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PORTUGAL

LiteracyTracker

GAMIFICATION AND BEHAVIOUR RECOGNITION IN LITERACY ASSESSMENTS FOR SUB-SAHARAN AFRICAN COMMUNITIES

Context

Sub-Saharan Africa (SSA) is the geographic area with the lowest youth and adult literacy rates in the whole world. At the same time, the mobile market in this region is revealing a tremendous growing rate.

Thus, an opportunity to overcome a severe problem as illiteracy emerges in the SSA countries, by making use of the characteristics and potentialities of the Information and Communications Technologies (ICT), namely mobile phones.

Motivation

On these countries there is not an easy and freely available way to check and assess literacy levels of populations. The current assessment process is often based on pen-and-paper based tests and not conducted by specialized people.

Mobile phones may take an important role in tracking literacy and also in motivating people to learn how to read and write. User engagement in reading and learning is essential and it can be

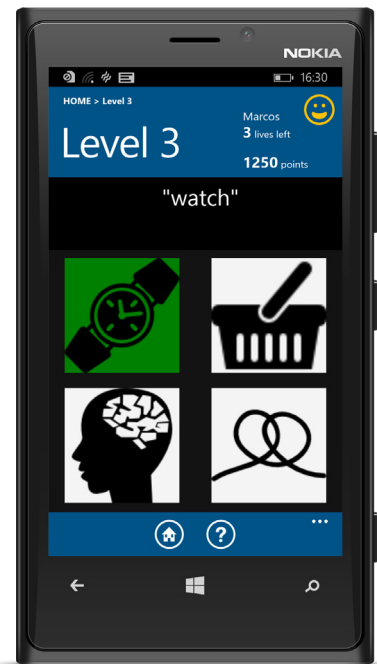


Fig1. Example of a level displayed during the literacy assessment.

improved through the gamification of literacy. Additionally, specific behaviours can be identified and analyzed, helping to adapt interfaces for each user and mitigating the need for specialized people to conduct the tests.

Gamifying Literacy

LiteracyTracker aims to evaluate the literacy levels of SSA communities by using gamification techniques to make assessments become enjoyable experiences for the users. The application contains a new literacy test model specially designed after the literature review.

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Project Objectives

- autonomously assess user's literacy level through engaging tests
- track user's literacy progress over the time
- correlate user's literacy level with his behaviour while interacting with the application
- modify the application interface and usability according to the literacy profile and behaviour of the user

Levels of Exercises

- Level 1: writing the alphabet letters
- Level 2: recognition of words by listening
- Level 3: knowledge of vocabulary
- Level 4: writing words from dictation
- Level 5: comprehension of sentences



Fig2. One user, during a usability testing session, interacting with LiteracyTracker.

Users face a sequence of levels of exercises that they should complete to succeed and advance to the next one. Points are earned or lost whether the answer is correct or incorrect.

Over the time, there are rewards that may be unlocked as the user reaches predetermined goals.

LiteracyTracker's interface is adaptive, which means that it changes to the needs of the users. Reducing visual noise or showing a step by step explanation of the levels goals along with audio support, are examples of performed adaptations.

Final Remarks

Three sessions of tests were conducted in three schools with children aged between 7 and 12, with distinct levels of knowledge of the English language.

The results showed the efficacy of gamifying literacy in order to provide a captivating experience to the users and also promising results about the adaptive interface.

It is expected that users will develop their literacy skills by being motivated to do so.

Future Work

Other gamification elements can be introduced such as new levels of exercises exploring the speech recognition technology. Moreover, new ways of visual and audio feedback can be explored. Finally, testing LiteracyTracker with the target users is required in order to better address their needs.



Fig3. Example of an unlocked reward.