

CAN TABLETS IN EFL CLASSES IMPACT STUDENTS' MOTIVATION TO LEARN ENGLISH?

PODERÃO OS TABLETS NAS AULAS DE ILE TER IMPACTO NA MOTIVAÇÃO DOS ALUNOS PARA APRENDER INGLÊS?

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The goal of this study is to understand if there is an impact on students' motivation to learn English as a Foreign Language when mobile technologies are used to support active learning activities that develop students' oral production competences. The participants were two teachers and their 106 students, divided in 3 classes of the 7th grade and 1 of the 8th grade, who were using their own tablets at school. This use was the result of a school project for promoting the integration of technology in classroom activities. At the beginning and end of the school year, students answered a questionnaire that contained three dimensions of a motivation index from Gardner's "The Attitude/Motivation Test Battery". Following a preliminary analysis of these quantitative data, the instrument for qualitative data collection was created – an interview protocol which was applied to the two teachers. After analysing the qualitative data, all the data was analysed and the outcomes scrutinized. Thus, this mixed methods research design followed a sequential explanatory strategy, since the latter allowed a further analysis of the initial results. The results revealed a favourable tendency in terms of student motivation, although statistically significant differences were only found in the case of students with initial lower and moderate levels of motivation. Both teachers referred improvements in student participation and engagement in classroom activities.

Keywords: Mobile Assisted Language Learning (MALL). Tablets. English as a Foreign Language (EFL). Motivation. One-to-one (1:1). Technology Enhanced Learning (TEL).

O objetivo deste estudo é entender se haverá um impacto na motivação dos alunos para aprender inglês como língua estrangeira quando se recorre a tecnologias móveis para apoiar atividades de aprendizagem ativas que desenvolvam as competências de produção oral dos alunos. Os participantes foram dois professores e os seus 106 alunos, divididos em 3 turmas de 7.º e 1 de 8.º ano, que usavam os próprios tablets na escola. Essa utilização resultou de um projeto da escola para promover a integração de tecnologias nas atividades da sala de aula. No início e no final do ano letivo, os alunos responderam a um questionário que continha três dimensões de um índice

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de motivação, retirado da “Bateria de Testes de Atitude/Motivação” de Gardner. Após uma análise preliminar a esses dados quantitativos, foi criado o instrumento de recolha de dados qualitativos – um protocolo de entrevista aplicado a dois professores. Após a análise dos dados qualitativos, todos os dados foram analisados em conjunto e esses resultados examinados. Assim, este desenho de investigação com métodos mistos seguiu uma estratégia explanatória sequencial, uma vez que os últimos dados permitiram uma análise mais aprofundada dos dados iniciais. Os resultados revelaram uma tendência favorável em termos de motivação dos alunos, embora se tivessem encontrado diferenças estatisticamente significativas apenas no caso dos alunos com níveis iniciais de motivação mais baixos e moderados. Ambos os professores referiram melhorias na participação e envolvimento dos alunos nas atividades em sala de aula.

Palavras-chave: Aprendizagem de Línguas Assistida por Tecnologias Móveis (MALL). Tablets. Inglês – Língua Estrangeira (ILE). Motivação. Um-para-um (1:1). Aprendizagem enriquecida por tecnologia.

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1. Introduction

Being English a lingua franca, its learning and oral fluency are growing challenges if one considers that the European reality is increasingly culturally diverse (Commission of the European Communities 2003). Being fluent in at least one foreign language facilitates contact with other cultures, imposing this learning itself as a pressing societal challenge. At the same time, given the constant mobile devices evolution and with their increasing number of functionalities, new possibilities are constantly being presented for the formal educational context. The presence and prevalence of mobile technologies in daily routines, whether for professional, educational or leisure purposes, has become widespread, and their almost omnipresent use is infused and implied in people’s daily actions. The mobility of new technologies leads to increasingly more powerful, lighter, more affordable machines, which allow social interactions and learning situations that can take place at anytime, anywhere, daily and on a continuous basis.

These technologies have been recognized as advantageous for learning (Burston 2015; Kukulska-Hulme 2009; Traxler 2011), with a focus on student achievement, motivation and competence development. With guidelines for Mobile Learning established by recognised institutions such as the European Commission and the UNESCO (European Commission 2014; West & Vosloo 2013), new challenges need to be addressed in what concerns equal opportunities in terms of information access, as well as dealing with new technological contexts and digital literacy (Ferrari, Brečko & Punie 2014). Given the ever growing challenges of plurilingual and cultural contexts in the classroom, it seems pertinent to study the affinities between mobile learning and foreign language learning.

The research presented here pays special attention to mobile technologies (MT) and their pedagogical advantages when integrated to lead students to create their own digital contents in the specific context of learning English as a Foreign Language (EFL). This work focuses on student learning and the possible benefits resulting from this tablet integration, in a one-to-one implementation model (1:1, *i.e.* a ratio of one device per

student in the classroom) in the 3rd cycle of basic education in Portugal (7th and 8th grade). The research question focuses on the contributions of this integration to students' motivation to learn EFL.

2. Mobile assisted language learning

The concept of Mobile Learning (ML) was understood by Traxler (2009, p. 4), not only as the combination of the two terms, but rather as a variation between the mobile continuation of e-learning and another form of learning that adapts to challenges and different limitations. This is particularly true when there is a lack of resources or when technologies can be used to widen the opportunities for a more authentic learning. Traxler considered it a difficult concept to define, resulting from the ubiquitous integration of the various mobile and wireless technologies (not yet referring to tablets), and that ML would become an independent domain. Kukulska-Hulme (2009), agreeing with Traxler, draws attention to the relevance of the distinction between the various meanings underlying the word mobility, associated with formal and informal learning, since it may refer to mobile technologies, to mobile content, but also to the mobile learner, stressing not just mobility but also the learning opportunities that are generated around it. Pegrum, Oakley and Faulkner (2013) also stress the fact that the mobility of these devices might create new learning opportunities, particularly if more than just the students or the devices are in movement – if the learning experience is in movement.

What the technological evolution has allowed to concentrate in a single mobile device has been recognised as the advantages that ML can bring to the educational context (Carvalho 2012; Kukulska-Hulme 2009; Traxler 2011). For example, by bringing together formal and informal learning contexts, allowing learning on the move, the ubiquity of mobile devices engenders interest in different ways of learning and teaching (Kukulska-Hulme 2009).

Still far from a consensual definition of ML, it is an area that has had a rapid evolution in educational research (Kukulska-Hulme 2009; Pegrum, Oakley & Faulkner 2013), not only due to the technological development, but also because of the ambiguity of mobility. The 'mobility' of learning has aroused the interest of research in different aspects, as it differs from 'portability', with mobile devices being a lot more flexible than portable ones.

The research field of ML also points to benefits for students and learning in the specific cases of 1:1 integration models, preferably with the students' appropriation and ownership of the devices (Kukulska-Hulme 2009; Pegrum *et al.* 2013). The mobility of the equipment provides different opportunities by allowing students to move and access content and data simultaneously, which may lead to different types of production as well (Kukulska-Hulme 2009). Other advantages mentioned are associated to the easy access to information, the adaptability to students' needs (Clark & Luckin 2013; Goodwin 2012), as well as to the improvements in school results, especially for students with learning disabilities (Higgins, Xiao & Katsipataki 2012). There is also a greater motivation of students and teachers, as well as the opportunity to create more equitable learning experiences through the development of digital competence (Gawełek, Spataro &

Komarny 2011). There is also reference to advantages related to a greater variety in terms of the types of activities, allowing teachers to depart from traditional instructional approaches and to adopt more active and student-centred pedagogical approaches (Pegrum *et al.* 2013).

As for Mobile Assisted Language Learning (MALL), it emerges as a new field of research, as a result of Computer Assisted Language Learning (CALL). Kukulska-Hulme (2009) distinguishes the two areas emphasizing that MT have the peculiarity of infiltrating learners' daily lives, considering the author that students identify themselves more easily with such technologies, as they also infiltrate learning in a spontaneous way. Lack of motivation is often cited as an impediment to language learning, recognizing Kukulska-Hulme, Norris and Donohue (2015) that MT are potentially motivating for school activities, as well as for more authentic communicative learning situations, while students are developing their digital competence at the same time.

Adding to the mobile devices' characteristics, there are also other possibilities that arise from the applications that can be installed. The variety of apps is also appreciated for their multiple functions and applicability to various educational contexts, from pre-school to higher education (Aronin & Floyd 2013; Beschorner & Hutchison 2013).

Ensor (2012) prefers apps that enable collaborative work and communication, even among younger students. Hutchison, Beschorner and Schmidt-Crawford (2012) consider that applications allow previously unimaginable situations, even in mobile learning. Clark and Luckin (2013) believe such experiences with apps would be impossible with desktops or laptops, especially because of the difference in mobility. Hutchison *et al.* (2012) consider that the creative process for the production of digital contents can be simplified with the use of apps, eliminating the barriers of paper work, noting there would be no limits to students' freedom and creativity. Karsenti & Fievez (2013) point to a significant improvement in the quality and variety of digital productions of both students and teachers.

Regarding the use of applications Huber refers:

(...) a myriad of learning applications and ways to transfer subject matters are provided on and through such devices. A variety of skills for all subjects, such as listening, reading and reasoning skills can be promoted through a range of activities and applications. (Huber 2012, p. 1)

What tablets allow, according to Ensor (2012), is to go through several processes, such as research, data collection, digital content production and sharing in just a single device.

In this literature review, there was consensus regarding the educational potential of mobile devices. One of the aspects mentioned as an advantageous effect of mobile technologies integration is the motivational factor exerted on young people, and this interest in the activities is an advantage that will increase motivation for learning (Aronin & Floyd 2013; Hesser & Schwartz 2013; Karsenti & Fievez 2013; O'Malley, Jenkins, Wesley, Donehower, Rabuck & Lewis 2013; Peluso 2012). Clark and Luckin (2013) state that the positive impact on students' involvement in learning far outweighs the setbacks they might add to the classroom. As Clark and Luckin explain:

Whilst there are some minor concerns raised about potential overuse or distracting influence, misuse and a lack of confidence or skills in some students these findings are far outweighed by those which report on increased motivation, enthusiasm, interest, engagement, independence and self-regulation, creativity and improved productivity. (Clark & Luckin 2013, p. 23)

Several authors point out the fact that MT create a real possibility of choice according to students' preferences and needs (Hesser & Schwartz 2013; Hutchison *et al.* 2012), which may lead to students identifying themselves with these resources, as a sense of belonging and ownership. O'Malley *et al.* (2013) emphasize the efficiency of the iPad tablet in terms of increased motivation, since they have shown that it promotes the development of students' self-confidence as they progress in the development of skills in which they had still not been successful.

In sum, motivation appears to be an important outcome when students use mobile devices to learn, particularly when they feel they own the device and the learning process. Student productivity seems to be greatly improved, leading to a higher self-confidence, involvement and interest in the learning activities.

3. Methodology: participants and instruments

The fieldwork and data collection took place in the 2015/2016 school year, with a total of 106 students, from a private school in the Lisbon area. There was a total of 106 students, 53 girls and 53 boys, most being 12 years old. The school had already begun a Mobile Technology Implementation programme, in a 1:1 model with all the classes involved in this project, namely an 8th and three 7th grade classes. These two different groups constituted two different levels of student technology adoption, since the 8th grade was already in their second year in the project. The two teachers of English of the four classes were also involved in the study. They were 41 and 51 years old and both already owned a tablet.

Considering the literature review, the research question was formulated for the study as follows: Will the pedagogical integration of tablets 1:1 contribute favourably to students' motivation to learn English as a Foreign Language? This question was materialised in a research regarding teachers' and students' perceptions about student motivation as a result of activities in the classroom using MT, seeking an impact on student motivation to learn English.

The followed methodology focused strictly on the research problem, adopting a mixed methodology of data collection and analysis, selecting data collection instruments that might contribute directly to this problematic. This methodology is considered to be part of the pragmatic paradigm of research, since it focuses objectively on the research problem as defined by Creswell, Plano Clark, Gutmann and Hanson (2003). These authors name this as a 'sequential explanatory strategy', which means that in this study the quantitative data were collected at the beginning and end of the study (through a questionnaire). After a preliminary analysis of the quantitative data, the qualitative data collection instrument was produced accordingly, being the two teachers interviewed at

the end of the project as a way to broaden the understanding of the previously obtained quantitative results. Their opinion about the initial results was also collected. That means that the latter could explain in greater detail the initial data. This also allows, according to Creswell *et al.* (2003), a joint analysis of all these results in the end.

Creswell *et al.* (2003, p. 178) consider this as the most straightforward mixed methods designs, due to the fact that an initial quantitative data collection and analysis is followed by a qualitative data collection and analysis. Although priority lays in the quantitative data, both methods are used and considered in the final analysis. The authors consider that this type of method can be particularly useful to further study initial surprising results.

3.1. Attitude / Motivation Test Battery

The questionnaire applied to the students, at the beginning of the school year, in September 2015 – Moment 1 (M1) and at the end, in June 2016 – Moment 2 (M2), is about their motivation to learn EFL. To assess their motivation, the “Attitude / Motivation Test Battery” (Gardner 1985) was chosen. The students answered the questionnaire digitally (using a Google Drive Form) with their own tablets in their classrooms. The results were then analysed with the Statistical Package for the Social Sciences (SPSS version 24).

The instrument “The Attitude/Motivation Test Battery” (AMTB) was conceived in 1985 by Robert C. Gardner. The author has been investigating the issues of motivation in learning foreign languages and considers the non-linguistic aspects as relevant in the acquisition of a language as the linguistic ones, such as the ability to read, write or speak. He focused his work on non-linguistic aspects, such as understanding the other language-speaking culture and the desire to continue studying the foreign language, as well as other languages (Gardner 1985).

The AMTB instrument is intended to measure non-linguistic aspects of language learning. Gardner, originally from Canada, created the AMTB for the acquisition of other languages as a foreign (FL) or second language (L2), initially assuming French as L2. Only in 2004, given the fact that the instrument was widely being used in research, was it adapted to consider English as a Foreign Language (Gardner 2004). Both instruments have been used in research in the areas of Applied Linguistics and Psychology, considering motivation in the learning or acquisition of foreign languages. The original instrument of 1985 is the one that is more widely recognised (Burrows & Stepanczuk 2013; Dörnyei 1994; Dörnyei 1998; Madrid & Pérez Cañado 2001; Hashwani 2008) and the one chosen for this work.

Gardner’s AMTB, as a battery of tests, has several scales focusing on several non-linguistic aspects that might influence the learning of a foreign language. These 19 scales are divided into four indices. Out of these four, index 2 – *Motivation* to learn the foreign language – was the favoured one for this study. This index is calculated by adding the following adapted scores: “4. Attitudes towards the learning of English” (ALE); “9. Motivational Intensity” (MI); and “10. Desire to Learn English” (DLE) (Gardner 1985).

The first one (4. ALE) has 10 items, five are affirmative and five are negative, expressing respectively positive and negative feelings towards EFL learning. The original 7 points Likert scale will be used, varying between “I totally disagree” and “I totally agree”. A high score on this scale (the maximum score being 70) will indicate a positive attitude towards English language learning. As an example, a positive item on this scale is “I plan to learn as much English as possible”, while a negative example is “When I leave school, I shall give up the study of English entirely because I am not interested in it.”

The second scale (9. IM) also has 10 items, which are multiple-choice and formulated to measure the intensity of motivation to learn the foreign language, referring to students' future plans to continue, or not, the learning and use of English. In this scale, a high score (at a maximum of 30) will indicate a high student effort to be successful in EFL acquisition. The items and response options address different themes, as is the example of item 4:

- (1) When it comes to English homework, I: a) put some effort into it, but not as much as I could [2 points]; b) work very carefully, making sure I understand everything [3 points]; and (c) just skim over it [1 point].

The last scale of this index (10. DLE) has 10 items that are also of multiple-choice. A high score (maximum of 30) will represent a strong desire to learn EFL. As in the previous scale, the answers are according to the themes of each question and each answer item has a different score. An example item on this scale is:

- (2) If I had the opportunity to speak English outside of school, I would: a) never speak it [1 point]; b) speak English most of the time, using Portuguese only if really necessary [3 points]; and c) speak it occasionally, using Portuguese whenever possible [2 points].

These scales were designed to integrate an instrument that would be capable of assessing the different affective components that affect the learning of an L2. As a research instrument with recognized validity, it has been used in several studies and for different purposes:

To date, its major applications have involved investigations of (a) the correlations of sub-tests and composite test scores with indices of language (b) the effects of specific programs, excursions, etc., on attitudinal / motivational characteristics, and (c) the relation of attitudes and motivation to classroom behaviour. (Gardner 1985, p. 5)

The full instrument was also tested and validated for its internal consistency by the author with 5000 student samples. The AMTB is expected to bring a valuable input on student perceptions that might help to reflect on motivation. However, to prevent the study from having insufficient or inconclusive data, the collection of qualitative data along with these, as described as follows, will hopefully allow a consistent reflection on motivation.

3.2. Interview

After collecting and analysing the data from the Motivation scales (examples 1 and 2), a protocol for an interview to the teachers was created according to the preliminary analysis of the initial data. Being this the last step in the data collection, its main goal is to deepen the quantitative data and conclusions resulting from the collections and instruments already mentioned (Creswell *et al.* 2003). Creswell *et al.* (2003) recognise that the interview can be included in an investigation that integrates several methodologies and is of a different nature, as this will bring relevant textual elements. Although these instruments measure motivation differently, the results of the collected data can be analysed individually and later their interpretation can be contrasted.

This study intends to collect teachers' perceptions about students' progression regarding their motivation and involvement in the English language class. Teachers' perceptions are very relevant, since they are the specialists dealing with these aspects of students' learning throughout the school year in the classroom, having a deeper knowledge of the students, the class situations and their implications.

Interviews may be more or less structured (Bogdan & Biklen 2007; Creswell *et al.* 2003) and the data collected can be more reliable when more than one participant is interviewed. When the interview is more structured, it is important to use the same formulations of questions and expect interviewees to understand the questions in the same way (Cohen, Manion & Morrison 2007, p. 151), as opposed to a less structured interview, in which there is more freedom for the conversation to flow freely and to let the interviewees name the topics themselves.

Baring this in mind, the semi-structured interview procedure was chosen for this study. A script was produced after the initial analysis of the quantitative data and according to the sequential explanatory strategy (Creswell *et al.* 2003). It was applied to the two teachers in July 2016, after the conclusion of the school year, requesting them to reflect on the events experienced throughout the year. Teachers were interviewed individually. The audio recordings allowed a full transcription of the two sessions with the teachers. This transcription was then organized in tables that allowed the comparison between their answers and according to the planned structure of the interview.

After analysing the content of the interview, a joint analysis of the entire body of data collected was carried out. This final analysis allowed the contrast of the various perspectives collected on the same topic.

4. Results of the comparative analysis

In this section the quantitative data is presented first, then the results of the students' questionnaire, followed by the qualitative data, the results of the teachers' interview, with a short summary at the end. The results will be further discussed in a subsequent section.

4.1. Students' motivation scores

The application of the questionnaires to the students, with the three particular chosen scales, aimed to assess the impact of the project on students' motivation to learn the foreign language. Thus, two moments of application of the instrument are compared - before starting the project, at the beginning of the school year (moment 1 – M1) and then, at the end of the school year (moment 2 – M2).

Since the three chosen scales constitute the index 2 in the battery of tests, referring to *Motivation* to learn the foreign language, the Motivation index is calculated by adding the scores of three scales: “4. Attitudes towards the learning of English” (ALE) – maximum score of 70; “9. Motivational Intensity” (MI) – maximum score of 30; and “10. Desire to Learn English” (DLE) – maximum score of 30. The maximum total score is 130 points.

As shown in Table 1, the group shows an average total score of 60,65 in the first dimension ALE in M1 and 61,79 in M2. The difference between the two moments was not statistically significant ($p=,144$). As for the second dimension MI, the average total score is 24,70 in M1 and 24,75 in M2 (maximum of 30), having also no statistical significance ($sig.=,861$). The last dimension considered, DLE, presents an average score of 24,21 in M1 and 24,67 in M2 (maximum of 30), and the difference between scores was, again, not statistically significant ($p=,102$). Thus, the total score is 109,56 in M1 and 111,21 in M2, (maximum of 130), and there is no significant difference between these results ($p=,130$). In spite of non-significant differences, it should be noted that these values were already high in M1, remaining equally high in M2, increasing the total score, albeit in a less marked way.

Table 1. AMTB Scores by Dimensions and Total Scores

<i>n</i> =106		Total score mean	Standard Deviation	Mean differences	t-Student (<i>t</i>)	<i>p</i> -value (<i>sig.</i>)																										
D1 – ALE (max. 70)	M1	60,65	7,940	1,142	-1,472	,144																										
	M2	61,79	6,823				D2 – MI (max. 30)	M1	24,70	2,879	,047	-,176	,861	M2	24,75	2,586	D3 – DLE (max. 30)	M1	24,21	3,004	,462	-1,649	,102	M2	24,67	2,714	Total Score 3 dimensions (max. 130)	M1	109,56	11,710	1,651	-1,526
D2 – MI (max. 30)	M1	24,70	2,879	,047	-,176	,861																										
	M2	24,75	2,586				D3 – DLE (max. 30)	M1	24,21	3,004	,462	-1,649	,102	M2	24,67	2,714	Total Score 3 dimensions (max. 130)	M1	109,56	11,710	1,651	-1,526	,130	M2	111,21	9,836						
D3 – DLE (max. 30)	M1	24,21	3,004	,462	-1,649	,102																										
	M2	24,67	2,714				Total Score 3 dimensions (max. 130)	M1	109,56	11,710	1,651	-1,526	,130	M2	111,21	9,836																
Total Score 3 dimensions (max. 130)	M1	109,56	11,710	1,651	-1,526	,130																										
	M2	111,21	9,836																													

Groups of students were also considered to identify whether there would be differences depending on whether the initial motivation was more or less elevated. The goal was to look at progressions in group instead of simply calculating the total average score and motivation dimensions. Thus, for each one of the dimensions a maximum, medium and minimum score was also established, as explained in Table 2.

Table 2. Maximum, medium and minimum scores, total and by dimensions of the AMTB

	Maximum score	Medium score	Minimum score
D1 – ALE	70	40	10
D2 – MI	30	20	10
D3 – DLE	30	20	10
Total Scores	130	80	30

According to these groups, students were then divided into three levels according to their total scores: Level 1 – Reduced level of motivation (students with scores between 30 and 79 points); Level 2 – Moderate level of motivation (students with scores between 80 and 104 points) and Level 3 – High level of motivation (students with scores between 105 and 130 points). As identified in Table 3, in M1 only 3 students were in Level 1, 26 in Level 2 and 77 in Level 3. This confirms that the vast majority of the students were already very motivated to learn English at the beginning of the study. Motivation scores were then calculated for each of these levels, scores for both total and by dimensions.

Table 3. Total AMTB Scores by initial motivation levels

	<i>n</i> (106)		Min. (30)	Max. (130)	Total score mean	Standard deviation	Mean differences	t-Student (<i>t</i>)	<i>p</i> -value (<i>sig.</i>)
Level 1 (30-79)	3	M1	73	77	74,67	2,082	11	-2,144	,165
		M2	81	95	85,67	8,083			
Level 2 (80-104)	26	M1	82	104	96,92	6,675	13,46	-6,212	,000*
		M2	86	126	110,38	8,338			
Level 3 (105-130)	77	M1	105	129	115,18	6,322	-2,7	3,091	,003*
		M2	87	126	112,48	9,026			

Note: *significant for $p < .05$

The 3 students in the Reduced level of motivation, Level 1, presented an average total score of 74,67 in M1, rising to 85,67 in M2, having a difference of 11 points between the two. This increase is equivalent to a change to a Moderate level of motivation, according

to the division previously established in this research. Nevertheless, it does not reveal statistical significance ($p=.165$), even more so because the number of elements in this group was quite reduced ($n=3$).

The 26 students in Level 2 in M1, the Moderate level of motivation, presented an average total score of 96,92, rising to 110,38 in M2, with an incremental difference of 13,46 points. Such rise again includes these students in the following level of motivation, *i.e.* a High level of motivation. This difference is statistically significant ($p=.000$).

The majority of the students, the 77 that were initially included in the High level of motivation, Level 3, present an average total score of 115,18 in M1, descending to 112,48, which is a difference between averages of -2,7 points with statistical significance ($p=.003$). Although descending, this large group of students remains at a High level of motivation.

These data were further analysed by dimensions. Table 4 presents these results by the AMTB dimensions and by the three levels of initial motivation.

Table 4. Scores by AMTB Dimensions and by levels

	<i>n</i> (106)		Min.	Max.	Total score mean	Standard Deviation	Mean differences	t- Student (<i>t</i>)	<i>p</i> - value (<i>sig.</i>)	
Level 1 (30-79)	3	D1 – ALE (max. 70)	M1	36	39	37,33	1,528	7,67	-5,277	,034*
			M2	42	47	45,00	2,646			
		D2 – MI (max. 30)	M1	19	20	19,33	,577	2,67	-1,220	,347
			M2	19	27	22,00	4,359			
		D3 – DLE (max. 30)	M1	15	21	18,00	3,000	0,67	-,244	,830
			M2	15	21	18,67	3,215			
Level 2 (80-104)	26	D1 – ALE (max. 70)	M1	41	64	51,92	5,161	9,2	-6,500	,000*
			M2	46	70	61,12	5,989			
		D2 – MI (max. 30)	M1	16	28	23,12	3,051	1,3	-2,078	,048*
			M2	17	28	24,42	2,701			
		D3 – DLE (max. 30)	M1	17	26	21,88	2,355	2,97	-4,382	,000*
			M2	18	29	24,85	2,894			
Level 3 (105-130)	77	D1 – ALE (max. 70)	M1	55	70	64,51	3,962	-1,83	2,609	,011*
			M2	44	70	62,68	6,344			
		D2 – MI (max. 30)	M1	18	30	25,44	2,414	-0,48	1,774	,080
			M2	19	29	24,96	2,441			
		D3 – DLE (max. 30)	M1	18	30	25,23	2,444	-0,39	1,681	,097
			M2	20	30	24,84	2,385			

Note: *significant for $p < .05$

Thus, it can be seen that Levels 1 and 2 have always improved from M1 to M2 in all dimensions. Along with that, in Level 1 these improvements are stronger in D1, where the mean difference is of 7,67 points ($p=,034$). The differences in D2 and D3 are not statistically significant ($p=,347$ and $,830$).

In Level 2, these improvements are more evident in D1 and D3, where there are mean differences of 9,2 and 2,97 points respectively ($p=,000$ in both), having D2 a minor improvement with a mean difference of 1,3 points ($p=,048$).

The group of the 77 students in Level 3 has a different pattern of changes, since it descends in all dimensions of motivation, even though these differences are less evident, of -1,83 in D1 ($p=,011$), -0,48 in D2 ($p=,080$) and -0.39 in D3 ($p=,097$).

4.2. Teachers' perceptions during the interview

The teachers' perceptions regarding students' motivation towards learning presented here were collected during the interview. It should be noted that both teachers associate 'motivation for learning' with 'student involvement in class activities' and 'oral participation', and both emphasise their increase during tablet-based activities. Thus, in this analysis of teachers' responses, these concepts are always related, since both participants associate 'motivation' to 'participation'.

Teacher 1, for example, stresses motivation as a benefit of using tablets in class: "I think [tablet integration is] quite interesting, quite relevant, when we refer to student motivation." Later on, when referring to the development of oral production, teacher 1 considers it as allied to motivation:

If motivation is different, then oral production is also different, of course. Because if they are much more motivated they will also want [to improve] the level of oral production, they will want to improve, they will want it to be different (...) [the project] had an impact because they became more motivated for the language and even felt they reasonably dominate the English language.

Both interviewees seem to agree that the mere presence of the technological device may confer a differentiating element that motivates students to the classroom activities. Teacher 1 notes: "They end up feeling more enthusiastic. They are more open... it makes them come to class with this predisposition to work (...) We could see their eyes sparkle... in what they could do and their ideas coming up..."

In the same line of thought, Teacher 2 refers to the students' enthusiasm for activities in the classroom, when they realized that the work would involve the use of the tablet: "that feeling of... every time I went in and they said 'but are we using the iPad today?' That's it! It gave me the feeling that they were motivated to have more classes with iPad." Teacher 2 also explains that this sense of motivation in one of the classes was related to the work done in class: "At the end to present their last projects (...) I felt it more in the 7th than in the 8th grade, I felt that they asked... to be all with their iPad and I realised that it was really to work."

Teacher 2 finds two explanations for this motivation to be related to school work. As she explains, using this device makes schoolwork for this subject easier, and also a lot

funnier, being the students more available and more motivated, in her opinion. On another occasion she points out:

Because they saw it as a fun thing, right? and so they were much more motivated. They didn't think it was boring at all. It was fun to do that, and also because they always liked to see their finished product, they were very happy to see how it was going to be (...) motivation was very much linked to having fun and the fact that they were creating something fun, without even realizing it, they were learning.

Both teachers pointed out that they felt more pronounced differences in students' motivation related to the activities in this project. For example, Teacher 1 says: "In class we could see that when we talked about a project where they could use the iPad, their motivation was much greater. They were all excited." Teacher 2 agrees and stated that she felt that "during presentations the weaker or shy students were much more willing to do a much better work. They were richer than the others."

Finally, both teachers refer that this higher motivation is also linked to a higher quality of products made by the students. Teacher 1 considered that most of the products were of a greater quality than usual: "The great majority of students' products were all of great quality, and if there is no motivation, you can't do it..." Later he compares the type of work that these students do to the ones of other students without these technologies: "in these classes they begin to think about the apps they can use and how they can do their project. That is, they have more ways of doing the same thing and it's not as boring." As for Teacher 2, she compares the two classes she teaches as they are in different technology adoption phases, being the 8th grade in their second year:

They were more motivated, more the 7th than the 8th... because the 8th grade saw the iPad as a way to do the same slides presentation, so almost everyone presented in Keynote, for example, it was very basic (...) So what I felt was that was really their initial idea, that the iPad was to do presentations, and in a very linear way, and in the end they realised that they could be creative with that.

The same teacher also points out that the fact that the students feel more confident about the work they are doing, also motivates them:

They felt more comfortable because, like I said, I think learning English has a lot to do with self-esteem, it has a lot to do with 'I can't do it' and when they realised that they could, there was 'the happy little seed' of 'you see, you can do it' and that motivated them and they felt more comfortable.

In essence, an improvement in motivation seems to be very clear for both teachers because they feel that students are more confident, more active, and more enthusiastic about classroom activities, as both refer in their perceptions throughout the interview. Both emphasise students' different attitudes in classes where tablets are used to lead students to content production, having both considered students' participation and involvement improves in this type of work. Both even highlight an improvement in oral production as a result of this greater motivation for their work in the school subject.

5. Final remarks

The goal of this study was to look at student motivation when using tablets in the English class with the purpose of creating digital content where they would develop oral skills. The research question resulting from the literature review was: Will the pedagogical integration of tablets 1:1 contribute favourably to students' motivation to learn English as a Foreign Language? To answer this research question, the study looked both at students' and teachers' perceptions through different instruments of data collection, namely a questionnaire to the 106 students and an interview to the 2 teachers.

There is an improvement in motivation as a whole. The initial quantitative results, collected through a questionnaire, showed that the levels of motivation for English language learning were particularly high and consequently there were no noticeable differences between the beginning and the end of the school year, which was the timeline of the project. However, when students are differentiated by their levels of motivation, based on the scores registered at the beginning of the school year, it can be observed that students from the Moderate level move to the Higher level of motivation. In this group we can detect statistically significant differences. This trend in the results is true not only for the total score of the motivation scale but also for the 3 dimensions analysed. This improvement was also verified in the few students in the Reduced level of motivation, even though there were no statistically significant differences.

In the same way, through the content analysis process in the interviews, this positive impact of the project on students' motivation to learn English was also verified and widely reported by the teachers. In particular, the teachers emphasized that the project stimulated students' involvement in the tasks they did in class, as well as their enthusiasm, their participation, level of interaction and the overall quality of their work.

An improvement in motivation is noted by both teachers, who affirm it was evident, being much more expressive in their opinions than what the initial quantitative data had presented. In a more detailed and complementary analysis, by performance levels, it can be observed that these improvements are much more evident in the case of students with lower levels of motivation, and that students with higher levels of motivation present a slight decrease, remaining in the same level of motivation. Although the improvement occurs and is evident in both quantitative and qualitative data, it is not as evident to students as it appears to be in the teachers' perceptions of what is common and usual in their work with students. This increase in motivation also seems to be more evident in the group of students in the first year of technology adoption (the 7th grade), which is confirmed by Teacher 2.

The study presented here thus demonstrates favourable effects of the use of tablets to support EFL learning activities. These results concur with the literature analysed in what student motivation and involvement is concerned, namely the works of Gawełek *et al.* (2011) and Kukulska-Hulme *et al.* (2015). The improvements were detected in terms of the students' *attitudes* towards the learning of English, *motivational intensity* and *desire to learn* English. These were only significant for the group of students with moderate levels of motivation. Both teachers confirm higher levels of motivation in the

students involved in the project and using MT in the classroom, particularly shy and weaker students.

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References

- Aronin, S. & Floyd, K. (2013). Using an ipad in inclusive preschool classrooms to introduce STEM concepts. *Teaching Exceptional Children*, 45 (4), 34–39.
- Beschorner, B. & Hutchison, A. (2013). Ipad as a literacy teaching tool in early childhood. *International Journal of Education in Mathematics, Science and Technology*, 1 (1), 16–24.
- Bogdan, R. C. & Biklen, S. K. (2007). *Qualitative Research for Education: An Introduction to Theories and Methods* (5th Edition). London: Pearson.
- Burrows, T. & Stepanczuk, D. (2013). Gauge of readiness for internet-based language learning: An 800-pound gorilla. *The JALT CALL Journal*, 9 (2), 197–217.
- Burston, J. (2015). Twenty years of MALL project implementation: A meta-analysis of learning outcomes. *ReCALL*, 27 (1), 4–20.
- Carvalho, A. A. (2012). *Aprender na era digital: Jogos e Mobile-Learning*. Santo Tirso: DeFacto Editores.
- Clark, W. & Luckin, R. (2013). *What the research says – ipads in the classroom*. London: London Knowledge Lab – Institute of Education University of London.
- Cohen, L., Manion, L. & Morrison, K. (2007). *Research methods in education*. London: Routledge.
- Commission of the European Communities (2003). *Promoting Language Learning and Linguistic Diversity: An Action Plan 2004–2006*. 449. <<https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52003DC0449&from=EN>>. Consulted on: 1st December 2018.
- Creswell, J. W., Plano Clark, V. L., Gutmann, M. L. & Hanson, W. E. (2003). Advanced mixed methods research designs. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed methods in social and behavioral research* (pp. 209–240). Thousand Oaks, CA: Sage.
- Dörnyei, Z. (1994). Motivation and motivating in the foreign language classroom. *The Modern Language Journal*, 78 (3), 273–284.
- Dörnyei, Z. (1998). Motivation in second and foreign language learning. *Language Teaching*, 31, 117–135.
- Ensor, T. (2012). Teaming with technology: “Real” ipad applications. *International Reading Association: Journal of Adolescent & Adult Literacy*, 56 (3), 193.
- European Commission (2014). *Measuring digital skills across the EU: EU wide indicators of digital competence*. <<https://ec.europa.eu/digital-agenda/en/news/measuring-digital-skills-across-eu-wide-indicators-digital-competence>>. Consulted on: 1st December 2018.
- Ferrari, A., Brečko, B. & Punie, Y. (2014). DIGCOMP: A framework for developing and understanding digital competence in Europe. *Digital Literacies and eCompetence, eLearning Papers*, 38, 3–16.
- Gardner, R. C. (1985). *The Attitude/Motivation Test Battery: Technical Report*. Ontario, Canada: University of Western Ontario.
- Gardner, R. C. (2004). *Attitude Motivation Test Battery: International AMTB project*. <<http://hyxy.nankai.edu.cn/jingpinke/buchongyuedu/Motivation%20measurement-AMTB.pdf>>. Consulted on: 1st December 2018.
- Gawelek, M.A., Spataro, M. & Komarny, P. (2011). Mobile perspectives: On ipads – why mobile? *EDUCAUSE Review*, 46 (2), 28–32.

- Goodwin, K. (2012). *Use of tablet technology in the classroom*. New South Wales, Australia: Curriculum and Learning Innovation Centre – Institute of Early Childhood Macquarie University.
- Hashwani, M. S. (2008). Students' attitudes, motivation and anxiety towards English language learning. *Journal of Research and Reflections in Education*, 2 (2), 121–144.
- Hesser, T. & Schwartz, P. (2013). Ipad in the science laboratory: Experience in designing and implementing a paperless chemistry laboratory course. *Journal of STEM Education*, 14 (2), 5–9.
- Higgins, S., Xiao, Z. & Katsipataki, M. (2012) *The impact of digital technology on learning: A summary for the education endowment foundation – full report*. Durham, UK: Education Endowment Foundation – Durham University.
- Huber, S. (2012). *Ipads in the classroom – A development of a taxonomy for the use of tablets in schools* (PhD thesis, Graz University of Technology, Graz, Austria).
- Hutchison, A., Beschoner, B. & Schmidt-Crawford, D. (2012). Exploring the use of the ipad for literacy learning. *International Literacy Association – The Reading Teacher*, 66 (1), 15–23.
- Karsenti, T. & Fievez, A. (2013). *The ipad in education: uses, benefits, and challenges – A survey of 6,057 students and 302 teachers in Quebec, Canada*. Montreal, Canada: CRIFPE.
- Kukulka-Hulme, A., Norris, L. & Donohue, J. (2015). *Mobile pedagogy for English language teaching: a guide for teachers*. London: British Council.
- Kukulka-Hulme, A. (2009). Will mobile learning change language learning? *ReCALL*, 21 (2), 157–165.
- Madrid, D. & Pérez Cañado, M. L. (2001). Exploring the student's motivation in the EFL class. In E. García Sánchez (Ed.) *Present and Future Trends in TEFL*, 321–364.
- O'Malley, P., Jenkins, S., Wesley, B., Donehower, C., Rabuck, D. & Lewis, M. (2013). Effectiveness of using iPads to build Math fluency. *Proceedings of annual meeting of the Council for Exceptional Children*. San Antonio - Texas: Council for Exceptional Children.
- Pegrum, M., Oakley, G. & Faulkner, R. (2013). Schools going mobile: A study of the adoption of mobile handheld technologies in Western Australian independent schools. *Australasian Journal of Educational Technology*, 29 (1), 66–81.
- Peluso, D. (2012). The fast-paced ipad revolution: Can educators stay up to date and relevant about these ubiquitous devices? *British Journal of Educational Technology*, 43 (4), 125–127.
- Traxler, J. (2009). Learning in a mobile age. *International Journal of Mobile and Blended Learning*, 1 (1), 1–12.
- Traxler, J. (2011). Aprendizagem móvel e recursos educativos digitais do futuro. *Cadernos ERTE - Sacausef*, 7, 36–47.
- West, M. & Vosloo, S. (2013). *UNESCO policy guidelines for mobile learning*. Paris: UNESCO.
<<https://unesdoc.unesco.org/ark:/48223/pf0000219641?posInSet=1&queryId=777a51d3-1e51-47df-b238-f41660af4321>>. Consulted on: 1st December 2018.

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