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Forliviamo: How to incidentally learn Italian through a context-aware mobile application

Abstract: This chapter aims to describe the development of the *Forliviamo* web application, which fosters incidental learning of Italian by international students through the promotion of the city of Forlì and its surroundings. Following a brief portrayal of the context in which the app originated, the theoretical underpinnings that supported the project will be shortly outlined. Afterwards, a general description of the application will be given. A special focus will be put on how language learning has been conceived through experiential tourism and on the strategies adopted to produce contents having different levels of complexity addressed to the whole community of users. To conclude, the outcomes of a first test conducted on a sample of students will be analysed.

Keywords: app, Italian L2, mobile assisted language learning, context-aware language learning, incidental learning

1. Introduction

The latest technological developments in the field of mobile devices and their applications have allowed for experimentation regarding their potential for language learning. Authors such as Kétyi, (2015), Castañeda and Cho (2016), Rachels and Rockinson-Szapkiw (2017) and Godwin-Jones (2017) have written widely about the growing importance of mobile phones in learners' lives and how they can be applied to language learning. The ever-increasing availability of different models of mobile devices, with varying price ranges that make them accessible to different segments of the population, and open Wi-Fi networks enable people to be connected to the web almost everywhere.

This context has favoured the use of apps in the field of language learning technologies. This chapter will, therefore, present the initial results of a web app aimed at the incidental and context-aware learning of Italian as a second language at the Campus of Forlì. Following a brief portrayal of the context in which the app originated, a general description of the app will be given. It will be explained how the app combines its two main goals, i.e., promoting the experiential tourism of a city and its surroundings and fostering language learning.

The strategies adopted to create the contents will be approached on two levels. It will be first described how text and multimedia have been produced in order to meet the needs of a heterogeneous audience with different language levels. This will be followed by an analysis of the strategies adopted to create language learning activities, to present domain specific lexicon and to create short insights into both Italian and the local dialect, in order to show how users approached language learning. At this point, specific attention will also be given to the feedbacks obtained so far through the testing of the app with international students.

2. Context

This section will first of all describe the international vocation of the campus of Forlì, which gave rise to the need for a tool to promote the city and encourage the learning of Italian. Then, the CALL-ER project in which the app was developed will be described, with some references to a previous international project from which CALL-ER drew inspiration.[3] Finally, the concepts of context-awareness and incidental learning, which distinguish this app from other language learning tools, will be defined.

2.1. The context of the app design

The campus of Forlì came into being in 2001 as the completion of a process that had begun in 1989 and that was aimed to create a new multicampus structure for the University of Bologna, which now includes Bologna, Cesena, Forlì, Ravenna and Rimini[4]. Since then, the campus of Forlì has experienced a significant expansion both in terms of facilities and services for students and also of opportunities for internationalisation within the degree courses, including seven degree programmes in English (either the whole programme or one of their curricula) in the academic year 2021–2022, more specifically two bachelor's degree programmes and five master's degree programmes.[5]

These programmes reflect the ever-increasing growth in the number of international students that the campus of Forlì has been experiencing over the years: during the academic year 2021–2022 the campus of Forlì hosted 190 international exchange students (compared to the 156 in 2020–2021) and 526 international students who are fully enrolled in the degree programmes, compared to the 498 in 2020–2021.[6] The need to find strategies to facilitate the approach of international students with the city, its services and the Italian language emerged from this international context and resulted in the design of the *Forliviamo* app, which will be described in section 3.

2.2. The CALL-ER project

The *Forliviamo* app has been developed within the CALL-ER project (Context-Aware Language Learning in Emilia Romagna). It was funded by the Region Emilia Romagna (High Competences for Research and Technology Transfer, Human Resources for Intelligent Specialization) through a one-year research grant awarded to the author of this chapter at the Department of Interpreting and Translation of the University of Bologna (Campus of Forlì). The app was inspired by a previous project, named ILOCALAPP (Incidentally Learning Other Cultures and Languages through an App), which involved a highly international and interdisciplinary network of European universities (Ceccherelli & Valva, 2016; Ceccherelli et al., 2016)[7]. ILOCALLAPP was set up in 2010 and developed in the period 2015–2018 within the Erasmus+ Programme, Key 2-Strategic Partnerships in Higher Education. This funding allowed for the development of several European projects aimed at designing technological platforms and devices, among which particular mention should be made of the series of UniON! mobile applications geolocalised in different European cities. In this regard, the UniON!_IT app was aimed at incidental and context-aware learning of Italian as L2 in Bologna (Cervini, et al., 2016; Valva et al., 2018; Cervini, 2018). *Forliviamo* takes up the principles underlying the design of the UniON!_IT app, aiming to promote incidental learning, experiential learning and context-aware mobile learning in Forlì. These concepts will be described in the following section.

2.3. Context-aware language learning and incidental learning

The concept of context-awareness within the title of the CALL-ER project (Context-Aware Language Learning in Emilia Romagna) can be referred to as "a mobile computing paradigm in which applications can discover and take advantage of contextual information such as user location, time of day, neighbouring users and devices, and user activity" (Musumba & Nyongesa, 2013, Introduction section, para. 1).

The first introduction of context awareness dates back to the Active Badge research project by Olivetti Research Ltd in 1992 (Want et al., 1992). Since then, context awareness has been discussed by many researchers, for example Schilit & Theimer (1994), Schilit et al. (1994), Schmidt et. al. (1999), Salber et al. (1999), Razzaque et al. (2005), whose different definitions have been collected and further debated by Liu et al. in their study of 2011. In the field of Mobile-Assisted Language Learning (MALL), context-awareness is defined as the activity of gathering information about a user's surroundings to give an overview of what is happening at a specific time around the user and his/her device. Because of the

multimedia nature of the tools that enable users to perform various activities and to deliver content that is relevant in each particular environment, and because of the increasing availability of open Wi-Fi networks, mobile devices can easily act as a support for learners in case of need and in different contexts (Naismith et al., 2004, p. 14). These specific characteristics of mobile devices make them ideal tools to be integrated in education and to foster meaningful, mobile, context-aware learning of languages and – in this specific case – Italian as a second language.

As for the type of learning chosen in the design of the *Forliviamo* app, it is necessary to interweave the concept of context-awareness of mobile devices with the concept of incidental learning. Incidental learning has been defined in general terms as: "a byproduct of some other activity, such as task accomplishment, interpersonal interaction, sensing the organizational culture, trial-and-error experimentation, or even formal learning" (Marsick & Watkins, 1990/2016, p. 12).

Incidental learning is a type of a learning that "is always occurring, with or without our conscious awareness" (Marsick & Watkins, 2001, p. 29) and can also refer to learning one stimulus while paying attention to a different one (Cenoz & Gorter, 2008). To better understand this concept, the definition of linguistic landscape given by Landry and Bourhis (1997, p. 25) can provide a good example of incidental learning: "The language of public road signs, advertising billboards, street names, place names, commercial shop signs, and public signs on government buildings combines to form the linguistic landscape of a given territory, region, or urban agglomeration". All these elements contribute to incidental learning, as they convey content that learners see every day in their lives and that they learn inductively.

In this regard, these definitions of incidental learning reflect the features found in the *Forliviamo* app. Its main aim will not be the improvement of the language skills of its users according to quantifiable criteria, such as scores and levels, as is the case with other apps, such as Duolingo (Rachels & Rockinson-Szapkiw, 2017) or Busuu (Kétyi, 2015), that have a rather more structuralist approach (see also the taxonomy of available apps and how they could be used for foreign language learning presented by Rosell-Aguilar (2017, p. 249)). Contrary to this, the innovative aspect that distinguishes *Forliviamo* from other apps for language learning is that users can inductively improve their Italian while discovering the city, just by being confronted with audio files and videos recorded in the streets, descriptions of iconic places of the cities, local recipes, etc. This is possible, because language usage is embedded in captivating informative and descriptive content that seeks primarily to raise students' awareness of Italian and local culture.

An overall description of the app contents and functionalities will be given in the next section, which is an update of the 2021 study by Cervini and Zingaro.

3. The *Forliviamo* app

Forliviamo is a free web application for language and culture incidental learning that provides the users with linguistic, cultural and practical information related to the city of Forlì and its surrounding areas (Cervini & Zingaro, 2021). The name is based on a play on words – it is a combination of the ancient name of the city (*Forum Livii*, then Forlivo and today Forlì) and the ending "-iamo", which is the first-person plural ending of Italian verbs at present tense. Threrefore, the overall meaning can be: let's make/ discover/ live Forlì together.

The app is mainly targeted at a very heterogeneous audience of 'tourist-learners', i.e., international students arriving in Forlì for a short period of study within mobility programmes or who are fully enrolled at the University of Bologna (Forlì Campus). Moreover, the topics covered by the app could also be interesting to native speakers of Italian, who might be interested in a new way of discovering an area they do not know or their surroundings (in case they live in the region Emilia-Romagna). The web app is available at http://www.forlivi amo.it/.

Forliviamo has been developed with specific features aimed to foster meaningful, mobile, context-aware learning of Italian as a second language, as well as to facilitate the transfer of both Italian and local culture, according to the latest innovations in the field of MALL (Ferguson et al., 2019). Most of the structure and the functionalities of the application are inspired by the above mentioned ILOCALAPP project, whereas the code used for the design is open source, so it can be reused to design similar apps.

3.1. Structure and functionalities

The first stage of development consisted in establishing the topic areas of the contents, a process that benefited importantly from the previous experience of the author's supervisors (see footnote 3) in designing UniON!_IT app, as part of the above-mentioned ILOCALAPP project. Drawing inspiration from this app, the contents of *Forliviamo* are organised in six main categories, which branch out into several subcategories: 1) University life: Studying at Unibo, libraries and meeting places; 2) Eating and drinking out: Romagna's recipes, traditional recipes of the region Romagna and – more specifically – of Forlì, restaurants offering local cuisine; 3) Itineraries: Architecture of the fascist era, Medieval route; 4) Practical life: telephone and internet, health, money and post

office; 5) Places: culture (museums, historical places), leisure and entertainment (theatres, music, cinema); 6) Events: festivals, fairs etc. The contents include both texts and multimedia (images, audio, videos), alongside with links to external resources.

The choice of the six main categories is based on the aim to retrace the habits of international students both in their daily lives as university students and also as young adults living a new life abroad. For this reason, both institutional places (university, libraries, public offices, etc.) and entertainment ones (restaurants, cinemas, etc.) are included.

The menu allows for full accessibility of contents: users may start from any category and choose whether to continue or switch to other categories and subcategories. However, in order to stimulate curiosity and promote active participation in the learning process, users may also unlock extra content, i.e., additional texts or multimedia, by taking part in activities based on the concept of gaming, such as quizzes based on multiple-choice questions that can either be general knowledge questions concerning the city and its culture or specific questions about the vocabulary used in a text or audio file.

The choice to design an app with hidden extra content to be unlocked by the users has been made in accordance with the latest innovations in the field of techno-pedagogy, as for example the study of Castañeda and Cho (2016), which has demonstrated that integrating a game-like application in a classroom contributed to the improvement of student accuracy and confidence in conjugating Spanish verbs.

Moreover, research shows that foreign language study can be improved through easy access to resources suited to individual interests or needs (Kukulska-Hulme, 2013). To make sure that the contents of the *Forliviamo* app would meet the requirements of its potential end-users and that the idea of an app would be appreciated, a participatory approach was adopted in the early stage of the project. It consisted in collecting the opinions and expectations of the potential end-users, i.e., 21 mobility students in Forlì (academic year 2020–2021) and 4 representatives from the main tourist organisations and cultural associations involved in promoting the province of Forlì-Cesena, which could use it to make their services better known to the public. Foreign students were subjected to an anonymous online questionnaire, whereas tourist organisations were given the choice between an anonymous questionnaire and a telephone interview.[8]

After having established the topic area of the main categories based on the results of the questionnaire or interviews, the second stage consisted in finding effective strategies to achieve incidental learning.

3.2. Creation of contents in accordance to different competence levels

The creation of contents for incidental language learning through experiential tourism implies focusing on several aspects: the potential users, the usability of the content, which must be suitable to be read/listened to via a digital device, the framework of the electronic devices on which the application will be working, the places and services to be promoted, among others.

Firstly, one of the most challenging issues in the development of the app was the choice to produce content that is addressed to the whole community of users, ranging from absolute beginners to advanced international students, without focusing on a particular level of language proficiency. This deeply influenced the writing strategies and led to the development of a series of guiding principles aimed at producing an app in which each user can find useful content for discovering the city and its services as well as for improving their language skills. For this reason, within the menu of each section of the app, the level of competence has been indicated under each text: *Livello facile* (easy level), *Livello intermedio* (medium level) and *Livello difficile* (difficult level). To further distinguish the texts, labels are in three different colours that are reminiscent of traffic lights: green for easy text, orange for those of medium difficulty and red for high difficulty. These labels should be considered as reading suggestions: users may either choose texts suitable for their proficiency level or challenge themselves with higher difficulty levels. This strategy seeks to prevent users from becoming demotivated or bored.

Secondly, techniques for writing highly comprehensible texts have been applied in terms of syntax and lexicon. First of all, short-length texts, ranging from 100 to 300 words, have been planned in order to be adequate to the small screen of electronic devices. Texts classified as easy or medium have short and coordinated sentences. Moreover, the lexicon was carefully chosen and composed mainly of high-frequency words. Less frequent words, such as idiomatic expressions or terms belonging to a specific domain (e.g., architecture, bureaucracy, gastronomy etc.) are usually followed by reformulations and/or synonyms to enhance understanding, and in some cases, they are highlighted in blue and are hyperlinked to a pop-up window containing a definition. These strategies were adopted for lexical insights both in Italian and in even the local Romagnolo dialect, with the latter being very likely to be heard in everyday conversations in the street or local shops and to be found in the menus of restaurants offering local specialities.

3.3. Some examples of context-aware and incidental learning

The creation of contents for incidental language learning through experiential tourism implies that users learn both language and cultural content almost unknowingly, while they are focused on consulting content of an informative-descriptive nature with useful information related to their daily lives and becoming familiar with the campus, the city and their respective services. As previously mentioned, the app content includes both texts and multimedia (images, audio, videos), alongside links to external resources, such as websites, YouTube videos and social media pages. This combination of different semiotic resources has been used both to promote the development of integrated skills, favouring different cognitive styles, and to create a more involving experience for users, which contributes to their incidental learning.

This applies not only to learning general information about the city, its services and the university campus, but also to learning domain-specific words (e.g., related to architecture, gastronomy, healthcare etc.) and the so-called realia, i.e., words and expressions for culture-specific material elements that can be learned by seeing them in their context of use. Vlahov and Florin (1970) classified realia into various categories, one of which is ethnographic realia, encompassing everyday life material elements that are widely represented in the app in the following subcategories: 1) gastronomy: the different kinds of home-made pasta, whose names are here indicated first in Italian and then in Romagnolo dialect (e.g., *pasta/mnèstra*, *passatelli/pasadèin*, *cappelletti/caplèt*), *piadina* or *piada*, i.e., the typical local bread-like food, local kitchen tools (e.g., *testo romagnolo/tègia*, a tool similar to a pan used to make *piadina*); 2) work (*Carabinieri*, which is a separate branch of the Italian Armed Forces that primarily carries out domestic policing duties; *Guardia Medica*, an emergency medical service); and 3) realia related to politics and society, which include administrative divisions (*regione*, *provincia*, *comune*), political and social life (*partigiani*, which were armed groups of the Italian Resistance against Nazi-Fascism in the Second World War, to whom some places in the city are dedicated).

The strategies adopted to favour incidental learning are the following, listed in descending order of inductivity: the insertion of images, videos and short interviews with additional information, a wide use of explicative reformulations within the written/spoken text, and, finally, highlighting in bold the potentially unknown words (medium/low-frequency words, realia, domain-specific words) and hyperlinking them to pop-up windows containing a definition.

In addition, users can informally check if they have learned the key concepts and lexicon of each text or audio through gaming activities: they can unlock

extra content simply by answering to questions based on the information or lexicon contained in the previous content.

This combination of different semiotic resources also represents a significant innovation compared to the UniON!!_IT app, produced within the ILOCALAPP project (see 2.2).

4. Testing

After an informal testing as part of a treasure hunting organised in Forlì at the European Researchers' Night (24th September 2021), the first formal app testing was conducted in a class of 18 intermediate level students attending the Italian as a Second Language course, which is held by the author of this chapter at the Department of Interpreting and Translation. Given the small sample size, it is necessary to clarify that the purpose was to carry out initial tests of an app which had been fully completed only two months earlier, in order to collect information on its proper functioning and, most of all, on the students' appreciation and perception of usefulness in terms of incidental learning of vocabulary and new information about the city.

The app was used to supplement classroom teaching with self-learning activities. By way of example, only the data related to the University Life section of the app, whose testing involved the whole class, will be reported here. Within this section, each student chose three contents (three texts and their relevant multimedia). In doing so, they also took lexical quizzes that unlocked extra multimedia content and allowed them to learn more about certain words for which a definition was given in a pop-up window.

At the end of the activity, they answered a Google Form questionnaire that firstly tested the usefulness and appreciation of the contents in that specific section of the app, but which also included questions on the overall appreciation of the app. The form contained some initial questions, useful to draw a profile of the group (length of previous study of Italian, mother tongue), as well as questions on the usefulness of the app to learn new information about the city and to learn Italian. Most questions were based on the Likert 5-point scale, whereas others were open-ended. The latter were mainly follow-ups to the answers given to questions on a scale of 1-5 (e.g., "Did you learn any new information or curiosities about university life?" (Answer on a 1-5 scale) "If so, can you name a couple?" (open-ended question)). In other cases, they were independent questions (e.g., length of study, mother tongue, comments and suggestions on how to improve the contents).

As for the profile of the respondents, they have studied Italian for an average of 3.5 years (from a minimum of two months to a maximum of 11 years), and their native languages are: Spanish (6), French (5), English (3), German (2), Mandarin Chinese (1) and Hungarian (1). An analysis of the opinions collected shows a general appreciation of the app and its usefulness both for discovering the city and for improving the language incidentally. To the question "Did you learn new information on the university campus or more in general on university life?", 39.9% of respondents answered "very much information" (point 5 of the Likert scale), 50% "a lot of information" (point 4), and 11.1% "enough information" (point 3). As examples, the respondents indicated a general deeper understanding of the university system in Bologna, in particular of the academic grade system, exams, student services, cultural events and daily life information. As for the question "Did you learn new words?", 88.9% of respondents answered affirmatively and listed some words related to the university system and facilities, and 11.1% answered negatively. The latter answer can be explained by the length of studying Italian, which for the respondents in question corresponds to 11 years and five years. Further exploring the issue of lexical learning, to the question "Did you find difficult words that did not have a definition in the pop-up window?", 77.8% said no and 22.2% yes, with a total of four unknown words listed.

Another point of fundamental importance is the generally positive evaluation concerning, firstly, the comprehensibility of the contents and, secondly, their pleasantness. In this respect, to the question "Did you have difficulties in understanding the app contents?", 44.4% of respondents answered "not at all", 33.3% had few difficulties, 16.7% had some difficulties and 5.6% had a lot of difficulties. These last two answers were given by respondents who had been studying Italian for less than one year to two years. More in depth, content classified as easy was perceived as actually easier than intermediate and difficult content by, respectively, 44.4% ("easier") and 27.8% ("much easier") of the respondents, whereas 22.2% rated the content as "slightly easier" and only 5.6% rated it as "not at all easier". Likewise, compared to content classified as difficult, content classified as intermediate was perceived as "slightly easier" by 38.9%, "easier" by 38.9% and "much easier" by 22.2%. As for the appreciation of the multimedia of the app, 44.4% of the respondents were very satisfied, 44.4% were extremely satisfied and only 11.1% were moderately satisfied. Enthusiastic responses were also received regarding the usefulness of the app: 55.6% of respondents rated it as "very useful" to improve their Italian, 27.8% as "useful" and 16.7% as "moderately useful"; as for the discovery of the city, 55.6% rated it as "very useful" and 44.4% as "useful".

Finally, the respondents provided some advice to improve the app, such as adding more videos and games and including the option to hear the pronunciation of the words when you click on them.

5. Conclusion

This chapter focused on the development of the *Forliviamo* app and how a web app can be useful to promote incidental learning of Italian as a second language within the university campus of Forlì (University of Bologna). It described the strategies adopted to make incidental learning possible, such as constructing texts accessible to all users – regardless of their starting level of language proficiency – and providing the necessary lexical insights into the Italian language and the Romagnolo dialect. According to the feedback collected so far, the app is perceived as adequate to present and promote the city of Forlì and the university campus to international students and, at the same time, to support them throughout their incidental learning of Italian.

The next goals of the project include the development of some functions related to both context-awareness (e.g., geolocation) and incidental learning (e.g., listening to the pronunciation of the words in the app, recording spontaneous speech of native speakers in the street or in communicative situations related to the app), as well as an increase in gamification. This will facilitate and enhance the use of the app as a supplement and/or alternative to classroom activities. Further investigation will be needed in order to better understand the effects of mobile incidental learning through an app. This will be the object of future research by the project team members.

Notes

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2 Department of Interpreting and Translation (DIT), Campus of Forlì.
3 The members of the CALL-ER project are all affiliated to the University of Bologna, namely: Silvia Bernardini, Cristiana Cervini, and Patrick Leech for the supervision in the content development, Federico Garcea, and Daniele Negretti for the IT development and Anna Zingaro (the author of this chapter) for the content development.
4 See https://www.unibo.it/en/university/campuses-and-structures (retrieved on February 3, 2022).
5 See https://www.unibo.it/en/campus-forli/studying-at-forli (retrieved on February 7, 2022).

6 See https://almarm.unibo.it/almarm/welcome.htm (retrieved on February 7, 2022).
7 See http://www.ilocalapp.eu/ (retrieved on March 12, 2022).
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