

EFFECTS OF IMPLEMENTING DIGITAL STORYTELLING ON THE ORAL PRODUCTION OF ENGLISH LEARNERS: A TASK-BASED STUDY

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- **ABSTRACT:** Considering the rapid change of technology nowadays and the possibilities of using new digital tools for building knowledge in different contexts, the interest of researchers and practitioners has grown considering how to best align digital technologies and education. Nonetheless, plenty of unanswered doubts remain regarding the more adequate ways in which technology and pedagogical activities can be integrated as a potential for learning, especially in second language (L2) contexts. Taking this into consideration, the present study aimed at investigating the effects of a task cycle (ELLIS, 2003) with digital storytelling on the oral production of L2 learners of English at a public university of Bahia. Oral data from fourteen participants were gathered in three moments – pre and post-tests – via *Whatsapp* and analysed considering complexity, accuracy, fluency and lexical density dimensions (SKEHAN, 2003). Results in general suggest an improvement in participants' L2 speech for some of the measures investigated, despite the short experimental time. Therefore, the potential of digital storytelling is discussed as an alternative tool for L2 enhancement in formal teaching and learning contexts, taking into account the need for further studies whose aim is to unveil and inform issues about the use of technologies in the language classroom.
- **KEYWORDS:** Digital technology. Digital Storytelling. Tasks. Oral production. Language learning and teaching. Classroom.

Introduction

It is well known that, in general terms, one of the goals of every second language¹ (L2) learner is to use language in a fluent, accurate and appropriate way in different real-world situations (ELLIS, 2003). However, such a task may be quite complex, even

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¹ In the present article, second language is used as a synonym of foreign language (FL), despite being aware of the differences between these two terms.

though some outdoors and language course advertisements may suggest otherwise. In L2 learning and teaching contexts, much effort on the part of the teacher has been put into compartmentalizing time in order to offer learners enough opportunities for the development of several competences in the target-language in an autonomous manner. Considering *L2 oral production* in special, the time available in the classroom has been one of the major obstacles so that such a skill may be adequately developed (APPEL; BORGES, 2011; WEISSHEIMER; CALDAS; MARQUES, 2018). Together with time shortage in the classroom, little attention has been given by teachers to this issue possibly due to the inherent complexities of oral production and its enhancement (WEISSHEIMER, 2007), among other aspects. Therefore, classroom time tends to be insufficient and it takes a lot of work for an L2 to be fully developed, especially when the aim is reaching higher proficiency levels.

This way, additional opportunities for L2 oral production seem to be extremely necessary to favor its development. This is because, following a cognitive language processing orientation, speaking is understood as a complex cognitive skill (LEVELT, 1989), therefore requiring attention and practice to be fully developed. Weissheimer, Caldas and Marques (2018) suggest, for instance, the use of oral tasks through WhatsApp to promote moments of practice and enhance speaking in the L2 classroom. In the study, which involved the participation of 27 English learners (basic level) from a private school, an improvement for learners' oral production was observed, regarding increased grammar precision (accuracy),² after two months of activities and a total of four audio recorded tasks produced. Taking this into consideration, studies such as Weissheimer *et al.* (2018)'s may encourage other proposals in language learning contexts for they stimulate experiences of practice and effective L2 use, especially integrating pedagogical tasks and digital technologies,³ which are more and more present in our life.

Digital technology, in general terms, seems to be everywhere, being part of our daily duties in several environments and for different purposes (i.e., Smartphones, email, Moodle, Whatsapp, Instagram, Skype, YouTube, Spotify, among other examples). There is no dispute to its constant presence in our routines, be it for leisure, work or study reasons. Regarding education, for instance, the potential impact of certain Web 2.0 tools – such as blogs, wikis, social networking sites, video-making and video-sharing sites, to cite just a few – has been perceived as revolutionary by researchers due to the expanding number of educators and learners who have begun to experiment with them (WANG; VÁSQUEZ, 2012).

Considering L2 teaching and learning in special, digital technology has allowed learners to experience the learning process in different, more interactive and creative ways. The use of some of these communication devices (i.e., chats, forums and video or

² Accuracy, understood as the ability to avoid errors, was measured by number of errors per 100 words (WEISSHEIMER; CALDAS; MARQUES, 2018).

³ Digital technology is here understood as a synonym of information and communication technology (ICT), following Evans (2009). In addition, it is also related to the term 'digital media' which refers for instance to elements such as the internet, cell phones/smartphones, computer games, interactive television, among others (BUCKINGHAM, 2007).

teleconferences, among others), amplifies the possibility of integrating the four L2 skills (speaking, listening, reading and writing) what allows their enhancement. Moreover, opportunities for more authentic and meaningful L2 use may also be amplified this way (TUMOLO, 2006, 2015). Nevertheless, several questions on how to incorporate these new technologies with tasks for L2 development still remain unanswered (GONZÁLEZ-LLORET; ORTEGA, 2014), especially considering the need for such an integration (task and tech) to be a productive one so as to inform both areas of enquiry – task-based language teaching [TBLT] (ELLIS, 2003; VAN DEN BRANDEN; BYGATE; NORRIS, 2009) and computer assisted language learning [CALL] (CHAPELLE, 2009).

Thus, the implementation of tasks with digital storytelling (DST), in order to optimize oral production in the language classroom, may serve as a potential alternative to fill such a gap – and this is what the present study aimed to fulfill. In other words, the investigation aimed to answer the following research question: *Is there a change in participants' L2 oral production as a byproduct of the digital storytelling task cycle, considering complexity, accuracy, fluency and lexical density?* Taking into account what has been presented, the following section discusses some of the study's main constructs, theoretical aspects and relevant investigations regarding L2 oral production, the task-based approach and digital storytelling, since these were the elements guiding the research proposal just reported.

Theoretical background

One of the greatest challenges for many language learners seems to be, in general terms, to develop L2 speech, in special when aiming at a higher level of proficiency. According to Bergsleithner (2009, p. 114), L2 speaking is “one of the most difficult language skills to be developed in the classroom”, especially “when working with larger and/or quite heterogeneous groups”. This issue may be explained through a cognitive perspective: the act of producing language is understood as a complex cognitive skill (LEVELT, 1989). Such a skill requires practice⁴ in order to be fully developed, and it is through practice that a skilled behavior is able to evolve and change from a controlled to an automatic process (SCHMIDT, 1990). In this sense, practicing the language – using it in context, with a purpose, with greater emphasis on the meaning to be conveyed – is an essential movement in the process of learning an L2. This happens because, when producing language, the learner is impelled to notice language *gaps* (*noticing*; SCHMIDT, 1990) considering what he/she is able to say and what he/she wants to say, and to reflect about the language in use (SWAIN, 1993, 1995). These aspects are results

⁴ The term practice is here understood as being part of the information processing perspective, following Schmidt (1990) and Anderson (1995), among others, and not in the sense suggested by some SLA theories which see it as an opportunity to practice specific language rules through structural exercises or drills (as in Ellis (1994), for instance) (WEISSHEIMER, 2007).

of the Output Hypothesis, proposed by Swain (1993) and investigated not only in the area of second language acquisition (SLA) but also in TBLT⁵ research.

The teaching approach named TBLT follows a perspective which emphasizes a pedagogical practice which is *learner-centered*, fostering individualized instruction and opportunities to *learn by doing*, therefore making it possible for learners to develop autonomy (VAN DEN BRANDEN; BYGATE; NORRIS, 2009). Furthermore, TBLT has, as part of its foundation, the concept of *l'educacion integrale* (LONG, 2015), acknowledging the importance of educating the individual as a whole. Due to its solid theoretical grounds based on empirical research evidence in the area of cognitive psychology (information processing in special), the task-based approach aims, this way, to promote L2 learning through tasks which require language use in context (i.e., with tasks that resemble the real world outside the classroom), and whose primary focus is on meaning – though it guarantees a secondary place for a focus on form⁶ (LONG, 1991), that is, to focus on developing those formal aspects of the language which are also essential for the learning process (ELLIS, 2003). Despite being learner-centered, the teacher plays a fundamental role in TBLT, working not only as a mediator of the learning process, but also as a researcher, when designing and implementing tasks in the classroom, following the premises of the approach, reflecting upon it and, in this way, collaborating with the further advancement of TBLT as a consolidated research area in SLA (VAN DEN BRANDEN, 2016).

Tasks are classroom activities whose overall goal is to foster language learning. When engaged in a task – whose primary focus is always on meaning (BYGATE, 2015) –, learners are expected to *use* the language (being learned), in either oral or written form. Due to that, tasks may be easily associated with digital technologies, which are also part of L2 learners' real world. Hence, a possible connection to be made for the classroom is the use of digital stories (DS) – short and captivating stories in the form of a video, created in a multimodal manner, including images, music, written text and oral narration (CHRISTIANSEN; KOELZER, 2016).

Digital stories have been extensively investigated in the areas of Education and Language pedagogy (LAMBERT, 2007; LEE, 2014; ROBIN; MCNEIL, 2012; SADIK, 2008; SMEDA; DARICH; SHARDA, 2013). Generally, L2 research reveals that, when

⁵ In general, a great number of TBLT-oriented studies tends to analyse L2 production (oral or written) using these three main dimensions – complexity, accuracy, and fluency (or CAF) – despite the inexistence of a consensus in the area regarding the definition and operationalization of each dimension (see Craven (2017) and Housen and Kuiken (2009) about some characteristics and limitations of CAF). Recently, more and more studies have searched for ways to combine these 'traditional' measures with other measures, such as communicative adequacy, by Pallotti (2009), for instance (see Specht (2017) for a discussion on reasons to use the measure of adequacy to investigate L2 performance). This is an attempt, in a way, to bring a more holistic perspective into L2 oral production investigations in TBLT. Our piece of research, for instance, analysed learners oral productions making use of both CAF measures, adding still lexical density, and adequacy, following Pallotti (2009) and Specht (2017). More information on these elements is given in the Method section.

⁶ For Long, *focus on form* may assist learners to notice gaps (SCHMIDT, 1990, 2001) in the input which might not have been noticed otherwise. When noticing such gaps in one's speech, L2 oral production may be optimized, according to Swain (1993, 1995).

creating a DS, learners may extend knowledge of formal aspects of the language, in addition to developing other skills such as those related to digital skills, critical thinking, collaborative and interpersonal work, among others (NISHIOKA, 2016; YUSKEL; ROBIN; MCNEIL, 2011). Studies on DS specifically investigating L2 oral production have been predominantly qualitative in nature, reflecting in general learners' reports on whether there was a perceived improvement in speech performance after engaging in digital storytelling creation. Despite the importance of such results for us to better understand the potential of DS for language development, not much is yet known whether such a perception (students self-assessing their own speech) correlates with a solid change/improvement in L2 oral production, for instance. There is still a shortage of studies aiming to measure⁷ the effects of the use of DS on L2 oral production – looking into learners' oral recordings, for instance, and statistically analyzing speech dimension variables in different moments in time, before and after a DST intervention, for instance. No study in Brazil has conducted such an investigation up to now, to the best of our knowledge, and that justifies the present research, especially considering the fact that such an attempt may serve to shed light on the issues just raised, as well as to inform relevant pedagogical implications considering the Brazilian context. This being said, in the following paragraphs aspects related to how the study was organized and conducted will be explained.

Method

The present study, of a quantitative nature,⁸ aimed to investigate the effects of DS creation on learners' L2 oral production. In order to guide the investigation, the following research question was raised:

Is there change in L2 oral production as a byproduct of the digital storytelling task cycle, considering complexity, accuracy, fluency and lexical density?

In order to answer such question, information regarding the research participants, instruments and procedures for data collection and analysis will be presented as it follows.

⁷ The aim here is not to advocate this type of research is better than the other; on the contrary, it is well understood that both types – qualitative and quantitative perspectives – are essential and should be, whenever possible, complementarily used in the discussion of any linguistic phenomenon, considering that, this way, the researcher's view over the object being investigated may be amplified. And this is exactly why both perspectives (qualitative & quantitative) were used in our study, reported in this article, therefore integrating these two concepts to better discuss and analyse data.

⁸ As already mentioned, this article is a fragment of the doctorate dissertation of the first author, under supervision of the second author; therefore, general aspects regarding the quantitative data/part from the study will be here presented. Nonetheless, the study also analysed, qualitatively: a) the types of (meta)cognitive processes participants engaged in during the task cycle; and b) participants' perception regarding the experience of creating a DS in English, as a whole. Information on that can be found in Trevisol (2019).

Participants and research context

In the present research, 14 learners of English as a foreign language accepted to be participants – 7 men and 7 women, ages 18 to 50 years old –, all from the undergraduate English Teaching Program (Letras Língua Inglesa & Literaturas) from a public university in the state of Bahia, Brazil. Participants resided in towns located in the hinterland of the state. They were all from an intact class, being regularly enrolled in the components of *English - Intermediate I* and *Oral Production I* when data was collected. All of them accepted to be part of the study voluntarily.⁹ Regarding language proficiency, 7 participants were assessed as being basic level and 7 as intermediate.¹⁰ Instruments used and procedures for data collection and analysis will be presented next.

Instruments, data collection procedures and analysis

In order to operationalize the study, some instruments¹¹ were used for gathering data. These were: a) a pre-test for oral production, carried out before the task cycle began; b) a task cycle with digital storytelling and other classroom activities; c) an immediate post-test for oral production, carried out right after the task cycle was complete; and d) a delayed post-test for oral production, carried out one month after the DS experiment in English was concluded. All these instruments and tasks were applied during a three-week period: meetings were held twice a week, on Wednesday and Thursday evenings (4 hours each time), and a total of 6 classes (around 20 hours in class, approximately). Time was made available by the professors of the previously mentioned components (English Intermediate I and Oral Production I) so that the study could be conducted in November of 2017. All the activities regarding this piece of research were applied by the researcher, who had had no contact of any type with the participants before data gathering procedures commenced.

In addition to the instruments previously specified, participants also answered seven questionnaires whose data informed the qualitative part of the study, enabling, for instance, our understanding and discussion of the cognitive processes learners engaged in while executing each of the tasks in the cycle, as well as their perceptions regarding personal story creation, the use of digital technology inside and outside the English classroom, among other relevant aspects.¹²

⁹ This study was approved by the Brazilian Research Ethics Committee (Register 84509118.7.0000.0121).

¹⁰ Proficiency was assessed by seven raters, all experienced in the area of L2 teaching, during data collection.

¹¹ All the participants signed a Consent Form, accepting to freely take part in the study, before initiating any activity related to it.

¹² Considering the qualitative part of the study is out of the scope of this article, more information can be found in Trevisol (2019), Trevisol & D'Ely (2019) and Delatorre & Trevisol (2020). Also, a detailed appraisal of the DS questionnaire is given in Trevisol (2020).

Regarding the task cycle, the main activities were: 1) an initial oral recording in order to contextualize the theme of the DS – *my trajectory as a foreign language learner*; 2) the writing of the DS script following the given theme; 3) the organization of the DS *Storyboard*, with image and soundtrack selection; 4) the audio recording of the DS (oral narration) to be included in the video; 5) the completion of the DS, with final adjustments and synchronization of sound and image in video. Learners carried out all the tasks in the cycle in English. The cycle also included, among other activities, a workshop on how to use the software *Moviemaker* so participants were familiarized and able to use it for their DS creation, since most learners had had no experience in video-editing before.

Data from the three individual oral productions (OP) in English were gathered via WhatsApp using learners' own smartphones, in different moments in time (see instruments just mentioned in b, d, and e above). The OPs were short oral narratives produced individually (approximately 60 seconds), in English, right after a 10-minute non-guided planning time was given (without any help from the researcher). All OPs followed the same procedures. When planning, learners could take notes about what they would say afterwards, while recording their audios. However, after the planning time ended, the individual recording was done without their notes. The OPs and other activities of the cycle took place in a classroom the learners already used at university. The main theme for the OPs and DS was the same, being a familiar topic to all learners: it impelled them to reflect and *narrate their experiences as English learners*. Moreover, the DS was created in English and individually (each learner produced one video only) – these digital narratives were between 2 to 5 minutes long.

Moving now to the operationalization of the L2 speech dimensions in the study, after having collected and transcribed data in its totality, the OPs were assessed using the traditional measures followed by other task-based studies (SKEHAN, 2009b), which commonly consider these three dimensions: complexity, accuracy, fluency (here assessed using six different measures) and lexical density. In general, complexity was operationalized¹³ considering the number of subordinate clauses per AS-unit.¹⁴ Accuracy was operationalized by the number of errors per AS-unit – errors here understood as deviations from the language usage norms. Fluency¹⁵ was operationalized considering the following measures: a) *speed fluency*, assessed by the number of words per minute

¹³ In order to operationalize such measures, some technological resources were used in the data analysis phase, such as Microsoft Word (to organize documents, the oral transcriptions for instance), Microsoft Excell (to organize the numeric data into graphs, tables, using functions to calculate means), Audacity and Praat software (to verify speech time and calculate fluency measures), Text Analyzer (<https://www.online-utility.org/text/analyzer.jsp>) to calculate word frequency and measure lexical density), and, finally, the R software (for the statistical analyses). More information regarding the operational and analytical procedures can be found in Trevisol (2019).

¹⁴ AS-unit stands for *analysis of speech* unit – it is a more refined measure for investigations related to speech production. Proposed by Foster, Tonkyn and Wigglesworth (2000), the AS-unit has been extensively employed in recent studies on L2 oral production, such as Ahmadian, Tavakoli and Dastjerdi (2015), Norris and Ortega (2009), Révész, Ekiert and Torgersen (2014) and Specht (2017), among others.

¹⁵ Following Skehan (2003), fluency is generally understood as a dimension which is subdivided into speed fluency, breakdown fluency (e.g., pausing) and reformulations produced by the speaker.

in a given speech sample – of two types, pruned¹⁶ and unpruned; b) *breakdown fluency*, assessed by the number of pauses (of two types, filled and unfilled)¹⁷ per AS-unit, and by the percentage of unfilled pauses; e c) and *repair fluency*, assessed by calculating the number of self-repairs per AS-unit. At last, weighted lexical density was assessed considering the proportion of lexical items and their frequency. Data for the OPs were also assessed using descriptive statistics (e.g., means, standard deviations, minimum and maximum values, gain scores, among others) and inferential statistics (e.g., sample normality test, comparisons between the different moments of the experiment (e.g., Friedman test), among others).

It is also worth mentioning that, to those interested in developing studies considering the dimensions used in the present study – dimensions here just briefly described –, detailed information regarding each measure and their operationalization are presented in Trevisol (2019) in a more informative manner. Furthermore, all OP transcriptions are available in the appendices of Trevisol (2019) in order to illustrate these productions and to allow other researchers to access such data and better comprehend how the process of data organization and analysis was carried out.¹⁸ This way, it may serve as a facilitator to other studies about L2 oral production to be conducted in Brazil or abroad.

Results

At the end of the experiment, which culminated in the creation of an individual DS in English, it was noticed a positive change in the OPs of all L2 participants in at least one of the measures investigated. In other words, their English productions were better after the DS experiment, in general, when compared to their productions before the DS task cycle initiated – even though the difference, considering the before and after moments, was small in numbers.

In order to illustrate such changes in a simple manner, Table 1 shows the individual gain scores of each participant considering the two post-test moments. Such gains were considered in comparison to the initial moment of the experiment – the pre-test – which happened before the digital storytelling activities had initiated. The calculation was done by subtracting from the post-test value (post-test 1 or 2) the pre-test value, observing, therefore, the difference between the post and pre-test values. In Table 1, the

¹⁶ In the *pruned* measure, repetitions and reformulations are not considered for the analysis, for instance (e.g., when the speaker makes a mistake and immediately self-corrects him/herself (reformulation) – this part of data is not counted for the calculation), while in the *unpruned* measure these elements are kept in the data so that unpruned speed fluency is calculated.

¹⁷ *Filled pauses* are those in which the speaker produces items such as *humh, eh, well*, in a strategic manner, in order to have more time to think about what to say next. *Unfilled pauses*, on the other hand, are pauses of complete silence.

¹⁸ The availability of such elements in the appendices also allows for the study data to be verified, questioned, and critically discussed by other researchers in the area. Furthermore, for those who are not yet familiarized with TBLT-based research – specially with research on L2 oral production – the appendices may be of assistance so that this initial contact may be possible, thus guiding future researchers with an instrumental step-by-step path through the assessment of complexity, accuracy, fluency and lexical density.

speech dimensions appear in the columns, with the total of nine measures analysed – from complexity (measure 1), to lexical density (measure 9). The ‘plus’ symbol (+) demonstrates in which L2 speech measure there was an observed gain, or improvement, for each of the participants. The OPs in the table are divided into OP3 – immediate post-test (or post-test 1) – and OP4 – delayed post test (or post-test 2) –, the latter carried out a month after the DS activities had been concluded. Moreover, in the Participants column, the first lines – P1, P7, P9, P10, P11, P12 and P13 – represent the participants whose English proficiency was rated as *basic-level*; while the subsequent participants – P2, P3, P4, P5, P6, P8, and P14 – are of an *intermediate-level*.

Table 1 - Individual gains in L2 oral production: post-test results

Participant	VARIABLES																	
	1		2		3		4		5		6		7		8		9	
	Complexity	Accuracy	Fluency - speed <i>unpruned</i>	Fluency - speed <i>pruned</i>	Pauses (filled)	Pauses (silence)	% Pausing time	Self-repairs	Lexical Density									
	OP3	OP4	OP3	OP4	OP3	OP4	OP3	OP4	OP3	OP4	OP3	OP4	OP3	OP4	OP3	OP4	OP3	OP4
P1		ND	+	ND	+	ND	+	ND	+	ND		ND		ND		ND	+	ND
P7	+	+		+		+		+		+			+		+		+	+
P9	+	+			+	+	+	+			+	+	+	+	+	+		
P10	+		+	+		+		+	+	+	+	+	+	+	+	+		
P11	+	+		+	+	+	+	+	+	+	+	+	+	+		+	+	+
P12	+		+	+					+								+	+
P13		ND	+	ND		ND		ND	+	ND	+	ND		ND		ND		ND
P2			+	+	+	+	+	+	+						+	+	+	+
P3			+	+											+	+		+
P4	+	+	+		+	+	+				+		+		+		+	
P5	+				+	+	+	+	+	+					+	+	+	
P6		+	+	+	+		+		+	+	+	+	+	+	+		+	+
P8			+		+	+	+	+			+	+	+	+	+	+	+	+
P14	ND	+	ND		ND		ND		ND		ND		ND		ND		ND	+

Note: P refers to Participant; ND (*no data*) refers to missing values; OP3 refers to post-test 1 (immediate) e OP4 to post-test 2 (delayed); the ‘plus’ symbol (+) refers to gains, positive observations or instances in which an improvement on participants’ L2 speech was observed.

Source: Authors’ elaboration.

In general, the table shows that, for this group of learners, the oral productions in English recorded after the completion of the DS cycle were found to have been enhanced in several aspects (being either more accurate or complex, or fluent or lexically dense), though a clearly defined pattern was not overall observed. The L2 speech of

some participants improved in several measures (e.g., P6, P11), while for others L2 productions improved in a few measures only (e.g., P12, P14), for instance.

In order to exemplify¹⁹ some issues, let us check the immediate post-test (OP3) of Participant 6 (intermediate-level): it can be noticed that P6's L2 oral production was not only more accurate but also faster (in both *pruned* and *unpruned* speed measures); in addition, his/her speech also had fewer pauses in general (e.g., fewer elements such as *humm* and fewer silence instances), as well as fewer moments of self-correction; finally, the lexical choices used by him/her were also more varied when considering his/her pre-test scores for comparison. Therefore, it is possible to state that P6's L2 production in the immediate post-test presented gains in 8 out of 9 of the variables investigated, being complexity the only exception in which no improvement was observed (that is, no observed increase in the number of subordinate clauses per AS-unit in OP3).

Furthermore, when analysing P6's L2 oral production one month after the completion of the DST cycle – thus looking into OP4, the delayed post-test – we may now see an improvement in the complexity dimension – that is, P6's L2 oral production is more complex in OP4²⁰ (one month after the experiment is concluded) when compared with his/her L2 production before the task cycle was initiated (in the pre-test). Still analysing P6's production: gains (+) are also observed for accuracy (whose positive change, already noticed in OP3, seems to have been maintained in OP4); moreover, the quantity of pauses was smaller and lexical density was also enhanced in OP4. Therefore, P6's speech in English at the delayed post-test improved in 6 out of 9 variables – complexity, accuracy, breakdown fluency (in terms of filled pauses, silent pauses, and percentage of pausing time), and lexical density. Taking into consideration the explanations just given, it can be noticed that the present investigation allowed a more individual analysis of L2 productions, considering each participant in particular, in addition to a group observation, in a separate manner, considering differences in proficiency (e.g., basic x intermediate). Furthermore, the analysis made evident the positive effects on L2 performance for the group of participants as a whole – what is extremely relevant to studies which, such as the present one, aim at better understanding the impact of tasks mediated by digital technologies in 'real' (intact) settings – since here, the participants are part of an intact, closed group, thus reflecting a context understood as a 'real' classroom (e.g., not formed for research purposes, without data gathering in a laboratory, for instance).

¹⁹ In order to facilitate observation, let us consider for instance:: if the + symbol appears in a given speech measure (from 1 to 9) for a given participant (P) both in the OP3 and OP4 columns, that means there was an improvement observed for L2 speech in that given measure both immediately after the DST task cycle finished (OP3) and after one month has passed (OP4). In that sense, the gains or improvement observed was maintained (since it was also present in OP4). If the + symbol appears in a given measure only in OP3 (and not in OP4), it is understood that there was an immediate improvement (at the end of the cycle, in OP3), however this gain was not maintained later in time, in OP4. Check P5, for instance, and the measures of accuracy (measure number 2) and lexical density (9): there was an observed improvement (+) in OP3 but not in OP4.

²⁰ As represented by the symbol (+) on the table.

Taking now into account the results of the whole group of learners (N=14), it can be noticed that most OPs improved specially regarding the dimensions of accuracy, fluency and lexical density, not only in the immediate post-test but also in the delayed post-test (one month after the end of the DST experiment). This positive change was warranted, possibly, by task repetition (BYGATE, 2001; D'ELY, 2006; D'ELY; MOTA; BYGATE, 2019), triggered by the *whatsapp* recording activities (the 3 OPs produced) as well as – and specially – by the recording task which encompassed the audio narration for the digital story. This narrative recording with students' own voices for the video (based on its *script* written previously in class) was an activity undertaken at home; consequently, learners could devote more time to it, do it autonomously, in the way they found it to be more appropriate. That allowed them to do the recording more than once (many times), if necessary.

Results suggest that, given the opportunity to audio-record the DS narrative at home instead of in the classroom, many participants engaged in this L2 task considering it a moment for rehearsing their speech. Their perceptions regarding this process²¹ demonstrate that they were able to, through this activity: a) notice *gaps* in their own speech in English – perceiving differences between what they wanted to say and what they could indeed say in the recording; and b) self-assess their own oral performance, reflecting upon critical aspects and specific elements in need of revision and modification (e.g., pronunciation, review of a given verbal tense in English). Issues such as the ones raised by learners are seen as important for the L2 learning process, and in special for L2 oral production, according to Swain (1993, 1995) and Swain and Lapkin (1995).

A great number of studies interested in enhancing L2 speech emphasize the relevance of task repetition²² for promoting the development of L2 OP (such as BIRJANDI; AHANGARI, 2008; BYGATE, 1996, 1998, 1999, 2001, 2009; BYGATE; SAMUDA, 2005; D'ELY, 2006; D'ELY; MOTA; BYGATE, 2019, as well as FINARDI, 2008, to cite just a few), specially when complexity, accuracy and/or fluency are under consideration (SKEHAN, 2014). When analysing the OPs by proficiency level, for instance, a greater improvement was observed, in general, in the OPs for the intermediate group in OP3, while a greater speech improvement for the basic group was observed in OP4 (delayed post-test). This observation suggests that perhaps a longer period of time may be necessary so that changes – or some type of treatment effect – can be effectively noticed in the performance of L2 beginners. This may be justified by the fact that language restructuring and automatization do not happen overnight: for a controlled

²¹ Information was gathered using the questionnaires briefly mentioned. Due to that, the study was able to better triangulate data which deepened our understanding of other issues connected to, for instance, the process learners engaged in during the DS creation, as well as to language learning (and related skills) via the task cycle and the digital resources used in the L2 classroom.

²² The claim is that, when repeating a task, in general, the cognitive processing load tends to reduce; this may favor the second production (repeated), considering the information previously activated in memory may be more easily integrated in a subsequent performance, thus allowing that part of the attentional resources can be freed to other aspects of performance (BYGATE, 2001). For this reason, the metacognitive process of task repetition fosters the optimization of L2 performance, in at least one speech dimension.

process (in the beginning) to become automatized, practice is necessary (SCHMIDT, 1990), what presupposes repetition, time and frequency of use, for instance. These aspects reveal what happens for one to develop speaking – a complex cognitive skills, according to Levelt (1989) – as well as L2 proficiency, in general terms.

Despite the positive changes observed in participants' L2 oral productions after the creation of the digital narratives, results from the Friedman test suggest that the differences among the three moments were not statistically significant²³ (to the 5% significance level) for any of the nine variables investigated. Due to that, generalizing the results of the study to other L2 populations is not possible. This may likely be due to the sample size and the total time of the DS experiment, among other factors. Some of these limitations will be considered in the final paragraphs, together with some pedagogical implications for the L2 classroom.

Final considerations

The goal of the present article was to report on part of an investigation regarding the effects of a task cycle with digital storytelling on the L2 production of a group of learners in Brazil, future English teachers. The experiment was built following assumptions of the task-based approach (SKEHAN, 2009a), aspiring to integrate the potentialities of digital technologies into L2 learning in more heterogenous educational settings – as in a 'real' classroom, for instance. Another goal of the study was, in general terms (though without much emphasis), to comprehend how the implementation process of the DST task cycle took place in order to broaden knowledge on this matter: to raise awareness on the impact of digital storytelling (and the cognitive processes the tasks stimulated) on L2 learning and discuss relevant aspects for L2 pedagogy – issues in need of further investigation in the Bazilian context. As demonstrated in the article, results suggest that tasks for DS creation may be a potential alternative for the L2 classroom since they trigger opportunities to use the L2 in an effective and integrated manner – for a DS is multimodal and different language skills are thus part of it (e.g., reading, writing, speaking, listening) –, being able to push L2 performance by the end of the task cycle, even in short periods of time.

Despite the positive results, considering this particular group of learners, the study is limited in some aspects, though here we mention only two main issues for consideration: 1) the reduced number of participants (N=14), common in groups such as the one investigated (e.g., undergraduate teaching course, hinterland location); and 2) the short amount of time (three weeks) devoted to the experiment with tasks and digital storytelling, when compared to other studies in the area.

²³ At first, the statistical test used was the Shapiro Wilk test, which aimed to test the normality of the sample; moreover, the non-parametric Friedman test (for paired and dependent samples) was used to verify whether differences existed among the 3 moments of the experiment (pre-test e post-tests immediate and delayed).

Regarding limitation 1: Studies in TBLT are usually conducted with a greater number of participants; however, they rarely focus on long-term task cycles (i.e., longitudinal experiments) and specially in real/intact classrooms, settings characterized by having more heterogeneity (and/or variables the researcher may not be able to control and that may exert some influence on the results of the study, for instance). In general, it is known that the more participants a study has, the greater the chances for results to be statistically significant (or of having a significant *p value* in the end). Therefore, it is possible that, were the number of participants higher, results could have probably been statistically significant.

Regarding limitation 2: Research on DST have been mostly conducted considering longer time periods which varied from three to twelve *months* in general. In Nishioka (2016), for instance, participants worked collaboratively for an entire semester to develop their DSs; differently, in our study, the complete task cycle – culminating in the individual DS presentation to the whole group of students at the end of the cycle – encompassed only three *weeks*²⁴ (being that the delayed post-test happened in a single day one month later). For having been orchestrated in a real (non-experimental, heterogeneous) classroom, there was no additional time available for conducting the study due to many factors, such as the end of semester (and year) at university, for instance.

Taking into consideration what has been presented, it is suggested that further studies and/or pedagogical practices bear such issues in mind, trying, whenever possible, to reflect about ways to adapt task cycles with digital storytelling to the needs of their own individual and local contexts, thus considering the feasibility of having longer periods of time devoted to the DS cycles. Furthermore, having more time available, we suggest the planning of additional activities to integrate either the task or the post-task phases²⁵ of the cycle (when learners are initiating the writings of their DS *script* or right after having displayed the video publically to the classmates and teacher, for instance) as a way to further assist learners' needs.

This way, some aspects that teachers might take into account when planning and implementing a task cycle with DST are, for instance: a) to reinforce assistance in the organization phase of the writing and re-writing of the story draft, allowing that the process is shared with the teacher (so he/she can give *feedback* when needed), and that it develops in a process-based manner; b) to propose activities which entail the transcription of learners' audio recordings (i.e., from Whatsapp) fomenting, therefore, moments for collective or individual analysis of one's speech, and moments to attend to certain elements of the language (e.g., grammar, pronunciation difficulties, among others). By considering aspects such as these, we could possibly promote greater

²⁴ In addition to the limited time available, it must be mentioned that learners still faced the challenge of having to learn a new digital skill during the study: learning how to manipulate and use the video-editing software – *Moviemaker* – which was something new for most participants and essential so that the DS could be created and displayed at the end of the task cycle.

²⁵ The phases of task implementation followed the framework proposed by Skehan (2009a).

opportunities of *focus on form*, of language reflection and analysis (regarding the L2 samples produced), and of *noticing* elements in the target language that would have gone unnoticed by the learner. What these aspects entail is the amplification of favorable circumstances for L2 development – and for oral production in particular, considering it is a complex and challenging skill, specially in formal L2 learning settings.

Last but not least, considering the present investigation brought some evidence of the positive effects of digital storytelling on L2 oral production in a real classroom, it is understood that through the integration of digital technologies and pedagogical tasks – carefully planned, tailor-made and implemented by the teacher –, greater are the chances for L2 learners to assume their central role in the learning process, being thus able to develop the L2 competences they have chosen to achieve. Nevertheless, more and more investigations are needed so that we may expand our understanding on the several factors that could impact on this process, specially when combining the use of digital technology (and their various resources) with our practices in formal educational contexts, contexts at times with quite specific and local characteristics, eager to be better known and investigated.

TREVISOL, J. R.; D'ELY, R. C. F. Effects of implementing digital storytelling on the oral production of English learners: a task-based study. *Alfa*, São Paulo, v. 65, 2021.

- *RESUMO: Devido à rapidez em que as mudanças tecnológicas se dão no mundo contemporâneo e às possibilidades que as novas ferramentas trazem para a construção de conhecimentos em contextos variados, é crescente o interesse de pesquisadores e educadores acerca da inserção de tecnologias digitais aliadas à educação. Porém, muitos são ainda os questionamentos sobre quão eficiente para a aprendizagem seria a implementação de atividades com tecnologias digitais, em especial em contextos de segunda língua (L2). Assim, esta pesquisa investigou os efeitos de um ciclo de tarefas (ELLIS, 2003) com histórias digitais na produção oral em L2 de aprendizes de inglês em uma universidade pública da Bahia. Dados de produção oral de quatorze participantes foram coletados em três momentos – pré e pós-testes – via Whatsapp e analisados considerando-se sua complexidade, acurácia, fluência e densidade lexical (SKEHAN, 2003). Os resultados, em geral, evidenciam uma melhora na fala dos participantes para algumas das medidas investigadas, mesmo em um curto espaço de tempo. Por fim, discute-se o potencial da história digital como ferramenta para o aprimoramento da L2 em contextos formais de ensino-aprendizagem, considerando-se a necessidade de mais pesquisas que busquem compreender o uso de tecnologias na sala de aula de línguas.*
- *PALAVRAS-CHAVE: Tecnologia. Histórias Digitais. Tarefas. Produção Oral. Aprendizagem-ensino de Línguas. Sala de aula.*

REFERENCES

- AHMADIAN, M. J., TAVAKOLI, M.; DASTJERDI, H. The combined effects of online planning and task structure on complexity, accuracy, and fluency of L2 speech. **Language Learning Journal**, Ann Arbor, v. 43, n. 1, p. 41-56, 2015.
- ANDERSON, J.R. **Learning and memory: an integrated approach**. New York: John Wiley and Sons, 1995.
- APPEL, C.; BORGES, F. Task design for L2 oral practice in audioblogs. **The EUROCALL Review**, Valencia, v. 20, n. 1, 2011.
- BERGSLEITHNER, J. M. Linguagem oral e aspectos cognitivos em Linguística Aplicada: ensino/aprendizagem de L2/LE através de tarefas. **Revista Língua & Literatura**, Frederico Westphalen, v. 11, n. 17, p. 113-124, 2009.
- BIRJANDI, P.; AHANGARI, S. Effects of Task Repetition on the Fluency, Complexity and Accuracy of Iranian EFL Learners. **The Asian EFL Journal**, Saudi Arabia, v. 10, n. 3, p. 28-52, 2008.
- BUCKINGHAM, D. Media education goes digital: an introduction. **Learning, Media and Technology**, London, v. 32, n. 2, p. 111-119, 2007.
- BYGATE, M. Introduction. In: BYGATE, M. (ed.). **Domains and directions in the development of TBLT**. Amsterdam: John Benjamins, 2015. p.XV-XXIV.
- BYGATE, M. Effects of task repetition on the structure and control of oral language. In: VAN DEN BRANDEN, K.; M. BYGATE, M.; NORRIS, J. (ed.). **Task-based language teaching: a reader**. Philadelphia, PA: John Benjamins, 2009. p. 249–274.
- BYGATE, M. Effects of task repetition on the structure and control of oral language. In: BYGATE, M.; SKEHAN, P.; SWAIN, M. (ed.). **Researching pedagogic tasks: second language learning and testing**. London: Longman, 2001. p.23-48.
- BYGATE, M. Task as context for the framing, reframing and unframing of language. **System**, Amsterdam, v. 27, p. 33-48, 1999.
- BYGATE, M. Theoretical perspectives on speaking. **Annual Review of Applied Linguistics**, Cambridge, v. 18, p. 20-42, 1998.
- BYGATE, M. Effects of task repetition: appraising the developing language of learners. In: WILLIS, J.; WILLIS, D. (ed.). **Challenge and Change in Language Teaching**. Oxford: Heinemann, 1996. p. 136-146.
- BYGATE, M.; SAMUDA, V. Integrative planning through the use of task repetition. In: ELLIS, R. (ed.). **Planning and task performance in a second language**. Amsterdam: New York: Benjamins, 2005. p.37-74.

CHAPELLE, C. A. The relationship between second language acquisition theory and computer-assisted language learning. **The Modern Language Journal**, Hoboken, v.93, p. 741-753, 2009.

CHRISTIANSEN, M.S.; KOELZER, M.L. Digital storytelling: using different technologies for EFL. **MEXTESOL Journal**, Ciudad del Mexico, v. 40, n.1, p. 1-14, 2016.

CRAVEN, L. Measuring language performance: complexity, accuracy and fluency measures. *In*: WEI INTERNATIONAL ACADEMIC CONFERENCE, Barcelona, 2017. **Proceedings** [...], Barcelona: Spain, 2017. p.25-27.

DELATORRE, F.; TREVISOL, J.R. Brazilian learners of English perceptions about oral production on a digital storytelling task cycle. **Organon**, Porto Alegre, v. 35, n. 68, 2020. Disponível em: <https://seer.ufrgs.br/organon/article/view/100710>. Acesso em: 12 maio 2021.

D'ELY, R. C. F. **A focus on learners' metacognitive processes: the impact of strategic planning, repetition, strategic planning plus repetition, and strategic planning for repetition on L2 oral performance**. Tese (Doutorado em Letras) - Centro de Comunicação e Expressão, Universidade Federal de Santa Catarina, Florianópolis, 2006. Disponível em: <http://repositorio.ufsc.br/xmlui/handle/123456789/89407>. Acesso em: 12 maio 2021.

D'ELY, R. C. F.; MOTA, M.; BYGATE, M. Strategic planning and repetition as metacognitive processes in task performance: implications for EFL learners' speech production. *In*: ZHISHENG, E.; AHMADIAN, M. J. (ed.). **Researching L2 Taskperformance and pedagogy**: in honour of Peter Skehan. Amsterdam: John Benjamins, 2019, p. 199-228.

ELLIS, R. **Task-based language learning and teaching**. Oxford: Oxford University Press, 2003.

ELLIS, R. **The study of second language acquisition**. Oxford: Oxford University Press, 1994.

EVANS, M. **Foreign language learning with digital technology**. New York: Continuum International Publishing, 2009.

FINARDI, K. Effects of task repetition on L2 oral performance. **Trabalhos em Linguística Aplicada**, Campinas, v. 47, n. 1, p. 31-43, 2008.

FOSTER, P.; TONKYN, A.; WIGGLESWORTH, G. Measuring spoken language: a unit for all reasons. **Applied Linguistics**, Oxford, v. 21, n. 3, p. 354-375, 2000.

GONZÁLEZ-LLORET, M; ORTEGA, L. **Technology-mediated TBLT: researching technology and tasks**. Amsterdam: John Benjamins, 2014.

- HOUSEN, A.; KUIKEN, F. Complexity, accuracy and fluency in second language acquisition. **Applied Linguistics**, Oxford, v. 30, n. 4, p. 461-473, 2009.
- LAMBERT, J. **Digital storytelling cookbook**. Berkely, CA: Digital Dinner Press, 2007.
- LEE, L. Digital news stories: Building language learners' content knowledge and speaking skills. **Foreign Language Annals**, Hoboken, v. 47, n. 2, p. 338-356, 2014.
- LEVELT, W. J. M. **Speaking: from intention to articulation**. Cambridge, Massachusetts: The MIT Press, 1989.
- LONG, M. H. Building the road as we travel. *In*: BYGATE, M. (ed.). **Domains and directions in the development of TBLT**. Amsterdam: John Benjamins, 2015. p. 1-26.
- LONG, M. H. Focus on form: a design feature in language teaching methodology. *In*: DE BOT, K.; GINSBERG, R.; KRAMSCH, C. (ed.). **Foreign language research in cross-cultural perspective**. Amsterdam: John Benjamins, 1991. p.39-52.
- NISHIOKA, H. Analysing language development in a collaborative digital storytelling project: Sociocultural perspectives. **System**, Amsterdam, v.62, p. 39-52, 2016.
- NORRIS, J. M.; ORTEGA, L. Towards an organic approach to investigating CAF in instructed SLA: The case of complexity. **Applied Linguistics**, Oxford, v. 30, n. 4, p. 555–578, 2009.
- PALLOTTI, G. CAF: Defining, refining and differentiating constructs. **Applied Linguistics**, Oxford, v. 30, p. 590-601, 2009.
- RÉVÉSZ, A.; EKIERT, M.; TORGERSEN, E. N. The Effects of Complexity, Accuracy, and Fluency on Communicative Adequacy in Oral Task Performance. **Applied Linguistics**, Oxford, p. 1-22, 2014.
- ROBIN, B. R.; MC NEIL, S. What Educators Should Know about Teaching Digital Storytelling. **Digital Education Review**, Barcelona, v.22, p. 37-52, 2012.
- SADIK, A. Digital storytelling: a meaningful technology-integrated approach for engaged student learning. **Education Technology Research Development**, Berlin, v. 56, p. 487-506, 2008.
- SCHMIDT, R. W. Attention. *In*: ROBINSON, P. **Cognition and second language instruction**. Cambridge: Cambridge University Press, 2001. p. 3-32.
- SCHMIDT, R. W. The role of consciousness in second language learning. **Applied Linguistics**, Oxford, v.11, n. 2, p. 17-46, 1990.
- SKEHAN, P. The context for researching a processing perspective on task performance. *In*: SKEHAN, P. (ed.). **Processing perspectives on task performance**. Amsterdam: John Benjamins, 2014. p. 1-26.

SKEHAN, P. A framework for the implementation of task-based instruction. *In*: VAN DEN BRANDEN, K.; M. BYGATE, M.; NORRIS, J. (ed.). **Task-based language teaching: a reader**. Philadelphia, PA: John Benjamins, 2009a. p. 83-108.

SKEHAN, P. Modelling second language performance: Integrating complexity, accuracy, fluency and lexis. **Applied Linguistics**, Oxford, v. 30, p. 510-532, 2009b.

SKEHAN, P. **Task-based instruction**. Cambridge: Cambridge University Press, 2003.

SMEDA, N.; DARICH, E.; SHARDA, N. The Effectiveness of Digital Storytelling in the Classrooms: A Case Study. *In*: IEEE INTERNATIONAL CONFERENCE ON ADVANCED LEARNING TECHNOLOGIES, 13., **Proceedings [...]**, 2013. p. 491-492.

SPECHT, A. L. **Is strategic planning enough?**: Investigating the impact of two types of strategy instruction on students' oral planned performance. 2017. Dissertação (Mestrado em Inglês) - Centro de Comunicação e Expressão, Universidade Federal de Santa Catarina, Florianópolis, 2017. Disponível em: <https://repositorio.ufsc.br/handle/123456789/187086>. Acesso em: 12 maio 2021.

SWAIN, M. Three functions of output in second language learning. *In*: COOK, G.; SEIDHOFER, B. (ed.). **Principles and practice in applied linguistics**. Oxford: Oxford University Press, 1995. p.125-144.

SWAIN, M. The output hypothesis: just speaking and writing isn't enough. **The Canadian Modern Language Review**, Toronto, v. 50, p. 158-164, 1993.

SWAIN, M.; LAPKIN, S. Problems in output and the cognitive processes they generate: A step towards second language learning. **Applied Linguistics**, Oxford, v. 16, p. 371-391, 1995.

TREVISOL, J. R. A needs analysis questionnaire for the L2 classroom: insights from a Brazilian study on tasks and technology. **Revista X**, Curitiba, v. 15, n. 3, p. 126-145, 2020.

TREVISOL, J. R. **Investigating L2 learners production and perception of a cycle of tasks with digital storytelling**: an exploratory study in technology-mediated TBLT. 2019. Tese (Doutorado em Inglês) - Centro de Comunicação e Expressão, Universidade Federal de Santa Catarina, Florianópolis, 2019. Disponível em: <https://repositorio.ufsc.br/handle/123456789/198996>. Acesso em: 12 maio 2021.

TREVISOL, J. R.; D'ELY, R. C. S. F. Tarefas & histórias digitais na sala de aula de línguas: efeitos na produção oral em L2. *In*: OLIVEIRA, D. A.; SILVA, I. T. (org.). **Fundamentos e práticas no ensino da língua inglesa**: Volume I: Resultados e propostas de pesquisa. Alagoinhas: Bordô-Grená, 2019. p. 79-92. Disponível em: https://5fd55af0-05d2-4627-9691-0c7f536817eb.filesusr.com/ugd/d0c995_ea6fcb10eeaf4061845932936d784bda.pdf. Acesso em: 12 maio 2021.

TUMOLO, C. H. S. Ensino à distância: horizontes para o ensino de línguas estrangeiras. **Fragmentos**, Goiânia, v.30, p. 25-34, 2006.

TUMOLO, C. H. S. Histórias digitais como recurso para ensino/aprendizagem de Inglês como língua estrangeira. **Estudos Anglo Americanos**, Florianópolis, v. 43, p. 100-117, 2015.

VAN DEN BRANDEN, K. The role of teachers in task-based language education. **Annual Review of Applied Linguistics**, Cambridge, v. 36, p. 164-181, 2016.

VAN DEN BRANDEN, K.; BYGATE, M; NORRIS, J.M. **Task-based language teaching: a reader**. Amsterdam: John Benjamins, 2009.

WANG, S.; WÁSQUEZ, C. Web 2.0 and second language learning: what does research tell us? **CALICO Journal**, Sheffield, v. 29, n. 3, p. 412-430, 2012.

WEISSHEIMER, J. **Working memory capacity and the development of L2 speech production**. 2007. Tese (Doutorado em Inglês) - Centro de Comunicação e Expressão, Universidade Federal de Santa Catarina, Florianópolis, 2007.

WEISSHEIMER, J.; CALDAS, V.; MARQUES, F. Using whatsapp to develop L2 oral production. **Leitura**, Maceió, v.1, n. 60, p. 21-38, 2018.

YUSKEL, P.; ROBIN, B.; MCNEIL, S. Educational Uses of Digital Storytelling all around the World. *In*: SOCIETY FOR INFORMATION TECHNOLOGY & TEACHER EDUCATION INTERNATIONAL CONFERENCE, 2011, Nashville. **Proceedings** [...], Nashville: AACE, 2011. p. 1264-1271.

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