

iTalk2Learn partners

Stiftung Universität Hildesheim is a German University with a focus on pedagogics, cultural sciences, languages, and computer science. The Information Systems and Machine Learning Lab is a world leading research group on machine learning and recommender systems.

www.uni-hildesheim.de

Ruhr-Universität Bochum is one of Germany's leading research universities with an acknowledged reputation for excellence in research, for the promotion of early career researchers and for its forward-looking teaching concepts.

www.ruhr-uni-bochum.de

London Knowledge Lab is a collaboration between two centres of world-class research – the Institute of Education and Birkbeck College. Its aim is to explore the roles of technology in learning, and to understand how it relates to broader social, economic and cultural factors.

www.lkl.ac.uk

The Institute of Education is one of the world's leading institutions for education and social sciences and tops the league table for education research.

www.ioe.ac.uk

Birkbeck is a world-class research and teaching institution, which is engaged in conducting research that is actively pushing back the boundaries of the world's knowledge across the disciplines.

www.bbk.ac.uk

SAIL LABS Technology is one of the world's leading innovators of speech and language technology. SAIL develops technologies to mine media and text including the indexing of audio, video and text, speech recognition, transcriptions from multiple languages, and the processing of social media.

www.sail-labs.com

Testaluna designs and develops video games, simulations and virtual communities, combining high quality entertainment with training, educational, therapeutic or promotional purposes.

www.testaluna.it

Whizz Education works with parents, schools and ministries of education to raise standards in maths for 5 to 13 year olds. The Maths-Whizz® suite incorporates adaptive tutoring, whole class learning tools and application of best practices.

www.whizz.com



iTalk2Learn

Talk, Tutor, Explore, Learn:

Intelligent Tutoring and Exploration for Robust Learning

iTalk2Learn is a 3 year collaborative European project (Nov 2012 – Oct 2015) that aims to develop an **open-source intelligent tutoring platform**, to support the mathematics learning of students aged 5 to 11.

Our use of cutting-edge technology will allow students to learn from a system in a more natural way than ever before. In addition, it will help educators use computers to deliver personalised learning, freeing them to give more face-to-face attention to other students.



iTalk2Learn is an interdisciplinary project. It comprises a consortium of academic and commercial partners who bring experience and expertise in machine learning, user modelling, intelligent tutoring systems, natural language processing, educational psychology and mathematics education.

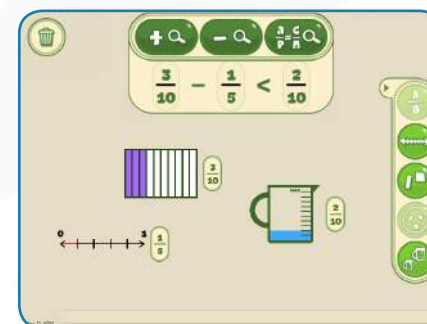
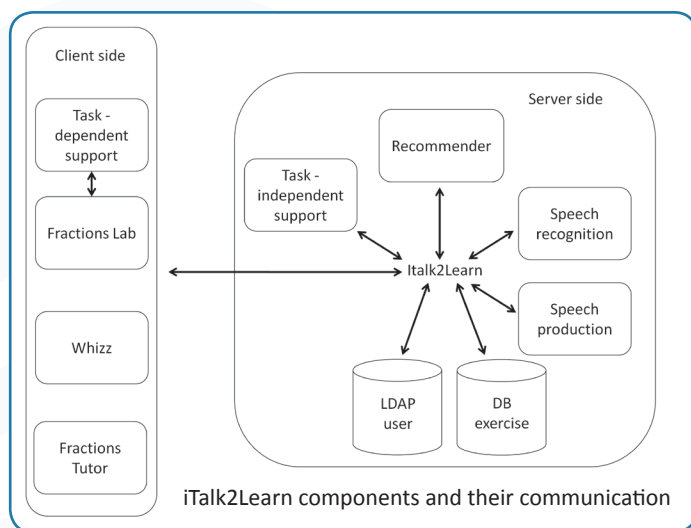
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Fractions Lab: Fractions equivalence, addition and subtraction, using a variety of representations.

iTalk2Learn aims

The iTalk2Learn project has four main aims:

- To provide **new methods for automatic intervention selection** by developing machine learning models that exploit observations about success of past interventions in a principled and systematic way, and thus delivering high quality results.
- To extend the focus of intelligent tutoring systems by **integrating exploratory activities and structured practice** (to support both procedural and conceptual learning).
- To extend the interaction capabilities of intelligent tutoring systems to **integrate speech**, particularly in order to attain cues about each learner's situation and to use these cues to improve the quality of intervention selection.
- To provide an **open-source platform** for intelligent support systems by integrating results from the above aims above within a flexible, plugin-based architecture.

iTalk2Learn domain

iTalk2Learn's target domain is fractions, with a focus upon equivalence, addition and subtraction. Not only is it widely acknowledged that students face particular difficulties when learning about fractions, but fractions afford an unparalleled richness with respect to multiple representations and interpretations.

iTalk2Learn key innovations

Exploratory and structured learning environments

The project brings together existing structured learning environments (Maths-Whizz® and Fractions Tutor) with a new exploratory learning environment developed by the project (Fractions Lab). This combination helps students acquire both procedural and conceptual knowledge of fractions.

Adaptive sequencer

The project is developing and researching a lesson sequencer that takes into account historical performance across an entire student base as well as the behavioural patterns of each individual student in order to adapt intelligently – just like a human tutor – to their needs. The adaptive sequencer helps determine sequencing within and switching between the structured and exploratory learning environments.

Speech and affect recognition

The platform will also process and respond to a student's speech (key words) and intonation throughout a session, detecting patterns of behaviour, the student's attitude to the learning situation and their affective states. This system will contribute both to feedback delivered by Fractions Lab (encouraging students to use mathematical language and providing affect boosts) and to the sequencing of learning tasks within iTalk2Learn.