



## Flexible ICT Options for Language Learning in Primary Education

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### Abstract

*Using technology for teaching and learning in the classroom doesn't seem to be so obvious and easy. Kennisnet, the Dutch research institute for ICT and learning, shows in her yearly monitor that although 80% of primary education classroom have a digital blackboard and every five pupils share a computer, its use stays rather limited<sup>[1]</sup>. An important complain of teachers is that there is a lack of quality digital educational resources. Today's promises for ICT seem more down to earth and focused on results. Projects with titles that include 'evidence based' demonstrate that, and teachers ask for it. ICT should be working, and should give a benefit, an extra. So, new flexible ICT options for language learning should be based on these principles as well. The new learning and teaching series of learning materials for Frisian language in primary education in the province of Fryslân in the Netherlands are being developed according to a design research approach<sup>[2]</sup>. Primary school teachers are part of the team designing and testing the educational resources and environment. Based on research findings design decisions towards where and how ICT will be used are made. An important principle is flexibility as is defined by De Boer and Collis<sup>[3]</sup>, which focuses on the organization and the curriculum part of learning. ICT can play an important part in the specific design of the curriculum of a program, which may differ from school to school. Also, the way schools use different media may differ: some schools like books, some their digital blackboard, some their tablets and others the mix of it all. Another example is the use of specific language games that can be part of the curriculum, or not. Also, the way schools want to offer their pupils personal learning tracks for parts of the curriculum is a choice. Teachers and schools work together with language, educational and ICT specialist in the design of the (digital) learning and teaching environment. It offers teachers choices. ICT is used, but books and paper as well. Based on the needs and conditions of teachers a suitable design for their teaching. The goal of this project is to include ICT in an offer towards schools and teachers, in such a way that ICT is used for the benefit of teaching and learning the Frisian language in primary education.*

### 1. Frisian language in primary education, some facts and figures

Fryslân is a province in the North of the Netherlands. Within the Netherlands, two official languages are spoken: Dutch and Frisian. The Frisian language is characterized as an autochthonous minority western Germanic language, closely related to Dutch<sup>[4]</sup>. Of the 620,000 inhabitants of Fryslân, 94% understands, 74% speaks, 65% reads and 17% writes (in) the Frisian language. About 55% consider Frisian as their mother tongue<sup>[4]</sup>.

Primary schools in Fryslân are not that different than those in other parts of the Netherlands, with regard to curriculum. Schools are responsible for the quality of education and have a great deal of curricular autonomy<sup>[5]</sup>. They are for example able to select learning materials that relate to their educational visions, with budgets for which they have responsibility. An important difference is however that within the curriculum in Fryslân, the subject Frisian language is an obligatory part of the curriculum. Another characteristic is that schools in this part of the country are rather small. The (about) 450 schools have an average of 125 pupils, of which 24% have less than 60 children and only 3% of the schools have more than three hundred children<sup>[4]</sup>. The majority of primary schools in Fryslân spend 30-60 minutes on one lesson of Frisian per week and about 15-20% of the schools regularly use Frisian as medium of instruction<sup>[6]</sup>.

### 2. Identifying ideas, demands and wishes for a new set of learning materials for Frisian language learning

In 2010, the Dutch Inspectorate did a study on Frisian language in the province of Fryslân<sup>[6]</sup>. The study concludes that the quality of education of Frisian could and should be better. Although differences between children can be significant – for some children the Frisian language is mother tongue, for others it is a second language – differentiation is rarely observed. Also, about half of the schools have teachers teaching the subject without a qualification. And finally, goals should be result oriented and better use of test and evaluation should demonstrate progress<sup>[6]</sup>.

In order to give a quality impulse on the Frisian language, the province of Fryslân started a new project. It assigned Afûk, the publisher/institute for the Frisian Language, to develop a learning platform replacing the current coherent package of learning resources for the Frisian course (called StudioF). Main goal of the assignment was to enable schools and teachers to improve the quality of the subject. In 2013, the project started. As an approach for the development of the educational platform, educational design research was used<sup>[2]</sup>. Important characteristics within this approach are the immediate role of practitioners from the start and use of available and relevant literature for the area of development, leading to design principles. In the following paragraphs input leading to these design principles will be discussed. In part 3 of this paper, the design principles will be presented.

Before changing anything, it is important to know what is there. Therefore, one of the first steps were a number of school visits in which observations of classes were made, as well as interviews with teachers and pupils. After the observation teachers were interviewed about their ideas and experiences of the course, the materials, the goals, evaluation, etc. Some interesting indicators from these conversations were that teachers found it hard to differentiate with the available materials, although the materials provided options for that. Also, they almost didn't include evaluation within the teaching process, although tests were available on a website, they were hardly used. Teachers preferred the video material, accompanied with activities that are related to current news events above the textbook materials, which a number of them stated as outdated. Asked for what teachers thought of inspiring examples for Frisian, they talked about differentiation as was used in the Dutch course (3 levels) and two examples of English packages of learning materials that used the digital school board and used a lot of videos. Pupils also preferred the news-based learning materials and activities. They stated that using games would be more fun to learn.

Another element within this orientation part of the educational design research approach was an inventory of actual developments within education, especially focused on the use of technology. A number of interesting developments were listed and reviewed, amongst them:

- Khanacademy.org: Using videos for free learning, pupils have autonomy over their learning;
- Groove.me: A learning package for learning English in primary education, using pop-songs and the digital school board;
- Got-it.nl: A price winner (IPON) package for learning Dutch language in primary education, with individual and adaptive learning and strong learning analytics;
- Takeiteasy.nu: A learning package for learning English in primary education, using a digital native English speaking teacher and the digital school board;
- Mobilelearning.nu/: A new approach for secondary education in which Ipads are used for individual learning;
- Emma: A publisher (Eisma) that uses in a flexible way the educational content (i.e. English, Greek) for printed books as well for their e-learning environment;
- Sam Schoffel: An Ipad (serious) game for reading.

Some of these examples were mentioned by teachers in school visits. A number of observations of these materials focused were made to better understand use and potential. These findings were input for the design principles, as will be elaborated further in section 3.

Based on the outcomes of the school visits, another study activity was planned. In a survey, organized by the Fryske Akademy, the scientific research institute in the fields of the Frisian language, culture, history and society, 50 teachers in primary education were asked about the use and appreciation of the current teaching materials for Frisian language learning in primary education via a paper-based questionnaire. Krol-Hage<sup>[7]</sup> concludes that teachers find themselves able to give the course and are enthusiastic about the subject. The current teaching material (StudioF) is valued with a score of 6.2 for the textbook, 6.0 for the activitiesbook and 7.1 for the grammarbook on a ten point scale. Teachers value additional materials, such as the earlier mentioned broadcasts and accompanying activities sheets, higher (8+). There is room for improvement, and these quantitative data support outcomes of the interviews with teachers in the school about how they value materials and their ideas about what could be improved. These results also were used for the design principles for the learning platform, as will be described in the next section.

### **3. Design principles for the learning environment and first prototype**

Based on the interviews within schools, analyzes of new developments and reviews of studies <sup>[8, 9, 10, 11, 12]</sup> design principles for a learning platform for learning and teaching Frisian language in primary education were formulated in which key issues and ideas were reflected. The educational platform should be based on a content database with relevant metadata that relates to (inter)national

standards. Also, the learning platform should be very easy to use and flexible with regards to pedagogy, educational organization and curriculum. A number of flexibility dimensions<sup>[3]</sup> were elaborated in more detail. The coherent package of subject-related learning resources should be characterized by:

- Curriculum flexibility: Custom made curricula based on school and teacher (pupil) choices and characteristics;
- Didactical/pedagogical flexibility: Options for different learning styles, content, differentiation, class organization, group & individual learning;
- Presentation flexibility: Custom made based presentation on school and teacher (pupil) choices and characteristics, digital white/blackboard, digital teacher assistant, use on mobile devices and tablets, crossed media/blended learning, printing on demand;
- New learning options: Serious games, gamification, personal learning, adaptive learning modules;
- Evaluating learning options: Smart learning analytics, evaluation tools and instruments, integrated as part of learning activities;
- General usability requirements: Ease of use, well-arranged, accessible, motivating, actual, scalable, easy to manage.

In a number of expert meetings, in which teachers, curriculum experts, a publisher, teacher trainers, language experts and teacher assessors and other educational experts participated, these principles were reflected, reformulated and examples were discussed. A more detailed elaboration of the principles was made. Figure 1 demonstrates some images of those designs.

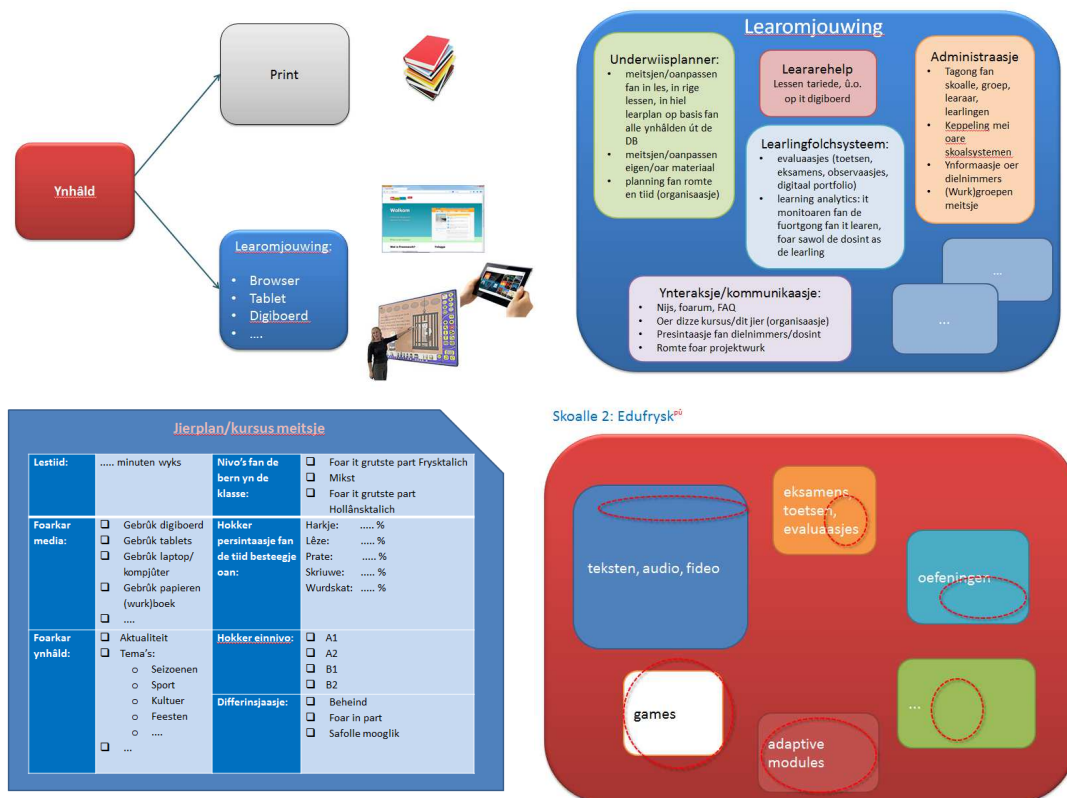
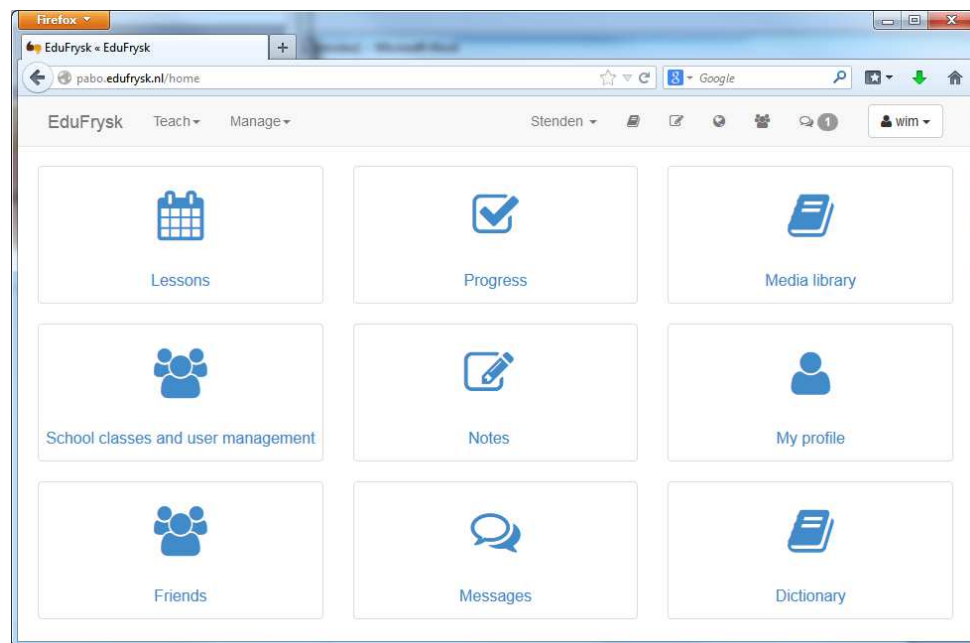


Figure 1. Series of images with an elaboration of the design principles: (1) content can be printed or made available on different devices; (2) modules of the learning platform; (3) a curriculum planner; (4) example of a learning environment based on school/teacher choices.

In the summer of 2013, a first pilot was set-up to design a first prototype of the flexible learning environment was made with over 2000 digital quality resources (texts, video's, audio, poems, dictations, ...) for learning Frisian language that were already available. Figure 2 shows an image of the dashboard of the learning platform.



*Figure 2. Dashboard of the first prototype of the learning environment*

In September 2013 a first pilot was set-up for teacher trainers and their students (future primary school teachers) to work with the environment. Main focus of this first evaluation was the usability and user-friendliness<sup>[13]</sup> of the platform. According to the research design approach<sup>[2]</sup> this step can be seen as one of many. Future iterations will focus on the relevance, consistence, and effectiveness<sup>[13]</sup> of the learning platform.

#### **4. From here on...**

Research of SLO, the Netherlands institute of Curriculum development, shows the importance of coherent packages of subject-related learning resources within (primary) education. Teachers use these packages of learning materials most within their teaching and paper based materials are still mainstream<sup>[8]</sup>. Those teachers in general are very happy with these materials, they value quality as good. Teachers that want to be more flexible, respond to needs or interests of pupils tend to use smaller and more digital resources<sup>[8]</sup>. Kennisnet<sup>[1]</sup> concludes in her yearly monitor in which they look at developments of ICT in education that technical facilities are getting better, i.e. almost all classrooms in primary education have a digital school board with an internet connection, but teachers indicate that there is a lack of quality digital educational resources.

First steps were made in developing a system for primary education to teach and learn the Frisian language in such a way that ICT is used for the benefit of teaching and learning. This new learning platform with learning materials for the Frisian Language is being developed according to a design research approach<sup>[2]</sup>. Important is that the platform is not fully operational according to all design principles as stated earlier. In 2013 and 2014, new components of the platform will be elaborated, such as serious games for language learning, an adaptive environment for learning grammar and integration of an evaluation module with learning analytics. Primary schoolteachers, other practitioners and experts are part of the team designing and testing the educational resources and digital platform, so that what is being elaborated reflects the ideas of practitioners and will fit in their way of working. This, in the end, will be an essential factor in the successfulness of the use of the new platform and will give an impulse on the quality of Frisian language learning in primary education.



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