INTACT Project: Bilingual Teaching Resources Tailored for Students' Mobile Life

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Abstract

At present interactive teaching and learning materials are either only usable with a certain technology, like interactive whiteboards or tablets, or bound to a certain provider software. Until now there has only been a small number of materials available that allow synchronous, collaborative work at different locations on a shared task, independent from the technology used. Against the background of this the Comenius multilateral project INTACT (Interactive Teaching materials Across Culture and Technology) develops interactive teaching and learning resources for bilingual education in different subjects, evaluates them and provides them on an online platform developed for them.

INTACT creates and implements reliable teaching resources for example for Mathematics, Geography, Technology, Second Language Learning, Primary Science, Secondary Science and Environmental Education with the aim to promote a culture of collaboration among students and an interactive approach to learning inside and outside the classroom. Since the technological requirements in schools are diverse, the teaching resources will be implemented in HTML 5, thus ensuring independence of specific hard- or software.

In many partner countries schools are not used to a bilingual setting in the classroom, and INTACT addresses this with a special emphasis as a way to introduce the CLIL methodology in countries where it is not yet used on an everyday basis and at such different age levels.

1. Background and innovative aspects

In the last years the use of technology in schools has increased. In current literature different authors describe possibilities of interactive whiteboard usage in educational settings (Gutenberg, Iser, & Machate, 2010 [1]; Higgins, Beauchamp, & Miller, 2007 [2]; Kennewell & Higgins, 2007 [3]; Martin, 2009 [4]; Schlieszeit, 2011 [5]; Smith, Higgins, Wall, & Miller, 2005 [6]. Further research in this field can also be found in Manny-Ikan, Dagan, Tikochinski and Zorman (2011) [7], Shi Yang, Hao Yang and Liu (2012) [8] or Thomas and Schmid (2010) [9]).

The use of mobile devices has grown rapidly and this leads to a growing relevance of mobile learning in education. Mobile learning enables students and teachers to have their personal learning environment with them every time and everywhere (Johnson et al., 2013 [10]). Examples for the use of tablets in educational settings can be found in Aufenanger and Schlieszeit (2013) [11] or Henderson and Yeow (2012) [12]. An overview of the current state of research can be found in Clark and Luckin (2013) [13]. There are more and more results concerning research and studies in this field (Janke, Norqvist & Olsson, 2013 [14]; McCombs & Liu, 2011 [15]; Reid & Ostashewski, 2011 [16]).

Up to now existing resources are developed for a specific technology that often requires the additional use of a specific software and therefore their usage is frequently bound to a specific producer of interactive whiteboards or system software of mobile devices (Android, iOS). Due to this the appliance is either connected to the use of a copyrighted program (for example notebook for SMART and Active Inspire for Promethean interactive whiteboards) or to proprietary software like flash that is not compatible with all kinds of mobile devices. There is also only a small number of materials available that allow synchronous, collaborative work at different locations on a shared task, independent from the technology used.

Furthermore, the technological requirements in European schools are widespread and diverse and there is still a lack of resources that focus on bilingual instruction for sciences in primary and secondary schools. Therefore the INTACT-project (INteractive Teaching Materials Across Culture and Technology) faces the challenge of developing interactive teaching and learning resources for bilingual contexts in the areas of science as well as second language learning. The main outcomes of INTACT are to develop and implement cooperative and collaborative resources for bilingual learning settings and the development and implementation of an online platform as repository and facilitator for the use of these resources. In order to guarantee flexibility and independency from a specific

technology or software, the INTACT-Project implements all resources using HTML5. Due to this the resources can be used in schools all over Europe with different devices from computers and interactive whiteboards to smartphones or tablets, thus resulting in a more user-friendly technological approach. Apart from that the INTACT-project promotes interactivity in a double sense – interactivity with digital learning resources and international interactivity which allows connected learning all over Europe using a common INTACT-platform. The resources developed and implemented by the INTACT-project aim to initiate the collaboration between schools in the region and also across borders in sciences and to offer a wide variety of free resources for this field.

Target groups are school teachers and stakeholders as well as information multipliers who are interested in using ICT for bilingual teaching in primary and secondary education. The purpose of the INTACT-project is to provide examples of interactive teaching and learning resources within the platform to facilitate bilingual learning beyond cultural boarders,

2. Development of the project

INTACT is a multilateral Comenius project, funded under the Lifelong Learning Programme of the European Union. The project is funded for three years total, and was started in December 2012 and consist of a consortium with partners from six European countries. The six project partners are (1) University of Education Ludwigsburg (Germany), (2) Universidad Complutense Madrid (Spain), (3) Kecskemét College (Hungary), (4) St. Patrick's College, Dublin (Ireland), (5) Polytechnic Institute of Bragança (Portugal), and (6) Babes-Bolyai University Cluj (Romania). Ludwigsburg University of Education is responsible for overall work areas and oversees the general project task areas, for example quality control.

The project includes three major phases: (1) development, (2) implementation and (3) evaluation of the resources and the online-platform.

Each partner cooperates with at least one pilot school. Researchers of the partner institutions that are experts in their field have developed concepts for resources based on current - scientifically approved - educational approaches cooperatively with teachers of the pilot schools. All resources took into account the different curricula of the countries involved as well as the language level to be used. The resources will be tested at the pilot schools in autumn 2014 and, with consideration of the results, will be revised accordingly for subsequent technological implementation. Until now the development of resources for bilingual instruction in different subjects took place as well as the collection of functional requirements of the online platform based on the concepts of the resources. Table 1 shows the subjects and topics of the developed concepts for the resources.

Table 1 Developed concepts for resources

Subject	Topics
Biology	Immune System; Circulatory System
Civilization	Legends and Heroes (To be a knight in King Arthur's Court)
Geography	Climate elements and factors
German as a second language	Mozart als Kind und seine Reisen
Primary Science	Creatures of the night; Magnetism
Mathematics	Construction of Triangles
Engineering	Technical Drawing

The selection of the resources to be piloted and evaluated at a first step was based on the level of collaborative content, the overall level of development of the Unit of Work/Lessons and the development of the Learning Objects in each. A further criterion was the availability of pilot schools for pairing since the resources to be evaluated were designed in one country but will be piloted in another. Both countries will then wotk on the revision of the resource.

Simultaneously, the project is in the stage of implementing the resources based on the developed concepts - partly by an external company, as well as the online-platform which is also being programed by an external company based on the collected functional requirements besides the use cases written by the INTACT consortium.

3. Developing bilingual competences

The growing trend towards globalisation and the need to communicate in a second language (L2), particularly English in different contexts has led to important changes regarding language policy and teaching in education throughout Europe.

Bilingualism (as a particular case of plurilingualism) is defined functionally as the "ability to communicate in two (or several) languages independently of the relative level of competence, of the modes and ages of acquisition and of the psycholinguistic relations between the different languages composing the speakers' repertoire" [17]. Insofar bilingualism is applicable to all age levels and in the context of this project is viewed as an advantage in students educational itinerary.

Nowadays bilingual competences are highly explored in higher education, due to the Bologna reform and mobility programmes but also due to a series of professional and social factors. Many European universities have implemented bilingual programmes and introduced innovative language teaching methodologies. As such, CLIL (Content and Language Integrated Learning) seems to be the perfect company to bilingualism and to the stress which has been put on the English language as a result of globalization and educational changes in Europe and the rest of the world.

Within the INTACT project the bilingual stress is set on English and in the case of Hungary and Romania also on German. All participant institutions have a language expert in their group and the staff from St. Patrick's College in Ireland ultimately supervises language use and correction.

In many of the chosen pilot schools a bilingual setting is not considered a norm when it comes to the classroom, but the CLIL methodology has gained importance as an innovative teaching and learning approach schools are prone to host, at least as an experiment.

In *The European Framework for CLIL Teacher Education* [18] CLIL is defined as a "dual-focused educational approach in which an additional language is used for the learning and teaching of content and language with the objective of promoting both content and language mastery to predefined levels" (Maljers, Marsh, Wolff, Genesee, Frigols-Martín, Mehisto, 2010).

This methodology is well known for its integrative nature and this serves the INTACT project's objectives quite well and i tis suitable to all levels of education – primary, secondary, tertiary, vocational and adult. CLIL seeks to teach two subjects in one – a content subject and a language. Content subjects, such as mathematics and an additional language, are usually taught separately.

With the exception of primary teachers, other professionals are often trained to teach just one subject be that a content subject or a language, and not both. INTACT project is groundbreaking in this aspect as well. Both teachers and learners will have the possibility to work in this specific environment.

This also means that the resources were very carefully planned and written from the language point of view. Different age levels and language knowledge were considered.

Conclusion

As a conclusion it can be said that the INTACT project is tailoring students' education taking into account several groundbreaking aspects which are linked to both the technological and pedagogic aspect. First the teaching resources will be implemented in HTML 5, thus ensuring independence of specific hard- or software, which is applicable to different school environments and, as such, it will crete a more easy-going collaborative learning environment. Then, it stresses the use of English as an important communication tool in the education and future of students, merging this with the CLIL methodology. The project life span is until Noember 2015 but the consortium is working to make the platform and its resources usable beyond that point in time.

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