

## How to Integrate Stories and ICT in Content-based Units of Work for English Learning

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**ABSTRACT:** The aim of this article is to show how it is possible to integrate stories and ICT in Content Language Integrated Learning (CLIL) for English as a foreign language (EFL) learning in bilingual schools. Two Units of Work are presented. One, for the second year of Primary, is based on a Science topic, 'Materials'. The story used is 'The three little pigs' and the computer program 'JClíc'. The other one is based on a Science and Arts topic for the sixth year of Primary, the story used is 'Charlotte's Web' and the computer program 'Atenex'.

**Keywords:** stories, ICT, CLIL, EFL.

### **Integración de cuentos y TIC en Unidades Didácticas para el aprendizaje del Inglés a través de contenidos**

**RESUMEN:** El propósito de este artículo es mostrar cómo se puede alcanzar la integración de cuentos y TIC en el Aprendizaje Integrado de Conocimientos Curriculares y Lengua Extranjera (AICLE) para el aprendizaje del inglés como lengua extranjera (ILE) en colegios bilingües. Se presentan dos Unidades: Una basada en un tema de Conocimiento del Medio Natural: "Materiales", para 2º Curso de Primaria, a partir del cuento: "Los tres cerditos", y el programa informático "JClíc" y otra Unidad basada en un tema de Ciencias y Arte para 6º Curso de Primaria, a partir del cuento: "Charlotte's Web", y el programa informático: "Atenex".

**Palabras clave:** cuentos, TIC, AICLE, ILE.

### **INTRODUCTION**

According to Pavón & Rubio (2009:52), the implementation of content and language integrated learning (CLIL) means significant changes in the way in which teaching is planned, sequenced and carried out. In their study, they focus on some constraints that the learning-teaching of a foreign language in Spain offers and suggest that the main way of overcoming these problems is a coordinated approach by teachers which can take the form of integrated didactic units (IDU): 'the creation of integrated didactic units, in which the teachers involved in plurilingual teaching contribute to the goals and common contents of their linguistic and non-linguistic subjects, becomes the central element of CLIL' (idem).

Met (1999), states that from a theoretical perspective, an integration of language and content is consistent with communicative approaches and with emergent theories of human learning. Communicative approaches emphasize that language students have to be engaged in tasks which have authentic objectives as well as authentic meaning interchanges. CLIL approaches are coherent with this emphasis.

The constructivist theory suggests that learning is promoted when learners can see the relationship between the parts and the whole, and between specific (separate) facts or knowledge. They also need to see these facts as a part of a broader framework of reference as far as knowledge and action is concerned.

According to Coyle, Hood, Marsh (2010:4):

CLIL is an approach which is neither language learning nor subject learning, but an amalgam of both and is linked to the processes of convergence. Convergence involves the fusion of elements which may have been previously fragmented, such as subjects in the curriculum. This is where CLIL breaks new ground.

Grabe and Stoller (1997) quote additional factors taken from Cognitive and Educational Psychology and which give theoretical support to CLIL. According to some research in Learning Cognitive Psychology, it is suggested that double emphasis on language and content focuses the learner's attention on the language in such a way that it promotes progress through phases of associative, cognitive and autonomous execution. It is also argued that strategies which increase the learner's self-elaboration and reveal connections between the material to be learned (strategies for learning content) promote memory and make deep processing easier.

In this way, the main aim of this article is to analyze the integration of fairy tales and of Information and Communication Technologies (ICT) in the building of Units of Work for the teaching of Science and Arts through English in bilingual primary schools.

One of the units is related to the topic 'Materials' (within the area of Environmental Awareness). The fairy tale which was chosen and which worked as an integration element, was 'The three little pigs'. Other areas of the curriculum were also included, namely Art and Music. JClic was the software used to reinforce the general learning contents. This Unit of Work was worked on by a) the tutor of the course, b) the trainee teacher, and c) the pupils, who were in the second year of Primary in CEIP San Juan Bautista, in Madrid.

The second Unit of Work is related to the topic 'Animals'. The pupils did the proposed activities by drawing on the experiences of 3 days spent at a farm school, where they acquired knowledge about animals, built handcraft and in general learned how to get on well together. The story chosen for this Unit of Work was 'Charlotte's Web' and the software used was 'Atenex'.

In the first part of this article we will analyze the main features of fairy tales, considering the relation between children's literature and the learning of English, and using ICT as a tool to reinforce acquisition.

In the second part we will present exercises built with JClic and Atenex software, to reinforce the contents integrated in both Units of Work.

Finally, we will present the results which were obtained from questionnaires used to evaluate how effectively both teachers and pupils had taught or learned the contents of the Unit of Work 'Materials'.

These results show not only the main characteristics of JClíc software but also the practical effects of its implementation in the classroom. At the same time the activities made with Atenex software are presented; these activities were mainly used as a reinforcement of the Unit of Work ‘Animals’ and to create a comic from the tale ‘Charlotte’s Web’.

## **1. FAIRY TALES AND ICT AS INTEGRATING ELEMENTS OF A CONTENT-BASED UNIT OF WORK**

### **1.1. Fairy tales: features**

Stories have always played a very important role in society and we all know that people enjoy them when they listen to them. According to research undertaken in the last 30 years, children who belong to families in which fairy tales are valued have better academic results than those who belong to families where fairy tales are seldom read or told.

Henche (1996:114) sees fairy tales as a crucible of universal symbols which evoke the stages and the key experiences that human beings go through in the process of establishing themselves in the surrounding environment. The profile of many of our educational centres is a multicultural one. But these tales are strongly universal, so every child from any background can feel identified with them. Henche is referring to twelve fairy tales which ‘evoke metaphorically the evolutionary process of self-fulfilment.’

Through the tale ‘The three little pigs’, which was integrated in the topic ‘Materials’, within the fields of Environmental Awareness, Art and Music, the pupils learned, for example, about the building of their own personality, perseverance, work and the future.

The houses in the story –the straw house, the wooden house and the brick house– refer to the nucleus of one’s own personality, from weaker to stronger. Fear is also present in the story, as it is always present in these tales: it is a result of separation and abandonment. Other stories where this same feeling is present include ‘The wolf and the seven kid goats’, in which the mother goes away and a problem arises, or ‘Little Red Riding Hood’, in which the little girl leaves her mother and goes through the wood all by herself.

### **1.2. Literature for children and the teaching of English through technology**

As stated by Cavalcanti & Barreira (2009), literature is in itself complex because of its artistic and aesthetic nature and children’s literature is considered a less valued artistic and scientific product. Nowadays it is necessary to understand children’s fairy tales as spaces which promote social and cultural encounters, in which pupils can learn some of the values that make up part of their own and other societies.

As these authors say, literature provides a place to open up to other realities, a place in which it is possible to stimulate one’s liking for narratives and one’s aesthetic pleasures. Cameron (2001:159) states that ‘stories and themes represent holistic approaches to language teaching and learning that place a high premium on children’s involvement with rich, authentic uses of the foreign language’.

Although we see fairy tales as plural and appealing, they should not be lacking in complexity, nor should they omit key questions about feelings and life. Otherwise, we would forget how our society is organized and how people interrelate amongst themselves.

Not only do we believe that stories imitate life, but we also feel them to be the very society that surrounds us and which is expressed through the dialogues and experiences of the characters, who exchange ideas, and share ideals and values which can be recognized in the magic words of a story.

Children should have contact with these stories from an early age because they help to stimulate the development of their imagination and curiosity. They help children to live strong emotions that one day will actually occur in the society where they belong. Through stories, children can imagine contexts where problems occur and try to solve them.

We must make sure a story is presented with the necessary magic. It is imperative that between the reader and the text there exists a real complicity. According to Cavalcanti & Barreira (2009), the mediator must a) worry about the space in which he/she will present the story; b) attempt to create a dialogue of enchantment, in which children can ask questions and participate actively and interactively in the story; c) take into account the pedagogical function of the story and especially its moral nature.

It is also necessary to take care of the devices that facilitate the presentation of a story. In fact, the use of technology promotes a better understanding of the message of the story, while at the same time contributing to a better immersion in the magical story world. The computer may work as an aid in this sense. By using it, one can:

- a) create a PowerPoint document with images, to facilitate the introduction to the story, its forests, castles, gardens, patios, houses, rooms, etc;
- b) use songs that stimulate children's auditory memory, as well as repetitive exercises, quizzes and riddles;
- c) create and use educational games with instant assessment, which enable us to analyze pupils' reading comprehension and even allow them to develop their skills and digital technology;
- d) allow children to share with other pupils from schools in the European Union (or even the world) the story and the interpretation of its contents, by sending e-mail messages, or through eTwinning, etc.
- e) encourage pupils to make a comic based on the story they heard, through the use of tools such as Paint (PC) or Seashore (MAC).

In fact, as stated by Cruz (2011), technologies may allow pupils to get involved in real contexts, in which they are able to develop a critical cultural awareness of the world which surrounds them. Web 2.0 and its applications live side-by-side with our pupils, who are digital natives (O'Reilly, 2005). Therefore, teachers can integrate these technologies in their own plans, and thereby allow students to use the technologies in a continuous way within different contexts. Moreover, technology, with its forums, blogs or videoconferencing tools may also allow teachers to build true interdisciplinary projects, in which CLIL approaches favour the development of a specific IDU, which is not only the result of the summing up of topics from different subjects but also the choice of a specific topic which aims at intervening in the surrounding society in a certain way (cf. Paviani, 2004).

With all this in mind, we believe that pupils and teachers can benefit from the use of authoring tools, such as JClíc and Atenex, which present themselves as facilitating tools in the building of learning itself, because they allow everyone to create their own materials. In fact, the generated content is the product of their representations and cognitive processes, giving significance to the teaching practices and the pedagogical processes in which they engage (Sousa, 2009).

Therefore, we can take advantage of stories and ICT as educational resources and use them to integrate content and language. If the story is somehow related to the subject content, it could be an important element of motivation and contextualization and at the same time the pupils can improve their language level and learn important values through it. It is also important because it can allow pupils to develop their artistic and writing skills, for instance, by making the corresponding comic from the story and then use this to do activities in order to develop their reading and other cognitive skills. Technological resources may also become very important for the learning of the language in a way that is interwoven with the content, for instance by using the motif of the story to design language- and content-related activities through authoring tools, as well as other important uses already mentioned.

## **2. PROGRAM ACTIVITIES THROUGH JCLIC IN THE CONTEXT OF THE UNIT OF WORK**

The Unit of Work based on the topic ‘Materials’ was created, as has already been mentioned, through a **content-based language teaching approach** with integration of stories and ICT.

### **2.1. The activity: competences, contents and materials used**

The story ‘The three little pigs’, as has been said, fitted the topic, being within the area of Environmental Awareness. In this Unit of Work, in particular, the following core competences were developed. (Competences are understood to be capacities or skills to perform tasks or deal with different situations effectively in a given context).

#### *2.1.1. Competences*

- a) Linguistic competence
  - Build vocabulary related to the materials worked on in all their aspects and express this vocabulary.
  - Experiment and develop a critical spirit.
  - Discuss the experiments carried out.
- b) Competence in knowledge and interaction with the physical world
  - Express experiences in a clear way.
  - Predict situations and then experience them.
  - Handle materials effectively.
- c) Treatment of computing and digital competence
  - Use the computer or other object to give information about materials or the use of software.

- d) Social and civic competence
  - Respect and value others.
  - Prevent bullying.
- e) Artistic and cultural competence
  - Use natural materials to create craftwork.
- f) The competence of learning how to learn
  - Use resources and materials in an orderly manner.
- g) Autonomy and personal initiative
  - Develop social skills and respect for others; develop cooperation and teamwork.
  - Develop personal attitudes such as responsibility, perseverance, self-esteem, creativity and self-criticism.

### 2.1.2. Contents

Within the Unit of Work the following contents were developed:

- a) In the area of Environmental Awareness
  - Different materials: straw, wood, sticks, clay, wax, glass, metal, paper, rubber, stone, cotton, wool, silk;
  - Characteristics of materials: *hard, soft, smooth, transparent, solid, liquid, heavy, light, warm, cool*;
- b) In the area of English
  - Vocabulary given above, plus vocabulary already known.
  - Structures:
    - When you heat it ... / when you cool it ...*
    - If you heat it ... / If you cool it ...*
    - It becomes ...*
    - When you put it into the water it floats / sinks*
    - If you put it ...*
    - It keeps me warm / cool.*
    - It is made of*

The teaching resources used during the Unit of Work were divided into:

- a) Printed materials: cards with different activities on them, textbooks, short stories, photographs, flashcards, stories.
- b) Audiovisual material, ICT: computer, microphone, headphones, camera, video, computer programs.
- c) The environment: classroom, computer room, canteen.
- d) Other items: microwave, pencils, erasers, glue, blu-tack, crayons, cardboard, cards, masks, sticks, straw, chocolate, popcorn, clay, natural materials (e.g. stones, shells), house of the three cardboard pigs.

The first of the activities developed in class sessions is the presentation of vocabulary. Then, the story is told and some questions are asked about it. After that, the teacher pro-

poses some tasks related to the story, such as organizing different paragraphs in the proper sequence of the story. As a result of this task, each student has a copy of the story in writing and can read it aloud on their own in the classroom or at home.

The children then choose different materials and make various objects with them. They touch and handle them and then describe them to the rest of their classmates. They also practise the structure: *It is made of ...*

This is followed by the introduction of new language referring to the state of materials (e.g. *solid / liquid*) and the fact that these materials can change depending on how they are handled (e.g. *when we heat it / cool it, it becomes ...*). Afterwards the teacher lists various things (e.g. *butter, wax, ice-cream*) and students talk about what happens when they handle the materials according to the instructions. Then the teacher asks questions about any of the materials they have learned about (for example, whether they float or sink).

The pupils form five groups and each group chooses a material: 1) chocolate, 2) maize (corn), 3) clay, 4) wax, 5) ice-cream. Each group writes about the features of their material and what happens if you heat or cool it. The teacher writes their sentences on the interactive whiteboard (IWB) and the students read them and save them. These are the sentences that were produced.

Group 1: This is chocolate. It is solid and cold. If we heat it, it becomes liquid.

Group 2: This is corn. It is solid and cold. If we dry it and heat it, it becomes popcorn.

Group 3: This is clay. It is soft and cold. If we heat it, it becomes hard.

Group 4: This is wax. It is solid and cold. If we heat it, it becomes liquid.

Group 5: This is ice-cream. It is cold and hard. If we heat it, it becomes liquid.

The teacher writes the words of the song ‘The three little pigs’ on the board. The pupils sing it all together and with the help of the microphone, it is recorded on the computer. This is the song:

The three little pigs had a bad time, time, time  
 Because the wolf blew down the houses (bis)  
 The three little pigs don't know where to live, live, live  
 They don't have a place to live (bis)  
 They don't have bricks to make a house, bricks, bricks,  
 They don't have wood to make a house, wood, wood  
 They don't have straw to make a house, straw, straw.

Following this, the teacher and pupils go to the small canteen, where there is a microwave. Here they carry out their experiments. Each group contributes: they talk about their material and they are recorded by a video camera. Then, when this is finished, the teacher asks the pupils to find and bring from home natural materials such as stones, shells, leaves, sticks, seeds ... and make something out of these materials, to be exhibited in class. In the end, they play a guessing game to revise the different materials and their properties.

JClíc was the computer program used to draw up the different activities in the context of the Unit of Work. JClíc is a free software suite which can be downloaded from <http://>

[clic.xtec.cat/](http://clic.xtec.cat/) and used for various types of educational activities like puzzles, matchings, text exercises, crosswords, word searches, etc. which the teacher makes in advance and takes to class.

According to Guerrero, Muñoz & Sotelino (2007:172), the advantages of the use of JClíc in teaching are the following:

(...) Integration of all multimedia components (video, picture, animation).

Pupil's motivation through 16 exercise types.

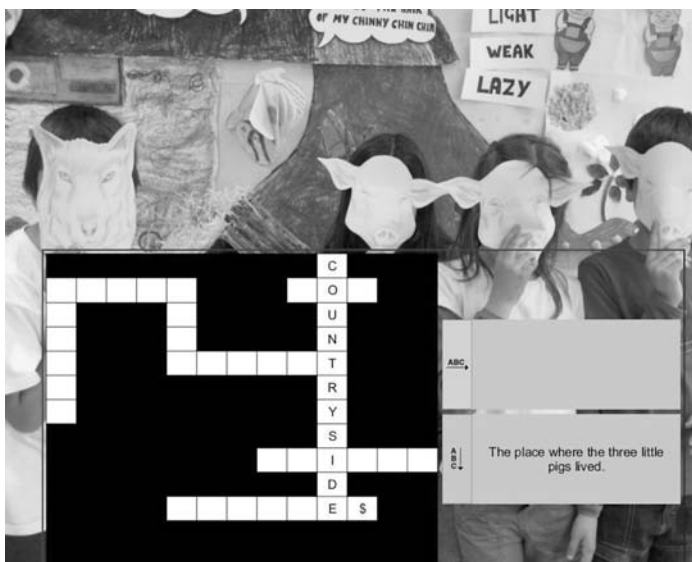
Integration of all media files in a 'zip' file.

Limitation on time and number of tries: boxes show information about the activity: time spent, success, etc.

Report to teachers for performance control.

The following activities were developed using JClíc.

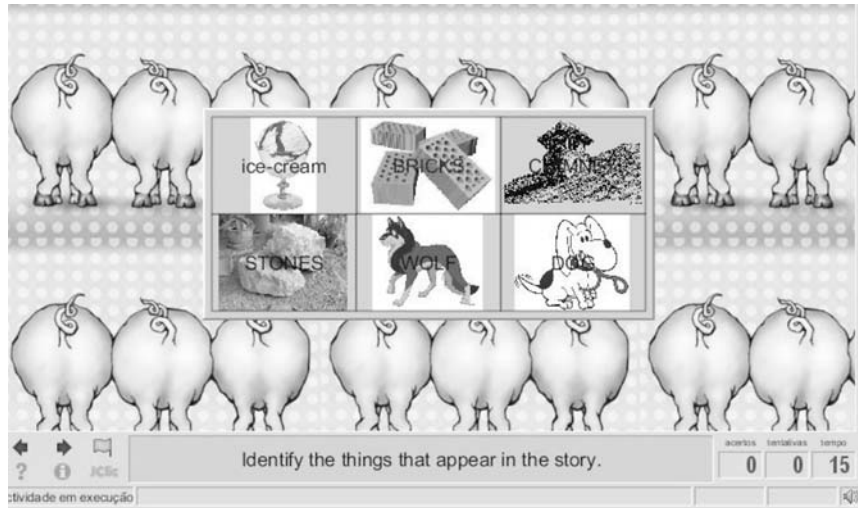
In picture 1, you can see a crossword, in which the pupils had to fill in the blank spaces with words from the story: *countryside*, *house*, *hut*, etc.



Picture 1. Crossword.

Through the following exercise (Picture 2), pupils identify the images that form part of the story.





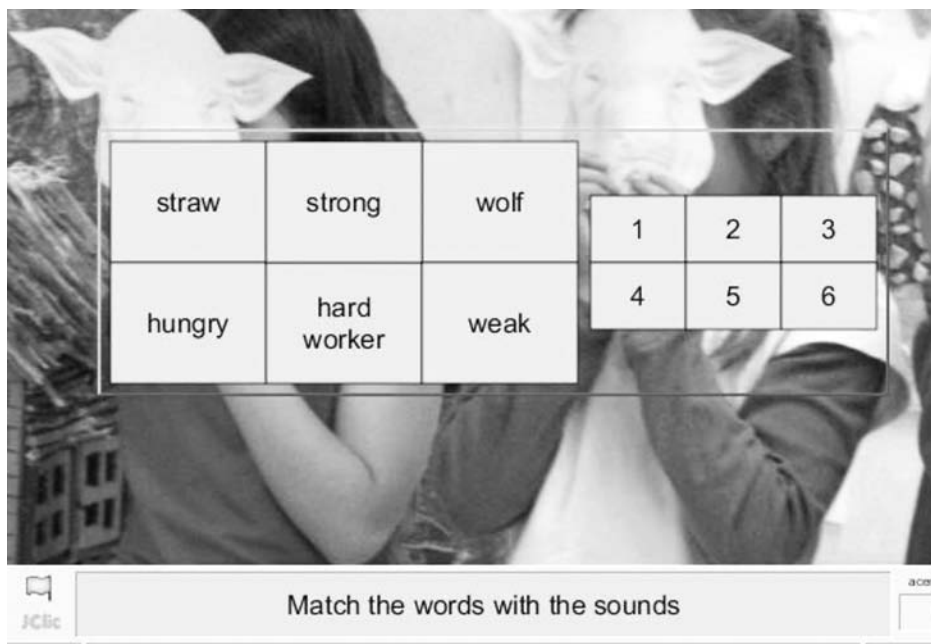
Picture 2. Identification of things.

The following exercise (Picture 3) was conceived so that pupils could use the words in context. They fill in the blanks with the correct word.



Picture 3. Words in context.

Finally, pupils have the opportunity to relate the words to their correct pronunciation



Picture 4. Matching the words and their sounds.

Technology and its supporting activities, such as the ones presented here, allow for contact with social, cultural and linguistic diversity, providing an opportunity for pupils to develop activities that they can be carried out both individually and in groups. (Cruz, Marcelo & Silva, 2009).

## 2.2. Results obtained through the activities related to the JCLic program

### 2.2.1. Evaluation of the JCLic program

The teachers involved were each given a questionnaire and asked to evaluate the program. Table 1 shows a summary of this evaluation. The teachers liked the fact that the program included examples and felt that the contents of the activities were clear and appropriate for the children. It was felt that the program allowed individual use, but was not appropriate for a group. It was also felt that the program allowed an immediate assessment of the children who used it.

Motivation is one of the strongest aspects of the program, as through it children 'are more ready to learn, and they don't only learn English but also how to use ICT'. (APPENDIX I <http://goo.gl/zYOiI>). However, not enough elements of surprise were found in the program, and it was not found to include social and cultural information from the countries where the target language is spoken.

The following table shows the evaluation of the program in detail.

*Table 1 – Evaluation of the JClick program*

S DIS = Strongly disagree / DIS = Disagree / N = Neither agree nor disagree / AG = Agree/ SA = Strongly agree.

	S DIS	DIS	N	AG	SA
It includes demonstrations				X	
The content is appropriate for the pupils it has been used with.					X
The objectives are clear and appropriate.				X	
The instructions given by the program are clear.			X		
The language level is adequate.					X
The program is appropriate for the pupils' age.					X
Group use is allowed for.			X		
Individual use is allowed for.					X
The children are given explanations.		X			
When a child gives the correct answer, the program goes automatically to another level.		X			
The child obtains some type of reward/motivation for a correct response.				X	
There is some sort of evaluation/follow-up of the child's learning.					X
The program presents surprise elements.			X		
The program contains a balance between constant elements and chance elements.			X		
There is sufficient quantity and variety of meaningful practice exercises		X			
There are no errors of spelling or content.			X		
The teacher has access to the pupil's progress, as given by the program.					X
Pupils can use the program to check on their own learning.			X		
The program allows for a choice of American or British English	X				
The program lets one listen to the texts.					X
It is possible to record sounds.					X
The program provides some type of socio-cultural information.	X				

There are no discriminatory contents.					X
The four basic skills of English learning are sufficiently covered in the program.			X		
Children enjoy using this program.				X	

### 2.2.2. Teacher's questionnaire about how the session with the pupils went

A teacher who had implemented the activities answers the questionnaire about how the session with the JClic software went. The responses are shown in Table 2. The teacher says that the students worked very well, and that they themselves chose what to write or not to write. However, it is pointed out that they sometimes did not understand what they had to do because this is not explained in the activity. It should be noted that these activities are designed by the teacher and children must read the instructions before they start.

There were some problems that limited children's performance: a) an insufficient number of computers, b) the malfunction of some equipment. However, the outcome was positive, as evidenced by the responses given to the questionnaire in Table 2. The following could be selected to represent this positive result: 'they like going down to the computer room' and therefore 'didn't need any special motivation'; they 'know how to use the computer and use the mouse very well, so they are able to manage the program adequately.'

Table 2. teacher's evaluation questionnaire of a session with JClic.

<p><b>In cases where they worked in pairs, how did they interact with their classmate?</b> They shared the computers in pairs. In general, they worked very well. They took it in turns to use the mouse and the headphones.</p>
<p><b>What problems did the pupils have when they used the program?</b> Sometimes they didn't understand what they had to do because they don't read the instructions before starting an activity.</p> <p><b>Did they get to solve them? How?</b> Yes, by asking both teachers.</p>
<p><b>Were there any problems in the classroom? If so, what kind of problems?</b> There were not enough computers in the classroom for all the pupils. Some of the headphones didn't work.</p>
<p><b>How did you solve this problem?</b> The pupils couldn't do the activities properly because they couldn't listen to the audio. Because of that, they didn't find the activities as good as they might have done.</p>
<p><b>Is there a solution? If so, what?</b> Yes, the school should buy more new computers and headphones if there is a budget for that.</p>
<p><b>Did the pupils need any special motivation when they had to do the activities on the computer? If so, what was it?</b> They didn't need any special motivation. They like going down to the computer room very much. They know how to use the computer and the mouse very well, so they are able to manage the program adequately.</p>

**What was the atmosphere like at the beginning of the session?**

There was a fair amount of noise because the children were nervous, waiting to see what they were going to do and they all tried to open the program as soon as they were sitting down.

**And at the end?**

A calm atmosphere.

In a third questionnaire, (APPENDIX I <http://goo.gl/zYOiI>), the teacher who implemented the activities through JClic makes a personal assessment about using the JClic computer program and ICT in general.

JClic is valued positively by her:

‘(...) because the pupils learn to handle the mouse and the keyboard, and they enjoy doing the activities. I also rate the Windows voice recorder very highly, because the pupils can be recorded when they talk and then they enjoy listening to themselves.’

The teacher thinks that from the professional point of view, the experience has been positive, as she has learned how to use several computer programs that she did not previously know about. However, she still considers that the teacher is the one who is largely responsible for the contextualization of the story (‘it is the teacher who contextualizes’).

### 2.2.3. Evaluation questionnaire based on the pupils’ opinions

Meanwhile, the pupils had to answer a questionnaire whose results can be analyzed below (Table 3).

It is interesting to note that the children feel that they concentrated during the activities, since they were happy working with a computer. At the same time, they think they can learn on their own, without having to depend on the action of the teacher. However, when they come to assess their own learning, opinions differ between those who believe they learned more and had more fun using the computer and those who did not:

Table 3. Evaluation questionnaire filled in by the pupils.

Answer the questions by putting a cross in the corresponding square	Not at all	Little	I don't know	A bit	Very much
Did you concentrate and pay attention when you were working on the computer?	2	4	2	6	6
Did you enjoy the activities you did on the computer?	1	1		10	8
Do you think the tasks you did on the computer were difficult?	9	8	1	1	1

Do you think the tasks you did on the computer were easy?	2	4	2	3	6
Do you like going to the computer room in the English class?	1	4		7	8
Do you think your classmates enjoy doing activities on the computer, and learn from this?			6	3	10
Do you think you learn more and enjoy yourself more when you use the computer in the English classroom?	2	5	3	4	6
Do you need the teacher's help to work with the computer?	3	8	2	2	4

### 3. ACTIVITIES THROUGH ATENEX AND THE CREATION OF A COMIC BASED ON THE FAIRY TALE 'CHARLOTTE'S WEB' IN THE CONTEXT OF THE UNIT OF WORK 'ANIMALS AND HANDCRAFT'

This Unit of Work was designed for Year 6 of Primary Education in the bilingual school Julio Pinto in Tres Cantos (Madrid). It was put into practice by a trainee teacher doing teaching practice. By adapting the story 'Charlotte's Web' by E.B. White (APPENDIX II <http://goo.gl/cdhq8>), it is possible to integrate different topics from different subjects under a Content-Integrated-Learning (CLIL) methodology. This means that through this unit children are expected to learn English at the same time as they focus on Science, Literacy, Art and interpersonal skills. In this case, the special emphasis and the implementation of the unit took place during the Art sessions. Furthermore, the unit is intended to integrate the experiences the children had on a three-day visit to a farm school, where they learned and reviewed important information about animals, crafts and just living together.

During the course of the Unit of Work posters were designed and created to promote friendship between pupils. The pupils also participated in the creation of artwork, contributing to the general purpose and final task of a collective wall display about friendship (<http://goo.gl/npMgZ>). There was also a comic made by the trainee teacher and the pupils from the story 'Charlotte Web', plus some activities for the pupils. These activities can be found at the following address: <http://goo.gl/w7WFW>.

The objectives of the Unit of Work were:

#### a) General objectives

- To produce diverse messages using images and simple codes, as well as specific plastic and visual techniques.
- To develop confidence in their artistic skills and respect for one another's productions.
- To listen to and understand messages in different oral interactions, and to use the information transmitted to do specific tasks related to their experience.
- To express themselves and interact orally in simple and regular situations which

have a known content, using verbal and non-verbal procedures and working with a respectful and collaborating attitude.

*b) Specific objectives related to Arts*

- To understand and use vocabulary related to narrations in visual arts (e.g. films, comics): characters, setting, soundtrack, trailer, script, bubbles ...
- To explore the ideas and meanings behind Calder's mobiles.
- To explore the properties of different materials used to construct a spider mobile (spider's web + spider's body). The pupils were given a poster base (with a spider's body and a spider's web design) to help them.
- To understand the various possibilities of the plastic and visual media to represent ideas, feelings, and experiences in a personal way.
- To design and create posters to promote friendship between students.
- To participate in the creation of artwork, contributing to the general purpose and to the final task in the form of a collective mural.

*c) Specific objectives related to Science*

- To review and extend their knowledge of animal reproduction and nutrition.
- To examine the different body parts of a spider and important information about its life: life cycle, skills...

*d) Specific objectives related to English*

- To listen to and understand the story in the unit.
- To follow instructions in English which enable them to use the computer and to make handicrafts.
- To develop strategies for defining and guessing meanings (e.g. use of description, synonyms).
- To practise specific vocabulary related to animals, visual arts and 'living together'.
- To use language for self-expression within the established topic.

*e) Specific objectives related to interpersonal skills*

- To reflect on how to make and keep friends.
- To demonstrate effective skills for interacting with others (e.g. sharing, helping each other, talking in turns).

ATENEX is a program (Picture 5) which can be downloaded to your computer, allowing you to create offline exercises. But it also offers the possibility of creating them online at the following address: <http://constructor.educarex.es/constructor/>. Hence, the exercises can either be uploaded to a web server or used offline on an 'intranet' server or through a CD-ROM on one or more separate computers in a classroom. The latter option was chosen. In this way, several self-running CDs containing the relevant activities to be used in the classroom were created. These activities can be found at the following address: <http://goo.gl/zjrHQ>



Picture 5. Atenex Constructor Version 3.0 2-2.

### 3.1. Evaluation of the Atenex program

According to Stager (2002), this program allows a great deal of freedom because it allows for great creativity in the building of activities; in other words, the action of designing different types of contents in a personalized digital environment can constitute a sort of meta-constructivist process. According to the trainee teacher who developed the activities with the ATENEX program, there were the following advantages and disadvantages.

#### 3.1.1. Advantages

- It is free for educational purposes.
- It can be used online and offline.
- It has a creation assistant.
- It offers the possibility of including video, music, images, open office documents, pdfs, animations.
- It has video tutorials and examples.
- One can work in the workspace just by dragging and dropping the elements that one wants to have in the interactive exercise.
- It is possible to choose the language used.
- There are 47 templates for different kinds of exercises, and for different educational stages.
- Different frames, scenes and itineraries can be created.
- Later changes are allowed.
- It can be used with Linux and Windows.
- One creates an interactive page to be seen with a standard browser, such as Explorer or Netscape.



- No special software installation is required on pupils' computers.
- It is not necessary to have an Internet connection in the classroom to run it.
- The interactive exercises created motivate children, promote autonomy and frequently serve as self-evaluation tools.

### 3.1.2. *Disadvantages*

- Space is needed on the hard disk.
- An updated version of Flash player is needed.
- One has to keep to the standard space on a screen.
- Some default configurations are difficult to get rid of.
- Some templates require an external flash file that is not included in the package.
- Some links to external websites are not very easy to make.

## 4. CONCLUSIONS

The first Unit of Work for bilingual groups analyzed in this work is based on the topic of 'Materials' within the area of Environmental Awareness (Science). Participation in the eTwinning programme (<http://cp.sanjuanbautista.madrid.educa.madrid.org/etwinning.htm>), has meant that a part of the educational community of San Juan Bautista CEIP (Madrid) has been implicated in the expansion of the school Web. The children love to show their work and disseminate it. They have seen pieces of work done in other European schools, they have compared different ways of working with various materials, they have printed documents and performed in plays ... The video recording of the story 'The Three Little Pigs' and the activities carried out through JClic were very useful for all the students, as was the opportunity to share with other European centres. In addition, the work encouraged reading, because children had to read the instructions first before they worked on the computer (and this in itself was very difficult for them, because they were so highly motivated and longing to start using the computer).

Collaboration with other European schools taught us how they were working with the materials – in different ways in some respects, and in similar ways in others.

We favoured the use of ICT, playing JClic activities, using digital cameras, scanning drawings and doing several other activities. The pupils were motivated to learn English as a second language, so that they could communicate with friends from other countries.

The fact of working on the topic 'Materials' with other European schools facilitated communication in English, encouraging the children to use it more. The joint development of areas such as Environmental Awareness, Music and Art, made ICT extra effective in the overall educational process. And through these processes of communication, many pupils across Europe became friends.

The experience was so positive that in the coming years, they would like to continue and expand, making new contacts in more countries, cities, towns, and schools. It is hoped to continue working on more projects, growing, informed and trained in a holistic manner.

As far as the second Unit of Work analyzed in this work is concerned, the children were very motivated when they went to the computer room. They showed considerable

interest in the activities and were very engaged. Most of them respected turn-taking when sharing the mouse. Their favourite activities were the ones that most resembled games, and the texts that they had to listen to, and which they found challenging. However, the activities for reading only (i.e. information about the author and the spider's body) generated different responses.

The use of whiteboards and coloured paper, as well as the pop-culture images motivated the children. They enjoyed this activity and it developed their creativity and their design skills and served as a tool for self-expression. The teacher gave some sentence starters to complete such as 'A good/true friend ...', and with the information on friendship previously seen, they personalized and categorized ideas on what friends do and on the qualities of a good friend.

And although a few students made mistakes when transcribing their sentences from their whiteboards to the coloured paper, it must be said that most of them made good use of the whiteboards as a tool that allowed a quick response to the proposed activity.

Regarding the making of the spider and its web, the sheet containing visual reminders of the process was a good idea, and it saved a lot of time and the need to repeat instructions and allowed the teacher to maximize his/her attention to each group. The children who had finished their models also helped the ones who were still working, which served to develop their relational skills, as well. The performance of each student was different, and the spinning of the web required patience, eye-hand coordination skills and a couple of practice turns before they got the right technique to make the craft. And although it was challenging, most of the students had satisfactory results in both classes.

The comic was also highly motivating, involving cooperation in groups for it to be created and performed by the pupils and also for an understanding of the story, as shown through the different activities related to it.

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