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A scrutiny of the educational value of EFL mobile learning applications

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Abstract

Mobile learning is without any doubt the next step in the evolution of educational technology as it offers modern methods of support to the process of learning through the use of mobile instruments. However, although there are a huge number of educational applications in the market at the moment, the educational value of many of them is rather questionable.

The final aim of the SO-CALL-ME ((Social Ontology-based Cognitively Augmented Language Learning Mobile Environment) (FFI 2011-29829) research project is to design and create EFL mobile applications that successfully combine technical skills and a solid pedagogy. In this light, the present study is the third phase of a line of research which started in 2012. In the first phase 67 MALL applications in the context of EFL were assessed by means of a rubric not on their technical features but on their pedagogic goals. The results gave us an idea of the qualities and limitations of the apps examined. In the second phase, a quality guide was created as the basis for a more elaborate evaluation rubric. Out of the EFL apps previously analyzed with the first rubric, we chose four that fulfilled the features considered most important for the apps to be developed in a final stage of the research project. In the third phase, a rubric was used to evaluate the linguistic adequacy of EFL apps for listening. The present study offers the evaluation of a higher number of apps using the rubrics created in phases 2 and 3 in order to corroborate the first impressions as a final step before using the quality guide for the creation of EFL applications.

Keywords: mobile learning, EFL, applications, educational

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1. Introduction

Mobile Assisted Language Learning, or MALL, can be defined as the process of reaching knowledge through exploration and conversation across multiple contexts amongst people and interactive technologies (Sharples, 2007). O'Malley, Vavoula, Glew, Taylor, Sharples & Lefrere (2003) define it as "any sort of learning that happens when the learner is not in a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies". It is a fast developing field as the demands of an increasingly knowledge-based society and the dramatic advances in mobile phone technology are acting in combination (Wang & Shen, 2012) and, seemingly, in the same direction. MALL is becoming a real force in education, which uses increasingly more portable tools as a support in the classrooms (Martín-Monje et al., in press). At the time of writing this paper, there are over 28,000 educational apps available on the market. With such a high number of apps available, we can easily expect to find varying degrees of quality. It is therefore important to find tools and mechanism which may help instructors and learners chose those apps which can represent a real added value to their teaching/learning efforts. Thus, for MALL to attain its full potential, it is essential to develop a pedagogy and an instructional design tailored to the needs of this new learning environment (Wang & Shen, 2012).

MALL opens a wide range of new and exciting learning opportunities (SØlvberg & Rismark, 2012). With its portability, mobile technology expands learning and teaching opportunities for second and foreign language learners and teachers. Taking into consideration the fact that generation Y is highly directed towards this emerging new mobile technology, educators have no choice but to adapt themselves to the procedures of mobile learning in their teaching and in the development of educational materials. In their study, O'Malley et al. (2003) highlight the fact that mobile learning is not just another type of learning technology but a new era that is expected to re-conceptualize how people learn. Educators need to be abreast of this fast evolving field of learning in order to gain the most benefits from it. While a great number of projects have concentrated on teaching students to make use of mobile technologies, not many have concentrated on teaching teachers to use those devices (Shrestha, 2012; Vosloo, 2012). Singularly, in some remarkable projects financed by the Mobile Learning Network (MoLeNET) programme trainee teachers carried out tasks using Skype on mobile phones to maintain contact with their supervisors, and recorded their performances teaching in class using video cameras for self-assessment (Dykes & Renfrew Knight, 2012). In the words of Dudeney (2013), probably, teachers may need to spend time trying to turn students from tech-comfy into tech-savvy users of MALL. In order to make this a reality, students must be taught how their devices can help not only classroom learning but also informal, lifelong learning. This process entails a change of perspective in some aspects such as the fact that mobile devices are not only useful for playing games, mobile activities can go further than mere entertainment, MALL is more than drills, and user-generated content is more than a lazy substitute for teacher-generated material (Pegrum, 2014). Furthermore, while some teachers can fuse their content and pedagogical knowledge to bear on new technologies, they may sometimes find themselves teaching students whose technological proficiency goes beyond their own, and who can consequently help the development of the teachers' technological knowledge as well as, in some instances, becoming 'technological co-learners' (Oakley & Faulkner, 2013). As Hockley, Dudeney & Pegrum (2013) point out, teachers should be prepared to learn not only from trainers, but from and with their students, in what may become rich teaching and learning partnerships. Certainly mobile learning is becoming the leading mode of learning and the challenge now is how to best use this growing technology within the framework of the well-established methodologies based on prevailing learning theories, without subjecting learners to learning experiences that are solely technology-based. As educators we must take the initiative and delve into this new notion. To this end, in this article, we intend to present the findings from the various stages of a study in which some EFL apps have been scrutinized.

Our research has developed in four stages so far: stage 1 comprised an analysis of EFL apps and a categorization thereof; Stage 2 consisted in the design of a rubric for the pedagogic and technical assessment of EFL apps; Stage 3 involved the creation of a specifically linguistic rubric

to evaluate the linguistic adequacy of EFL apps for the listening skill; in Stage 4 the evaluation of a higher number of apps is being carried out using the rubrics created in stages 2 and 3. The final aim is to corroborate the first impressions as a final step before using the quality guide for the creation of EFL applications. Therefore, the results will represent a starting point from which to design and develop EFL mobile applications that successfully combine technical skills and a solid pedagogy.

2. Corpus and methods

2.1. Stage 1. Analysis and categorization of EFL apps available

The objective of this stage was the examination of some of the most salient MALL applications available in the market at the moment. These apps were evaluated from a pedagogic point of view without taking into account their technical specifications (Arús-Hita Rodríguez-Arancón, Arús-Hita & Calle-Martínez al, in press). The evaluation of apps was done through the use of two templates created for the purpose. The first template was a table with two columns and an extendible number of rows where three evaluators could note each app assessed and the URL from which such app had been extracted. The aim of this list was for each evaluator to know what apps had already been examined and thus avoid repetitions. The second template was an in-house created rubric that was formed with three criteria and a scale from one to five. The aim was to keep the rubric very much geared towards our project's specific needs and to evaluate as many apps as possible in a relatively short space of time whilst guaranteeing homogeneity in the process. The three criteria considered were: 1) the apps' cognitive value; 2) similarity of the apps with the pedagogic aims of the SO-CALL-ME project; and 3) complementarity with the pedagogic aims of the SO-CALL-ME project. A brief description and a final conclusion of each app were given at the end of each rubric. Table 1 illustrates this rubric as used to evaluate one of the apps.

Table 1. Initial evaluation rubric

App: Johnny Grammar	1	2	3	4	5
Cognitive value	None	Low or imprecise	Precise but not high or realistic	Clear and realistic	Clear and with great potential
Similarity with SO-CALL-ME	None	some	Fair	High	Very high
Complementarity with SO-CALL-ME	None or not clear	Some or not very clear	Fair	High	Very high

A total of 67 EFL apps were assessed through a non-in-depth methodological analysis, combining the study of the information available on the websites describing each app and, whenever possible, tested on a mobile phone.

Stage 2. Design of an evaluation rubric for the pedagogic and technical assessment of EFL apps

In the second stage, a quality guide and a rubric were designed in order to evaluate apps. The guide follows the ten criteria established by Fernández-Pampillón, Domínguez Romero & de Armas Ranero (2012) for the evaluation and creation of learning objects and adjusts them to the features and goals of educational apps. The important feature of this guide is that it combines pedagogical bases (Cognitive value and pedagogic coherence; Content quality; Capacity to generate learning; Interactivity and adaptability; and Motivation) with technical ones (Format and layout; Usability; Accessibility; Visibility; and Compatibility). This avoids the risk of evaluating apps only from a technical point of view, which, as stated by Ballance (2013) "is to discuss little more than mobile-enabled CALL" and it also reflects the fact that apps are very much dependant on technology and should therefore not be evaluated from an exclusively

pedagogical perspective.

Based on this guide, a new rubric was designed to ease the app evaluation process, carried out this time by two evaluators. Four of the 67 previously evaluated EFL apps with the highest marks, i.e. with the highest potential to serve as sources of inspiration for the apps to be developed, were chosen for a preliminary evaluation: Englishfeed, SpeakingPal English Tutor, Clear Speech and Learn English Audio and Video. Table 2 shows this rubric ready for use.

Table 2. Rubric for the pedagogic and technical evaluation of apps

| | Punctuation | | | |
	Englishfeed	SpeakingPal	Clear Speech	Audio&Video
1. Cognitive value and pedagogic coherence				
2. Content quality				
3. Capacity to generate learning				
4. Interactivity and adaptability				
5. Motivation				
6. Format and layout				
7. Usability				
8. Accessibility				
9. Visibility				
10. Compatibility				

2.2. Stage 3. Rubric for the evaluation of apps in language learning (REALL)

As the weakest point in the evaluated apps had to do with key methodological issues, we found it was necessary to tackle those aspects and therefore zero in on EFL-specific methodology. We therefore looked at the Common European Framework of Reference (CEFR henceforth, Council of Europe, 2011) in order to establish a specifically linguistic benchmark. The implementation of the CEFR was done in such a way that it complemented the previous stages of research and meant 'an added value' to the pedagogic assessment that had already been fulfilled. For the purposes of that piece of research we centred our attention on levels A2-B2, which are the ones that cover the majority of EFL learners and users. SO-CALL-ME has a clear focus on oral competence, which is why the development of REALL gave priority to this skill. The starting point was oral reception, but the rest of the language activities described by the CEFR would follow (oral production and interaction, written reception, written production and interaction, interpretation and translation). In this line, the CEFR descriptors for listening competence were analysed and highlighted accordingly.

All this resulted in REALL, a rubric which was used to evaluate the linguistic adequacy of EFL apps for listening. It followed the same pattern as the previous rubric: the information in the cells takes the quality guide as a reference. The categories chosen were the following: level, types of texts, topics and delivery. The evaluating process was also parallel to the one used in the pedagogic and technical assessment of stage two: two evaluators analysed the five chosen apps (*Englishfeed, Speakingpal, Clear Speech, Learn English Audio & Video, Learn English Elementary Podcasts*), in order to work out their linguistic adequacy according to the CEFR. Table 3 shows this rubric ready for use.

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<div align="center">Table 3. Reall</div>

	English Feed	Speakingpal	Clear Speech	Learn English Audio & Video	Learn English Elementary OPodcasts
1.Level					
2. Types of texts					
3. Topics					
4. Delivery					

2.3. Stage 4. Evaluation of apps from a pedagogic and linguistic point of view

The present study offers the evaluation of a higher number of apps using the rubrics created in phases 2 and 3 (see tables 2 and 3, above) to corroborate the first impressions as a final step before using the quality guide for the creation of EFL applications. With this study, the total number of evaluated apps using our in-house created rubrics is 9. The evaluating process was the same as the one carried out in phases 2 and 3: two authors of this paper undertook the evaluation of 4 more apps (*Learn English-Listening Skill, Headway Listening, English Conversation, TOEIC 700Q*).

2. Results

Before describing the results of the evaluations carried in out in stage 4, with which this paper is concerned, we provide a brief summary of the results obtained in stages 1 through 3, as described in Arús-Hita et al. (in press), Rodríguez-Arancón et al. (in press) and Martín-Monje Arús-Hita, Rodríguez-Arancón & Calle-Martínez (in press).

The first thing to be observed during the initial analysis and categorization of EFL apps available was that a high number of those which had been assessed presented technical problems when downloading or starting them. Concerning software requirements, a great number were feasible for Apple devices –iPhone, iPad and, sometimes, iPod Touch –; around one in four were also available for Android; while Blackberry OS, Bada or Ovi seem to be much less targeted by app developers.

As previously mentioned, four of the apps with the highest marks in stage 1 – i.e. *Englishfeed, SpeakingPal English Tutor, Clear Speech* and *Learn English Audio and Video* – were pedagogically assessed by means of an in-house created rubric. We were aware that the number of EFL apps evaluated at that stage was statistically insignificant, yet pending further evaluation – see the results for stage 4, below – some interesting facts seemed to stand out. For instance, and most notably, criterion 4 in our evaluation rubric –Interactivity and adaptability – turned out to be the weakest point in the apps evaluated. This came as no surprise, as the specifications of this criterion in our quality guide include some essential requisites for successful FLT with which teaching methods have traditionally struggled, notably, contextualized teaching.

This takes us to the results of the third evaluation stage, where we targeted EFL-specific methodology. Again, the number was too small to reach definitive conclusions, but it served the authors to pilot the REALL rubric and show the consistency between the two evaluators, since there were minimum discrepancies between them. The study carried out at that stage allowed us to conclude that the pedagogic and technical quality of EFL apps does not necessarily go hand in hand with their linguistic value and adequacy for EFL teaching, since only two of the five apps with the highest score in the previous pedagogic assessment achieved a reasonably good score when applying REALL. The evaluation made clear the fact that not all MALL apps are backed up by a sound linguistic content that is adequate for steady language learning. We now reach the results of our enhanced assessment of MALL apps both from a more generally pedagogic and a more specifically linguistics point of view. Let us remember that our purpose here is to corroborate the first impressions obtained in stages 2 and 3. Table 4 shows the results of the pedagogic assessment and compares the scores given by the two evaluators to each of the four

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EFL apps assessed following the ten criteria in our rubric. The minimum and maximum possible scores are 1 and 5, respectively. The same quality guide used in stage 2 helped the evaluators in the assessment process, and it once again proved to be of help, as statistically confirmed by the kappa inter-rater agreement measure, which is 0.838, i.e. "very good".[*]

Table 4 Scores of the 4 additional EFL apps evaluated by means of the general rubric

	Evaluation							
	LearnEnglish-Listening Skill		Headway Listening		English Conversation		TOEIC 700Q	
	Ev. 1	Ev. 2	Ev. 1	Ev. 2	Ev. 1	Ev. 2	Ev. 1	Ev. 2
1.Cognitive value and pedagogic coherence	4	5	2	2	2	1	5	5
2. Content quality	5	5	2	2	2	2	5	5
3. Capacity to generate learning	5	5	3	3	2	2	5	5
4. Interactivity and adaptability	5	5	2	2	1	1	5	5
5. Motivation	3	4	1	1	1	1	5	5
6. Format and layout	5	5	1	1	1	1	5	5
7. Usability	5	5	4	4	5	4	5	5
8. Accessibility	5	5	4	4	4	4	5	5
9. Visibility	5	5	5	5	5	5	5	5
10. Compatibility	5	5	5	5	5	5	5	5

An interesting observable fact is that criteria 1 through 5 average the lowest scores in the apps evaluated. These criteria are all pedagogical – technical criteria being 6 through 10. This confirms and adds to the previous results obtained in stage 2, where the apps evaluated showed weakness as far as criterion 4 is concerned, which again appears among those with the lowest scoring average on this occasion (26 points, in a tie with criterion 1), second only to criterion 5 (21 points), which appears as the weakest overall. We say that these results "confirm and add" to the previously obtained results because we can again see that EFL apps are likelier to struggle with pedagogic issues than with technical ones, and not just with specific ones but in general. So, whereas TOEIC700Q obtained top results for every category – closely followed by *LearnEnglish-Listening Skill*, with four points lost in pedagogic aspects –, the two other apps evaluated lost most of their points in pedagogic issues: Headway Listening scored 20/50 in criteria 1-5 vs. 38/50 in criteria 6-10, and English Conversation achieved 15/50 pedagogically vs. 39/50 technically. Table 5 shows the pedagogic part of our app evaluation quality guide, with the five criteria and the specifications thereof.

Table 5. Pedagogic criteria and specifications (subcriteria) in our app evaluation quality guide

1. Cognitive value and pedagogic coherence

This criterion assesses if the teaching aim(s), the target users and the skills to be developed are clearly set from the beginning. In particular, it must be assessed whether:
a. The app's download page, or the app itself, includes a description or a demo clearly specifying and/or showing the pedagogic aims, the skills to be developed and the users' type/level/needs.
b. There is coherence between the aims, the skills, and the target users.
c. There is coherence between the aims/users/skills and the app's contents, resulting in a potential high cognitive value.

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[*] The kappa value measures the agreement between two raters, 0.000 meaning no agreement and 1.000 meaning absolute agreement. The closer the value is to 1, the higher the agreement. 0.838 is considered by kappa calculation tools as "very good". For the calculations made in this paper, we used GraphPad's kappa calculation tool, available on: http://graphpad.com/quickcalcs/kappa1/.

2. Content quality

This criterion aims at evaluating the content of the app which might be a file, several files, or even other apps. The following sub-criteria should be taken into account:

a. The presentation of the content, sections and ideas are clear and easily located.

b. The instructions for the activities are clear as to how to carry them out and how they are assessed.

c. The number and distribution of concepts and ideas should be well balanced. There should not be any sections with a high concentration of concepts, nor others with a low concentration.

d. If there are explanations, the main points are highlighted so that the learner can intuitively see which ones are the main ideas.

e. The content is of a similar level to the knowledge level of the users.

f. The content is coherent with the objectives, abilities to be developed and the working method.

h. The content should is up to date.

i. The content is objective and not biased (for instance, cultural clichés are avoided).

j. The content respects intellectual property rights by:

      i. specifying the sources used.

      ii. if the work has copyright, not using more than 10%, or use more than 10% with permission.

iii. if the work is bound by an open use licence such as *creative commons* (http://es.creativecommons.org/), complying with the conditions.

3. Capacity to generate learning

a. The app's contents help to achieve the learning goals (note that this is an *a posteriori* criterion, as opposed to the *a priori* nature of "Cognitive Value cognitive and pedagogic coherence").

b. The app helps learners to find out/generate/develop the learning ideas by themselves. It fosters creativity.

c. The app fosters the learner's ability to relate already learned concepts to new concepts.

4. Interactivity and adaptability

The *interactivity* criterion is related to the fact that the presentation of the content is not static but that it depends on the use by the learner. It must be taken into account if:

a. The content presented to the users is related to the questions, answers or actions that they have previously carried out.

b. The content presented depends on the previous knowledge of the learners or on their needs.

c. Users feel that they really control and manage their learning process.

d. Conditioned content presentation is automatic, through programming, or manual, through the apps' instructions for use.

The *adaptability* criterion is related to the ease with which the app adapts to the different types of users. It must be taken into account if:

e. The app proposes different contents/activities for different competence levels.

f. The app can be used independently of specific teaching or learning methods.

5. Motivation

The app can attract and maintain the interest of the student for learning. In order to evaluate this criterion it must be taken into account if:

a. The app makes direct references to its usability in the real world. Learners perceive that what they learn is relevant to their professional and/or social surroundings.

b. The app presents the content or the didactic exploitation in an innovative and attractive manner. For instance, it replicates the interface of entertainment applications.

c. Criteria 2, content quality, 3, capacity to generate learning, and 4, interactivity and adaptability contribute to motivation.

The results obtained in this second round of evaluations strengthen the initial impression that the pedagogic component of EFL apps is often improvable. We now move to the more FLT-specific evaluation of the four apps selected – let us remember that the quality guide and rubric presented above target educational apps in general – to see if the assessment by means of

REALL also corroborates the analyses in stage 3 as described above.

All four apps cater for A2-B2 language learners; three of them achieve more than half of the possible marks and therefore pass this test. As was to be expected, two of these are, again, *LearnEnglish-Listening* skill (32/40) and, one more time with top marks, TOEIC 700Q (40/40). Headway Listening joins the leading pack this time with a 26/40 mark, whereas English Conversation confirms its low pedagogic value with 14/40. Table 6 shows the results of this more specific assessment.

Table 6. Scores of the 4 additional EFL apps evaluated by means of REALL (Kappa=1.000, i.e. "perfect")

	Evaluation							
	LearnEnglish-Listening Skill		Headway Listening		English Conversation		TOEIC 700Q	
	Ev. 1	Ev. 2	Ev. 1	Ev. 2	Ev. 1	Ev. 2	Ev. 1	Ev. 2
1.Level	3	3	3	3	2	2	5	5
2. Types of texts	4	4	3	3	2	2	5	5
3. Topics	4	4	3	3	2	2	5	5
4. Delivery	5	5	4	4	1	1	5	5

The comparative study of the pedagogic and EFL-specific assessment reveals that all four apps fare similarly in both assessments, notably concerning their relative ranking, which remains unchanged – see table 7, below, for the comparative study. It can be observed that *Headway Listening* appears in a better light in the REALL-based evaluation, as it scores under 50% in the pedagogic component of the general assessment (for a total 58%, including technical aspects) whereas it goes up to 65% with REALL. This is easily explainable by the very low score obtained by this app in the "motivation" criterion (double 1/5), a criterion not contemplated in REALL and which brings the app's average down considerably in the more general evaluation. This is actually a good example of how both rubrics can complement each other. *LearnEnglish-Listening Skill*, conversely, goes down by twelve percentage points (92 to 80) in REALL; nevertheless, its second position in the ranking remains unchallenged. The latter, downward fluctuation is probably accountable by the fact that, REALL consisting of only four criteria instead of the ten in the general rubric, points lost in one category in REALL have a larger negative impact on the overall score of high-scoring apps, e.g. the double 3 in the "level" criterion for *LearnEnglish-Listening Skill*.

Table 7. Comparative results of general and FLT-specific assessments

Comparative evaluation			
General assessment		FLT-specific assessment (REALL)	
Name of the app	Score [pedagogic]	Name of the app	Score
TOEIC 700Q	100/100 (100%) [100/100 (100%)]	TOEIC 700Q	40/40 (100%)
LearnEnglish-Listening Skill	96/100 (96%) [46/50 (92%)]	LearnEnglish-Listening Skill	32/40 (80%)
Headway Listening	58/100 (58%) [20/50 (40%)]	Headway Listening	26/40 (65%)
English Conversation	54/100 (54%) [15/50 (30%)]	English Conversation	14/40 (35%)

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3. Conclusion

In this paper we have shown the stages in the rubric-based evaluation of EFL apps, moving from the more general to the more specific. The main focus has been stage 4 of this process, where the rubrics used in stages 2 and 3 have been used to evaluate an additional number of apps. The general and the FLT-specific rubrics have proved to be truly complementary, as they allow assessing apps from a larger perspective that includes broad pedagogic categories and technical aspects, i.e. the general rubric, as well as from a closer perspective, more focused on FLT methodology, i.e. REALL. An added value of the research here presented is that in this fourth stage we have incorporated the statistical validation of the reliability of our rubrics by means of the kappa value measurement of inter-rater agreement.

After this four-stage investigation that involved the categorization of EFL apps available in the market, the design of a rubric for the pedagogic assessment and a specifically linguistic rubric for a subsequent evaluation, it can be concluded that the technical quality of an app does not necessarily go hand in hand with its adequacy for EFL teaching and learning. This evaluation made clear the fact that apps initially attractive to the user of MALL are not necessarily backed up by a sound linguistic content that is adequate for steady language learning. This should be taken into account for all those involved in the design of language apps, making us reflect on the importance of both dimensions when creating an app for FLT. Pending further evaluations, our results point to the need for EFL apps that specifically tackle pedagogic issues such as interactivity and adaptability issues by providing contextualized English practice, i.e. apps in which the activities, games, etc., available to learners draw upon notional-functional topics presented in the previous listening practice, in the case of apps targeting EFL listening. Apps specifically addressing these issues can at the same time help to improve the motivation aspect, which appears as rather weak in our evaluation. Those are the kind of apps that we, as well as the rest of the ATLAS group, are currently working on in the productive stage of SO-CALL-ME.

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