iRead: Infrastructure and Integrated Tools for Personalized Learning of Reading Skill

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Abstract. *iRead* is the acronym for the "*Infrastructure and integrated tools for personalized learning of reading skills*" European Union Horizon-2020 funded project This report briefly presents the *iRead* project ((consortium composition, aims and objectives, current status and achievements, future work).

Keywords: iRead project, H2020.

1   Introduction

iRead is the acronym for the *"Infrastructure and integrated tools for personalized learning of reading skills"* European Union Horizon-2020 funded project[1]. *iRead* is a 4-year (2017-2020) project that aims to develop a software infrastructure of personalized, adaptive technologies (which include real-time user modelling and domain knowledge components) and a diverse set of applications for supporting learning and teaching of reading skills for children with different abilities and linguistic backgrounds. *iRead* targets primary school children aged 6-12 years old. As reading is a language dependent skill, *iRead* currently focuses on English, English as a Foreign Language (EFL), German, Greek and Spanish. In addition, for English and Greek it also covers children with dyslexia.

2   Project description

2.1   iRead consortium

The consortium consists of sixteen partners, coming from nine different EU countries (Germany, Greece, Netherlands, Norway, North Macedonia, Romania, Spain, Sweden and United Kingdom). Eight consortium partners are Academic/Research Institutions (University College London [UK], National Technical University of Athens [GR],

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University of Goteborg [SE] , University of Ioannina [GR], German Research Centre for Artificial Intelligence [DE], Lucian Blaga University of Sibiu [RO], University of Barcelona [ES], Baden-Wuerttemberg Cooperative State University [DE]), four are SME IT experts (Dolphin Computer Access Ltd [UK], Fish in a Bottle Ltd [UK], Knowable [NL], Pickatale [MK]), two (2) are publishers with large printed and e-book collections (Patakis [GR], Wisdom [NO]), one is SME Educational Expert (Doukas School [GR]), and one is non-profit organization (The British Council [UK]) aiming to English as a Foreign Language.

2.2   iRead project goals

The overarching aim of the *iRead* project is to develop a software infrastructure of personalised, adaptive technologies and a diverse set of applications for supporting learning and teaching of reading skills. The specific goals of the project, as they appear in the original proposal, are to:

1. Develop a scalable, cloud-based software infrastructure of open, interoperable components, including real-time user modelling and domain knowledge components, to support learning of reading skills by children with different abilities and linguistic backgrounds.
2. Develop domain models for English, Greek, German and Spanish learners, and to contextualise those models with respect to skills and difficulties of (i) typically developing readers, (ii) English and Greek readers with dyslexia and (ii) learners of English as a Foreign Language.
3. Develop applications for supporting learning (literacy games, interactive e-books, Reader app) that utilise the infrastructure to yield different types of personalised learning services and experiences.
4. Develop and evaluate personalised content classification metrics that "enable reading" for use by electronic publishers and libraries.
5. Enable orchestrated use of the learning applications (games, e-books, Reader app) based on learning analytics, and a personalised experience through adaptive support.
6. Implement a number of large-scale evaluation pilots across European countries and providers in order to evaluate the pedagogical effectiveness of the *iRead* ecosystem.

3   Current status and achievements

The *iRead* project runs in its third year and is about to launch (in September 2019) a number of large scale evaluation pilots across six European countries (Germany, Greece, Romania, Spain, Sweden and United Kingdom).
The project achievements, so far, include:

1. Development of language domain models for English, German, Greek and Spanish novice readers, as well as variations for readers with dyslexia (for English and Greek) and for English as a Foreign Language.
2. Design and implementation of a literacy game (NAVIGO) that supports the learning of the reading skill.
3. Design and implementation of an eBook reader app (AMIGO).
4. Development of an infrastructure that supports user management (including authentication and authorization), domain modelling and user profiling, data logging and resource management.
5. Development of specialized resources (extended dictionaries, teaching material, learning activities) in four languages (English, German, Greek, Spanish) in order to provide literacy content to the NAVIGO and AMIGO applications.
6. Development of web applications for the support of teachers during the large scale evaluation.
7. Development of tools for data analytics.
8. Development of an intelligent eBook system.
9. Development of a content classification system for English.
10. Development of a solid project evaluation plan.
11. Recruitment of schools and teachers to participate in the large pilot evaluation and implementation of various teacher support/training actions.

4 Future work

The large scale evaluation pilots for *iRead* will run during the 2019-2020 school year and will conclude in July 2020. In parallel, an online trial will be launched targeting the English and Greek languages. Extensive data collection (mainly by recording the user and system actions during gameplay) will take place and the collected data will be analysed in order to establish the effectiveness of the *iRead* system. The *iRead* project will be concluded in December 2020.