Localisation Education Activity Programme (LEAP)

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Abstract. This paper presents a new initiative called the Localisation Education Activity Programme (LEAP). It has been set up within the Localisation Research Centre[1] (LRC) at the University of Limerick, under the auspices of Centre for Next Generation Localisation[2] (CNGL), a government sponsored Centre for Science, Engineering and Technology in Ireland.

Localisation is the adaptation of digital content to a combination of language and culture, called *locale*. In this article we describe the two main pillars of LEAP which are i) courses run in conjunction with the Irish Centre for Talented Youth[3] (CTYI) and ii) the Primary School Localisation Toolkit, consisting of a toolkit which offers a suite of educational activities and a teacher assistance toolkit. The main goal of LEAP is to use localisation related concepts at primary schools (ages 7 – 12) in order to help students and teachers overcome obstacles resulting from cultural diversity.

Keywords: education, games, Japanese language, localisation, primary level, teaching

1. Introduction

Localisation is regarded as the adaptation of content to different target locales. A target locale refers to a country/region which is characterised by a language or language variant and a specific culture. In different locales there are linguistic, cultural, and technical differences. A linguistic locale difference is a spelling variation, e.g. US vs. UK English. An example of a

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[1] http://www.localisation.ie/, 15/11/09.

[2] http://www.cngl.ie/, 15/11/09.

[3] http://www.dcu.ie/ctyi/, 15/11/09.

technical locale difference is the various computer keyboard layouts used around the world. Colours, gestures, and their different meanings fall under cultural differences (see Schäler, 2002). Collins (2002) states that cultural preferences can be influenced by cultural experience. Thus cultural experience can accordingly increase or decrease the cultural tolerance. In this paper, we focus more on the cultural differences rather than the linguistic and technical differences of a locale, as the former appeal most to young students.

LEAP is a new initiative that is being undertaken by the LRC under the umbrella of the CNGL; our selection of the name LEAP envisages assisting young students take their first "leap" at primary school stage by giving them a head-start in global cultural awareness. In LEAP we combine language education with computer learning, making computer-assisted language learning, also at young age, possible and effective. Students are prepared for both the digital world, and the linguistic and cultural diversity which we are experiencing.

2. The Concept of Localisation

As for a definition of 'translation' and any cultural considerations that it requires, Esselink (2000: 4) states the following:

> *"Translation is the process of converting written text or spoken words, to another language. It requires that the full meaning of the source material be accurately rendered into the target language with special attention paid to cultural nuance and style."* (Esselink, 2000: 4)

Localisation, apart from the linguistic transfer from source to target language, also includes the adaptation of cultural idiosyncrasies[4] which are unique to the target locale, e.g. gestures and icons. People get accustomed to international contents and become multilingual or culturally heterogeneous through experiences such as education, work, leisure, and media.

As far as education is concerned, moreover, the curriculum should be able to be adapted not only to the learners' language and cultural preferences, but also to their learning abilities. Among others, pupil grouping and learning environment are issues of personalised learning[5]. Thus multilingualism and cultural heterogeneity can be effectively achieved.

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[4] In rare cases, these cultural idiosyncrasies are removed, when they offend the target locale.

[5] http://nationalstrategies.standards.dcsf.gov.uk/search/inclusion/results/nav:46354, 15/08/10

Moving towards localisation, Esselink (2000: 4) states that approximately 80% of software products are localised from English into other target languages; as an example of the predominance of the USA in the area of localisation, one translation and localisation company[6] adapted the original LISA definition of localisation to read:

> *"Localization involves taking a product and making it linguistically and culturally appropriate to the target locale (country/region and language) where it will be* ***U.S.ed*** *and sold."*

Initially, knowledge of English was a prerequisite in order to utilise specific products and technologies; however, this has changed in the last ten years, as Kuroda (2009) states:

> *"Up until about 10 years ago it was commonplace to assume that one needed to understand English in order to experience new products and technologies (...) [M]any countries have seen stronger demand for a national culture, national systems and communication in a national language (...) More and more countries and regions are making it legally mandatory to communicate information in the country's official language. The traditional approach of focusing only on mechanical and efficient localisation based primarily on English is starting to become inadequate for product information and manuals."*
> Kuroda (2009: 16-17)

Summarising the above statement, the demand, both nationally and legally, for linguistically and culturally adapted content has increased steadily over the last ten years. Although ten years ago it may have been commonplace for products, their associated texts, and their technologies to be in English, today they are localised in many languages. Moreover, in some countries it is mandatory to supply information in the country's official language (s). Even in the USA, where it is taken that English is the lingua franca, there is no official language at federal level and so citizens have the right to require information in their own mother tongue. Localisation is moving beyond a privilege, as access to information is a fundamental right[7].

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[6] http://www.lztranslation.com/localization.html, 15/11/09.

[7] http://www.therosettafoundation.org/index.php/en/ourmission, 20/10/10

3. Centre for Next Generation Localisation and Localisation Research Centre

The Centre for Next Generation Localisation (CNGL) is an Irish state funded Centre for Science, Engineering and Technology (CSET). Founded in 2008, it has more than 100 researchers working on state-of-the-art technologies in four streams: Integrated Language Technologies, Digital Content Management, Localisation, and System Framework.

The Localisation Research Centre (LRC) coordinates CNGL research at the University of Limerick. Initially established as the Localisation Resources Centre at University College Dublin (UCD), in 1999 it moved to the UL and was re-constituted as the Localisation Research Centre. The LRC's key activities include research, development, and evaluation of localisation tools, consultancy services, education and training, publication of a regular Journal (Localisation Focus[8]), organisation of an annual academic competition a and localisation conference.

The LRC is comprised of a director, faculty members, staff and research students. There are currently 12 LRC researchers conducting CNGL funded research: 7 PhD students, 3 post doctoral fellows, 1 web developer, and MSc students. The research conducted at the LRC covers all stages of a typical localisation workflow, ranging from content authoring, maintenance, and file format conversion to the actual personalised or enterprise localisation process, and the generation of localised content. Modern technologies and features, such as Web 2.0 and Crowdsourcing are also examined and implemented in user applications.

3.1 Education and Outreach

The CNGL features an Education and Outreach (E & O) programme[9]. This programme focuses on primary, secondary, and tertiary level education as well as on public outreach, commercialisation, and inreach programmes to provide training and education for researchers working within the CNGL.

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[8] http://www.localisation.ie/resources/locfocus/index.htm, 11/09/10.

[9] http://www.cngl.ie/primary.html, 15/11/09. The Education and Outreach Manager is Cara Greene.

The Primary School Toolkit and the CTYI courses that we mentioned earlier in the paper comprise the primary level of the E & O programme. Thus LEAP focuses on this level and aims to design as suitable toolkit composed of both educational games and a teaching aid. We will look at this in depth in section 5.

At secondary level the All Ireland Linguistics Olympiad[10] (AILO) is an important initiative for the CNGL. The first AILO took place in 2008 and the second in 2009. These were face-to-face competition events where 5th- and 6th-year students in Ireland and Northern Ireland, with an interest in languages, could increase their knowledge of linguistics and use their ingenuity, creativity, and skills to solve language-related problems. The winners of the AILO are then given the opportunity to represent Ireland in the International Linguistics Olympiad (ILO). ILO in 2009 was in Wrocław, Poland and, for the first time, included a team representing Ireland. The ILO in 2010 took place in Stockholm, Sweden.

At the tertiary/professional level the annual Internationalisation and Localisation Summer School organised by the LRC is an important event. The 2009 LRC Internationalisation and Localisation Summer School[11] took place in Limerick from 2 – 5 June and offered attendees the chance to attend 3 days of hands-on training courses and a half day of presentation and lecture on industry-standard localisation technologies delivered by the experts – the developers themselves. Tool providers *Kilgray*, *Alchemy Software Development*, *Welocalize*, and *Plunet* were the industry partners for this event.

CNGL Tutorials, Seminar Series, and Thesis Awards are parts of the E & O inreach programme. The CNGL regularly runs free tutorials and workshops, where researchers in the relevant areas are invited to attend. Also, Dublin Computational Linguistic Research Seminars (DCLRS) are aimed at CNGL, National Centre for Language Technology (NCLT), and other researchers and developers interested in language technologies. In addition, the CNGL is involved in a joint ICT-CSET Computer Science thesis award with CLARITY[12], CTVR[13],

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[10] http://www.cngl.ie/ailo.html, 15/11/09. The main organiser of AILO is Prof. Harold Somers.

[11] http://www.localisation.ie/resources/courses/summerschools/2009/index.htm, 15/11/09.

[12] http://www.clarity-centre.org/, 20/10/10.

[13] http://www.ctvr.ie/, 20/10/10.

DERI[14] and Lero[15] CSETs and supports the LRC awards programme. The LRC awards programme is the longest established academic award programme for localisation in the world. Their Best Thesis Award has been run for 13 years in collaboration with *Symantec* and their Best Scholar Award is entering its sixth year with sponsorship from *con[text]*.

In the area of public outreach, there is a "DCU in the Community" outreach centre in Ballymun, a socially disadvantaged area in Dublin which the CNGL participates in. This gives disadvantaged individuals in Ballymun the chance to re-enter education by introducing them to some courses taught at university.

Another feature of the CNGL E & O programme is "CNGL Public Days", where CNGL activities and up-to-date research outcomes are presented to the public. In 2009 a CNGL showcase took place in conjunction with "Innovation Dublin", a week-long festival of events highlighting and promoting innovation by entrepreneurs, students, researchers, artists or large corporations.

After having seen some of the activities of E & O programme of CNGL, including inreach and outreach tutorials and workshops, thesis awards, summer school, and briefly the LEAP (see section 5), we focus on localisation education in the next section 4.

4. Localisation Education

Typically, localisation education is provided at university level; students are trained to be localisation professionals having often the end goal of later employment in the localisation industry. However, while there are many translation and language technology courses available to students, there are few courses dedicated exclusively to localisation. The first institution to establish such a course was the University of Limerick. In 1997 they launched the first dedicated postgraduate localisation programme, the Graduate Diploma in Software Localisation. Over the next 12 years the course would evolve alongside the localisation industry and today it has become the Masters of Science in Global Computing and

[14] http://www.deri.ie/, 20/10/10.

[15] http://www.lero.ie/, 20/10/10.

Localisation[16]. There are also courses, such as the Bachelors[17] and Masters[18] courses in software localisation that are provided at the University of Anhalt in Germany.

In addition to these academic educational programmes there are industrial courses, such as those offered by the Institute of Localisation Professionals[19] (TILP), a non-profit organisation that aims to develop professional practices in localisation globally. TILP offers extensive localisation training for individuals via their Certified Localisation Professional (CLP) training programme. Also, The Localization Institute[20] organises training, consulting, conferences, seminars, and roundtable events to address company-specific localisation requirements as well as a Localisation Certification Program and Localisation Project Management Certification Program with California State University, Chico.

4.1 Localisation Education for the Young

Localisation education at universities and industry level is essential for a multicultural and multilingual society. However, considering the changing circumstances of linguistic and cultural requirements in computing, along with advanced information communication technology (ICT), localisation education may begin at an earlier age. When speaking about localisation education for young students at primary schools, we refer to localisation in a very broad sense. Young students are not expected to translate from a foreign language to their mother tongue or deal with technical aspects, such as to resize dialogue boxes by using software localisation tools. However, they are able to learn about basic cultural and linguistic differences, especially if comparisons are made to their native cultures. In the next paragraphs we describe what localisation education at elementary level can involve.

Children, as young as six or seven years old, are already being exposed to cultural differences appearing in their everyday lives, including gestures, and colours. A hand gesture can be friendly in one locale, while offending in another. Gestures do not imply the same meaning in all parts of the world and even variations of the same gesture might have different meaning. While thumbs up means ‘that’s good’ and is a positive gesture, in Brazil any kind of thumbs

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[16] http://www.csis.ul.ie/course/LM632/, 15/11/09.

[17] http://www.inf.hs-anhalt.de/Bachelor/index_SL.htm#seewald-heeg, 15/11/09.

[18] http://www.inf.hs-anhalt.de/Master/master_SL.htm, 15/11/09.

[19] http://www.tilponline.org/, 15/11/09.

[20] http://www.localizationinstitute.com/, 15/11/09.

up gesture is considered vulgar[21]. As far as colours is concerned, McCandless (2010) provides illustrations, among others, about what meanings colours have in different cultures[22].

Apart from cultural differences, some linguistic differences are also ‘catchy’ and appealing to young students. Colloquial expressions, such as idioms and metaphors, are good examples. Camp & Reimer (2006) provide the following definition of metaphor:

> *“Metaphor is a figure of speech in which one thing is represented (or spoken of) as something else”* (Camp & Reimer (2006: 845).

Some examples of idioms/metaphors follow:

(1) en:*carry coals to Newcastle*

de: *Eulen nach Athen tragen*

(2) *en: kick the bucket*

fr: casser sa pipe

As far as the (1) example is concerned (meaning something unnecessary), there are some cultural considerations behind the linguistic expression. It is widely known that Newcastle’s development as a major city was attributed to its plentiful coal exports. Thus, its idiomatic meaning can be stipulated by its literal meaning. Similarly, there were many owls in Athens, as owl was a symbol of the goddess ‘Athene’, the savior of the city.

The second example’s meaning ‘die’ is also, similarly to the (1), not implied by the word-by-word translation, as it is the case for many idioms. Other examples of idioms and their translation equivalence can be found in Anastasiou (2010). Exercises and quiz with filling gaps can make young students easily learn and remember idioms.

Another example for localisation education for the young is homonyms and false friends (*faux amis*). They are good examples and "easy" to understand; additionally, they certainly capture the attention of the young students. A homonym example is the word "sayonara" which in Japanese means "farewell" and in Greek (σαγιονάρα) "flip flop shoe"! A false friend example is the word "gift" which in English means "present" and in German "poison". There are many

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[21] http://www.aquiziam.com/gestures.html, 11/09/10.

[22] http://www.informationisbeautiful.net/visualizations/colours-in-cultures/, 28/09/10.

such examples across languages and these examples engage young students much more than learning stiff foreign language texts.

4.2 Current language education situation

In this section we focus on foreign language education situation, first at a Japanese university and then in European primary schools. Currently many young students have the opportunity to learn more than one foreign language. The reasons for this are that language education has become more affordable, more teachers are available, and language lessons are very well incorporated into curriculums.

With regard to English teaching at a Japanese University, Martin (2004) refers to a lack of motivation due to there being few lab facilities available and also the approval of inappropriate texts by the Ministry of Education:

> *"The large crowded university and high school classes coupled with dull and lifeless English-language texts discourage both students and teachers alike. Listening lab facilities are rarely used, and the texts approved by the Ministry of Education are broken down on a word-for-word basis, with all the instructions, definitions, and explanations in Japanese, leaving little challenge or inspiration for a motivated student."* (Martin, 2004: 52)

Regarding the European primary schools, in 2006 the European Commission demonstrated a desire to improve young Europeans' grasp of foreign languages and stated that "Every citizen should have a good command of two foreign languages together with their mother tongue". However, EU member states find it difficult to implement concrete measures to achieve this goal. Binder (2006) highlights the education systems in Germany, France, Spain, Czech Republic, and Denmark. In summary, she stated that in Denmark young students are very good at learning foreign languages, as foreign language learning starts at an early stage and students spend a school year in an English or French speaking country. In Spain, language classes make up a mere 10% of teaching time and teachers are not required to have studied abroad. As for Germany, France, and Czech Republic, particularly languages of neighbouring countries tend to be taught at school.

Up-to-date information, analyses, and studies on European education systems and policies in 31 countries participating in the EU Lifelong Learning programme can be found on the Eurydice Network[23]. This Network supports and facilitates European cooperation in the field of lifelong learning. Descriptions and overviews of national education systems are in the so-called Eurybase[24], while reference material, such as the European glossary and school calendars can be found under Eurydice Tools[25].

Regarding the primary education level in Ireland, it is stated in Eurybase that the curriculum for primary schools has undergone a major revision through the 1990s, where a sophisticated system of teacher in-service education and of school support has been put in place. The National Council for Curriculum and Assessment (NCCA) and the Department of Education and Science designed and implemented the curriculum which designates "the European and global dimension of modern living". It is also mentioned that because Irish and English are official languages, they have dominated the language provision in primary schools. The government seeks to give special attention to Irish, which is specified in the Constitution as the first official language, but is less commonly used than English. Thus learning a third language in the primary school in Ireland is not common; only some parents in wealthy suburbs of cities have financed the provision of more formal foreign language (mainly French) teaching outside school hours.

In our opinion, learning languages without cultural information leads to phrase memorisation and real knowledge is not gained. As societies become increasingly multinational, we should provide the younger generations with cultural knowledge in tandem with language knowledge. We attempt this with the initiative LEAP and our activities which are discussed in the next section 5.

5. LEAP Activities

LEAP is an initiative under the E & O programme of the CNGL project. It focuses on primary level education and is built around two main areas: CTYI courses (see 5.1) and the Primary School Toolkit (5.2). These areas overlap in that the latter absorbs the feedback of the former. The technology behind the Primary School Toolkit is based on research undertaken by the

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[23] http://eacea.ec.europa.eu/education/eurydice/documents/eurybase/national_summary_sheets/047_IE_EN.pdf, http://eacea.ec.europa.eu/portal/page/portal/Eurydice/TESEHome

[24] http://eacea.ec.europa.eu/education/eurydice/eurybase_en.php

[25] http://eacea.ec.europa.eu/education/eurydice/tools_en.php

third author during his final year of undergraduate education and his MSc studies; the connection with CTYI came about following a course that the first two authors ran in July 2009 for CTYI called "Japanese Language & Culturally Localising Web Pages". This was the genesis of LEAP. Following discussions and the creation of a draft plan with the three authors and the LRC director, Reinhard Schäler, LEAP was included as part of the E & O programme.

In a multilingual and multicultural society, LEAP concerns language and cultural education. The main goal of LEAP is to teach both linguistic and cultural lessons in an interesting, "fun", and interactive way at primary schools. LEAP is a new educational programme which is envisioned to encourage children to appreciate the cultural and linguistic diversity of our society; the combination of linguistic and cultural education and lessons learned in localisation is what makes this initiative unique.

In this way, within LEAP, we aim to negate some of the negative aspects of multiculturalism, e.g. anxiety or dislike stemming from ignorance and lack of cultural understanding, such as that noted by Martin (2004):

> *"Lack of substantial engagement with other cultures on a personal and social level has resulted in minimal diversity in the classroom or the wider community, creating a general state of anxiety for many Japanese when dealing with foreigners."* (Martin, 2004: 51)

5.1 The Irish Centre for Talented Youth

The Irish Centre for Talented Youth (CTYI), established at Dublin City University (DCU) in 1992, works with young students of exceptional academic ability and fosters the development of independence and creativity of these highly able students. CTYI undertakes annual talent searches[26] and provides services for these students, including Saturday classes and residential summer programmes.

One test that the students can take is the so-called "Preliminary Scholastic Aptitude Test" (PSAT) which is an indicator of mathematical and verbal reasoning ability at a young age. On

[26] A talent search application form can be found at http://www.dcu.ie/ctyi/sitemap.htm, 15/11/09.

the basis of their performance in the PSAT, students are awarded merit scholarships towards the cost of CTYI summer programmes at DCU, where they gain a certificate of participation.

CNGL has organised courses in conjunction with CTYI since 2008. Course topics include Arabic language and culture, Japanese language, and also web design. In July 2009 the first two of this paper's authors ran a primary course called "Japanese Language & Culturally Localising Web Pages" in DCU. In July 2010 all three authors run a course entitled "Japanese Language, Webpage Creation and Localisation, Machine Translation, and Educational Games[27]" at the University of Limerick.

5.1.1 Sample Courses at the Irish Centre for Talented Youth

In the terms of our organised CTYI courses, Naoto Nishio, a Japanese native speaker, focused on teaching the Japanese language and introduction to localisation, while Dimitra Anastasiou taught the basic principles of webpage creation localisation and Machine Translation (MT). We integrated students' feedback from the 1st course in 2009 into the Primary School Toolkit, which was tested and evaluated by the students in the 2nd course in 2010 (see 5.2.2).

As an overview of the most recent course (in 2010), we will begin with some organisation-related practical information and then look at the course structure. The 25 students were between 7 and 13 years old, and had no previous experience with learning Japanese. Over the course of five days we had one ninety minute session per day. During the first two days we focused on the recognition, identification, and typing of Japanese characters. The remaining two days were dedicated to webpage creation, localisation, and MT. On the last day the students played and evaluated the educational games.

The list below shows the basic outline of the lesson plan:

1. Identify Katakana characters;
2. Acquire the sound of Katakana using a Katakana CD;
3. Learn how to type Katakana characters phonetically;
4. Compare the Japanese and English versions of Nintendo's Super Mario Bros website;
5. Create a webpage in English;

[27] These educational games are part of the Primary School Toolkit.

6. Localise the webpage into Japanese;
7. Drawing exercise;
8. Educational games.

As detailed above, the first two and a half days covered points 1 to 3 and the remaining days 4 to 6 points. Point 7 was a wind-down session where some minutes were used to relax the children and give them a light example of cultural diversity through a drawing exercise where they were asked to draw a bus and a beach (see 5.1.1.3). Point 8 refers to the Primary School Toolkit with the framework of the educational games (see 5.2).

In general, this course aimed to make students become familiar with Japanese language and culture, and then to introduce them to webpage localisation. The course material was divided into three parts: i) preparation, ii) creation, and iii) application. The creation and application were performed in parallel. In the following subsections we examine the three main parts of the course, namely Japanese language education (5.1.1.1), webpage creation and localisation (5.1.1.2), and cultural education (5.1.1.3).

5.1.1.1 Japanese Language Education

During the preparation stage, we introduced the students to all of the Japanese character sets (Katakana, Hiragana, Kanji, and Romaji) before concentrating on the Katakana character set. The reason for concentrating on the Katakana was to provide the learners with a sense of familiarity with the Japanese language based on Katakana's usage to represent foreign objects[28].

For example, the word 'software' is written as ソフトウェア /sofutowea/; thus learners can make a qualified guess about what the word is once the sounds of the katakana characters have been identified.

The students were asked to recognise Katakana on a number of different websites that they were directed to; for example, the website of the Imperial House in Japan[29] and the Nintendo website[30]. The purpose was to highlight the differences of traditional vs. modern content

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[28] Ms. Geraghty of the Japanese language unit at the University of Limerick also suggested us to focus on Katakana for Japanese language learning.

[29] http://www.kunaicho.go.jp/, 4 August 2010

[30] http://www.nintendo.co.jp/, 20 June 2010

representation; different character sets are used for different websites. The Nintendo website as a modern commercial site uses Katakana set more often than the website of the Imperial House which was more Kanji character oriented. Furthermore, the Nintendo site featured more graphics and images, and not too much text. According to Wilson (1988), “highly visual menus and icons appear to be appealing to children and easy for them to understand and use”. Two screenshots depicting, from one side, the predominance of text at the Imperial House’s website and from the other side, the predominance of images at Nintendo’s website follow below (Screenshot 1).

Imperial house in Japan

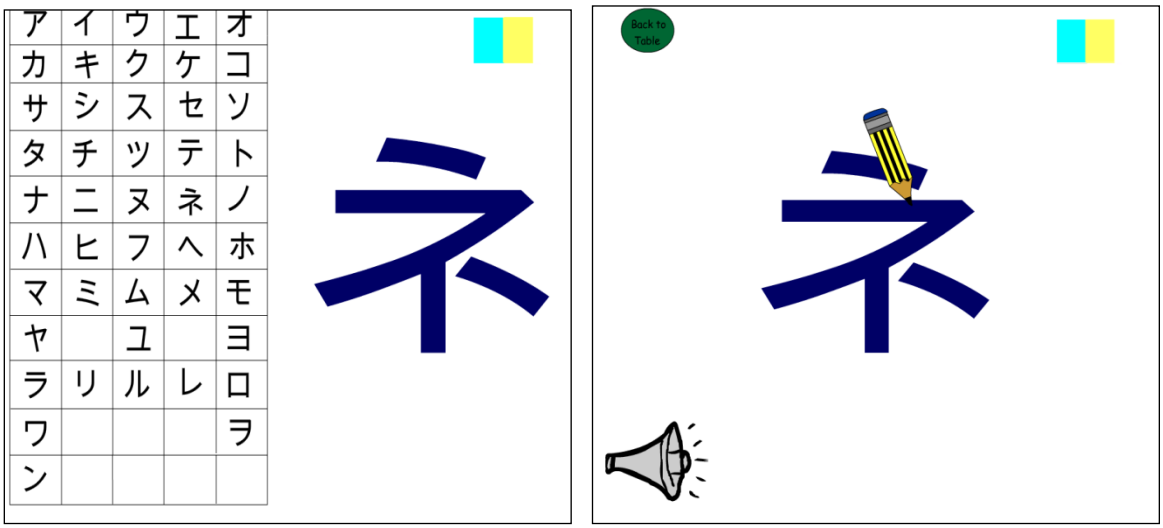
Nintendo

Screenshot 1. Distinction between Japanese websites

The exercise, apart from differentiating two Japanese websites, included circling with different colour pens the different Japanese characters. Students were able to distinguish between the different character sets by observing the differences in shape. For example, Hiragana was described by the students correctly as round, Katakana as straight, and Kanji as complex and detailed.

The next exercise was concerned with learning to type the Katakana characters. To aid with this, a sheet, extracted from Zimmermann's book (2003: front page) depicting the Katakana characters with alphabetical headings and also a CD with an application that demonstrated the sounds of each character were used. This application is developed by the Japanese Language unit in Department of Languages & Cultural Studies in the University of UL (Geraghty and Marcus Quinn 2009). They explain its purpose for teaching Japanese writing system, including avoiding the use of Roman characters representing the sound of Japanese to acquire the native sound of Japanese, reflecting their successful application of colour codes for the

abstract representation of character, and encouraging self-service study outside of classroom. Some screenshots of the application follow:



Katakana characters available on the CD *Way of writing the character /ne/*

Screenshot 2. Katakana CD application

On the left side we see all the characters available on the CD. In the first horizontal line, it reads: /a/, /i/, /u/, /e/, /o/, in the second /ka/, /ki/, /ku/, /ke/, /ko/ and all next lines have an according vowel-consonant combination. Each symbol is associated with a colour; in our example /n/ is turquoise and /e/ yellow. The colour codes enable the teaching of Japanese script without recourse to Roman script, leading to better pronunciation (Geraghty and Marcus Quinn, 2009). By clicking on a character, the application brings up another page (right picture), where the user sees the writing stroke of the character. Also, by clicking on the megaphone on the bottom left, the user can hear the relevant sound.

We noticed that the learners found difficulties in recognising characters. This was caused by subtle differences between the details of the glyph on printed character table by Zimmermann (2003), our handwritten characters, and on characters used on the CD. Also learners sometimes acquired the wrong sound for a character. This was due to a combination of a shortness of the recorded sound, the similarity with their native English sound, and the unfamiliarity with the sound of Japanese language of the learners.

It should be noted that some students had difficulties in distinguishing between two different characters because of their similar shapes in Katakana. Examples of similar characters follow:

ヌ/nu/ – ス/su/

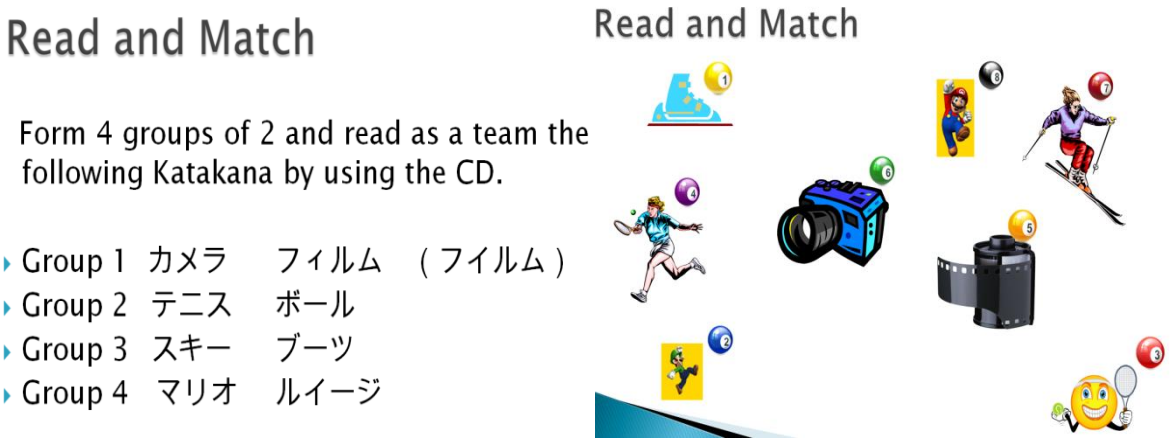
ツ/tu/ – シ/si/

ソ/so/ – ン/n/

Example 1. Similar characters in Katakana

At this stage, the students were able to identify, acquire the sound of, and pronounce Katakana characters. The use of an Input Method (IM) and also the change between Katakana and Hiragana were explained. During the typing of Japanese characters, interesting and "expected" challenges were observed. The native English students were sensitive to /l/ and /r/ sounds, while Japanese language does not have an /r/ sound. As these are common letters in the English alphabet, when the students were asked to type their names in Japanese, there were many inconsistencies. For example, Mario was represented incorrectly as マィオ /Malio/ instead of the correct マリオ /Mario/. This confused the students, because the sound of ラ is close to the sound made by /la/, while according to the IM, they are supposed to type with a key of "r" and then the key of "a" to represent the letter ラ. Despite such minor difficulties, it was surprising that in only two days, young students were able to type Japanese characters by their sounds.

After the students have learned to read and type words in Katakana, the following read and match exercise (Screenshot 3) was given to them. The students were divided into four groups and each group had to match the Japanese words with the corresponding pictures. Then they were asked to pronounce the words and also write them on the whiteboard.



Screenshot 3. ‘Read and match’ exercise

5.1.1.2 Website Creation and Localisation

Today we are experiencing a digital revolution; the predominance of the Web is shown with the plethora of websites which are also available in many languages. Website localisation does not include translation of text only, but also transformation of graphics. Moreover, different colours, layouts, and icons at localised websites are very common.

After the preparation stage, we find ourselves now at the creation and application stage. We taught the students how to create their own webpages in the simple editor *Notepad*. Basic HyperText Markup Language (HTML) tags and functionality were described. Students were shown how to format text on webpages, how to create headings, how to change the background colour for both whole pages and specific elements, how to create hyperlinks and so forth.

We provided the students with an HTML template (see Table 1, first column) and *Microsoft Word* files with various tags (Table 1, second column). The students then had to copy and paste the corresponding tags in the right order into *Notepad*, namely between the `<body>` opening and closing tags, save their .html template (and image files in the right folders), open the .html file in a browser, and check that everything functioned correctly.

HTML template

```
<html>
   <head>

   </head>

   <body
style="background:#CB2E43">

Here is the text you see on the screen!!

   </body>

</html>
```

Commands

1) This is my first website!

2) I like the colour of my webpage!

3) Date: 21/07/10

4) Time: 11:00

5) Location: LRC, Limerick

<!-- This is a comment. I can write anything and this will not appear on my webpage!! -->

6) Hello!! How are you? I am fine, thank you!!

7) <h1>My name is X.</h1>

8) <BLINK>I am taking part at the CTYI course!!</BLINK>

9) <MARQUEE BEHAVIOR="scroll" DIRECTION ="left">I learned Japanese!! I can type my name in Japanese!</MARQUEE>

10) You can find a picture of harry potter here.

11) Here is another picture of harry potter, now shown on the website!: <img

	src="harrypotter2.jpg"> 12) Here are the slides of the CTYI course here. 13) Here is a table I designed!: <TABLE ALIGN="left" border=1 cols=5 width=20 cellpadding=5><tr><td>I like summer!</td></tr></TABLE> 14) You can see a funny video of Mr. Bean here! 15) Here is a Japanese song! It is about cherry blossom, sakura, Japan's unofficial national flower! More information can be found here. 16) This is an article from Wikipedia encyclopedia about Japan

Table 1. Webpage creation

Then we gave to the students some smaller tasks, for example to replace ‘X’ with their name in command 7 and replace the article in *Wikipedia* about Japan with an article about Ireland in command 16. Furthermore, changing pictures and videos (commands 11 and 14) and generally personalising the webpage according to own preferences particularly attracted the attention of the students.

The next day, we instructed them in using and learning more complex tags. In addition, the students were supposed to manually write those tags and not copy-paste them from a given file. Some students performed this task successfully, while others made errors such as forgetting to close the tag or placing it at a wrong position. Similarly to the English webpage creation process, HTML tags with Japanese text (translations of the English text) were prepared and provided to the students. At the end of the exercise we provided them with a tag which they added to their webpages to enable switching between the original (English) and the localised (Japanese) version.

A point that should be acknowledged here is that, despite their young ages, the students were competent users of the Internet. This has both benefits and downsides. The benefit is that the students were familiar with common aspects of computing and the keyboard; the downside is

that some students took the opportunity to visit unsuitable sites. We strongly advised them to use only the educational websites we instructed them to visit. One management problem during the webpage creation was that there was a large number of folders with many different files. All of these folders were saved in a server and if a student made a mistake and deleted something, it was difficult to restore it; thus regular backups were advised.

5.1.1.3 Cultural Education

Cultural education consists of showing cultural differences between different countries. Various foreign language Nintendo websites (original Japanese) featuring the Mario character were used as an introduction to the concept of localisation. After splitting the class into groups of 3-4 students, we asked them to nominate one Super Mario game character per group and read the corresponding Japanese name of the game character. It was a surprise for the students to realise the differences in names between the game characters in English and Japanese. This shows that different cultures use different names to address one common item. The students became quite interested in identifying the sounds of Japanese characters in order to find out the name of the character in Japanese.

Apart from the differences of Super Mario game characters' names, we also showed differences in units of weight and measurement (by means of Super Mario examples too) and gave to the students simple exercises of converting their weight from pounds into kilos, and so on.

Moreover, on the final day we asked the students to draw a bus with the goal of teaching them cultural differences both worldwide and in the same country. Most students at the CTYI course came from Dublin and thus they drew a double decker bus as is commonly found in Dublin, while a girl from Galway drew a coach, the common bus type in Galway, Limerick, Cork, and other Irish towns. Some of them did not know that apart from the UK, Ireland, Cyprus, and Malta, in Europe there is right-hand traffic. As mentioned in the introduction, locale has technical/physical differences, and the driving system belongs to them.
We also asked the students to draw a beach; most students drew the sun yellow, while in Japan, the sun is likely to be drawn in red colour. We picked these two elements (bus and beach), as we can see many different visualisations and distinctive cultural characteristics according to the "locale" of the people.

All the above shows that there is a fun and interesting way for the students to learn about cultural differences; they were highly motivated and competitive. Providing the students with an environment where they are motivated to actively participate is one of the LEAP's main goals.

5.1.2 Evaluation

On the final day of our course we handed out a survey that we created in order to get feedback from the students about the course. Although we had prepared the course as well as we could, the most important thing was that the students were satisfied with it. This was the goal of the questionnaire. We also use the feedback to improve the course for next year.

As for the results, 100% of the students surveyed found the course interesting in general and 71% expressed a desire to continue learning Japanese and about localisation. As for the question "which other language would you like to learn at the same or a similar course", French, Greek, and Spanish were similarly ranked at 28%. Also, 68% of the students stated that they feel familiar with Katakana set.

As far as the evaluation of the educational games is concerned, see subsection ‘User Acceptance Testing’ (5.2.2). Generally, the feedback from the students was very positive: they all liked the games and the achievements, and they stated that they would play these games often at home. As for the recommendation for future games, they wish for more videos.

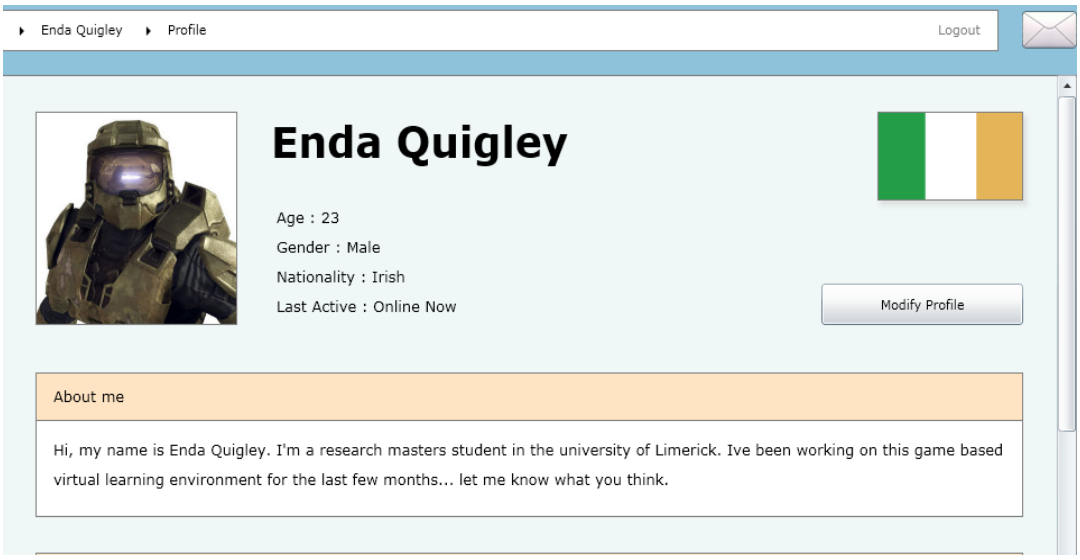
5.2 Primary School Toolkit

The Primary School Toolkit is composed of two elements that are designed to be used in partnership: i) an educational games framework and ii) a teaching aid. The design and development of the framework was initially undertaken as a final year project by Enda Quigley, the third author, under the supervision of the LRC director. Following the completion of a CNGL sponsored internship at the LRC over the summer, Enda was offered the chance to continue development as part of a research Masters at the LRC. It soon became apparent that the Primary School Toolkit and LEAP shared some goals and aspirations and that it would be both beneficial and complimentary to work together.

The educational games are based on a web-aware desktop application with a plug-in architecture that allows new modules to be added as the platform matures, while the teaching aid is toolkit to be used as classroom tool for teachers. The goal of the collaboration was to

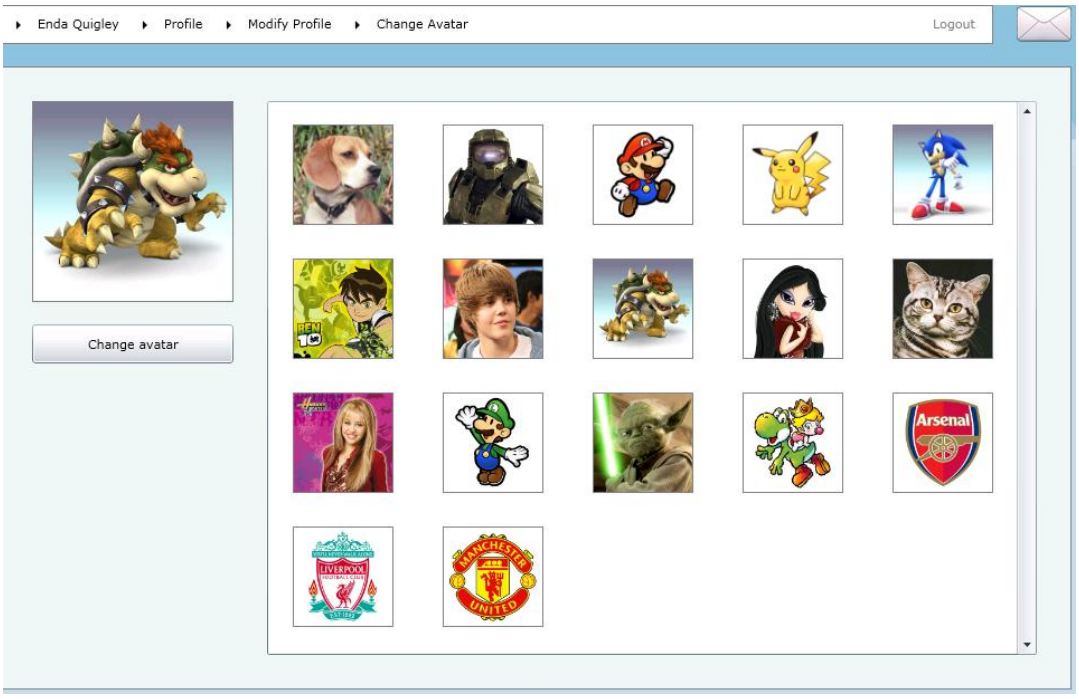
encapsulate the lessons taught at the CTYI, along with other topics relevant to the National Council for Curriculum and Assessment (NCCA) primary school curriculum, into a variety of educational games. This will allow us to reach a larger audience and provide a more engaging experience for the students. In general, the Primary School Toolkit should allow children to develop an appreciation of cultural and linguistic diversity.

Before we focus on the games, the following captures show how the initial graphical User Interface (GUI) is. Users create a profile with metadata about age, gender, nationality, and can also add information in a buffer text about themselves (see Screenshot 4).



Screenshot 4. User profile

The young users can also change their avatar/profile picture. Existing pictures (Screenshot 5) are available on the platform ready to be selected for each user.

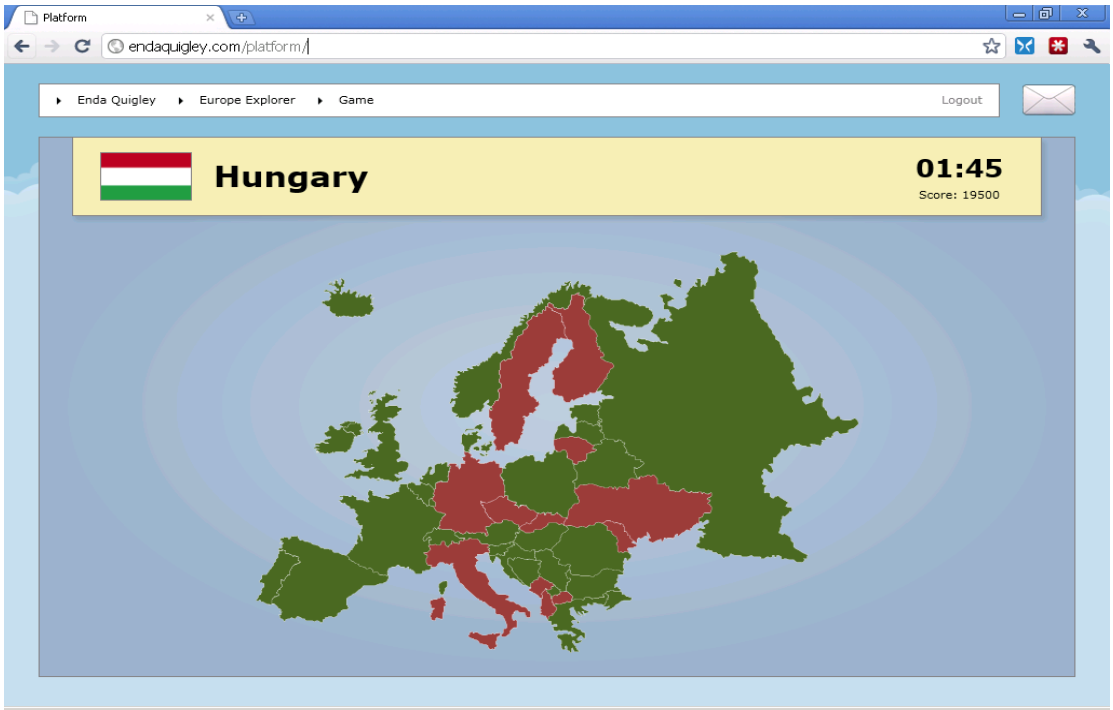


Screenshot 5. Change Avatar

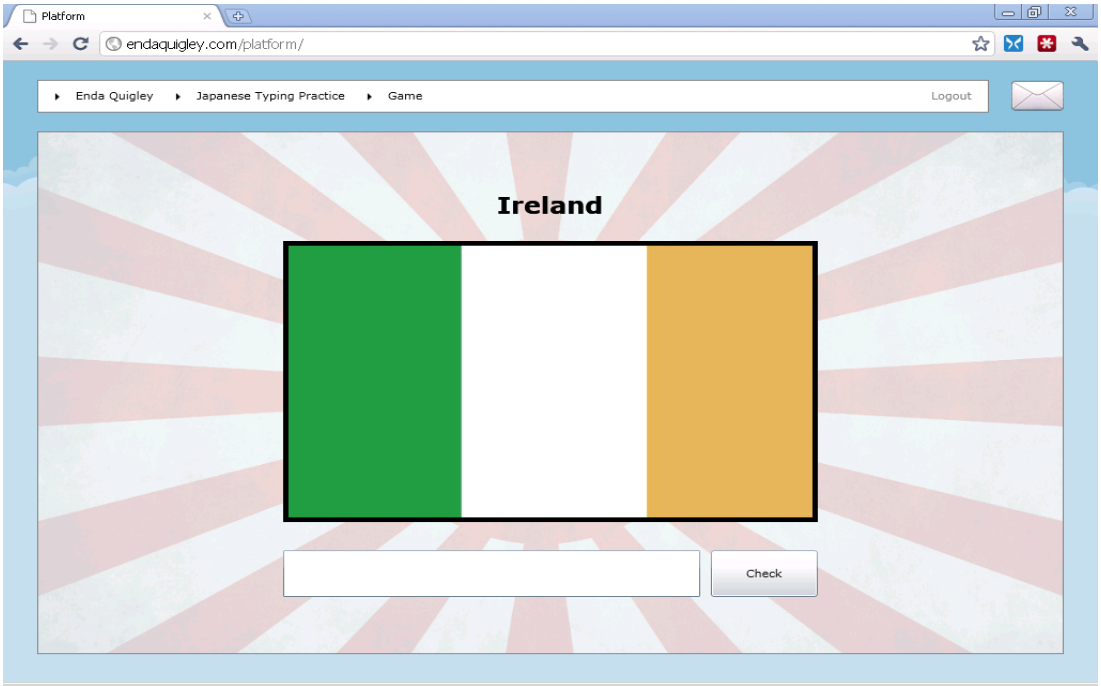
After users have created and modified their profile, they can play one of the following available games[31]:

1) **Europe Explorer** (Screenshot 6); here a country's name is provided and the user tries to find the right country by hovering the mouse over it. In Screenshot 6, for example, the user is asked to find Hungary on the European map.
2) **Japanese Typing Practice** (Screenshot 7); here the user types the Japanese word representing the picture (and label) – here 'Ireland' – and clicks on *Check* button to validate their input.
3) **Pokemon Translation/Transliteration** (Screenshot 8); here the user is given a Pokemon character name and selects the syllables on the right side to create the Japanese word. Noteworthy is that by hovering the mouse over the syllables, the user can hear the sound as well. In this game, there is a distinction of easy (small words-less syllables), regular, and hard level (bigger words-more syllables).

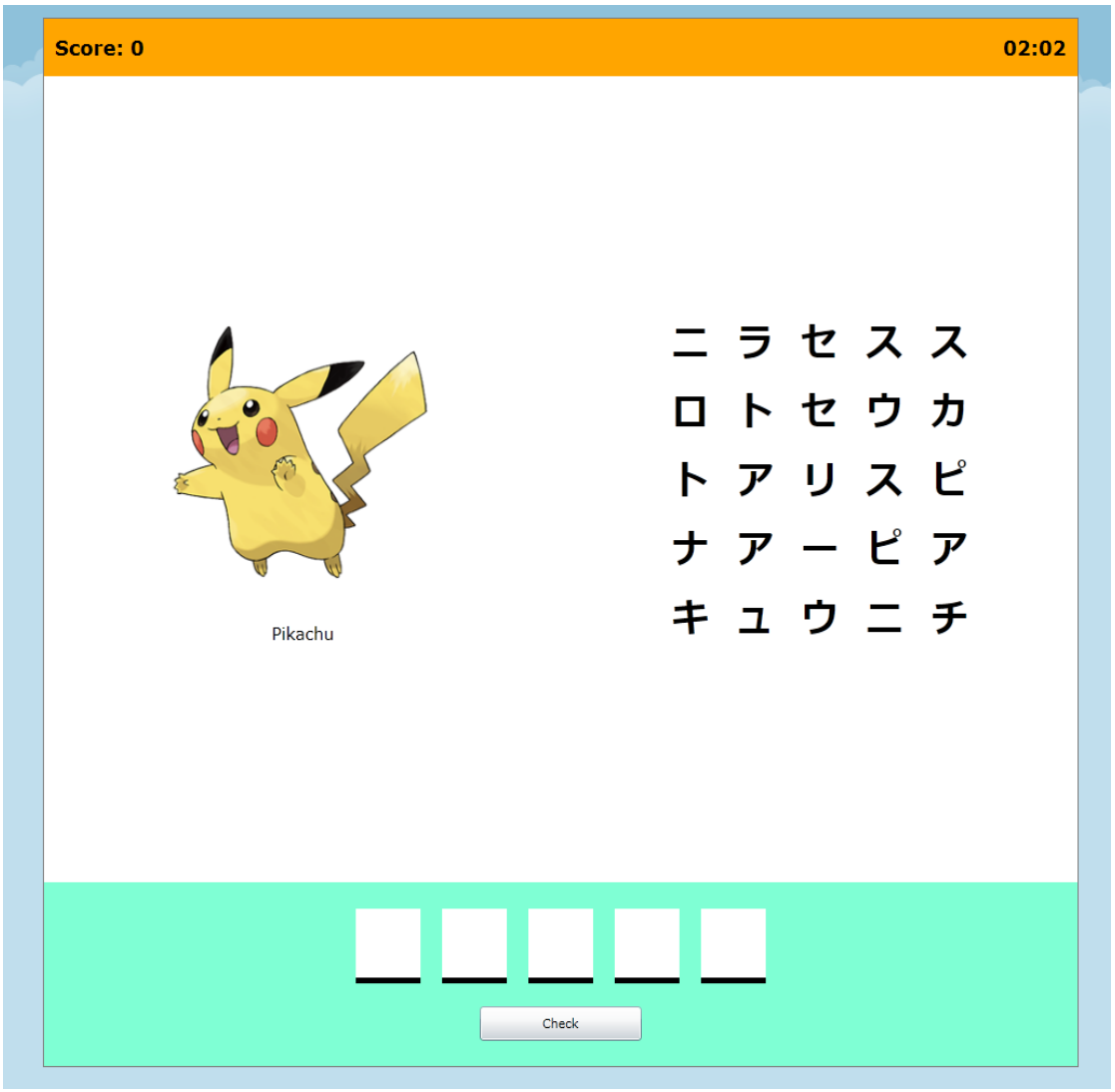
[31] The games are available at http://www.endaquigley.com/platform/. User name is 'Quigley Guy' and password is 'password'.



Screenshot 6. Europe Explorer

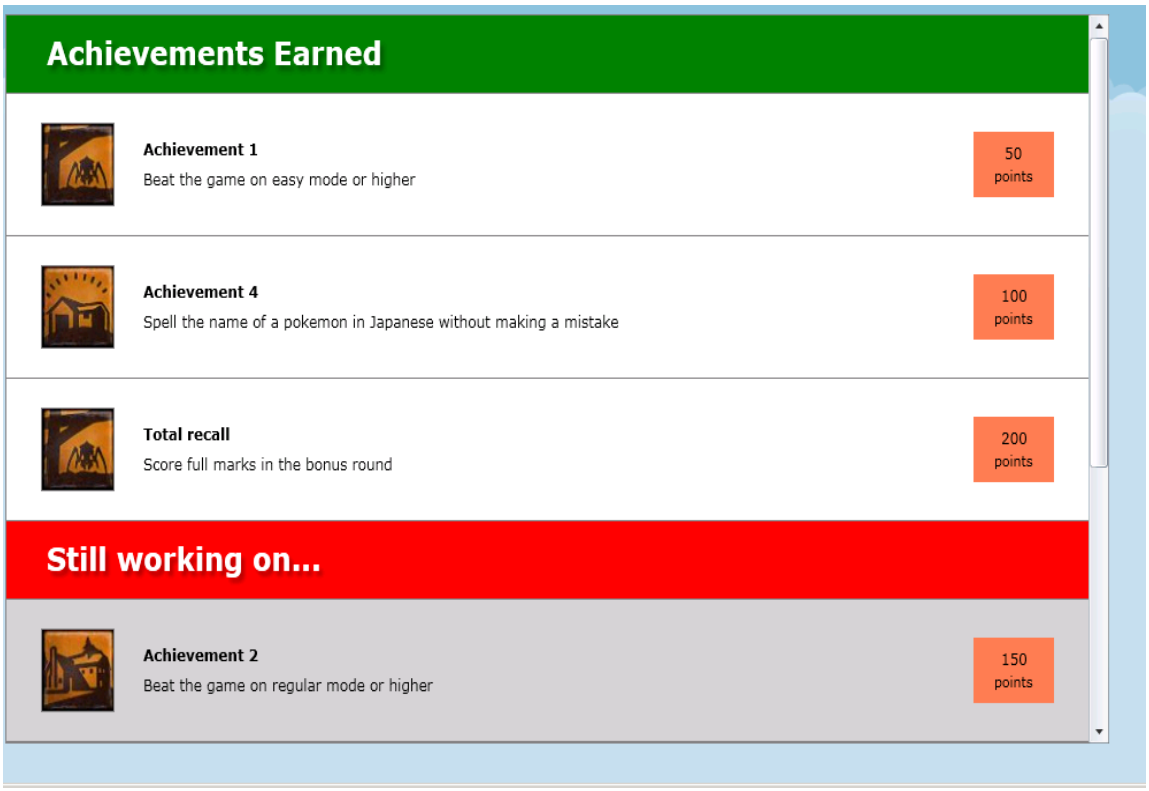


Screenshot 7. Japanese Typing Practice



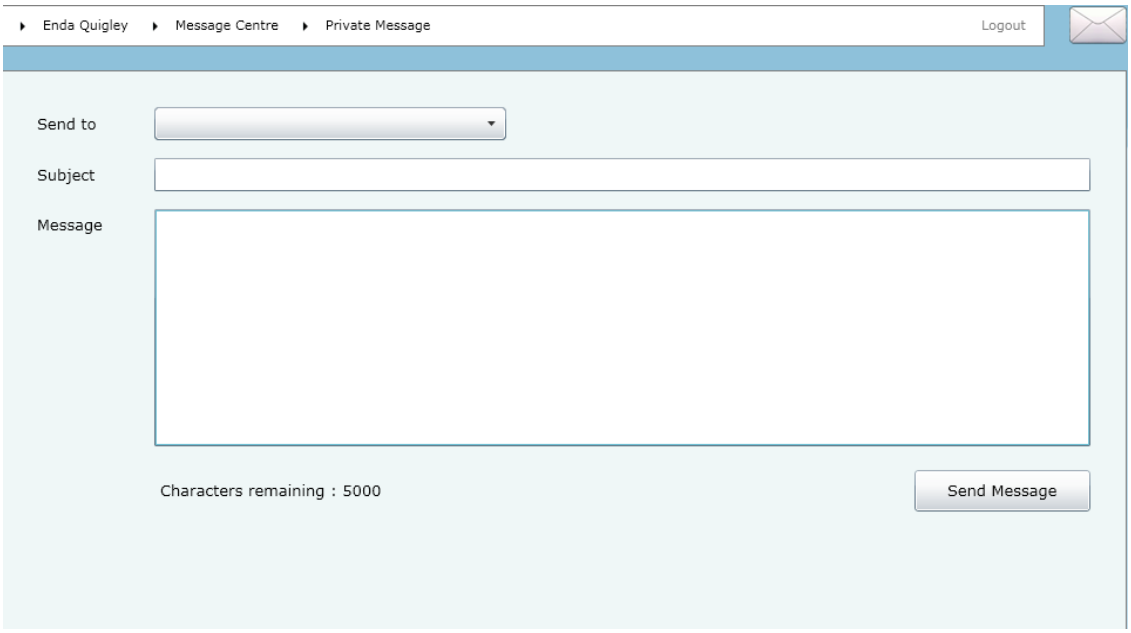
Screenshot 8. Pokemon Translation

Apart from the games as such, in the Primary School Toolkit there are motivational techniques, such as achievements (see Screenshot 9) and global high score lists. They promote friendly competition amongst the students and encourage them to continue playing the games (Quigley, 2010). According to Selvon (2006), “a trophy presentation is not only a great idea, but it will motivate the receiver to do more, to do better.” Each plugin in the Primary School Toolkit has the ability to award achievements for completing certain set goals. The title, description and accompanying value of each achievement is assigned by the plugin developer and stored in the platform database.



Screenshot 9. Achievements

Last but not least, there is the possibility of students to communicate with each other by sending messages (see Screenshot 10). However, for security reasons, messages can be sent only between accepted friends (through an invitation).



Screenshot 10. Messages centre

As the authors are based in Ireland, we envision the toolkit to, initially, be useful for native Irish students and students who have migrated to Ireland from other countries. The LRC has been conducting research into intercultural education in primary schools and has been in discussion with members of the Curriculum Design Unit (CDU) at Mary Immaculate College (MIC) in Limerick in order to ensure that the toolkit complements the current primary school curriculum. After paying a visit at a primary school in Limerick, teachers are more willing to try the end product rather than test it for a while and make recommendations for future improvement. It is envisaged that the toolkit will fit in with Chapter 7 of the National Council for Curriculum and Assessment's guidelines for "intercultural education in the primary school" and will also integrate Content and Language Integrated Learning (CLIL).

The teaching aid, which partially falls under future work, will be based on the educational games. The requirements for the teaching aid are to be easily accessible and integrated into a school's curriculum, incorporate elements of the Guidelines for Intercultural Education in the Primary School, and promote the concept of "Equality of Languages". This toolkit aims to provide a structured a safe collaborative environment for students from different countries to interact with each other and to learn about cultural awareness topics, such as customs, food, clothing, currency, and many more topics. This toolkit will not reproduce stereotypical images of countries' culture, but show by means of multimedia real cultural idiosyncrasies in common current topics. This is possible, not only through textbook descriptions, but through videos, games, webinars, and other interactive methods.

Thus the structure of the toolkit will be both classroom and web-based and will include both offline and online activities. The offline material (hard copies) can be used for non tech-enabled classrooms and can include printed posters, brochures, workbooks, videos, etc. The online material and the Web are used through the medium of the educational game framework and aim to provide the students with a fun, safe, and educational way to learn.

Also, in order to allow for a safe and "controlled" use of the Internet, each teacher will be given a the role of administrator within the game framework and will be responsible for creating student accounts, setting up class lists, and selecting the educational games which the students can access. This implementation enables teachers to log on and use a dashboard from any internet connected device. This enables teachers to control exactly what material the students have access to rather than loading all of the plugin games available for the

educational learning platform. This teachers' 'control' ensures that the students online identity is accurate, prevents the signup of malicious users' masquerading as young children, and provides a solid hierarchical responsibility link (Quigley, 2010: 34-35).

It should be pointed out that in April 2010, the Child exploitation and Online Protection (CEOP) proposed the idea of a panic button to be installed on all popular social networking sites, such as *Facebook* and *MySpace* to protect children from cyber bullying, hacking, viruses, distressing material and inappropriate sexual behaviour" (Hogan, 2009). Although in Facebook there is no panic button, they have adapted their solution[32] to integrate with the external application facility provided by the Facebook SDK (Software Development Kit).

5.2.1 Implementation

The educational games framework is designed to run on Microsoft Windows operating systems. It is written in C# and requires the latest version of the .Net framework to be installed to run. Schools interested in participating in the LEAP programme will be provided login credentials and a number of student licenses. The school will then be able to create an account for each teacher in the school using the online web interface and activate the software for each machine that will host the toolkit.

Each teacher can then create a class, assign the plug-in modules they wish to teach and generate a class enrolment key. Once the students have access to an enrolment key, they are allowed to create an account and access the toolkit content. For security purposes, this toolkit will only be accessible on authenticated school machines.

Each student will be allowed to create a detailed profile page, search for other students with similar interests, and get in contact with them. The toolkit also provides other methods of interaction, such as a community forums, instant chat, team bases games, and wikipedia type applications. Each plug-in module will also have the ability to compile a global high score list and to award trophies for completing certain tasks. These trophies are displayed in the student's trophy cabinet and can be compared with classmates and friends. These are motivational factors[33] used to encourage the students to play the games again and to unlock the difficult trophies.

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[32] CEOP Facebook application: http://apps.facebook.com/clickceop/

[33] http://www.mcmains.net/2009/04/22/workplace-motivation-and-game-mechanics/

As all students are organised into logical class groups during initial enrolment, it is easy for teachers to monitor and control the activities of each student in their class. The toolkit provides an API (Application Programming Interface) through which all plug-in modules must be implemented. This API allows each plug-in to create a report logging suspicious and anti-social behaviour. These reports are stored in our online database and contain the student's details along with the current time and date, severity level of the incident, and a detailed description of the events that took place. An example of this would be, if a student attempts to bypass the bad language filter, the teacher would be alerted of the student's actions and could discipline them appropriately.

5.2.2 User acceptance testing

User acceptance testing is performed to get instant feedback from the end-users and it may highlight hidden bugs during the process (Quigley, 2010, 51-52). The Primary School toolkit, as mentioned before, was demonstrated and tested on the last day of our 2010 CTYI course.

A number of the students were impatient and quick to ask questions, but given enough time or help from classmates they eventually solved their own problems. None of the students seemed to have any difficulty using the platform. They were aware of the concepts applied throughout the platform such as the breadcrumb navigation bar, profile pages, friend invites. and in-game achievements.

A questionnaire was handed out at the end of class. It comprised of nine short questions for the purpose of gathering anonymous information from the students. Overall it appeared that they enjoyed the platform experience. When asked if they would rather learn through the use of interactive games, one student wrote “Yes, bored to read and listen, like to do stuff”. The next question asked them if they were motivated by the high score lists. They all agreed that the high score list motivated them to play the games again. As one student put it, he wants to “get more than his friends”. When asked what they liked about the system, a lot of students said that “it was fun”. Others said that they liked the games and the ability to “have friends” and “talk to people”. The final question asked the students to list a number of features that that would like to see implemented in the next version of our platform. While many of the students left this section blank, online videos, multiplayer and more games were the main features requested.

6. Benefits of LEAP

LEAP will be beneficial to three main user groups: i) students, ii) teachers, and iii) creators of LEAP.

Students are the main beneficiaries of LEAP. The programme is created for them and improved via their feedback. Through LEAP primary school students will become aware of different cultures and languages and they can use what they learned in the educational games framework. They will have "effective" fun learning through the games. Also, LEAP assists effective educational activities in language and culture learning by enhancing the students' motivation in classrooms. LEAP's materials from the result of our localisation research activities provide the students with an enjoyable environment. Generally speaking, students learn new languages and cultures, have fun, and are aware of locale differences.

Teachers can take also advantage of the Primary School Toolkit. Although, they will need initial training on how to use the framework, in the long-run it will help them to make the teaching structure easier. They will learn how to use computers and simple applications and make computer-assisted learning environment possible. Teachers can upload materials on the teaching aid toolkit, rather than printing and handing out papers. It is more effective, less cost intensive, and less time consuming. Furthermore, teachers can have better control over students, allowing only the registered ones to play the games, and delete a student with unacceptable behaviour in extreme situations.

The toolkit will also be useful to the creators of the LEAP programme. Since LEAP is something innovative, new research positions, such as MSc students or PhD students can develop the toolkit further both in aspect of more games development and better students' management. This improvement will, in turn, help both students and teachers alike.

Moreover, LEAP and localisation institutes can contribute to produce educational tools to bridge the gap in multilingual and multinational society. LEAP aims to contribute to the collaboration between publishers and localisation research institutes to develop educational materials.

We intend to continually improve our framework with each round of teaching, each piece of feedback we receive, and as new technologies and research emerge. As an ongoing research topic, this initiative will bring localisation into the public eye and provide a focal point for LRC and CNGL education activities at primary level.

7. Conclusion

As localisation, multilingualism, and multiculturalism gain ever more ground nowadays, localisation education should start from a younger age. LEAP has potential to create a combined approach of language, culture, and computer education. The students that participate in the LEAP programme learn about the concept of localisation and how what is standard for them is not necessarily the same for their counterparts in other countries and regions (locales). Learning about culture and language with localisation resources will help create fun and interesting environment for learners and motivate them more. Also, by introducing the theme ‘localisation’ at schools, it will reach a wider public audience as well.

Our experience with CTYI supported our plans towards LEAP. The surprise of the students when they found out that the names of the Super Mario characters in English were different to the original Japanese names inspired us to continue teaching the concept of localisation to the young students who will lead us in future. Our CTYI experience also supports the statement made by Martin (2004) that regardless of the amount of effort, costs, and learners' willingness, it is important to revise the method and environment in the compulsory education curriculum.

To conclude, learning language- and culture-related appreciation is essential for this society. The interactive Primary School Toolkit presented in our course is an example of the education with localisation concept for future generations of our society. Today, academic bodies with localisation streams provide education and training for the next generation localisation workforces, so that in the future they contribute to open, globalised, and multilingual markets. Localisers must be trained both culturally and linguistically in terms of localisation and it is clear that if localisation education begins at a young age, the next generation will be better prepared for the gap in multilingual and multinational environment which localisation aims to bridge over to start with.

8. Future Prospects

We run two CTYI localisation courses in 2009 and 2010. The development of the toolkit has started in 2009 and was tested in the 2010 course. With regard to the teaching toolkit, we already have localisation-related content for primary schools. We intend to provide the course not only with regard to Japanese language, but also Greek and German. We absorb the

feedback of students from the questionnaires and try to meet their expectations in the next course. The games framework can be enhanced by means of more games, more plugins with open-source translation tools, and rich multimedia, as students prefer (see 5.2.2). Also the improvement of the teachers' administration control is one of our primary future goals.

A next important step is to introduce this concept of localisation education and game-based learning to teachers as one of their training programme. When teachers are willing to use the free Primary School Toolkit for their courses, the content will be then further extended and adapted to each school's technical requirements, preferences, and dedicated levels.

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Short CVs

Dimitra Anastasiou:

Currently Dimitra Anastasiou is working as a researcher at the University of Bremen. Previously she worked as a post-doctoral researcher at the Localisation Research Centre (LRC) in the terms of the Centre for Next Generation Localisation (CNGL) project. Her research focuses on multilingual digital content development, standards and metadata. She supervises two PhD students, lectures "Localisation tools and technology", is a voting member of the XLIFF TC Committee and organises the CNGL-wide metadata initiative. She was teaching "Website Localisation" to the children at the "Centre for Talented Youth, Ireland" in 2009.

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Naoto Nishio:

Naoto Nishio is a PhD research student in localisation at the University of Limerick within Centre for Next Generation Localisation and the Localisation Research Centre. His research interest includes describing localisation services for optimum selection of services for the dynamic execution of workflows. He taught an introduction to Japanese language and localisation for primary school students at the "Centre for Talented Youth, Ireland" in 2009 and 2010. His research is supported by the Science Foundation Ireland (Grant 07/CE/I1142) as part of the Centre for Next Generation Localisation at the University of Limerick.

Enda Quigley:

Enda Quigley is an avid gamer and software developer who enjoys keeping up with the latest trends in technology. He graduated from the University of Limerick with an honours degree in Computer Systems in 2009 and since then has been working on a game based virtual learning environment for use in primary schools as a Research Masters student.

Enda has recently acquired considerable teaching experience after designing and delivering a “Computers and Animation” course for eight to twelve year olds for the “Centre for Talented Youth, Ireland” over an eight week period and assisting with the “Database System” module in the University of Limerick for final year students. In his free time he enjoys swimming, cycling and working out in the gym.