Developing the UniON! Mobile app to foster incidental learning of languages and cultures

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1.   About ILOCALAPP and UniOn!

This paper will describe the development of UniOn!, an application for mobile devices, produced within the ILOCALAPP project between October 2015 and August 2018, and launched thereafter in its finalised version. Even though the use of mobile technology for learning purposes is increasingly taken for granted in many contexts, it still represents a great challenge in terms of (re)conceiving education. As Traxler & Kukulska-Hulme (2016) point out, the context for mobile learning has changed and become more and more context-aware, due to the ubiquity of the social use of mobile devices. These topics were exploited during the ILOCALAPP project, and its main result – the UniOn! application for language and culture learning – represents a case study in this regard. We will begin this contribution with a description of the project and the application, before discussing in detail the design considerations. We will conclude by presenting the pilot phase during which the app was tested and revised before its final release. Throughout this paper, special attention will be paid to the collaborative approach, which characterised the design, the development and the testing of the app, and which led to the features of UniOn!'s current version.

1.1.   The ILOCALAPP project

ILOCALAPP – Incidentally Learning Other Cultures and Languages through an APP – was a 3-year (2015-2018) Erasmus+ project aimed at the production of UniOn!, a mobile application for supporting mobility students through the incidental learning of four cultures and languages: Finnish, Italian, Polish and Portuguese. The project was coordinated by the University of Bologna (Italy) and was carried out in collaboration with the Adam Mickiewicz University of Poznań (Poland), the University of Lapland of Rovaniemi, (Finland) and the Centre for Social Studies of the University of Coimbra (Portugal). The international and interdisciplinary composition of the project Consortium was a first key-aspect for the creation of the application, for which different kinds of expertise (language, cultural, inter-cultural, ICT, multimedia, digital design, etc.) were combined to develop this tool. UniOn! is based on the principles of incidental learning and offers to its users the possibility to get acquainted with local language and culture in a smart, creative way (Ceccherelli, Cervini, Magni, Mirri, Roccetti, Salomoni & Valva, 2016). ILOCALAPP was aimed at supporting the international university students spending a period of time in the cities covered by the project (i.e. Bologna, Coimbra, Rovaniemi, Poznań). The goal was to integrate the local reality, both in terms of language acquisition and cultural awareness, by means of a smart mobile application which also conveyed practical information (Ceccherelli *et al.*, 2016). The app was rapidly enlarged to embrace other typologies of target users (e.g. high-school students, visiting scholars, tourists, migrants, among others), also opening up to new, differentiated uses (Valva, 2018).

UniOn! differs from the standard, common-known applications for language learning because learning is supposed to happen implicitly, as a by-product of other activities carried out by the users. Following the principles of incidental learning, the acquisition of language and culture relies on the learners' participation in the process of knowledge creation, in informal, formal

and non-formal settings (Cervini, Solovova, Jakkula & Ruta, 2016). The ILOCALAPP project offers app users the opportunity to get acquainted with local language and culture because they are able to interact with the host country and integrate into it. Thus, UniOn! fosters mobile and context-aware learning, taking advantage of the mobile devices in order to create learning experiences which exploit the richness and uniqueness of the learner's environment; it enables and encourages learners to capture aspects of the environment, considering the environment itself as a learning resource (Traxler & Kukulska-Hulme, 2016).

1.2.   The UniOn! application

UniOn! is an application which works on both Android and iOS systems. It is equipped with geo-localisation and context-awareness functionalities; and integrates other mobile applications and commonly used social media (Mirri, Roccetti, Salomoni, Mambelli & Valva, 2017). The contents of UniOn! include both texts and multimedia (images, audio, videos), along with links to external resources, services, and web sites that are available throughout the application. UniOn! can be used almost entirely offline, as only links to external resources require a connection. Some app settings are customisable by the users (notably font size and notifications) who can also choose to include selected dictionaries, link to a dedicated Facebook group and activate a save-notes function (Valva, 2018).

The UniOn! application was created in four versions which are similar but not identical. There is one for each language/culture/city of the ILOCALAPP project. All include some common features, as well as some particularities, which were chosen by the single teams according to the specific needs and characteristics of each language/culture/city. In all four versions of UniOn! the contents are contextualised in the host city, so as to provide the users with language, culture and practical information (Valva, Mirri & Salomoni, 2018).

All contents of the app are organised in eight main categories, which are the same for the four languages/cultures/cities of the project (Valva, et al., 2018). Each category is then composed of three-to-six thematic groups, or subcategories, and then again, each sub-category consists of several texts and insets. In other words, the contents of UniOn! stem out from a macro-level (the category), they branch out into intermediary sections (the sub-categories and the texts) and move to in-depth sections (the insets) (Valva, 2018). All topics are declined according to the socio-cultural features of the specific city: even though the main topics to be included were previously decided at consortium level and after relevant investigation among the stakeholders (see par.3 for details), the actual development of each version is very culture specific and it is inevitably influenced by the context. The eight main categories, which are common to the four versions, embrace the following fields of contents:

Main categories	Fields of contents
University Life	Studying, settling in, student life…
Getting around	Transportation, walking and cycling
Food & drink	Restaurants, cafés, canteens, bars
Worth seeing	Monuments, buildings, squares, parks
Entertainment	Cinema, theatre, museums, music
Lifestyle	Nature, sports, well-being
Services & needs	Health, housing, post, money
Shopping	Markets and supermarkets, shopping centres, design

Table 1 – UniOn ! contents per category

In addition to these eight categories, there is a ninth category called WordZ which includes the main vocabulary covered by the app and which daily shows the word (or the phrase) of the day.

Image 1 – Screenshot of the menu page in the UniON! for Bologna

The categories and subcategories menus allow for full accessibility of all the app contents without following any specific or suggested order. There are, however, other modalities for entering the app contents. First, they can be accessed through the notifications which are sent to users on the basis of their position. Secondly, a search function is included in the home page, making it possible to search for specific information.

In addition, for each category a game was included which can be accessed from a specific icon. The games created for UniOn! exploit three different typologies of format (matching, filling in the blanks, multiple choice). Even though the format is quite standard, the content of the games was explicitly developed with the aim of recalling the contents of the categories. The games can be played at any time, as an introduction to the category and/or on its way out, but this latter option is recommended in order to foster the memorisation of category's language contents (Valva, 2018).

The features described above result from intense and productive dialogue with the end-users, who proved to be crucial actors in the app development. Their contribution will be explained as part of the next section.

2.   Theoretical and design considerations

2.1.   View of learning

UniOn! is a smart mobile tool, which aims at facilitating learning by letting the users co-construct meaning and knowledge. It exploits the trend of mobile technologies, which are attracting new users and providing increasing capacity. In this way mobile technologies can contribute to the quality of education in so far as they can facilitate learning in formal and informal contexts, by creating an interactive learning environment with multiple contexts (Bachore, 2015). Moreover, learning through mobile technologies is likely to make boundaries between educational settings and life more permeable (MacDonald & Creanor, 2010). For example, following this direction, the contents included in UniOn! build upon the learner's ability to take advantage of and adapt to different kinds of input, both within and outside the application.

In addition, language and culture are given equal status in the app, and are even considered mutually dependent. This is in accordance with Kramsch (2003), according to whom language conveys information and provides knowledge with structure, culture is embedded in it. In this perspective, language both reflects and constructs cultural reality for speakers (Kramsch, 2003). Culture is communicated through language, and culture learning stems from interactive exchanges allowing for action and reflection (Levy, 2007).

Explicit language teaching (i.e. explanation of rules, structured exercises, correction and evaluation activities, etc) is not a part of the application. On the contrary, the language learning is meant to be incidental and to result from other activities (observing, interacting, problem solving).

In fact, the kind of learning fostered by the UniOn! app is experiential and based upon the mediation of learners with their local context. Such a mediation is aimed at the definition of personal learning environments, and also of personal learning goals, forms of practice, feedback, adaptation, collaboration and reflection (Laurillard, 2007). Moreover, the approach to learning conveyed by UniOn! is incidental, i.e. learning that is not planned nor intentional, but rather a by-product of other activities carried out by the app-users, and happening without learners being necessarily conscious of it (Kerka, 2000). In incidental learning, learners are in contact with factual information and they are engaged by that, they learn by doing and they interact with people, but also with tasks, knowledge and experience. In other words, in incidental learning learners interact with the context where learning is (incidentally) taking place. From this perspective, learning with UniOn! is context-aware insofar as the learning experience can exploit the situations in which the learner is engaged and the learner's environment becomes itself a learning resource. Contextualised learning is also personalised, and controlled by the learner, even though in a collaborative form, as learners can build shared knowledge (Traxler & Kukulska-Hulme, 2016).

All the above mentioned characteristics imply some challenges when planning and developing an educational app: mobile users are more likely to be distracted, mobile learning materials can be used in very different surrounding contexts; the small size of screen impacts upon the readability of texts; the information available should be easily retrievable in order to be easily applied in real-life situations, and so on. Therefore, it was particularly important to adopt design strategies that would foster implicit and incidental learning in the app (Cervini, 2018). In order to elucidate such strategies, the project teams decided to base the design and the development of the app on three core values:

i) the app should be collaborative and participatory, that is to say that it calls for the active participation of the learner/user, who is encouraged to be in control of usage and learning;

ii) the app should be integrated and situated, that is to say that it fosters authenticity and real-life situations and meaning that learning is context-aware and context-specific;

iii) the app should focus on informal and incidental learning, that is to say that learning derives from other activities carried out by the learners/users (e.g. exploration of the city, observation of the location, interaction in the place) (Cervini *et al.*, 2016).

These three core values which accompanied the creation of UniOn! were sustained by– and, at the same time, incorporated in– the concept of "mobile": mobile users, mobile devices, mobile learning are exploited and promoted by the app (Valva, 2018).

2.2.   *Role of the users*

In order to exploit incidental, mobile and situated learning, special attention was paid to the end-users, as engaging them from the very start of the design phases of an application impacts greatly on the success of an application once it is in use (Mirri, Roccetti & Salomoni, 2018). Therefore, the ILOCALAPP project teams adopted a collaborative design and followed a user-centred approach; the current features of the app are the result of a multi-stage end-users consultation.

The end-users consultation started at the very beginning of the project, including "traditional channels" (i.e. online surveys and face-to-face reviews) as well as some principles from user-

centred design approach and participatory methodology; which designing *for* the users was combined to designing *with* the users (Sanders, 2002). The end-users participated in experience-prototyping sessions and they were asked to test the different prototypes available at the different stages of production.

In the initial months of the project (January-May 2016), the end-users consultation consisted in: i) an online questionnaire, ii) focus groups and iii) experience prototyping. The online questionnaire was a large, international consultation conducted between February and March 2016; the questionnaire was sent to more than 25.000 mobility students and gathered 2.350 responses from all over Europe and the world. The survey collected information about the cultural areas of interest for mobility students, their views on using language & culture apps, and background information about the general usage of apps and mobile devices (Valva *et al*., 2018). The results of the online questionnaire were exploited to better identify the nine categories of contents to be included in the app and the features which could help motivate and engage the users of language and culture apps (Mirri *et al*., 2017). For the second consultation activity, the focus groups were specific, dedicated meetings with small groups of students (10-15 people), which were held in the Consortium institutions in April 2016. The focus groups aimed at getting feedback and comments from participants on the functionalities, the interactions, and the flow of the application, in terms of what, how and when offering contents and activities (Mirri *et al*., 2017). Finally, the third preliminary consultation activity consisted in experience prototyping sessions, which were carried out in the Consortium institutions in May 2016. During the sessions, the end-users simulated the interaction with the app by carrying out some specific tasks (e.g. buying a ticket, finding a place, ordering in a café, etc.) using a prototype. After the sessions, they were asked about specific aspects of the interaction with the app prototype and their answers helped the project teams progress with the definition and design of the UniOn! app functionalities and services (Valva *et al*., 2018).

After this initial consultation, more tests involving the end-users were conducted while the app prototypes were being updated. In January 2017, an initial assessment was carried out with a prototype including the first two categories of contents. The test was conducted with a small group of mobility students who raised relevant issues, such as the typology of contents to be included, the necessary functionalities of the app, the presence (or not) of a vehicular language. In September 2017, another test was conducted with a prototype including six out of the nine planned categories and almost all the planned functionalities. Again, relevant comments were collected, especially for the geo-localisation and the search functions.

Finally, the pilot phase of the UniOn! app took place in the initial months of 2018, when the app prototype was finalised (see below for details). It is worth underlining that all the consultation activities involving the end-users and their active participation in all the project stages drove the development of the application and had a positive impact on the final results.

2.3.   Creation of app contents

Before creating contents for incidental language learning, the authors focused upon the most important goals to achieve, as well as upon the constraints to be respected. Starting from the learning goals, and in line with experiential and situational incidental learning methodologies, we aimed at transferring the linguistic and cultural richness of the territory, through the descriptions of its places (institutional, cultural and/or fun), within the frame of a communicative action-oriented approach.

The app′s contents are addressed to the whole community of mobility students, independently from their competence in the target language (the app is addressed to beginners as well as to more advanced students). This represented both a goal and a constraint, because it had an impact on the writing strategies adopted by the authors. A key constraint was small screen

reading features, in the case of reading texts on smartphones or other digital mobile devices. These considerations are further discussed below in relation to three key-questions:

1) *Given the wide variety of possibilities, which places would it be most appropriate to include in the contents*? Places to be geo-localised in the app had to be limited, so we had to choose carefully respecting the notion of authenticity, and the desire to promote the most interesting and unique places of the territory. Concerning authenticity, we tried to retrace the habits of international students, in their daily-life as university students, but also as young adults living a new life abroad. That is why in UniOn! both institutional places (university, libraries, public offices, etc.) and entertainment ones (cinemas, museums, pubs, etc.) are included.

2) *How can we propose texts and contents suitable for all types of public*? This was one of the most challenging issues in writing texts and in conceiving multimedia contents for the app. Learning is more likely to take place if linguistic-cultural inputs are rich and motivating, and if contents' complexity is coherent with students' language proficiency; complex texts can be demotivating for beginners and simple texts can be boring for advanced students. For these reasons, the authors developed a series of guiding principles:

i) The use of coloured icons to distinguish easy texts from those of medium or high difficulty.

This suggests a reading path that best suits students′needs (green for easy texts, yellow for medium ones and red for difficult ones) and avoids disorientation;
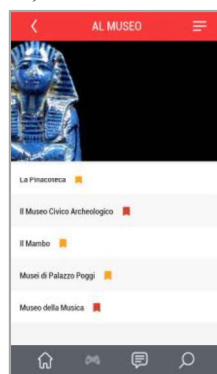
Image 2 – coloured icons to distinguish easy, intermediate and advanced texts.

ii) the application of techniques for writing highly comprehensible texts. For example, in the Italian UniOn! for Bologna, short and coordinated sentences were preferred to long and subordinate clauses in texts identified as easy or medium. Moreover, the lexicon was carefully chosen, composed mainly of high-frequency words. Less frequent words, such as idiomatic expressions are usually followed by reformulations, glosses, and/or synonyms, to enhance understanding. Key-words and expressions that are worth remembering are hyperlinked to the related lexical sheet, and vice-versa, where words are organised in semantic area. This kind of consultation creates redundancy, without being too repetitive and boring because the same or similar inputs are proposed again in different contexts;

iii) the exploitation of the theories of multimodality, to enhance the multimodal exploration of contents: "as a phenomenon of communication, multimodality defines the combination of different semiotic resources, or modes, in texts and communicative events, such as still and moving image, speech, writing, layout, gesture, and/or proxemics" (Adami, 2015). A multimodal approach is coherent with context-aware and experiential learning, because students experience the authentic place while surfing the related contents in the app;

iv) the promotion of peer-tutoring practices among students, through the use of online collaborative tools: groups of students can experience similar difficulties or have similar

doubts; in this case background and competence diversity is a real advantage because, in more than one dedicated online space, students belonging to UniOn! community can share doubts and experiences.

In the event that all these comprehension strategies are not enough, texts are also proposed in a version translated into English.

3) *How can we promote integrated skills work, in an incidental way, while getting familiar with the places and with the typical habits of the places?* UniOn! intends to prod the development of integrated skills -receptive and interactive- in an implicit way. Written texts and lexical sheets accompany audio-video sources, presenting the same topic from different perspectives and favouring different cognitive styles.

In order to enhance students′active use of new lemmas and expressions and to blend authentic linguistic input read or heard in the places, we designed a specific feature in the app called *Tips to Talk*. This section is dedicated to the listening and reading of the most prototypical interactions in a place (i.e. questions & answers) and it can be filled in with new proposals intercepted during live oral exchanges.

Moreover, the real heteroglossia of the territories is the expression of the linguistic-cultural identities of citizens, shop owners, and businesses in general. The linguistic landscape can be exploited profitably for meaningful and incidental language learning while strolling around the places using UniOn!. "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" (Cenoz, Groter 2006).

3.   Piloting the application

The pilot phase of the UniOn! app took place in the four project cities in the initial months of 2018. In the project application, the pilot phase was defined as "the testing of the app by a group of selected students who will be provided with the tool and asked to use it for a defined period of their mobility experience" (ILOCALAPP Project website). The end- users' consultation of the first project phase and all the testing activities carried out at all project stages influenced the structure of the pilot phase and resulted in a tailor-made piloting of the final app prototype.

3.1.   *Organisation of the pilot phase*

In November 2017, the selection process of the pilot users started in the four institutions of the project Consortium. In the end, more than 100 students were included in the testing of the final prototype of the four versions of the app (about 25 per city). The majority of pilot users were university mobility students, as they represented the main target identified by the project teams. This group consisted of foreign students spending a period (a semester, a full year) in the university of one of the project cities. Other typologies of students were also included, for instance university students coming from different cities of the same country (who very much appreciated the cultural and practical information included in UniOn! even though they were not as interested in language information) or high-school students in their final years (who were similar to the major group of pilots in terms of age and cultural background). Pilot users with different language levels (from A1 to C2 and even native speakers) were accepted and welcomed, to assess the occurrence of incidental learning in different circumstances. Moreover, also pilot users using different devices and different operating systems (the app being compliant with both Android and iOS) were involved in order to test the app response within different platforms (Valva *et al.*, 2018).

From December 2017 to February 2018, the pilot users who described themselves as beginners in the target language were given the opportunity to take an online course to receive

preliminary information. The course remained at their disposal for the whole duration of the pilot phase, as a supporting tool. Only a few of them, however, took advantage of this opportunity. Moreover, they did not consider the two activities (taking an online language course and testing a mobile application about that same language and related culture) as complementary, as was intended by the Consortium teams.

In January 2018 nevertheless, an introductory seminar was organised in the Consortium institutions in order to inform all pilot users about the purposes of the piloting and provide them with all necessary information and tools to carry out the assessment. At this point, the pilot users were provided with an evaluation grid, which they were asked to use as a guideline to assess both the contents (in terms of interest, usefulness, readability and language learning efficacy) and the functionalities of the app.

After that seminar, the pilot phase started. The pilot users were free to use the app on their own to test it; and they were invited to move around the city with the app and to perform some tasks. A couple of meetings with pilot users were scheduled in each project institution during the pilot phase, to check progress and discuss eventual problems. After the introductory seminar, the participants had been asked to fill in a questionnaire about their expectations and background information, and in the end a final questionnaire was distributed to the pilot users, to collect their feedback. This one included questions about all the issues contained in the evaluation grid. In total, 92 pilot users amongst the Consortium returned the survey about their expectations and 80 students returned the final feedback form, showing that they had completed the testing activities (Valva *et al.*, 2018).

3.2.   Pilot users': Traits and feedback

The pilot activities lasted until the end of February 2018, and thereafter the feedback was analysed. The preliminary questionnaire submitted by the participants in the introductory seminar provided background information about the pilot users themselves and about their expectations, including information about age, gender and nationality, but also about language background and experience with technology (Valva *et al.*, 2018). The data collected through this questionnaire provided a profile of the pilot users, the majority of them being females aged 19-22 years. The language background and the nationalities were quite diverse, with English being spoken by almost everybody at least as a second language. Fifty-six percent of respondents had already used an app for language learning. Their expectations concerning UniOn! were linked to the novelty of testing an innovative tool, and also to the possibility to learn new information and improve some skills. The discovery of their new context thanks to the app was also frequently mentioned in the submitted questionnaires as an expectation of the pilot users.

The evaluation grids which were distributed among the pilot users during their testing period focused on the contents and the functionalities of UniOn! They were meant to be relevant both for the pilot users, in so far as they were made aware of the issues to be checked, and for the project teams, as they served as guidelines to process the feedback received.

In the final evaluation questionnaire, after providing preliminary background information again, pilot users were invited to assess the items included in the evaluation grids. The evaluation questionnaire was structured in 16 Likert-scale questions, with a five-point agreement scale. The assessed items included topics, language, design, layout, geo-localisation, among others (Valva *et al.*, 2018).

The ILOCALAPP partners analysed the pilots' feedback in March 2018. The analysis of the results was done slightly differently within each team, as the feedback was specific to each of the four versions of the app. Moreover, the different typologies of users involved in the app testing (Erasmus students, students enrolled in international courses, national students, local

high school students, etc.) required the feedback to be carefully analysed, in order to contextualise it and verify its applicability.

The feedback confirmed that the topics in the app were considered useful and interesting and the texts understandable even though quite long. The games were regarded as useful to memorise information and in general the learning was perceived as quite intuitive. The layout was also considered intuitive, as the icons help identify the contents, and the design quite attractive. There were different opinions about the notifications related to the geo-localised contents: some pilot users felt that the system worked perfectly, while others reported some problems. Overall, the app was considered user-friendly.

The analysis of the pilots' feedback led to a plan for improving the app. In the Italian version, for instance, some texts were simplified slightly, some texts were added, and the indication of level was added to all texts of the Italian version through a system of coloured flags. The lexical notes were also improved and better organised, incorporating visual examples. The Tips to Talk were refined and new words to include in cat. 9 (WordZ) were selected. Moreover, final questions directly addressing the users were provided for almost all texts, to stimulate their reflection on the information provided. At the end of this revision phase, the finalised version UniOn! was released for all 4 languages and cultures involved in the project.

4.   Conclusion

In this paper we have described the development of the UniOn! application within the ILOCALAPP project. The results collected during the project show that such an application interests both users and researchers. Further investigation is, however, needed in order to better understand the impact of the application upon the users, and notably the effects of mobile incidental learning through an app on measurable progress in language and/or culture learning. This is the focus of current research into real usage of the app, and it will be the object of future developments within the project teams.

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