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Deliverable 6.3.2

Report on Dissemination and Contribution to Standards, Year 2

31th October 2014



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0.1 – 0.5	Throughout Y2	Online ('living') version mainly of the tabular information in this document made available to partners revised in each telco.
0.5	21/10/2014	Version for RUB to review
0.6	22/10/2014	IOE revision
0.7	24/10/2014	Version for Whizz to review
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1.0	28/10/2014	Submitted version



Executive Summary

This deliverable provides the second dissemination report focusing on activities carried out between M13 and M24 of the project. It also reports on the use of standards and the contribution that the project is making in this area, and identifies some key dissemination steps for the final year. Dissemination activities reported below included events such as conferences and workshops, publications, and links with other projects.

The major M13 – M24 dissemination achievements of the iTalk2learn consortium are:

- Significant increase in the number of our publications accepted in selective high-quality peer-reviewed conferences and journals (see Section 2.6.3). Three book chapters based on the work of the consortium have also been published. A number of other publications are currently under review, and additional journal publications are being prepared as extensions of the conference papers.
- At the leading European Conference on Technology-Enhanced Learning (EC-TEL 2014), project members presented two peer-reviewed papers and one peer-reviewed poster, and contributed to conference workshops. In addition, the iTalk2Learn platform was demonstrated in a public competition, where it was awarded two prizes (one by judges and one by popular vote). This success is a testament to the wider academic interest in the project and to the consortium's high quality research.
- Consortium members (led by IOE and BBK) working with members of three other EU FP7 projects (*PRAISE*, *EMOTE* and *PELARS*) organized an international workshop in conjunction with the International Educational Data Mining conference (EDM 2014). This acted as an excellent opportunity to present several aspects of the iTalk2learn project to an academic audience (including a workshop of 25 participants), to get feedback from international experts from across the world, and to extend and strengthen our academic connections with other EU researchers in this field.

In addition, it is worth noting that our formative evaluation work in schools (see D5.2) throughout Y2 also functioned as an on-going dissemination opportunity. As detailed below, there were numerous workshops and evaluation sessions in which iTalk2Learn was introduced to groups of students, and discussed with parents and teachers from various schools (both in Germany and the UK).

Finally, we also undertook a major overhaul of the website in order to reflect key project outcomes and to make the project as accessible as possible to the widest audience (including academics, developers and teachers worldwide). It is now easier to find information about all consortium partners, to access the Work Packages, and to download the project deliverables and publications. A key additional focus has been on the iTalk2Learn blog, with more than 30 posts during the year covering almost every aspect of the project.



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List of Abbreviations

UHi	Universitat Hildesheim
IOE	Institute of Education, University of London
TL	Testaluna SRL
RUB	Ruhr-Universitaet Bochum
BBK	Birkbeck College – University of London
Whizz	WHIZZ Education Limited
SAIL	SAIL Labs Technology AG
IMS	IMS Global Learning Consortium (http://www.imsglobal.org)
R&D	Research and Development



1. Introduction

This deliverable is a yearly update on D6.2 that presented our dissemination plan and on D6.3.1 that reported on Year 1 dissemination activities in M12. Here we focus on the main dissemination activities carried out as of M24 of the project and some of those planned for the near future.

D6.2 highlighted the importance of dissemination and its nature and that, for iTalk2Learn, it includes both traditional avenues, such as academic conferences, and other avenues such as product demonstrations, textbooks, books for practitioners, and general marketing. D6.2 also portrayed the dissemination element of R&D tasks particularly through design workshops, classroom experimentation and early trials/pilots that provide opportunities for interaction between researchers, teachers and students. We also referred to both 'pure' and 'exploitation-oriented' dissemination efforts to separate the activities that aim to increase visibility of the project by exposing its core ideas and functionality to different audiences particularly for academic purposes and those aimed at potential exploitation.

Section 2 outlines dissemination events and activities carried out in Y2. Section 3 lists all project publications as of M24. Section 4 summarises our growing links with other relevant EU and international projects. Section 5 describes the consortium's progress with respect to related standards. Section 6 identifies some key dissemination steps as the project is approaching its end.



2. Dissemination events and activities

A wide range of dissemination events and activities has been undertaken during Y2. These have included scientific conferences and workshops (Section 2.1), commercial expositions and fairs (Section 2.2), teacher workshops (Section 2.3), and dissemination activities aimed at influencers (Section 2.4). The website and social media developments are outlined in Section 2.5. In Section 2.6, we give further details of two key Y2 events for the iTalk2Learn consortium: the Educational Data Mining conference (EDM2014), and the European Conference in Technology Enhanced Learning (EC-TEL2014).

Project dissemination has also been a key part of our R&D-related activities. These have included the formative evaluations, classroom studies and speech data collection, both in Germany and the UK. However, although these particular activities provided unique opportunities and drew attention to the project for teachers, researchers and other stakeholders, they were part of the project's continuous effort and so are not explicitly reported here (details are reported in D5.2). Nevertheless, it is worth mentioning here that some participating schools have already indicated an interest in establishing a long-term relationship outside the context of the project and using iTalk2Learn with their students.

2.1 Peer-reviewed scientific conferences, workshops and other related events

As detailed in Table 1, members of the iTalk2Learn consortium presented project outcomes at 16 academic conferences, ranging from The British Society for Research into Learning Mathematics (London, UK) to the International Conference of the Learning Sciences (Boulder, USA) and the International Conference on Tools with Artificial Intelligence (Limassol, Cyprus). Audiences included academic researchers in education, elementary mathematics teacher trainers, computer supported education, learning science, data mining, intelligent systems, speech recognition and affect recognition – i.e. all of the key areas involved in the iTalk2Learn research. Feedback at the conferences was universally positive, and led to a number of very engaging debates and many new academic connections. Other audiences ranged from mathematics experts to primary school teachers tasked with teaching fractions. Table 1 focuses on the target audience and key activities. Paper titles and further details are provided in Section 3.



Table 1 Participation in scientific conferences, workshops and other related events: dates, locations, target audiences and key activities.

Date	Place	Conference name	Target audience and key activity	iTalk2Learn lead
1 March 2014	London, UK	British Society for Research into Learning Mathematics	Paper presentation to mathematics Education Researchers, teachers, teacher educators.	IOE
01-03 April 2014	Barcelona, Spain	International Conference on Computer Supported Education (CSEDU 2015)	Paper presentation to other researchers in educational area discussing new educational environments, best practices and case studies on innovative technology-based learning strategies and institutional policies on computer supported education.	UHi
10 May 2014	Birmingham , UK	Mathematics Specialist Teachers Day Meeting	Mathematics Specialist Teachers working on a Masters' level programme: Key note lecture on errors and misconceptions in mathematics with a focus on fractions	IOE
17 May 2014	Ormskirk, UK	Mathematics Specialist Teachers Day Meeting	Mathematics Specialist Teachers working on a Masters' level programme: Key note lecture on errors and misconceptions in mathematics with a focus on fractions	IOE
23-27 June 2014	Boulder, USA	International Conference of the Learning Sciences (ICLS 2014)	Paper presentation as part of the symposium "Combining Generation and Expository Instruction to Prepare Students to Transfer Big Ideas Across School Topics" (Glogger, 2014).	RUB
25-27 June 2014	Roskilde, Denmark	International Symposium on Methodologies for Intelligent Systems (ISMIS 2014)	Paper presentation on an approach for improving the classification performance in phoneme recognition to researchers interested in intelligent systems	UHi



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Date	Place	Conference name	Target audience and key activity	iTalk2Learn lead
04-07 July 2014	London, UK	Educational Data Mining (EDM 2014)	Workshop and posters presented to other researchers in educational data mining area. Whizz had a booth with iTalk2learn and Whizz material. IOE lead discussions in the industry track with interesting topics related to iTalk2learn potential exploitation and other issues. For further information, see Section 2.6 below.	UHi, IOE, BBK, Whizz
07-11 July 2014	Athens, Greece	International Conference on Advanced Learning Technologies (ICALT 2014)	Paper presented to other researchers/computer scientists in education technology.	UHi
12 July 2014	Ormskirk, UK	Continuing Professional Development Day	Presentation to primary teachers with an interest in mathematics education.	IOE
27-29 August 2014	Rotterdam, The Netherlands	European Association for Research on Learning and Instruction (EARLI), conference of the Special Interest Groups Instructional Design and Learning and Instruction with Computers (SIG 6 & 7, 2014)	Paper describing one of the main components of our intervention model: switching between structured practice and exploratory learning activities was presented to the Special Interest Groups (SIG) of researchers who study the design and development of learning environments. The presentation was followed by a roundtable discussion.	RUB



Date	Place	Conference name	Target audience and key activity	iTalk2Learn lead
16-19 September 2014	Graz, Austria	European Conference on Technology-Enhanced Learning	Demo presentation, two papers and one poster to educational researchers and industry participants. For further information, including the two awards received by iTalk2Learn, see Section 2.6 below.	UHi, IOE, BBK
17 September 2014	Shropshire, UK	Shropshire Shropshire Cross-phase Mathematics Conference	Keynote presentation to the conference (Dr Hansen, IOE) with the remit of talking about teaching fractions generally and the iTalk2Learn project specifically. Around 85 teachers were in attendance and 26 signed up to hear more about the project and how they could use the platform and Fractions Lab in their classrooms.	IOE
21-25 September 2014	Bochum, Germany	DGPs: Deutsche Gesellschaft für Psychologie [German Psychological Society]	iTalk2Learn presented the paper "Eine Quasi-experimentelle Studie zur Rolle kooperativen Lernens für die Effektivität des Productive Failure Ansatzes [Investigating the impact of collaborative learning on the effectiveness of Productive Failure]". The paper presents a study investigating the effects of exploratory learning activities when learning fractions in individual or collaborative learning settings.	RUB
22-26 September 2014	Stuttgart, Germany	37th German Conference on Artificial Intelligence (KI 2014)	iTalk2Learn presented the paper "Local Feature Extractors Accelerating HNNP for Phoneme Recognition".	UHi

Date	Place	Conference name	Target audience and key activity	iTalk2Learn lead
23-25 September 2014	London, UK	British Educational Research Association (BERA 2014)	Paper presented "Designing interactive representations for learning fractions". Conference participants included educational researchers and teachers interested in research findings.	IOE
10-12 November 2014	Limassol, Cyprus	International Conference on Tools with Artificial Intelligence (ICTAI 2014)	Paper presented "An SVM Plait for Improving Affect Recognition in Intelligent Tutoring Systems".	UHi

2.2 Commercial expositions and fairs

As detailed in Table 2, members of the consortium attended meetings at 5 international education and technology conference/exhibitions. These included one of the world's largest international commercial shows for education and technology (BETT 2014), the world's leading show for computer games developers (GDC 2014) and the world's largest computer expo (CeBIT 2014).

These opportunities allowed consortium members to make useful contacts (with potential clients and/or disseminators), through informal and formal meetings and by distributing project literature wherever appropriate (for an example of project literature, see Appendix II).

Table 2 Commercial expositions and fairs: date, place, event and summary.

Date	Place	Event	Brief Summary	iTalk2Learn lead
22-25 January 2014	London, UK	British Educational Training and Technology Show (BETT) 2014	Policy makers, potential clients within e-learning market, b2b opportunities and teachers interested in educational technology.	Whizz and IOE

Date	Place	Event	Brief Summary	iTalk2Learn lead
17-21 March 2014	San Francisco, USA	Game Developers Conference (GDC) 2014	Testaluna attended the Game Developers Conference in San Francisco. A series of meeting with Serious Games developers and multimedia creators for children learning have been organized. The iTalk2Learn project and Fractions Lab in particular were presented and discussed.	Testaluna
20-22 March 2014	Birmingham, UK	Education Show 2014	Potential clients within e-learning market.	Whizz
10-14 March 2014	Hannover, Germany	CeBIT, http://www.cebit.de/home	CeBIT is the largest computer expo worldwide. It is hosted by Deutsche Messe AG (DMAG). The exhibition comprises booths from companies and research centres from all over the world.	University of Hildesheim
14-17 April 2014	Nottingham, UK	British Congress of Mathematics Education, http://www.bcme8.org/	IOE representatives attended BCME8 (http://www.bcme8.org/). Leaflets of the project were handed out in the delegates' wallets. There was a lot of interest in primary throughout the conference both in lectures and in the exhibition space. Dr Mavrikis demonstrated iTalk2Learn and Fractions Lab in particular to interested teachers.	IOE

2.3 Teacher workshops and other capacity building opportunities

As detailed in Table 3, members of the consortium delivered a range of presentations and teacher workshops in university departments involved in teacher training and education research, both in Germany and the UK.

These included keynote presentations to trainee teachers about the iTalk2Learn project, hands-on



workshops about Fractions Lab to mathematics teaching specialists, and support sessions for MSc research student projects on areas linked to this project. These were used both as a method of dissemination and, in the case of the UK teacher workshops, an opportunity to get 'buy in' from teachers who are willing to act as champions of Fractions Lab in primary schools across the UK. We see this latter purpose as a capacity-building exercise moving into Year 3. As outlined in D7.3.1, the workshops were positive in both these respects.

Table 3 Teacher workshops and other capacity building opportunities: date, place, event and summary.

Date	Place	Venue	Type of event	iTalk2Learn lead
November 2014	Bochum, Germany	Professional School of Education	Presenting iTalk2Learn at the teacher graduate school of RUB.	RUB
March 2014	Midlands, UK	Primary schools from Midlands, England	One-hour hands-on workshop showcasing Fractions Lab with Mathematics Specialist Teachers	IOE
March 2014	Northwest of England, UK	Primary schools from NW of England	One-hour hands-on workshop showcasing Fractions Lab with Mathematics Specialist Teachers	IOE
May 2014	Midlands, UK	Primary schools from Midlands, England	One-hour hands-on workshop showcasing Fractions Lab with Mathematics Specialist Teachers	IOE
May 2014	Northwest of England, UK	Primary schools from NW of England	One-hour hands-on workshop showcasing Fractions Lab with Mathematics Specialist Teachers	IOE
Oct 2013-Sep 2014	London, UK	London Knowledge Lab	In addition to exposing students to project outcomes two MSc students in <i>Learning Technologies</i> and one MA student in <i>ICT in Education</i> conducted research closely related to the project's outcomes. Two more students have expressed interest this academic year.	IOE



Date	Place	Venue	Type of event	iTalk2Learn lead
September 2014	Bochum, Germany	Professional School of Education Bochum (teacher graduate school of RUB)	Keynote (Nikol Rummel, RUB) at the teacher graduate school of RUB, followed by a two hour workshop on designing learning environments (such as iTalk2Learn) that combine activities targeting procedural knowledge with activities targeting conceptual knowledge	RUB

2.4 Dissemination activities aimed at influencers

As noted in Table 4, this year saw two key events in which elements of the iTalk2Learn platform (in particular Fractions Lab) was demonstrated to ‘influencers’ and, in particular, to a leading member of the British Royal Family. The first event, ‘What the Research Says: What Industry Says Fusion Skills Really Are’, involved a group of influential UK teachers, who are well-known and very vocal in the UK ed-tech scene, together with representatives from the UK educational technology industry. Attendees were given a presentation about the project, hands-on opportunities to explore Fractions Lab, and opportunities to meet the project team and discuss project aims, project developments and future dissemination possibilities.

The second event saw a visit to the London Knowledge Lab (which is a research centre of the Institute of Education, University of London) by Her Royal Highness Princess Anne, in her capacity as Chancellor of the University of London. She was accompanied by the Vice-Chancellor of the University of London (Sir Adrian Smith) and the Director of the Institute of Education, University of London (Professor Chris Husbands). The Chancellor was introduced to the work of the Lab and was shown a selection of LKL projects. Dame Professor Celia Hoyles from LKL presented the ‘maths corner’ that included iTalk2learn with Fractions Lab displayed on a tablet (see Figure 1). HRH showed a particular interest in the integration of intelligent tutoring systems in the classroom and the changing role of the teacher.



Figure 1 Her Royal Highness (HRH) Princess Anne, in her capacity as chancellor of the University of London, visited the London Knowledge Lab on the occasion of its 10 years anniversary.

Table 4 Dissemination activities aimed at policy makers and other influential persons or organizations

Date	Place /School name	Summary of place/school demographics	Type of event	iTalk2Learn lead
31 January 2014	London, UK	London Knowledge Lab: Teachers, educators, industrial representatives	Demo of Fractions Lab during LKL 'What the research says' event: 'What industry says Fusion Skills really are.'	IOE
08 May 2014	London, UK	London Knowledge Lab: HRH Princess Anne in her capacity as Chancellor of the University of London, accompanied by the Vice-Chancellor of the University, Sir Adrian Smith, and the Director of the Institute of Education, University of London, Professor Chris Husbands.	Demo of iTalk2learn and Fractions Lab during visit. For further information, please see Section 2.6 below.	IOE

2.5 iTalk2Learn project website, social media and print media

As detailed in Table 5, during Y2 the project website (www.iTalk2Learn.eu) underwent a major overhaul (also, see Appendix III), with the Whizz marketing and technology teams taking responsibility. The aim of the overhaul was to reflect key project outcomes and to make the project accessible to broad-reaching audiences (including academics, developers and teachers worldwide). In particular, and in response to feedback from users and reviewers, the site was restructured around the consortium members, work packages, project deliverables and publications. Navigation tools now allow for a user-friendly experience with fluid movement between sections.



Whizz, in coordination with the other partners, has also established a schedule of regular blog posts to help keep the site content dynamic and engaging (<http://www.italk2learn.eu/blog/>). A total of 33 blog posts have been written to date, with multiple contributions from each partner highlighting the broad scope of iTalk2Learn - from student cases studies to detailed explanations of individual platform components. The blog uses multimedia content including text, images and video content to showcase aspects of the platform.

In addition, we have maintained a Twitter feed (<https://twitter.com/italk2learn>), posting more than 200 tweets highlighting new developments and blog posts, and we have created various iterations of a project leaflet, developed to reflect project milestones and potential audiences (for an example, see Appendix II).

Table 5 Dissemination tasks related to the website and social media

Key Dates	Activity	Partners responsible/ involved	Details
Throughout Y2	Website maintenance	Whizz	Major revamp of the website (see Appendix III). Maintenance and coordination of activities especially news and blog. http://www.italk2learn.eu/
	Twitter posts	Whizz (and all partners)	More than 200 tweets were made in the duration of Y2. Particular attention was made during conferences to disseminate information related to the project and the related talks https://twitter.com/italk2learn
April 2014 & Sep 2014	Leaflet re-design and production.	Whizz & IOE	Ad-hoc leaflets were made for key dissemination events (particularly workshops with teachers and the BCME conference). The main leaflet was revised before key conferences in the field e.g. EC-TEL 2014

2.6 Key events (further information)

While all the events described above (in Sections 2.1 to 2.5) are important for the project, we distinguish the following two events as being particular noteworthy: (i) the iTALK2Learn workshop held at the Educational Data Mining conference 2014, (ii) iTALK2Learn's presentations and competition success at the European Conference in Technology Enhanced Learning 2014.

2.6.1. Educational Data Mining conference

The iTALK2Learn workshop held at EDM 2014 had about 25 participants interested in developing data-driven feedback and intervention mechanisms based on rich, multimodal interactions of learners within learning systems. There were many interesting and fruitful discussions about all stages of the analysis and feedback process including pre-processing raw sensor data, and automatic recognition of affective states, to modelling salient features that provide useful cues to aid feedback and intervention strategies. The discussions continued throughout the conference, feeding into several of the main conference discussions.

2.6.2. European Conference in Technology Enhanced Learning

At EC-TEL2014, the iTalk2Learn participated in the EC-TEL ‘Demo Shootout’, that is becoming an EC-TEL tradition. Thirty-two TEL systems from universities and developers across Europe and America (including iTalk2Learn) were first demonstrated live, in a two and a half minute presentation to a conference hall of 200+ delegates. Subsequently, conference delegates had the opportunity to interact more closely with the systems that had been demonstrated, during which the iTalk2learn representatives explained and further demonstrated the system.

There were two sets of prizes on offer, with iTalk2learn being awarded one from each set. The first was a ‘business angels’ award from the i-KNOW 2014 conference (that was co-hosted with EC-TEL). This was awarded to systems that the professional investment angel judges believed had high commercial prospects. The second award was based on the delegates’ vote for the best system demonstration. iTalk2Learn received second place. When you remember that there were 32 systems from teams across and beyond Europe, this is again a very impressive achievement.

Below are two pictures from the event.

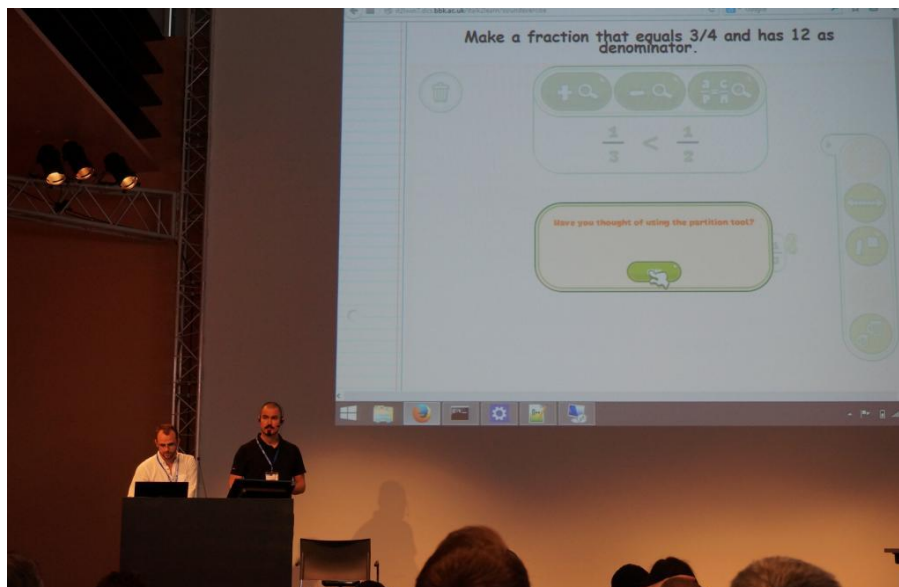


Figure 2. Dr Mavrikis and Dr Gutierrez-Santos presenting the iTalk2learn platform at EC-TEL 2014 in front of a live audience. Dr Gutierrez-Santos is wearing headphones to make a point about the speech recognition software, the outcome of which was shown in a console window. In the background, a prompt is provided by the Task-Dependent Support.



Figure 3 iTalk2learn representatives interact with delegates who voted for best demo award



3 Publications

3.1 Published conference, workshop and journal papers, and published book chapters.

As detailed in Table 6 below, 8 peer-reviewed conference papers, 2 peer-reviewed workshop papers, 2 peer-reviewed conference posters, 2 conference abstracts, 3 book chapters and 2 peer-reviewed journal papers written by consortium members were published or presented in Y2.

Table 6 List of iTALK2Learn publications

Publication type	Publication title	Date of publication	Publication journal or publication event	Authors	Related deliverable
Conference paper	Adaptive content sequencing without domain information	April 2014	Presentation at CSEDU 2014, an international conference on computer supported education.	C. Schatten, L. Schmidt-Thieme	WP2
Conference paper	Automatic Subclasses Estimation for a Better Classification with HNNP	June 2014	Presentation at 21st International Symposium on Methodologies for Intelligent Systems (ISMIS 2014, http://isl.ruc.dk/ismis2014/) Roskilde, Denmark, 25-27/06/2014	R. Janning, C. Schatten, L. Schmidt-Thieme	WP2, WP3



Publication type	Publication title	Date of publication	Publication journal or publication event	Authors	Related deliverable
Book chapter	Fractions, decimals, percentages, ratio and proportion.	June 2014	In Witt, M. (ed) (2014) Primary mathematics for trainee teachers. London: Learning Matters/SAGE.	A. Hansen, J. Leeming	WP1
Conference paper	Does collaboration affect learning in a Productive Failure setting?	June 2014	In J. L. Polman, E. A. Kyza, D. K. O'Neill, I. Tabak, W. R. Penuel, A. S. Ju-row, K. O'Connor, T. Lee, T., & L. D'Amico, Proceedings of the 11th international conference of the learning sciences (ICLS 2014), Vol. 3 (pp. 1184-1185). International Society of the Learning Sciences, Inc.	C. Mazziotti, K. Loibl & N. Rummel	WP1
Conference paper	"Minimal Invasive Integration of Learning Analytics Services in Intelligent Tutoring Systems"	July 2014	The 14th IEEE International Conference on Advanced Learning Technologies (ICALT 2014), 07-09/07/2014	C. Schatten, M. Wistuba, L. Schmidt-Thieme, S. Gutiérrez-Santos	WP4



Publication type	Publication title	Date of publication	Publication journal or publication event	Authors	Related deliverable
Workshop paper	Multimodal Affect Recognition for Adaptive Intelligent Tutoring Systems	July 2014	Presentation at Workshop on Feedback from Multimodal Interactions (FFMI) in Learning Management Systems at 7 th International Conference on Educational Data Mining (EDM 2014, http://www.educationaldatamining.org/EDM2014/)	R. Janning, C. Schatten, L. Schmidt-Thieme	WP3
Conference poster	Matrix Factorization Feasibility for Sequencing and Adaptive Support in ITS	July 2014	The 7th International Conference on Educational Data Mining EDM 2014 (EDM 2014) 04-07.07.2014	C. Schatten, R. Janning, M. Mavrikis, L. Schmidt-Thieme	WP2
Book chapter	Number: fractions, decimals and percentages.	July 2014	Chapter 6 In Hansen, A. (ed) Children's errors in mathematics (3rd edition). London: Learning Matters/SAGE.	A. Hansen	WP1
Workshop paper	Interventions during student multimodal learning activities: which, and why?	September 2014	Workshop on Feedback from Multimodal Interaction in Learning Management Systems (FFMI@ EDM 2014)	B. Grawemeyer, M. Mavrikis, S. Gutierrez-Santos, A. Hansen	WP1, WP2 (WP5)
Conference paper	Towards combining structured practice and exploratory learning activities to foster robust knowledge	August 2014	EARLI SIG 6 & 7 Meeting (Instructional Design & Learning and Instruction with Computers), Rotterdam, The Netherlands.	C. Mazziotti, K. Loibl & N. Rummel	WP1



Publication type	Publication title	Date of publication	Publication journal or publication event	Authors	Related deliverable
Conference paper	Feature Analysis for Affect Recognition Supporting Task Sequencing in Adaptive Intelligent Tutoring Systems '	September 2014	Presentation at European Conference on Technology Enhanced Learning (EC-TEL 2014, http://www.ec-tel.eu)	R. Janning, C. Schatten, L. Schmidt-Thieme	WP3
Conference paper	Exploring the Potential of Speech Recognition to Support Problem Solving and Reflection - Wizards Go to School in the Elementary Maths Classroom.	September 2014	EC-TEL 2014	M. Mavrikis, B. Grawemeyer, A. Hansen, S. Gutierrez-Santos.	WP1, WP2, WP3 (WP5)
Conference poster	Employing Speech to Contribute to Modelling and Adapting to Students' Affective States	September 2014	EC-TEL 2014	Beate Grawemeyer, Manolis Mavrikis, Alice Hansen, Claudia Mazziotti, Sergio Gutierrez-Santos	WP2
Conference abstract	Eine Quasi-experimentelle Studie zur Rolle kooperativen Lernens für die Effektivität des Productive Failure Ansatzes [Investigating the impact of collaborative learning on the effectiveness of Productive Failure]	September 2014	Presentation at the Conference of the German Psychological Society (DGPs 2014), Bochum, Germany. http://www.dgpskongress.de/frontend/index.php?page_id=355	C. Mazziotti, K. Loibl & N. Rummel	WP1



Publication type	Publication title	Date of publication	Publication journal or publication event	Authors	Related deliverable
Conference paper	Local Feature Extractors Accelerating HNNP for Phoneme Recognition	September 2014	Presentation at 37th German Conference on Artificial Intelligence (KI 2014, http://www.ki2014.de/)	R. Janning, C. Schatten, L. Schmidt-Thieme	WP2, WP3
Conference abstract	Designing interactive representations for learning fractions	September 2014	Presentation at the British Educational Research Association Conference, London 23-25 September, 2014.	A. Hansen, E. Geraniou & M. Mavrikis	WP1, WP3 (WP5)
Contribution in edited volume for researchers and teachers, Ruhr-Universität Bochum	Kooperatives Lernen: Eine entscheidende Komponente der Productive Failure Methode? [Collaborative learning: A crucial component of Productive Failure?]	In press	Mazziotti, C. & Rummel, N. (in press). Kooperatives Lernen: Eine entscheidende Komponente der Productive Failure Methode? In Sommer K., J. Lorke & C. Mattiesson (Eds.), <i>Publizieren in Zeitschriften für Forschung und Unterrichtspraxis – Ein Element der Wissenschaftskommunikation in den Fachdidaktiken und Bildungswissenschaften</i> . Bad Heilbrunn: Klinkhardt.	C. Mazziotti, N. Rummel & K. Loibl	WP1



Publication type	Publication title	Date of publication	Publication journal or publication event	Authors	Related deliverable
Journal paper	Professional development through cooperative inquiry: improving teachers' technological pedagogical content knowledge of fractions – Journal of Mathematics Teacher Education	Accepted with revisions	Journal of Mathematics Teacher Education	A. Hansen, M. Mavrikis, E. Geraniou	WP1, WP3 (WP7)
Journal paper	What transfers from problem-solving to instruction? Towards a unified theory of Productive Failure and Invention approaches	Under revision	Loibl, K., Roll, I. & Rummel, N. (under revision). What transfers from problem-solving to instruction? Towards a unified theory of Productive Failure and Invention approaches. Submitted to Cognitive Science.	Loibl, K., Roll, I. & Rummel, N.	WP1



3.2 Conference papers under review.

As detailed in Table 7 below, 4 additional conference papers have been submitted and are currently under review.

Table 7 List of iTALK2Learn Publications under review

Publication type	Publication title	Date of publication	Publication journal or publication event	Authors
Conference paper	Investigating the role of collaboration within Productive Failure	Under review	Submitted for presentation at 16th conference of European Association for Research on Learning and Instruction (EARLI) 25-29 August, Limassol, Cyprus. http://www.earli2015.org/	C. Mazziotti, K. Loibl & N. Rummel
Conference paper	Eine quasi-experimentelle Studie zur Bedeutung des kooperativen Lernens im Productive Failure Lernansatz [A quasi-experimental study investigating the impact of collaborative learning for Productive Failure]	Under review	Submitted for presentation at 2015 conference of the Society for Empirical Research in Educational Research (GEBF) 11-13 March, Bochum, Germany, http://www.gebf2015.de/	C. Mazziotti, K. Loibl & N. Rummel
Conference paper	Effects of Affective State: Students' Response to Adaptive Feedback – A Wizard-of-Oz study.	Under review	Submitted for presentation at ACM Conference on Human Factors in Computing Systems (CHI 2015)	B. Grawemeyer, M. Mavrikis, W. Holmes, A. Hansen, K. Loibl, S. Gutierrez-Santos



D6.3.1 Dissemination Report Y1

Publication type	Publication title	Date of publication	Publication journal or publication event	Authors
Conference paper	Light-Bulb Moment? Towards adaptive presentation of feedback based on students' affective state – A Wizard-of-Oz study.	Under review	Submitted for presentation at Integent User Interfaces 2015	B. Grawemeyer, W. Holmes, S. Gutierrez-Santos, A. Hansen, K. Loibl M. Mavrikis.

4 Cross-linking with other projects and initiatives

There are several on-going EU projects with related objectives to iTalk2Learn. We have actively sought collaboration with these projects in order to share findings, discuss challenges and consider possible common areas of R&D.

- A catalyst has been the *DG CONNECT* concertation meeting of all active FP7 and CIP projects in the field of technology-enhanced learning (TEL) managed by the unit G4 of the *DG CONNECT* on 7 February 2014. The aim of the meeting was to take stock of the achievements of the various projects and their results to date, and liaise with the FP7 call 11 and CIP projects starting in 2014. The meeting provided an opportunity to meet and network with the coordinators and other staff of all current TEL projects funded from FP7 and CIP and increase the coherence and communication across the full project portfolio. The adoption of the *Communication from the Commission to the European Parliament on Opening Up Education* in September 2013 has launched an EU wide debate for digital learning in Europe. The concertation meeting also served to identify how the current ongoing projects can contribute to deliver the agenda of the *Opening Up Education*, both individually and/or jointly.

One of the tangible outcome of this meeting was the EDM workshop (mentioned in Section 2) that was co-organised from chairs leading or coordinating 4 different EU projects: *iTalk2Learn*, *PRAISE* (<http://www.iiia.csic.es/praise/>), *EMOTE* (<http://www.emote-project.eu/>) and *PELARS* (www.pelars.eu).

- We have also participated in the Living Schools Lab Workshop “*How to run School Validations across Europe*” on 5th of June 2014, Brussels. The *European Schoolnet* is a network of 30 European Ministries of Education that aims to bring innovation in teaching and learning and helps schools make effective use of educational technologies. We are in close communication, investigating possible collaborations and involving the network for dissemination opportunities towards the end of the project.
- Sail is closely monitoring outcomes from two related projects *TOSCA-MP: Task-Oriented Search and Content Annotation For Media Production* (Werner Bailer Joanneum Research Graz (EU)) and *QuOIMA: Quelloffene Integrierte Multimedia Analyse*. In *TOCA-MP* ideas are exchanged about how to mimic the effect of speech-recognition errors for system evaluation. In *QuOIMA*, polarity analysis is being developed by Sail that will be integrated into the MMI which, in turn will make it available to the iTalk2Learn platform via the API.
- We intensified our collaboration with the Pittsburgh Science of Learning Center at Carnegie Mellon University. By translating the Fractions Tutor into German and adapting it to the needs of German students for the iTalk2Learn project, the target group becomes more



wide-spread - both within and beyond the duration of the project.

- We also established a collaboration with the *Mathematical Creativity Squared* project (<http://www.mc2-project.eu/>) funded under the FP7 Strategic Objective ICT-2013.8.1 "Technologies and scientific foundations in the field of creativity" (Project No. 610467). The *MC Squared* project is developing an intelligent computational environment to support stakeholders from creative industries involved in the production of media content for educational purposes. The project is engaging with Communities of Interest (COIs) in Spain, Greece, France and UK in developing e-books with highly interactive mathematical content. The iTalk2learn tasks and the Fractions Lab environment can act as inspiration for such e-books.
- We listed iTalk2learn in the technology pool of the project *we.learn.it* (<http://we.learn.it/>), an initiative supported by the EC (ICT-318530). The technology pool is an evolving set of learning technologies that can be used for learning expeditions, i.e. inquiry-based projects particularly suited for the exploratory nature of some of our tasks.

5 Standards and related specifications

At the end of Year 2, several design decisions have been set and a lot of the development of the iTalk2Learn is already in place. This has clarified the project's position with regard to educational standards and specifications. We are continuing our efforts to be updated with regard to standards and identifying useful opportunities for relating with on-going activities or simply capitalising on related findings. In this respect, the following four initiatives are relevant:

- **IMS Learning Tools Interoperability (LTI)**

This specification defines a simple but flexible way in which different virtual learning systems can communicate and cooperate. LTI aims to establish a standard way of integrating rich learning applications (often remotely hosted and provided through third-party services) with platforms like learning management systems (LMS), portals, or other educational environments. This is particularly relevant not only in making the iTalk2Learn platform work together with the MathWhizz system (e.g. for ease of access of the already established MathWhizz clientele) but for linking with other well-known Virtual Learning Environments (VLE) such as Moodle or Sakai that some schools use as LMS.

- **IMS Learning Design and Simple Sequencing**

The focus of this IMS specification is on sharing the design of learning experiences, but some of its features (at the so-called levels B and C) allow for the definition of adaptive sequencings; as in the former case. We explored using IMS Simple Sequencing for defining the intervention model specified in D1.3. Other aspects such as the Vygotsky Policy Sequencer seems out of scope due to the extensive data processing and different way of operating. However, a close look at the specification and the community does not indicate much interest in the last few years. We will monitor the space and consider the return of investment in applying the specification compared to a more ad-hoc solution.

- **IMS Caliper**

This specification is still under development. It is built around three concepts (learning profiles, learning sensors, sequencing) to develop a learning measuring framework; this may prove useful to export the learner models developed in the context of WP2.

- **Digital Metadata Alliance**

This year, two of the main initiatives related to e-learning standards, Dublin Core and IMS Global have joined forces¹. The Digital Learning Metadata Alliance aims to facilitate cooperation on metadata standards to make it easier to find and use digital resources both

¹ <http://www.imsglobal.org/pressreleases/IMSPR20141024.pdf>



within educational institutions and via the world wide web. DLMA.org is an umbrella project by which standards organizations with a stake in educational and learning metadata can coordinate and harmonize standards. We will follow with great attention the evolution of their standards and specifications in the coming 24 months. There is some scope in expressing the metadata related to task information in these formats, both for future reusability (e.g. in case content is exported) and for enabling re-use of related components in the iTalk2Learn platform.

- **Ontologies and other related work**

The work related to feedback (WP2) and semantic annotation of the content (WP4) (for enabling the switching and sequencing engine to deliver appropriate tasks) is potentially an area where we can re-use (and possibly contribute to) related work. As described in D2.2.1 we are inspired by the ontology defined in the context of the EU-funded LeActiveMath project (and subsequent related work). In particular the ActiveMath format extends OMDoc the Open semantic format for Mathematical Documents. The educational metadata extensions include competency definitions and using Bloom's, PISA and NCTM taxonomy (see Kohlase, 2006²), which we can extend based on the work of WP1 and the definition of different dimensions of tasks (see D1.2). A recent related development that we are also monitoring is different ontologies - components that are used according to the system's need in systems like LOCO analyst³ that is supported by potentially a combination of multiple ontologies in order to provide feedback to teachers regarding various aspects of the learning process. The ontologies used are related to learning context, user model (competencies, performance, preferences), learning materials, assessment and domain specific knowledge and are expressed in Simple Knowledge Organization System (SKOS⁴) a common data model for sharing and linking knowledge organization systems which could enable iTalk2Learn to share data or components with other applications (e.g. learning analytics tools).

² Michael Kohlase (2006): An Open Markup Format for Mathematical Documents (Version 1.2). Lecture Notes in Artificial Intelligence, no. 4180. Springer Verlag, Heidelberg. ISBN 3-540-37897-9.

³ <http://jelenajovanovic.net/LOCO-Analyst/loco.html>

⁴ <http://www.w3.org/TR/swbp-skos-core-spec>



6 Next dissemination steps

As we approach the end of the project, exploitation-orientated dissemination will become more important. Accordingly, consortium members are already planning a number of journal papers, conference submissions, academic collaborations and other dissemination events as described below.

6.1 Planned dissemination events

Table 8 shows key dissemination events that are on the radar of the iTALK2learn consortium.

Table 8 Possible key dissemination events

Dates	Event	Place	Partners responsible/ involved
21-24 January 2015	BETT 2015	London, UK	Whizz, IOE
4 – 8 February 2015	CERME 2015	Prague, Czech Republic	IOE, RUB
19-21 March 2015	Education Show	Birmingham, UK	Whizz, IOE
23-25 May 2015	CSEDU 2015	Lisbon, Portugal	UHi, BBK
22-26 June 2015	AIED 2015	Madrid, Spain	IOE, BBK
26-30 June 2015	EDM 2015	Madrid, Spain	IOE, UHi
13-18 July 2015	PME 2015	Hobart, Australia	IOE
25-29 August 2015	EARLI 2015	Limassol, Cyprus	RUB
September 2015	ECTEL 2015	Toledo, Spain	IOE, UHi, BBK



6.2 Planned journal papers

iTalk2Learn consortium members are building on their work throughout Y2 to write a growing number of journal publications. For example:

- IOE members are currently preparing a paper tentatively entitled ‘Designing interactive representations for learning fractions’, which is an extension of the BERA paper noted in Table 1, for submission to *Computers and Education*.
- BBK are currently preparing a paper based on the outcomes of formative assessments and Wizard of Oz studies and the findings related to feedback and affect, for submission to the *International Journal of Artificial Intelligence in Education (IJAIED)*.
- UHi are currently preparing papers that focus on the evaluation of the machine-learning sequencer (see D2.2.1 and D5.2), as extensions of the CSEDU, ICALT and EDM papers (in Table 1) and further results from formative and summative evaluations. Possible venue for submission is the *IEEE Transactions on Learning Technologies* or similar.
- IOE and RUB are expecting that conference and journal publications will emerge from the Y3 formative and summative evaluations of the intervention model, as described in D1.3.
- UHi plans to submit to a journal a summary of the outcomes of the feature development and analysis described in D 3.4.1 for affect recognition. Furthermore, as mentioned in D3.4.1 we aim at building an improved affect recognition model. The results of this process will also be submitted to a journal or conference.

6.3 Other dissemination plans

Apart from continuing liaising with other EU and nationally-funded projects, we also intend to increase our liaison activities with different stakeholders. For example, IOE and BBK will undertake a range of activities in collaboration with The London Knowledge Lab Innovations (LKL*i*) hub that fosters and supports collaborations, impact studies and sustainable and exploitation opportunities for research and projects between industry and all sectors of Education. IOE and RUB will engage in other capacity building activities (through the taught MSc and MA courses as well as other teacher workshops).

Lastly, we plan to develop further the project website, adding rich multimedia content and additional blog postings particularly addressed to teachers (e.g. instructions on how to use the system, suggestions about classroom activities, clear communication about the system’s ‘intelligence’ and decision making etc.). As discussed in D6.4.2 in detail, our collective previous experience suggests that a key factor of successful integration of technology into everyday instructional practice is careful consideration of the context within which that technology operates – any changes to existing practices may otherwise be perceived as too disruptive. We will therefore increase our efforts of keeping learners, teachers and parents close to the project.



Appendix I: Workshop on Feedback from Multimodal Interactions in Learning Management Systems

Abstract:

Virtually all learning management systems and tutoring systems provide feedback to learners based on their time spent within the system, the number, intensity and type of tasks worked on and past performance with these tasks and corresponding skills. Some systems even use this information to steer the learning process by interventions such as recommending specific next tasks to work on, providing hints etc. Often the analysis of learner / system interactions is limited to these high-level interactions, and does not make good use of all the information available in much richer interaction types such speech and video. In the workshop Feedback from Multimodal Interactions in Learning Management Systems (FFMI@EDM'2014) we would like to bring together researchers and practitioners who are interested in developing data-driven feedback and intervention mechanisms based on rich, multimodal interactions of learners within learning management systems, and among learners providing mutual advice and help. We aim at discussing all stages of the process, starting from preprocessing raw sensor data, automatic recognition of affective states to learning to identify salient features in these interactions that provide useful cues to steer feedback and intervention strategies and leading to adaptive and personalized learning management systems.

Full description:

Several techniques have been applied to mine data in Learning Management Systems. The immediate scopes are performance prediction, emotion recognition, speech analysis and many others. Less effort has been dedicated to answer the question how this analysis, especially of multimodal data, could be integrated to ameliorate the experience within Learning Management Systems for adaptive and personalized feedbacks, which are one of the mostly used intervention strategy. A good feedback design should answer four main questions: when, what, how and why. It is crucial to know when to display the feedback, i.e., not too early or too late, and because the student really needs help (why). Moreover, one has to decide what the feedback should contain and in which format this content should be presented, e.g., in audio or in visual format (how). These questions were answered at the beginning with fixed rule- and content-based strategies. Nowadays, the main research focuses are to solve them through Educational Data Mining and to transfer the problem from structured to unstructured learning environments. The available data for this kind of task changed over the last 10 years because of several reasons. Log files are automatically registered, without student's awareness. This information can go from fine grained event detection of mouse movements and clicks, to coarse score records. Thanks to the increasing availability and speed of internet connection this data can be collected in a central storage for later being analyzed. Moreover, cheaper sensors, to be found commonly integrated in laptops, tablets, and cell phones, allow a multi-modal data collection that once was possible only in laboratory with invasive settings. To give an idea of the richness of the available information we can list: web and depth cams for video recordings of facial behavior, gestures and eye-tracking, as well as certain physiological parameters, such as heart- and respiration rate, facial temperature, microphones for speech and other sound recordings, as well wearable inertial devices for movement detection. Also other biometrics sensors can be purchased: commercial easy-on Electroencephalogram (EEG), electrodermal activity, such as skin conductance (EDA), skin temperature, etc. The main scope of the workshop will be to bring together researchers of the Educational Data Mining community to exchange information about the current state of the art in personalized and adaptive feedback and interventions strategies, as well as about their possible multimodal data-driven extension in Learning Management Systems. Particular focus will be given to multimodal interaction, as novel source of information.

Workshop content and themes:

- Data mining and pattern recognition methods to assess affective states, such as emotions, or interpret gestures etc. in multimodal interactions, in the context of learning management systems, tutoring systems etc., esp. in speech, sound, video, haptics, eye tracking, and instrumented environments.
- Using information about affective states to provide feedback to learners.
- Using information about affective states to moderate interventions in tutoring systems such as recommending a next task to work on, providing hints etc.
- Preprocessing raw sensor data such as speech, video etc. for data mining of multimodal interaction data.
- Representation of multimodal interactions in learning management systems.
- Ethical aspects of mining multimodal interaction data.
- Trust and reputation models for feedback analysis.

**Important dates:**

April 24, 2014: Workshop papers submissions due. May 22, 2014: Notification of acceptance of Workshop papers. June 1, 2014: Camera ready papers due. July 4-7, 2014: Conference [EDM 2014](#).

Submission details:

Workshop papers should not be longer than 8 pages in EDM conference paper format (templates: [Word](#), [LaTeX](#)) and describe original and unpublished work. Submissions (PDF) will be accepted through EasyChair: [Submission](#).

Workshop papers will be published in a joint volume in CEUR workshop proceedings (ISSN: 1613-0073).

A selection of accepted workshop papers will be invited to extend their submission (providing a significant contribution beyond the workshop paper) for a special issue in the Journal of Educational Data Mining (JEDM) on Advances and Emerging trends in EDM.

Programme chairs:

Lars Schmidt-Thieme, ISMLL, University of Hildesheim, Germany Arvid Kappas, School of Humanities and Social Sciences, Jacobs University Bremen, Germany Carles Sierra, IIIA, Spanish Research Council, University of Technology, Sydney Emanuele Ruffaldi, PERCRO, Scuola Superiore Sant'Anna, Pisa, Italy

Programme committee:


Sergio Gutierrez-Santos, Birkbeck, University of London, UK Mark d'Inverno, Goldsmiths, University of London, UK Manolis Mavrikis, IOE, University of London, UK Francois Pachet, Sony Computer Science Laboratory Paris, France Matthew Yee-King, Goldsmiths, University of London, UK Helen Hastie, Heriot Watt University, Edinburgh, Scotland Iolanda Leite, Yale University, Connecticut, United States Luis de-la-Fuente, International University of La Rioja, Spain Helen Pain, ILCC, Human Communication Research Centre, University of Edinburgh

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Appendix II: Revised leaflet




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.


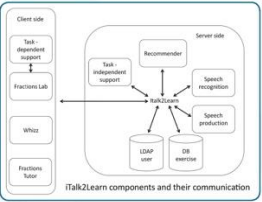


iTalk2Learn is an interdisciplinary project. It comprises a consortium of academic and commercial partners who bring experience and expertise in machine learning, user modelling, intelligent tutoring systems, natural language processing, educational psychology and mathematics education.

www.italk2learn.eu
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Funded under the Seventh Framework Programme, Contract number 318051.

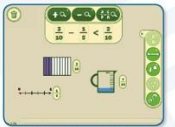
iTalk2Learn aims

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.



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

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.



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



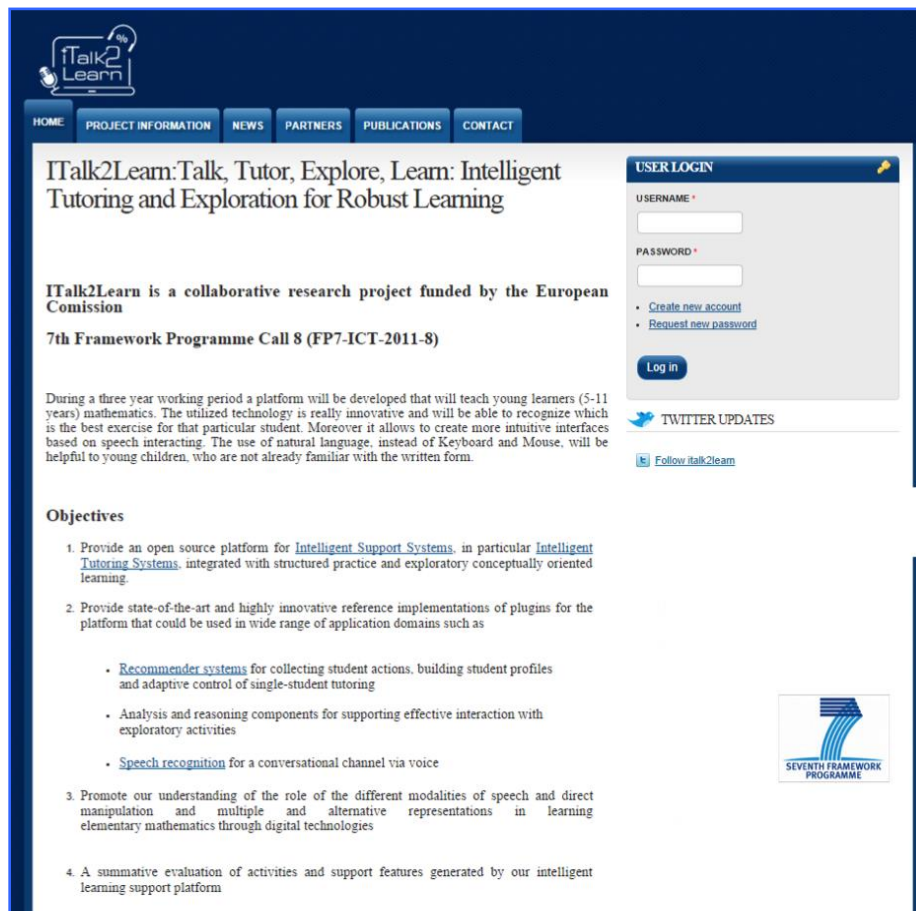
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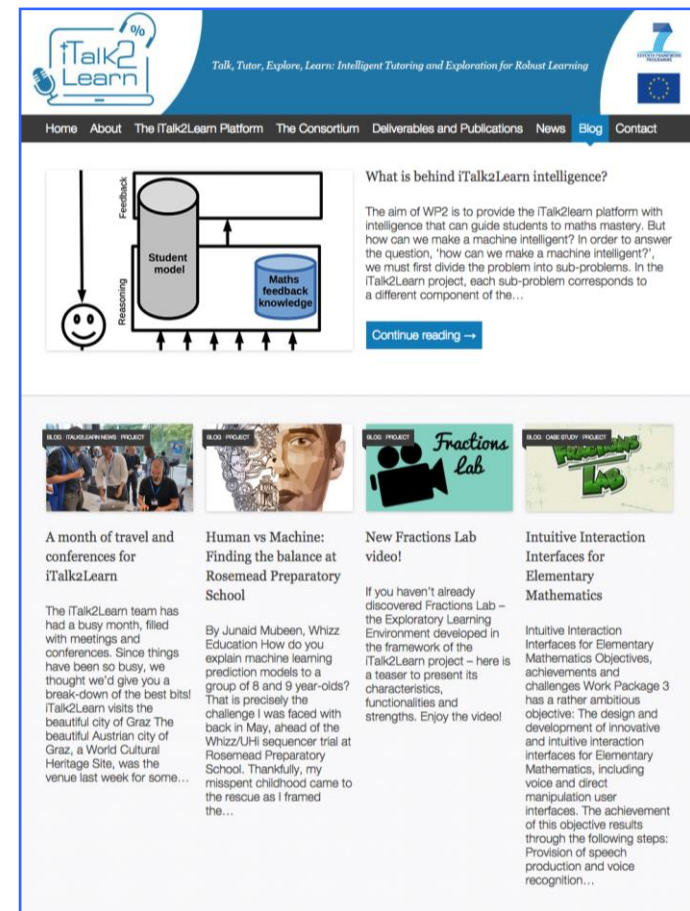
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Appendix III: The old and revamped website (www.italk2learn.eu)



Old site



New site (also see Section 2.5 above)