabic L1 EFL students' vocabulary development. Similar findings are reported by Norton (2019), who investigates how Japanese L1 EFL students utilise Instagram in their EFL studies. Norton (2019) indicates that Instagram is a valuable digital artifact that fosters EFL students' engagement in the process of learning English. Whereas Aloraini (2018) and Norton (2019) examine the use of Instagram, the study by Kusumaningputri and Widodo (2018) illuminates how digital photographs are employed in an EFL classroom in order to mediate

intercultural communication in Indonesian EFL settings. Kusumaningputri and Widodo (2018) indicate that digital photography seems to enhance EFL students' cultural awareness. Specifically, it is inferred from their study that using digital photographs in intercultural tasks promotes EFL students' intercultural awareness of their own Indonesian culture and the culture of the English-speaking countries.

Shuang and Zhang (2020) explore how digital artifacts are treated by Chinese L1 EFL university students in order to facilitate the process of extramural learning of English. Shuang and Zhang (2020) refer to this process as "digital curation", i.e. a form of learning practices that involves digital data collection, preservation and management. Shuang and Zhang (2020) have found that Chinese L1 EFL students build their own digital libraries that involve digital artifacts that, in their opinion, help them to learn English more efficiently. However, it has been established that the students' digital libraries are disorganised, vastly heterogeneous, and inefficient.

The research focus that illuminates the issue of digital artifacts from the vantage point of EFL/ESL researchers is present in the studies carried out by Kessler (2013), and Kustini et al. (2020), who appear to provide meta-analyses of the current state-of-the-art publications associated with digital artifacts in EFL contexts. In particular, Kessler (2013) explores pedagogical potential afforded by digital technology in general and digital artifacts in particular. Whereas Kessler (2013) argues that digital technology can enhance the EFL/ESL teaching and learning, he contends that "the greatest challenge for many English teachers today is managing to sort through the wealth of resources to identify those that are most useful for their own teaching contexts" (Kessler, 2013, p. 617). By emphasising that digital artifacts should be incorporated into EFL instructional settings, Kessler (2013) suggests that the use of digital artifacts by EFL teachers promotes learners' engagement and awareness of the benefits of various forms of literacy, inclusive of digital literacy. In a similar fashion to Kessler (2013), the study by Kustini et al. (2020) sets out to provide an overview of digital technology and digital artifacts in conjunction with EFL pedagogy. In particular, Kustini et al. (2020) critically interpret empirical research on digital technology and digital artifacts in EFL contexts that was published in peer-reviewed channels within the period from 2014 to 2019. Kustini et al. (2020) have identified several research themes that, presumably, characterise the current agenda in investigating digital artifacts in an EFL classroom. These themes are associated with motivation and engagement, improvement of the English language skills, facilitation of critical literacy skills, and challenges posed by digital artifacts to EFL teachers (Kustini et al., 2020).

It is evident from the literature review that the issue of digital artifacts in relation to EFL teaching and learning is amply represented from the vantage points of EFL teachers and students. However, there are insufficient studies that specifically address how digital artifacts are represented by pre-service EFL teachers (Tondeur, 2018). Moreover, relatively little is known about discursive representations of digital artifacts in academic writing by pre-service primary school teachers of English (Røkenes & Krumsvik, 2016). The novelty of the study further presented in the article consists in addressing how digital artifacts are

represented in academic writing produced by the participants, who are pre-service primary school teachers of English in Norway. Prior to proceeding to the study, however, it appears logical to familiarise the reader with an outline of digital practices in Norwegian EFL settings.

3. Digital practices in Norwegian EFL settings

Digital practices in EFL settings are well-established in Norway (Røkenes & Krumsvik, 2016) owing to the substantial presence of digital technology both at school and at home (Ørevik, 2018). Usually, Norwegian schools are provided with high-speed Internet, laptops, tablets, and smart boards (Røkenes, 2016: 18). A typical EFL classroom in Norway is nowadays associated with the use of digital artifacts, for instance audio and video files, images and written texts (Ørevik, 2018: 238). In this regard, it should be noted that students and teachers alike are expected to encounter digital artifacts in an EFL classroom from Year 1 at primary school until graduation from upper secondary school (Brevik & Rindal, 2020; Røkenes & Krumsvik, 2016).

Given that digital artifacts are integral in instructional settings in Norway, digital competence is regarded as a basic skill in the compulsory school system and in teacher education (From, 2017, p. 45). Following the EU recommendations, digital competence has the same status as other basic skills, such as writing, reading, numeracy, and speaking (Blikstad-Balas, 2012; Røkenes & Krumsvik, 2016). Blikstad-Balas (2012, p. 81) notes that the inclusion of digital competence as the fifth basic skill foregrounds its importance alongside the other four basic skills (i.e., writing, reading, numeracy, and speaking). It is posited that digital skills in Norwegian EFL settings “focus on two main areas, where one can be summed up as critical awareness in the retrieval and use of digital text sources, and the other as the ability to create texts in various digital formats.” (Ørevik, 2018, p. 245)

The aforementioned centrality of digital skills and digital artifacts contributes to the fostering of digital competence by Norwegian EFL teachers (Rindal & Brevik, 2019). It is a commonly accepted argument that EFL teachers’ digital competence is crucial due to the need to address the pervasive digitalisation of the Norwegian EFL landscape and, more importantly, to meet the national curriculum competence aims associated with digitalisation and digital skills (Rindal & Brevik, 2019). In this regard, it is argued that “the central role of English as lingua franca on the Internet suggests that the English school subject is particularly relevant for the development of students’ digital competence” (Rindal & Brevik, 2019, p. 430) in Norwegian EFL settings. The argument is further supported by Røkenes (2019), who indicates that digital competence is considered a part of Norwegian EFL teachers’ and teacher educators’ professional competence, given that digital artifacts form an important aspect of an EFL teacher’s work (Røkenes, 2019, p. 164). Subsequently, an extensive use of digital artifacts by Norwegian EFL teachers calls for a didactic reflection upon what

kinds of digital artifacts they use in and outside of an EFL classroom (Rindal & Brevik, 2019; Røkenes, 2019).

Another aspect of the current didactic thought in Norway involves a consideration of how pre-service EFL teachers employ digital artifacts in their practicum, casual and part-time teaching, as well as in relation to their future fulltime teaching at school (Røkenes, 2019). It is argued in the didactic research literature that since digital competence is emphasised as a central part of pre-service EFL teachers' subject-specific competence, Norwegian teacher education needs to continuously develop its curriculum and practices in conjunction with the digitalisation of Norwegian society and the general advancement of digital technology in teaching (Instefjord, 2018, p. 9). However, as I previously mentioned in the article, little is known about the use of digital artifacts by Norwegian pre-service EFL teachers (Blikstad-Balas, 2012) and, currently, there is no published research associated with discursive representations of digital artifacts in academic writing produced by pre-service EFL teachers. In the following section of the article, I introduce and discuss a study that seeks to address this issue.

4. The Present Study: Its Context and Specific Research Aims

The study is contextualised within a university course in EFL didactics at a regional university in Norway. The course in EFL didactics is open for enrolment to pre-service EFL teachers and non-teacher EFL students. The course provides an overview of different didactic approaches, methods and principles of EFL teaching and learning in primary school that are based upon the course book *English Teaching Strategies*, written by Drew and Sørheim (2016), that includes such topics as, for instance, "Assessment and the European Language Portfolio", "Forms of Assessment", "Teaching Writing Skills", "Teaching Oral Skills", "Information and Communication Technology in Teaching English", and "Integrating Oral and Written Language".

In terms of the course content, it should be emphasised that the course addresses the teaching and learning of English in Norwegian primary schools from Year 1 to Year 7, or grade 1 to grade 7 in USA terminology. This specific focus is in harmony with the university programme that is commonly referred to in Norwegian as *grunnskolelærerutdanning for trinn 1-7* (in English: Primary School Teacher Education for Years 1 – 7). Typically, the pre-service teachers who take this course will teach English to young learners at a range of primary schools in Norway. However, the course in EFL didactics is also open for enrolment to those students, who take the so-called *årsstudiet i engelsk* (English: a Year Course in English). The Year Course in English is an autonomous course that lasts for two semesters (i.e., one academic year, hence the name of the course). It is comprised of such modules as Functional Grammar of English, English Phonetics, English Literature, and Anglo-Saxon Civilization. Usually, the Year Course in English is taken by the students, who will not act as teachers later on. It should be reiterated that the group of participants in the present study is comprised of pre-service

EFL teachers who will teach English in the future, whilst the control group consists of the non-teacher students enrolled in the Year Course in English. As previously mentioned, all participants and controls are enrolled in the course in EFL didactics.

The course in EFL didactics involves two obligatory written assignments. Specifically, two argumentative essays in EFL didactics are expected to be written in academic English and referenced in APA style by the end of the semester. During the course in EFL didactics, the students are explicitly taught the principles of argumentative essay writing, the structure of an argumentative essay, and genre-appropriate linguistic means that pertain to the genre of academic writing in English. Each student is expected to submit two argumentative essays on the topics of their choice in EFL didactics. These essays are written in two rounds of essay writing. First, Essay 1 is written in the middle of the semester. It is followed by Essay 2 that is written by the end of the semester. Each essay is expected to be approximately 1200 words in length. As previously mentioned, the essays are requested to be written on the topics that are associated with EFL didactics that specifically address the teaching and learning of English in primary school settings in Norway.

Based upon the research questions that I presented in the introductory part of this article, the specific aims of the study are formulated as follows:

- i. to identify and analyse discursive representations of digital artifacts in the corpus of argumentative essays written by the participants and their controls;
- ii. to compare discursive representations of digital artifacts in the argumentative essays written by the participants and controls.

4.1. Participants

In total, the study involves 10 participants (8 females, 2 males, mean age = 24.0 y.o., standard deviation = 9.2), who are matched with 10 respective controls (8 females, 2 males, mean age = 26.1 y.o., standard deviation = 6.7). The participants and their controls are enrolled in the course in EFL didactics at a regional university in Norway. There are no native speakers of English amongst the participants and their controls. Whereas all participants have worked at primary school as relief teachers and/or casual teachers, the controls report that they have never worked at school. All participants and their respective controls signed the consent form allowing the author of the article to use their argumentative essays for scientific purposes. To ensure confidentiality, the real names of the participants were coded as P1, P2, ..., and P10 (i.e., the Participant and the number). An identical procedure is applied to the controls, whose real names are coded as C1, C2, ..., and C10, respectively.

4.2. Corpus

The corpus of the present study consists of 52 474 words in total. It is comprised of Essays 1 and Essays 2 written by the participants and their controls. The descriptive statistics of the corpus are computed by means of using the program Statistical Package for the Social Sciences, or SPSS (IBM 2011). The descriptive statistics of the corpus including means (M) and standard deviations (SD) are given in Table 1.

Table 1: The Descriptive Statistics of the Corpus

N	Tasks	Participants	Controls
1	Essay 1	Total N words = 13 324 M words = 1322 SD = 116	Total N words = 10 263 M word = 1291 SD = 120
2	Essay 2	Total N words = 12 219 M words = 1222 SD = 247	Total N words = 12 846 M words = 1 386 SD = 381

4.3 Procedure and method

As far as the procedure in the study is concerned, it should be noted that both essay rounds, i.e. E1 and E2, are carried out by the participants and controls individually at home within the time frame of one semester. As I previously mentioned, the first round of essays (E1) is written in the middle of the semester, whereas the second round of essays (E2) is completed at the end of the semester. The participants and controls are reminded that the topics of their E1 and E2 essays should be within the framework of EFL didactics and associated with Norwegian primary school contexts. In addition, the participants and controls are reminded that the topics for the first round of essays and the second round, respectively, should not be identical. For instance, if the topic is associated with EFL listening and writing in E1, this topic should not be repeated in E2 and the participants/controls are advised to choose other topics than listening and writing in their E2. The participants and the controls are made aware of the fact that both E1 and E2 are grade-bearing. They are submitted by the participants and controls on the university examination platform *Wiseflow* at the end of the semester in order to be assessed and graded.

Methodologically, the present study is guided by the qualitative methodology of discursive representation analysis formulated by KhosraviNik et al. (2012). According to their methodological premises, the corpus of essays is manually examined for the presence of nomination, argumentation, and attribution associated with digital artifacts in the EFL teaching and learning in primary school settings in Norway. Following KhosraviNik et al. (2012) the presence of nomination is identified by means of establishing how digital artifacts are named and referred to linguistically in the corpus, whilst attribution is investigated by

identifying characteristics, qualities, and features that are attributed to digital artifacts. Finally, argumentation is examined by means of establishing what arguments are employed by the participants and controls to represent digital artifacts in their argumentative essays on EFL teaching and learning in primary school settings in Norway.

4.4 Results and discussion

The results of the corpus analysis have revealed that 70% of all participants and 60% of the control group make explicit linguistic references to digital artifacts in their E1 essays, whereas 60% of the participants and 50% of controls make references to digital artifacts in the E2 essays. Following the methodological premises (see subsection 4.3 above) that are postulated by KhosraviNik et al. (2012), the analysis of the corpus has revealed nine nominations which are associated with digital artifacts that, according to the participants and their controls, are involved in the EFL teaching and learning in Norwegian primary school contexts. The nominations of digital artifacts are 1) *Digital Audiobooks*, 2) *Digital Films*, 3) *Digital Texts*, 4) *Digital Pictures*, 5) *Digital Folders*, 6) *Online Dictionaries*, 7) *Chatting and Messaging on the Internet*, 8) *Instagram*, and 9) *Videoconferencing via Skype*. The results indicate that these nominations differ in terms of their distribution amongst the participants and controls, as well as in terms of the attribution and argumentation that are associated with them. These findings are outlined in Table 2 below, that summarises the aforementioned nominations of digital artifacts in conjunction with their attribution (e.g., positive and/or negative) and argumentation, which points to the argument a digital artifact is associated with. In Table 2, the nominations, attributions, and argumentations of digital artifacts are given as the percentage of participants and their controls, who explicitly manifest them in the first and second rounds of essay writing.

Table 2: *Discursive Representation of Digital Artifacts: Nomination, Argumentation and Attribution in the First and Second Rounds of Essays*

N	Digital Artifacts: Nomination, Attribution, Argumentation	P E1	C E1	P E2	C E2
1	Nomination: <i>Digital Audiobooks</i> Attribution: <i>Positive</i> Argumentation: <i>Teaching Listening</i>	30% 30% 30%	20% 20% 20%	10% 10% 10%	- - -
2	Nomination: <i>Digital Films</i> Attribution: <i>Positive</i> Argumentation: <i>Teaching Culture;</i> <i>Teaching Listening and Speaking</i>	30% 30% 10% 20%	- - - -	20% 20% 10% 10%	20% 20% - 20%
3	Nomination: <i>Digital Texts</i> Attribution: <i>Positive</i> Argumentation: <i>Group Work;</i> <i>Teaching Reading;</i> <i>Individual Work</i> <i>Teaching Writing Skills</i>	30% 30% 10% 10% 10% -	10% 10% - 10% - -	20% 20% - 10% - 10%	- - - - - -

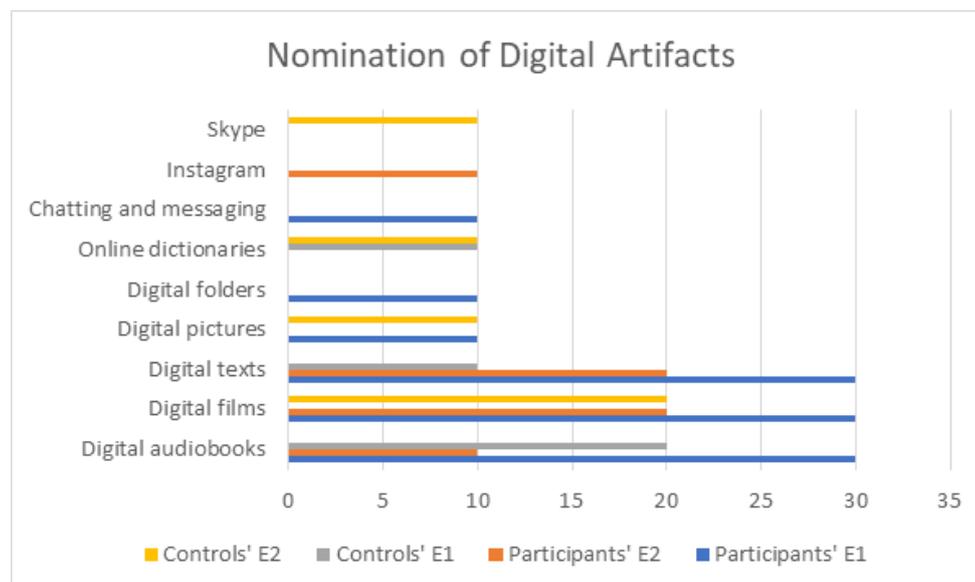
4	Nomination: <i>Digital Pictures</i>	10%	-	-	10%
	Attribution: <i>Positive</i>	10%	-	-	10%
	Argumentation: <i>Group Work</i>	10%	-	-	10%
5	Nomination: <i>Digital Folders</i>	10%	-	-	-
	Attribution: <i>Positive</i>	10%	-	-	-
	Argumentation: <i>Individual Work</i>	10%	-	-	-
6	Nomination: <i>Online Dictionaries</i>	-	10%		10%
	Attribution: <i>Positive</i>	-	10%		10%
	Argumentation: <i>Group Work;</i>	-	10%		-
	<i>Teaching Vocabulary</i>	-	-		10%
7	Nomination: <i>Chatting and messaging on the Internet</i>	10%	-	-	-
	Attribution: <i>Negative</i>	10%	-	-	-
	Argumentation: <i>Teaching Writing Skills</i>	10%	-	-	-
8	Nomination: <i>Instagram</i>	-	-	10%	-
	Attribution: <i>Positive</i>	-	-	10%	-
	Argumentation: <i>Teaching Reading</i>	-	-	10%	-
9	Nomination: <i>Videoconferencing via Skype</i>	-	-	-	10%
	Attribution: <i>Positive</i>	-	-	-	10%
	Argumentation: <i>Teaching Speaking</i>	-	-	-	10%

Explanation of the abbreviations: P E1 = the first round of essays written by the participants; C E1 = the first round of essays written by the controls; P E2 = the second round of essays written by the participants; C E2 = the second round of essays written by the controls

Further in the article, I will discuss nomination, attribution, and argumentation that are associated with the discursive representations of digital artifacts. To reiterate, in the present study, nomination is regarded in the light of how digital artifacts are named and referred to linguistically in the corpus, attribution is seen as the characteristics, qualities, and features that are attributed to digital artifacts, and argumentation is operationalised as the argument and/or arguments in the participants' and controls' essays in which digital artifacts are discursively represented.

4.4.1 Nomination

As previously mentioned, there are nine nominations of digital artifacts in the corpus (see Table 2). However, there are only three nominations of digital artifacts that are used by the group of participants both in E1 and E2, for instance, *Digital Audiobooks*, *Digital Films*, and *Digital Texts*. As evident from Table 2, there are no nominations that are present both in the E1 and E2 essays written by the participants and controls. These findings are illustrated by Figure 1 below.

Figure 1: *Nomination of Digital Artifacts in E1 and E2*

It follows from Figure 1 and Table 2 that the cases of nomination of digital artifacts in the participants' essays are represented, predominantly, by *Digital Audiobooks*, *Digital Films*, and *Digital Texts* (they are referred to by 30% of all participants in E1), whereas the nominations of *Digital Pictures*, *Digital Folders* and *Chatting and Messaging on the Internet* are less numerous (for instance, each of those nominations are referred to by 10% of the participants, mostly in E1). The presence of *Digital Audiobooks* in the participants' E1 and E2 is in line with the findings reported by Cardoso (2018), who has found that the in-service EFL teachers' reference to digital textbooks constitutes an intrinsic part of EFL classroom practices. In this corpus, the nomination *Digital Audiobooks* is embedded, mostly, in the narrative that illustrates their use in the teaching of listening skills.

The nomination of digital artifacts via the reference to *Digital Films* in the present corpus is in harmony with the prior study by Thoms et al. (2018), who report that this digital artifact is widely used by the majority of in-service teachers of English in the USA. In contrast to *Digital Films* and *Digital Audiobooks*, whose nomination and reference are in line with the previous literature, the nomination *Digital Texts* in the present corpus does not seem to correlate with the prior studies. Specifically, *Digital Texts* could be ascribed either to group and individual work or teaching reading in the E1 and E2 essays written by the participants, whilst in the previous literature it is reported to be used in conjunction with storytelling in an EFL classroom (García-Pastor, 2020; Irwin, 2019). Given the novelty of this finding and the current lack of prior studies that focus on *Digital Texts* and storytelling in Norwegian EFL contexts, it seems pertinent to suggest that this aspect merits a separate investigation that will be, hopefully, carried out in the future studies.

As far as the alignment of the present results with the previous research literature is concerned, it should be noted that the findings in this study are

in harmony with Aloraini (2018) and Norton (2019), respectively, who have established that *Instagram* is a digital artifact that is valued by EFL students as a useful and authentic resource in EFL learning. In addition, the results of this study provide indirect support to Kusumaningputri and Widodo (2018), who have discovered a positive effect of digital photography in EFL teaching and learning. Furthermore, the nomination *Digital Folders* is in concert with the study conducted by Shuang and Zhang (2020), where the systematisation and storage of digital artifacts by EFL students are described.

Predominantly, the participants nominate digital artifacts by means of noun phrases, for instance noun phrases (NP) with adjectives as premodifiers and countable nouns as the heads of the following NPs: *Digital Audiobooks*, *Digital Films*, *Digital Texts*, *Digital Pictures*, *Digital Folders*, and *Online Dictionaries*. In addition, there is one nomination that is manifested by a proper noun, e.g. *Instagram*. The rest of the nominations is expressed by non-finite clauses, such as *Chatting and Messaging on the Internet* and *Videoconferencing via Skype*. Notably, the aforementioned non-finite clauses include proper nouns, i.e. *the Internet* and *Skype*, respectively. It could be argued that the prevalence of nouns in the nominations of digital artifacts in the present corpus is indicative of the participants' and controls' reference to digital artifacts as a countable phenomenon that is associated with a digital product, which could be seen, read, listened to, manipulated, stored, made use of, and communicated with. The general tendency to nominate digital artifacts by means of an NP with an adjective as the premodifier could be taken to suggest that the participants and their controls might imply a dichotomy that consists of a digital artifact, for instance a digital audiobook, and its physical counterpart. This dichotomy is indicative of the duality of the EFL teaching and learning contexts in Norway that, arguably, combines a physical printed dictionary and an online dictionary, an audiobook on a CD and an audiobook as a digital file etc. Arguably, this state of affairs is reflective of the realities of an EFL classroom in Norway, that is characterised by a substantial presence of digitalisation and the associated digital artifacts on the one hand and the traditional pre-digital teaching aids that seem to co-exist in the current EFL instructional settings.

4.4.2 Attribution

As previously mentioned, the notion of discursive representation involves nomination, attribution, and argumentation. The analysis of the participants' and controls' essays indicates that the attribution of the digital artifacts that are referred to in the corpus is positive in general. In particular, the positive attribution is present in the participants' and controls' representations of such digital artifacts as *Digital Audiobooks*, *Digital Films*, *Digital Texts*, *Digital Pictures*, *Digital Folders*, *Online Dictionaries*, *Instagram*, and *Videoconferencing via Skype*.

The positive attribution of digital artifacts is, perhaps, not surprising, given that digital technology coupled with a pervasive Internet presence have secured an inalienable status of being intrinsic to the instructional landscape in Norway.

These findings are in line with the studies by Aloraini (2018) and Norton (2019), who reveal that EFL learners express their positive attitudes to the use of digital artifacts (e.g., Instagram) in the process of EFL learning. Similarly, the present findings seem to provide support to Kessler (2013), who notes a positive effect of digital technology and digital artifacts in the EFL teaching and learning. In addition, the positive attribution of digital artifacts in this study seems to be in harmony with the research publication by Kustini et al. (2020), in which digital technology and digital artifacts are argued to exert positive influence upon an EFL learner's motivation, engagement, and English language skills.

Whereas the general tonality of the attribution of digital artifacts is positive in this study, it should be noted that some participants (10%) express the negative attribution in conjunction with the nomination *Chatting and Messaging on the Internet*. The negative attribution is embedded in the argument of using *Chatting and Messaging on the Internet* in teaching writing. The participant argues that the use of chatting and/or messaging on the Internet in English would not lead to positive gains in teaching writing in English to young EFL learners, since they would not use grammatically and idiomatically correct language when writing online.

Notably, the negative attribution of digital artifacts is absent in the controls' essays. This finding should be analysed in conjunction with the second research question in the study, which seeks to uncover potential differences in discursive representations of digital artifacts between the groups of participants and controls. To reiterate, the controls' attribution of digital artifacts is positive. Whilst negative discursive voices concerning the use of digital artifacts in an EFL classroom are marginal amongst the participants, nevertheless, they are indicative of the differences between the groups of participants and controls. Presumably, the negative attribution of digital artifacts by the participants, even only by one of them (10% of the group), could signify the participants' critical assessment concerning the use of digital technology and digital artifacts in the actual EFL teaching process. Arguably, this criticism is associated with the participants' experience of part-time teaching at primary school, and/or school practicum.

It should be observed that the differences between the groups of participants and controls are not limited to the attribution. For instance, the dissimilarity between these two groups is evident from the nomination of digital artifacts. In particular, whereas the participants refer to the nomination *Digital Folders*, the controls seem to refrain from this nomination. To illustrate this nomination, which is positively attributed by the participants, let us consider Excerpt (1) below, e.g.:

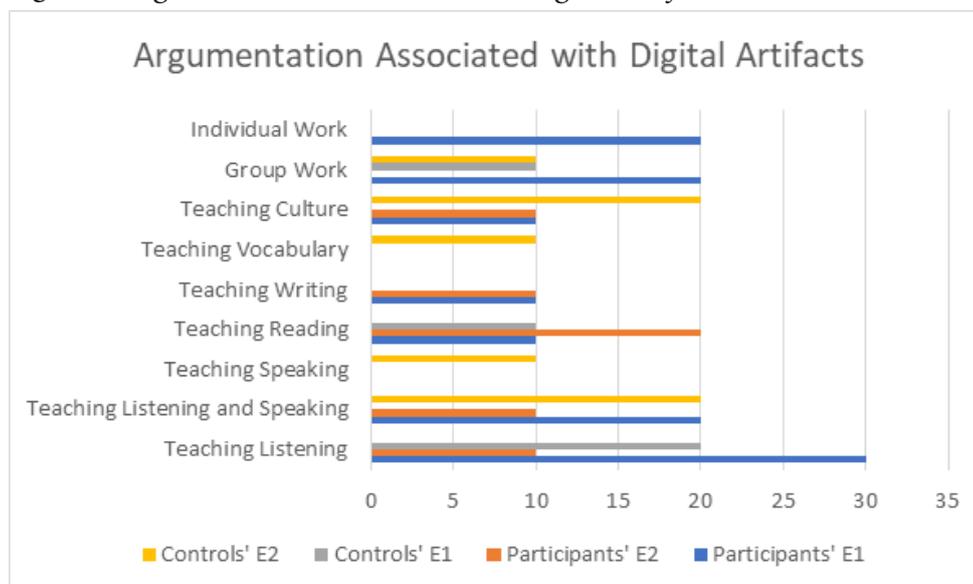
- (1) Folders are also popular since they are both a way of teaching and can be used as assessment. They may be either digital or on paper, and some use it instead of an exam. Digital folders could be used throughout the year. They represent what the students have learnt and it is also easy to give each student assignments which fit her/his level. (Participant P9)

In Excerpt (1), the participant presents a detailed, logical and well-structured argument concerning the positive gains associated with digital folders. Arguably, the participant's positive attribution of *Digital Folders* stems from a previous period of time which the participant spent at primary school either at practicum or teaching. The positive attribution is specific and indicative of the participant's direct exposure to an EFL classroom in Norway. In contrast to the participants' discursive representations of digital artifacts that are based upon realistic exposure to the EFL teaching and learning at primary school, the controls appear to refer to a number of digital artifacts that are absent in the participants' essays. Whereas the control's reference to *Videoconferencing via Skype* is embedded in the positive attribution, it lacks a realistic account of the application of Skype to the teaching of young EFL learners in an EFL classroom at primary school. Arguably, this observation emphasises the dissimilarities between the groups of participants and controls that stem from the presence of EFL teaching experience at primary school in the case of the participants.

4.4.3 Argumentation

Alongside attribution and nomination, argumentation is one of the characteristics of discursive representations of digital artifacts. As previously discussed in the article, argumentation is examined in this study by means of establishing what arguments are used to represent digital artifacts in the participants' and controls' essays. Judging from the results of the corpus analysis, there are several digital artifacts whose use corresponds to only one argumentation, for instance *Digital Audiobooks* is embedded exclusively in the argumentation *Teaching Listening* and not in any other argumentation. Similarly, *Digital Pictures* is associated only with the argumentation *Group Work*. Whereas *Videoconferencing via Skype* is found exclusively in the argumentation *Teaching Speaking*, *Digital Folders* has been identified in the argumentation *Individual Work* (see more examples of argumentation in Table 2). However, the digital artifact *Digital Films* is referred to in two different argumentations, such as *Teaching Culture* and *Teaching Listening and Speaking*, whilst *Digital Texts* is mentioned in four argumentations, e.g. *Group work*, *Teaching Reading*, *Individual Work*, and *Teaching Writing Skills*.

It is seen in Table 2 that the most frequent argumentation used by the participants in conjunction with reasoning about digital artifacts is *Teaching Listening* (30% in total in the participants' E1 essays). This argumentation is followed by *Teaching Listening and Speaking* (20% in total in the participants' E1 essays and 20% in total in the controls' E2 essays), *Teaching Reading* (20% in the participants' E2 essays), *Group Work* and *Individual Work* (each of these two argumentations is referred to by 20% of the participants in E1 essays). These findings are illustrated by Figure 2, where the percentage of participants in the first and second rounds of essays (E1 and E2) is plotted against the argumentation that is used in the essays.

Figure 2: *Argumentation Associated with Digital Artifacts*

It is evident from Figure 2 that the argumentations *Individual Work* and *Group Work* in conjunction with digital artifacts are more frequent in the participants' essays, especially in E1, in contrast to the control group. This finding could be explained by the participants' direct exposure to the EFL teaching and learning instructional contexts at primary school. In Norway, group work, i.e. the study in small groups of three to five EFL learners, is a widely spread practice (Kvalsund, 2000). For instance, it is quite common to organise the EFL class in several small groups, called *stasjon* in Norwegian (English: *station*), and provide each small group with a separate assignment. Such type of group work is introduced as early as Year 1 of primary school (Kvalsund, 2000). Given the participants' prior exposure to Norwegian instructional contexts at primary school, the occurrence of the argumentation *Group Work* does not appear fortuitous in the present corpus. In the broader context, however, this finding seems to be novel, since the literature (Aloraini, 2018; Cardoso, 2018; García-Pastor, 2020; Hsu et al., 2019) does not report previous studies that analyse digital artifacts in conjunction with group work in an EFL classroom.

5. Conclusions and linguo-didactic implications

This article presents and discusses a study that aims to shed light on discursive representations of digital artifacts by the participants, who are pre-service primary school teachers of English, and the control group, which is comprised of non-teacher EFL students. The participants and controls study EFL didactics within the framework of an EFL course at the same university. These two groups are gender-matched and similar in the age demographics (the participants' mean age = 24.0 y.o., standard deviation = 9.2; the controls' mean age = 26.1 y.o., standard deviation = 6.7). The similarity between them in terms of the demographics could be taken to assume that they belong to the so-called

generation of the digital natives (From, 2017; Kapranov, 2020), who have grown up with digital technology. Consequently, it could be assumed that the participants' and controls' argumentative essays would be reflective of their knowledge and awareness of digital competence and, in particular, digital artifacts. However, 30% of all participants and 40% of the controls make no references to digital artifacts in the first rounds of essays, while 40% of the participants and 50% of controls do not refer to digital artifacts in the second round of essays. Arguably, this finding is in contrast with the widely accepted and institutionalised expectations that an EFL teacher in Norway possesses a high level of digital literacy and develops cognisance of the digital artifacts in conjunction with the EFL teaching and learning in primary school. From a linguo-didactic perspective, the present finding should be regarded as an indication that pre-service EFL teachers should be continuously reminded of the importance of digital artifacts in an EFL classroom at primary school, given that digital literacy is regarded as a basic skill to be mastered by young EFL learners in Norway.

In addition, it appears pertinent to provide the following comment concerning the finding associated with the decrease in the nomination of digital artifacts in the teaching and learning of English from the first round of essays to the second round of essays. The decrease that is manifested in the second round of essays could be suggestive of the participants' (as well as the controls') less enthusiastic attitude towards the use and applicability of digital artifacts in the teaching and learning of English in Norwegian primary schools. This finding points out to the contention that some teachers, as well as pre-service teachers, do not seem to recognise digital technology as a valid medium of teaching and learning (Bader et al., 2021). In line with this contention, I concur with Bader et al. (2021, p. 29), who argue that pre-service teachers are not always aware of the benefits of digital artifacts in the teaching and learning process.

Another finding is associated with the attribution and nomination of digital artifacts in the participants' and controls' argumentative essays in EFL didactics. It follows from the results of the corpus analysis that discursive representations of digital artifacts are nominated by means of noun phrases with a positive attribution. The results of the analysis indicate that the positive attribution is present in the participants' and controls' discursive representations of the digital artifacts *Digital Audiobooks*, *Digital Films*, *Digital Texts*, *Digital Pictures*, *Digital Folders*, *Online Dictionaries*, *Instagram*, and *Videoconferencing via Skype*. From the vantage point of linguo-didactics, this finding could be taken to indicate that the participants and their controls share a positive attitude towards digital artifacts in an EFL classroom. This positive attitude should be taken into consideration and capitalised upon when teaching EFL didactics to future teachers of English.

Finally, one more major finding in this study involves discursive representations of digital artifacts associated with group work. The presence of discursive representations of digital artifacts in the argumentation that is related to group work is a novel finding which is reflective of the special emphasis on the teaching and learning of English in small groups in Norwegian primary schools.

From a linguo-didactic perspective, this finding is suggestive of the need to raise pre-service teachers' awareness of the importance of working in small groups in EFL instructional contexts in Norway.

Acknowledgements

The author wishes to acknowledge the participants and their controls, who took part in the study. The author is appreciative of the suggestions and advice provided by the two anonymous reviewers and the editor.

References

- Aloraini, N. (2018). Investigating Instagram as an EFL learning tool. *Arab World English Journal*, 4, 174-184.
- Bader, M., Iversen, S. H., & Burner, T. (2021). Students' perceptions and use of a new digital tool in teacher education. *Nordic Journal of Digital Literacy*, 16(01), 21-33.
- Bakhtin, M. M. (1979). *Estetica Slovesnogo Tvorchestva (The Aesthetics of Verbal Creativity)*. Iskusstvo.
- Blikstad-Balas, M. (2012). Digital literacy in upper secondary school-what do students use their laptops for during teacher instruction. *Nordic Journal of Digital Literacy*, 7(2), 81-96.
- Brevik, L. M., & Rindal, U. (2020). Language Use in the Classroom: Balancing Target Language Exposure with the Need for Other Languages. *TESOL Quarterly*, 54(4), 925-953.
- Cardoso, S. (2018). New Technologies, Multiple Literacies and Teaching English as a Foreign Language. *e-TEALS*, 8(1), 1-26.
- Drew, I., & Sørheim, B. (2016). *English teaching strategies: Methods for English teachers of 10 to 16-year-olds*. Samlaget.
- Dryzek, J. S., & Niemeyer, S. (2008). Discursive representation. *American political science review*, 481-493.
- From, J. (2017). Pedagogical Digital Competence--Between Values, Knowledge and Skills. *Higher Education Studies*, 7(2), 43-50.
- Garcia, A. (2020). Digital literacies in a wireless world. In: L. A. Lievrouw & B. D. Loader (Eds.), *Routledge Handbook of Digital Media and Communication* (pp. 143-153). New Routledge.
- García-Pastor, M. D. (2020). Digital storytelling and learners' dialogical construction of identity in EFL. In: Namir, F. (Ed.), *Digital storytelling in second and foreign language teaching* (pp. 1-20). Peter Lang.
- Gilster, P. (1997). *Digital Literacy*. John Wiley.
- Gür, B. F. (2002). Spatialisation of power/knowledge/discourse: Transformation of urban space through discursive representations in Sultanahmet, Istanbul. *Space and Culture*, 5(3), 237-252.
- Hennessy, S. (2011). The role of digital artefacts on the interactive whiteboard in supporting classroom dialogue. *Journal of computer assisted learning*, 27(6), 463-489.
- Hsu, H. P., Wenting, Z., & Hughes, J. E. (2019). Developing elementary students' digital literacy through augmented reality creation: Insights from a longitudinal analysis of questionnaires, interviews, and projects. *Journal of Educational Computing Research*, 57(6), 1400-1435.

- IBM. (2011). *IBM SPSS statistics for Windows, version 20.0*. New York: IBM Corp.
- Instefjord, E. J. (2018). Professional Digital Competence in Teacher Education: A mixed methods study of the emphasis on and integration of Professional Digital Competence in Teacher Education Programmes in Norway. Stavanger: University of Stavanger.
- Irwin, B. (2019). Exploring Student Collaboration Strategies through Digital Storytelling Films Created with Mobile Devices. In: R. Chartrand & E. Forsythe (Eds.), *AI and Machine Learning in Language Education* (pp. 33-42). JALT.
- Jones, P., Turney, A., Georgiou, H., & Nielsen, W. (2020). Assessing multimodal literacies in science: semiotic and practical insights from pre-service teacher education. *Language and Education*, 34(2), 153-172.
- Kapranov, O. (2020). English goes digital: Framing pre-service teachers' perceptions of a learning management system in their EFL studies. *ExELL: Explorations in English Language and Linguistics*, 8(1), 47-67.
- Kessler, G. (2013). Teaching ESL/EFL in a world of social media, mash-ups, and hyper-collaboration. *TESOL Journal*, 4(4), 615-632.
- KhosraviNik, M., Krzyzanowski, M., & Wodak, R. (2012). Dynamics of representation in discourse: Immigrants in the British press. In: M. Messer, R. Schroeder & R. Wodak (eds.), *Migrations: Interdisciplinary perspectives* (pp. 283-295). Springer.
- Kustini, S., Suherdi, D., & Musthafa, B. (2020, March). Moving from the Logic of the Page to the Logic of the Screen: A Review Research on Multimodal Pedagogy in EFL Classroom Contexts. In: *3rd International Conference on Language, Literature, Culture, and Education (ICOLLITE 2019)*, 160-165). Atlantis Press.
- Kusumaningputri, R., & Widodo, H. P. (2018). Promoting Indonesian university students' critical intercultural awareness in tertiary EAL classrooms: The use of digital photograph-mediated intercultural tasks. *System*, 72, 49-61.
- Kvalsund, R. (2000). The transition from primary to secondary level in smaller and larger rural schools in Norway: Comparing differences in context and social meaning. *International Journal of Educational Research*, 33(4), 401-423.
- Lauricella, A. R., Herdzina, J., & Robb, M. (2020). Early childhood educators' teaching of digital citizenship competencies. *Computers & Education*, 158, 103989.
- Lorenset, C. C., & Tumolo, C. H. S. (2019). Vocabulary Acquisition in English as a Foreign Language: Digital Gameplaying The Sims. *Revista Linguagem & Ensino*, 22(4), 1002-1019.
- Merriam-Webster Dictionary*. Artifact. <https://www.merriam-webster.com/dictionary/artifact>.
- Norton, P. (2019). Instagram as a Means of Promotion, Communication and Education. In: R. Chartrand & E. Forsythe (Eds.), *AI and Machine Learning in Language Education* (pp. 117-130). JALT.
- Ørevik, S. (2018). Digital technology in the English Classroom. In: A.-B. Fenner & A. S. Skulstad (Eds.), *Teaching English in the 21st Century* (pp. 237-256). Fagbokforlaget.
- Reyna, J., Hanham, J., & Meier, P. C. (2018). A framework for digital media literacies for teaching and learning in higher education. *E-learning and Digital Media*, 15(4), 176-190.
- Rindal, U., & Brevik, L.M. (2019). State of the art: English didactics in Norway. In: U. Rindal & L. M. Brevik (Eds.), *English Didactics in Norway* (pp. 418-440). Universitetsforlaget.

- Røkenes, F. M. (2019). PhD revisited: Preparing future teachers to teach with ICT. In: U. Rindal & L. M. Brevik (Eds.), *English Didactics in Norway* (pp. 162-182). Universitetsforlaget.
- Røkenes, F. M. (2016). *Preparing future teachers to teach with ICT: An investigation of digital competence development in ESL student teachers in a Norwegian teacher education program*. Trondheim: NTNU.
- Røkenes, F. M., & Krumsvik, R. J. (2016). Prepared to teach ESL with ICT? A study of digital competence in Norwegian teacher education. *Computers & Education*, 97, 1-20.
- Salmerón, L., Sampietro, A., & Delgado, P. (2020). Using Internet videos to learn about controversies: Evaluation and integration of multiple and multimodal documents by primary school students. *Computers & Education*, 148, 103796.
- Shuang, Z., & Zhang, J. (2020). Digital Curation of Online Resources among English Learners at Chinese Universities. *Beijing International Review of Education*, 2(3), 403-419.
- Thoms, J. J., Arshavskaya, E., & Poole, F. J. (2018). Open Educational Resources and ESL Education: Insights from US Educators. *TESL-EJ*, 22(2), 1-24.
- Tondeur, J. (2018). Enhancing future teachers' competencies for technology integration in education: Turning theory into practice. *Seminar. Net*, 14(2), 216-224.
- Viberg, O., Grönlund, Å., & Andersson, A. (2020). Integrating digital technology in mathematics education: a Swedish case study. *Interactive Learning Environments*, 1-12.
- Warschauer, M., & Grimes, D. (2007). Audience, authorship, and artifact: The emergent semiotics of Web 2.0. *Annual Review of Applied Linguistics*, 27, 1-23.

Recebido em: 16/12/2020

Aceito em: 26/04/2021