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Conception of Lesson Notes as Cartoon for Foreign Language Learning

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1. Introduction

With the development of Internet and new multimedia technologies, e-learning platforms have emerged to improve the quality of the learning activities, by facilitating resource and service access, distance exchange, and collaboration. E-learning platforms are typically web sites that host didactic content and facilitate the implementation of pedagogical strategies (Liu & Wang, 2008). They shared some common functionalities, such as learner self-registration, pedagogical resources and training sequences, on-line assessment, collaborative learning, and training resource management.

However, we assist to a shift from presentation to participation learning. Indeed, learning applications developed in Open Source code tend to be designed as participatory and collaborative e-learning environments. Open source course management systems such as Moodle (Dougiamas, 2004) are highly modularized, allowing teachers and learners to select, edit, or extend learning components most appropriate for their purpose. Moreover, teachers and learners can develop new modules and add them to catalogs of available pedagogical materials, allowing the e-learning platform itself to evolve collaboratively according to the needs and imaginations of the participants. Indeed, current e-learning platforms propose functionalities such as hypermedia, multimedia, forum, blog, wiki, chat, collaborative tools (see (QUIS team, 2004) for a complete analysis).

Nevertheless, to our knowledge, none of the e-learning platforms really directly deal with lesson and summary notes. It seems that learners have to manage by themselves to work and memorize their lessons. Therefore, learners have to resort to classical (non-IT) techniques such as summary notes (paper notes) for the visual people, or reading the lesson several times, either within their head for visual people or out loud for auditory people.

However, we share the vision of (Chickering & Ehrmann, 1996): *"Learning is not a spectator sport. Students do not learn much just sitting in classes listening to teachers, memorizing prepackaged assignments, and spitting out answers. They must talk about what they are learning, write reflectively about it, relate it to past experiences, and apply it to their daily lives. They must make what they learn part of themselves."*

Applied in the e-learning context, we think that e-learning activities must incorporate interactive exercises that are both relevant to the learning objectives and engaging for the

participants. Indeed, the e-learning experience must allow the participants to make choices that have a direct impact on the outcome, to provide an instructive and fun learning session. In this chapter, we propose a prototype to allow learners to create their own electronic lesson notes from resources present in an e-learning platform, in the context of foreign language learning. In this particular context, it appeared to us that an essential point was to enable the learner to attach sound files to the corresponding text part to allow both learner's channels (vision and audio) to be trained together and linked. Another important point to make the resulting material appealing, therefore the lesson notes are represented as cartoons with audio lecture. This approach thus merges the three possible learning styles, namely the Visual, Audio and Kinesthetic styles. The resulting lesson notes can lately be used for lesson memorization, by simply playing repeatedly the cartoon.

The chapter is organized as follows: Section 2 explains the context of our project, namely the need of learning a foreign language, within the perspective of using learning styles to design the lesson notes. Then, section 3 presents some work related to foreign language learning and cartoons in learning activities. In section 4, we describe the prototype to perform the creation of a lesson cartoon. And in section 5, we present the experiment we conducted to assess the approach, before concluding in section 6.

2. Context

2.1 Learning a foreign language

Usually, French people do not speak foreign language properly, as noticed in a humoristic way in (Altan, 2006): *"For example, it is very common to meet a French person speaking English. Such opportunities can lower anxiety related to the accent"*. Indeed, French students usually encounter difficulties to learn foreign languages. They are not used to practice these other languages (except when they have the opportunity to live in a foreign country for a while). Therefore, our school policy is to provide them with different means to apprehend a foreign language, such as classical classrooms and an e-learning platform.

However, this solution appears to be not so efficient, as all the learners do not really improve their foreign language level. We believe that the reason of this inefficiency comes from the fact that learners have to face too much information, with the supplementary documents in the e-learning platform, whereas they already have some difficulties to apprehend all the information within the classroom. In order to provide a useful tool to memorize lessons, we are interested in the way students can learn, which leads us to the Learning Styles.

2.2 Learning Styles

Learning styles are a characteristic and preferred way of learning. Therefore, knowing the learning styles can allow teachers to take into account the conditions under which an individual finds it easiest and most pleasant to learn (Illinois Literacy, 2006). Learning styles are primarily visual, auditory, or kinesthetic (tactile). Visual learners prefer to learn by reading or watching. Auditory learners like to learn by listening. Kinesthetic learners learn by doing, by touching or manipulating objects, or by using their hands.

Although students can learn to adapt themselves to learning styles that are not their preferred ones, most people have difficulties in the first place when they are asked to do something that seems unnatural to them. The most successful teachers are those who can

present material in a variety of ways using a combination of teaching methods to reach the diverse learning styles of their students. The tutoring strategies for each Learning Style, proposed in (Illinois Literacy, 2006), are given in Table 1.

Tutoring Strategies for Visual Learners	Tutoring Strategies for Auditory Learners	Tutoring Strategies for Kinesthetic Learners
<div>1. Use overhead transparencies</div> <div>2. Use flash cards for key concepts</div> <div>3. Allow time for student to write down notes</div> <div>4. Use as many visuals as possible: pictures, diagrams, charts, etc.</div> <div>5. Use demonstrations whenever possible</div> <div>6. Write out all key phrases, words, terms, etc.</div> <div>7. Create outlines for lessons, leaving blanks for student to complete</div> <div>8. Encourage student to chart out information using maps, diagrams, etc.</div> <div>9. Have student copy problems and examples</div> <div>10. Present lesson objective at the beginning of lesson and summary at the end</div> <div>11. Provide additional worksheets for later practice and reinforcement</div> <div>12. Write on blackboard when presenting key concepts, etc.</div> <div>13. Encourage students to keep a notebook/folder of all written work for each lesson/unit</div>	<div>1. Always present material orally</div> <div>2. Encourage discussion</div> <div>3. Use a tape recorder to tape session for student review</div> <div>4. Have student read aloud</div> <div>5. Ask for oral response to oral questions</div> <div>6. Ask student to repeat directions, key concepts, etc.</div> <div>7. Ask student to summarize main points</div> <div>8. Try to maintain eye contact</div> <div>9. Encourage student to think out loud</div> <div>10. Vary the tone and intensity of your voice</div> <div>11. Plan sessions that are organized in sequential order</div> <div>12. Give directions orally with only two or three steps at a time</div> <div>13. Have taped materials available for reference</div> <div>14. Encourage student to speak answers aloud before writing</div>	<div>1. Have student try out a problem on a chalkboard — or lab center</div> <div>2. Encourage students to make their own flashcards</div> <div>3. Give demonstrations while allowing student to perform, step by step</div> <div>4. Plan ways for the student to manipulate the materials</div> <div>5. Use concrete examples to help the student use the skills gained</div> <div>6. Involve the student in the planning of the tutoring session</div> <div>7. Use computer assisted programs, so students can type and move mouse</div> <div>8. Use association techniques to link new learning with past experiences</div> <div>9. Allow student to stand, move, etc. during session</div>

Table 1. Tutoring Strategies for the Visual, Auditory and Kinesthetic Learners

In our context of creating summary notes for foreign language learning, we want to propose a prototype that combines these three learning styles, notably thanks to the points:

- 3, 4 and 13 of strategies for visual learners;
- 3 and 13 of strategies for auditory learners;
- 2, 4 and 7 of strategies for kinesthetic learners.

Before presenting our prototype, we present in the following section, some related work to foreign language learning and cartoon in learning activities.

3. Related work

3.1 About Foreign language learning

Various work from different research areas have considered foreign language learning. Indeed, this research theme can be viewed from the linguistic point of view (for instance (Cook, 2001; Johnson, 2001; Klein, 1986; Sharwood Smith, 1994)), from the psychological point of view (for instance (Gardner & Macintyre, 1992; Sparks, & Ganschow, 2001; Wakamoto, 2000)), from the sociolinguistics point of view (for instance (Loveday, 1982; Preston, 1989; Pride, 1981)), etc. A history of foreign language learning theories well detailed in (Griffiths, 2004) shows that the first methods were based on grammar-translation, then on audio lingual method, followed by other approaches; and lately, most of the current approaches were related to communicative competences.

Concerning foreign language learning using e-learning platforms, from a psycholinguistic point of view, (Doughty & Long, 2001) study the selections among the range of technological options in distance education. They proposed a basis for the creation of optimal psycholinguistic environments for distance foreign language learning, based on ten methodological principles. Among them, we can particularly note: *Promote Learning by Doing, Provide Rich Input, Focus on form.*

From a technical point of view, foreign language learning via e-learning platform has various challenges to overcome. (Hampel & Hauck, 2004) examine the process of development and implementation of online courses in terms of activity design, tutor training, and student support, for language courses using an Internet-based audio-graphics conferencing tool (audiographic web conferencing refers to a technology that enables participants to hold voice communications over the Internet, accompanied with a variety of visual-graphic presentation aids or collaboration tools). (Trajanovic et al., 2007) focus on the problem of the lack of face-to-face communication with peers and the teacher in the case of distance learning system to foreign language teaching, using state-of-the-art tools for synchronous and asynchronous communication. (Volle, 2005) investigates the acquisition of speaking skills in an online distance education course of Spanish learners, based on students' pronunciation production in two types of recorded speaking activities and in two real-time conversations. By analyzing three kinds of data were collected from the conversations - an articulation score, an accuracy score, and a proficiency score, her findings suggest that there were significant gains in scores only in the area of oral proficiency.

Closer to our research theme, (Lo et al., 2000) propose a system to put not only the description of the course content but also the corresponding audio files in order to support a multimedia-teaching environment. (Szedmina & Robert, 2004) present a multimedia application that was created as extra practice material for use outside the English classes. It included multimedia material in the form of pictures, sound files and film material, to enhance the vocabulary of technical English. The application could be used for both practice purposes and self-testing.

3.2 About Cartoons as learning activities

Cartoons, when used in a learning strategy, have several effects, according to the research work of (Clark, 2000): they engage attention; they serve as entertainment; they present information in a non-threatening manner. However, there are some limited references to cartoons in education literature. In science education, they have been used for eliciting the learner's ideas (White & Gunstone, 1992; Hayes et al., 1994), for illustrating scientific ideas (Gonick & Huffman, 1990) and as a stimulus to reflection in science (Lock, 1991).

Cartoons can also be used as stimuli to encourage thinking processes and discussion skills as shown in (Doring, 2002). The author got favorable feedback from students on their use as a teaching strategy. According to her, in being encouraged to be humorous in their approach to concepts and situations, students frequently produce answers that are usually much more interesting and provocative. She notes as well that discussion is richer and students appear more confident, candid and less judgmental and more accepting of other views. Besides, she finds that evidence of the interest emerges from several students' willingness to provide appropriate examples some time after a particular topic has been dealt with.

Besides, (Rule & Auge, 2005) show that students who learned using cartoons achieved higher test scores and provided examples of why they enjoyed learning in this manner. The authors argue that cartoons were an effective pedagogical technique because they created a learning environment in which: students experienced a high degree of motivation to recognize and produce humor; they viewed and analyzed visual images that enhanced memory; they made numerous connections between the new material and prior knowledge through parody and analogy; they identified concepts of which they were unsure and sought clarification from the instructor or text as they attempted to create or improve cartoons; and they engaged in self-motivated practice as they reviewed cartoons for improvement and created their own cartoons.

4. Our prototype

4.1 Existing e-learning platform

The e-learning platform used at the Business High School of Chambéry is based on Moodle, an open source e-learning platform aiming at creating communities of learners around pedagogical contents and activities. The e-learning platform is based on a CMS (Content Management System), with supplementary pedagogical and communication functions to create an online e-learning environment, where teachers and learners can interact together, and/or can interact on pedagogical resources.

The particularity of a Moodle platform is to be conceived based on the constructivism paradigm, which postulates that knowledge is constructed in the learner's mind and not retransmitted statically via books or teachers. From the constructivism point of view, one goal is to create a pedagogical environment allowing learners to construct their knowledge from their experiences and their skills, and not just presenting information and evaluating learners' knowledge.

We want to add a new tool in the e-learning platform, to allow learners to pick up some parts of their lessons and/or exercises in order to create their own lesson notes, their own files, as a cartoon. We present our prototype in the following sub-sections.

4.2 Design of a lesson cartoon

Our goal is to provide learners with a prototype to create a complete cartoon of a foreign language lesson, associating learning strategies from the three learning styles presented in section 2.2. Indeed, as previously mentioned, visual learners prefer to learn by reading or watching, while auditory learners like to learn by listening, and kinesthetic learners learn by doing, by touching or manipulating objects, or by using their hands. By consequence, our idea is to make students use their tactile sense by manipulating objects – texts, images, sounds – to create their own lesson note, and when they will review their lesson, they will be able to read it with their visual sense, and listen to it with their auditory sense.

The prototype’s interface has to be intuitive enough to allow non-IT experts (such as our general learners) to easily handle the system. Indeed, all the actions have to be performed by clicking or dragging the different elements, and by selecting features in the toolbox. The lesson cartoon must be composed of frames that the learner has to fill with images, texts and sounds (cf. Figure 1). As a result, the lesson cartoon can be saved and viewed by any browser later on, for memorization.

Fig. 1. Example of a learner’s lesson cartoon in its visual conception phase, using our prototype with visual functionalities currently based on Comic Life™

Creating the lesson notes will implicitly use the learner’s tactile sense; therefore, there are no specific functionalities in the prototype for this sense. We present in the following subsections the visual and the sound functionalities for the creation of lesson notes in the prototype.

4.3 Visual functionalities

To create a lesson cartoon, the learner must first add images within frames, in order to create his/her personalized context of the lesson. The learner starts by selecting a page model from a collection of pages where empty frames are arranged in various patterns (see Figure 1).

The learner then selects images that already exist in a collection that may contain varied images representing the overall situations. However, the collection is not large, as the important thing is not details but the general idea of the frame. It may simply consist of a few characters, in different poses and different moods. Further images of objects (scenes, objects of interest, etc.) might be included in the collection to add supplementary information. All of these images can be ordered in categories or can be indexed so that when a learner needs a particular one, s/he just has to perform a search on a keyword, and the results show the corresponding images, from which s/he can pick up his/her preferred one. If ever the learner is not satisfied with the proposed images, s/he always has the possibility to select images from his/her own computer.

Once a frame contains all of the images desired, the learner adds bubbles, legends or annotations into the frame, in which s/he can move parts of the text of a lesson, an exercise, a quiz, etc. Bubbles make the characters speak or think “out loud”, while legends give general information about the situation. The annotations are added under a frame to provide any kind of comment such as giving the whole conjugations of a verb or specifying a grammar rule. The learner can then change the font at his/her will (change the size, font, color, use bold or italic style, highlight with colors, etc.).

4.4 Sound functionalities

Besides the visual representation of the lesson cartoon, the prototype allows the learner to add some sound that matches the text, to be played image-by-image, or bubble-by-bubble. The sound file can be created either by using some software that automatically creates sound with an artificial voice from text, or by the teacher who records his/her lecture of the text (the teacher being ideally a native speaker of the foreign language studied). Two cases then appear: either the teacher has recorded the sound files corresponding to the lesson before its happening, or the teacher lets the learners create their own text and when asked, s/he records his/her voice corresponding to the text given. The latter case implies that the teacher first needs to check the correctness of the learners’ creation, which can be useful and valuable.

4.5 Discussion

A learner constructs in this way a material, the lesson note, with multiple frames on each page, so that s/he can sort the content of the learning activity to remember and memorize. The lesson note is then completely personalized, and when the learner needs to review it, s/he has the possibility to easily and quite quickly perform multiple passes/lectures through his/her own material (see a final example in Figure 2).

There are several advantages to this approach. First, the learners choose within an image collection the images they want to integrate to their production, namely the lesson cartoon. They can choose the images they like, and modify and arrange them to obtain the results they are looking for. In this sense, they perform a creative activity that should result in a

personalized production. As noticed during the experiment, learners were proud of their creation and liked to share them with the others.

The text already exists in pedagogical resources at the learners' disposal, it just has to be copied and pasted at the desired spot in a frame, and highlighted directly with the formatting toolbox. In this way, the lesson cartoon fills its goal, which is retaining only useful elements, and highlighting the elements according to their level of significance to the learner. And the learners can add sound files to the text to get a sound version of their production. The resulting learner production can be checked, corrected (and even evaluated) by the teacher, to ensure the correctness of the production.

Finally, the learners manipulate different materials to create their own production on a computer, fulfilling part of the strategies for kinesthetic learners. And the combination of text and sound is particularly interesting in the case of a foreign language lesson, since it enables learners to hear a native speaker while reading the text, to match "the visual" and "the sound". The learner then catches information via both perception channels – the visual one and the sound one – which should help him/her match both "perceptions" and better memorize the vocabulary and its pronunciation. This fulfils part of the strategies for visual learners and auditory learners.

However, we can note that some drawbacks may occur. For instance, the creation of a cartoon from the lesson can be time-consuming. Or, the learner might be reluctant to this approach. In such cases, the prototype might not be used.

Fig. 2. A page example of a completed lesson cartoon with audio, created by a learner during the experiment

5. Experiment

To assess the level of acceptance of our prototype, an experiment was conducted with a public of 2nd year students at the Business High School of Chambéry. It lasted two hours, before the end of an English class. There were thirty-three students in a classroom (two student groups), and during this session, the students had to create their own cartoon lesson by using the prototype. All the necessary resources – documents related to the course, original images, and sound files pre-recorded by their English teacher – were available on the e-learning platform.

5.1 Research Questions

In this study, we want to assess the level of acceptance of our prototype, to check whether it is helpful and valuable for the students to learn a foreign language, or not. Moreover, we want to verify if the students' learning styles may influence their opinions about the prototype. Our research questions thus are:

- (1) Can the present approach motivate students to learn foreign language?
- (2) How do the students perceive the proposed approach based on the combination of the three learning styles?
- (3) Do students' own learning styles influence their opinion about the prototype?
- (4) Does the creation of cartoons as lesson notes influence the students' opinion about the prototype?

To answer these research questions, a combination of quantitative and qualitative research methods was employed for data collection and analysis.

5.2 Methodology

We used the following research procedure divided into three phases. The first phase consisted in performing a test about learning styles. The second phase was the experiment of the prototype itself. The last phase consisted in filling a questionnaire. In order to preserve anonymity, students chose a pseudonym they kept during the complete process.

Phase 1: Test about Learning Styles

The Learning Style Inventory (Illinois Literacy, 2006) was distributed to students to assess their learning style. This inventory helps people to be aware of their own learning style, the way they prefer to learn, to see what their best channel(s) of learning is (are). There are 24 questions with choices, related to the Visual, Auditory and Kinesthetic Learning Styles. Some examples are:

- *Prefer information to be written on the chalkboard, with the use of visual aids and assigned readings (Visual).*
- *Learn to spell better by repeating the words out loud than by writing the word on paper (Auditory).*
- *Enjoy working with tools or making models (Kinesthetic).*

This test took about 20 minutes.

Phase 2: Designing a lesson cartoon

The object of the experiment was presented to students: They had to create a lesson note (summary note) for the English course related to the current lesson. The students

downloaded from the e-learning platform all the resources: course documents, original images, and pre-recorded sound files. Next, a demo of the prototype was performed in front of them. The students then were asked the following question: "What would you put in your lesson note to learn this lesson?". Instead of creating a lesson note on a paper sheet, they were asked to create it using their computer, as a cartoon, where they could add sentences from the course (powerpoint file) and sounds (sentences recorded by an English teacher). In this experiment, they could add all the images they wanted, to make their production more appealing for them.

This experiment phase took about 85 minutes.

Phase 3: Questionnaire

A questionnaire was distributed to students at the end of the experiment, to get their feedback about the approach. The questionnaire was composed of 23 questions: 5 questions about their general impression about the experiment; 7 questions about their perception of this approach to learn; 3 questions about their perception of their resulting production; 2 questions about the motivation for learning using this approach; and a last part to get their general opinion with 2 closed questions and 4 open questions.

This questionnaire took about 15 minutes.

5.3 Data Analysis

We analyze the data collected from the questionnaire and the test about learning styles, to answer our research questions given in subsection 5.1. The learner sample being relatively small, this is only a pilot study to check the possible usefulness of the proposed prototype.

(1) Can the present approach motivate students to learn foreign language?

A first closed question "*Do you find this approach attractive?*" considers the motivation that this approach can bring. The results are presented in Figure 3. Nearly 90% of the students agreed with this, either "normally" (half of the students) or strongly (one third). Only 3% disagreed (one student), and 9% were neutral.

Fig. 3. Results for the attractiveness of the approach

To the open question *"What was disliked?"*, few students gave an answer. And the few ones mentioned concern either the start that was slow (*"start too complicate"*), or problems related to the prototype (*"software too slow"*, *"bugs"*, *"the progress is a little bit long"*), or expectations not fulfilled (*"not very practical to do copy-and-paste"*, *"search images"*, *"missing of interactivity (try again with sound!)"*).

In fact, the arguments given concern a difficulty encountered at the beginning of the experiment, or some bugs remaining in the prototype. They do not cast doubt over the approach. Therefore, the approach can be considered as attractive.

A second closed question *"Would this approach help you to better learn a foreign language?"* considers the usefulness of this approach in the case of foreign language learning. 58,6% of the answers were positive, while 41,4% were negative.

To know the reasons for a negative opinion about the approach, the open question *"Reasons why you found the approach negative"* was also asked. The answers can also be grouped in three categories: this is not a suitable method to them, this is nothing compared to a living experience, and it is more a question of motivation. The unsuitable method was described in these terms:

- *"I just have to read the text to retain it"*,
- *"nothing, this is just not my learning method"*,
- *"this is not a method that I like"*

Some students claim the living experience:

- *"this is the contact with people, that I appreciate in learning a language"*,
- *"because a living experience will always be more formative. We don't learn English in books or on computer"*,
- *"mastering a language requires a certain experience"*,
- *"the practice is nicer (in the country)"*

The answer highlighting the motivation was:

- *"because many tools already exist currently, and this one is just another one; the main important thing is to be motivated!"*

We effectively share the general point of view that the living experience in a foreign country is very valuable. However, our purpose is not to replace this kind of experience, rather to complete the current classical classrooms. Moreover, we agree with the fact that motivation is essential for learning.

Finally, all these former answers can give the general idea that, for about one half of the students, this approach would help learning a foreign language.

(2) How do the students perceive the proposed approach based on the combination of the three learning styles?

The answers of the general closed question *"What is your general opinion about the experiment?"* are shown in Figure 4. Nearly 3/4 of the students had a general positive opinion about the experiment (61% were strongly positive and 13% were positive), against 3% negative and 23% neutral. Therefore, as a whole, the approach was well perceived by the students.

Fig. 4. Results for the general opinion about the experiment

To the open question “Reasons why you found the approach positive”, the answers can be grouped in three categories: fun, use of senses, and some answers try to relate the experiment to learning styles. About the use of senses, the students commented:

- “because we listen and read at the same time! allow to better follow and retain the pronunciation”,
- “we have the 3 senses at the same time: visual, audio, and tactile”

And concerning the learning styles, the comments were:

- “for visual people”,
- “it depends on people, but personally, I better work when courses are interactive”

By consequence, some students effectively noticed the link between the experiment and the combining of some learning styles.

(3) Do students’ own learning styles influence their opinion about the prototype?

The students’ Learning Styles are given in Figure 5. One third of the students are visual and one third are visual with another style (half is visual and auditory, and half is visual and kinesthetic). The last third is either auditory alone, or auditory and kinesthetic.

Fig. 5. Results for the learning styles

To the closed question “*Would this approach help you to better learn a foreign language?*”, the answers according to the students’ learning styles are shown in Table 2. Generally, on this small learner sample, we can see that the learning styles do not really influence the students’ opinion, as about half of each category would like to use this approach, except in the cases of Visual-Auditory and Visual-Kinesthetic learners (almost all of them would like to use this approach).

Learning styles	Yes	No	Total
Visual	5	5	10
Auditory	2	3	5
Kinesthetic	0	0	0
Visual-Auditory	4	0	4
Visual-Kinesthetic	4	1	5
Auditory-Kinesthetic	2	3	5
Total	17	12	29

Table 2. Results of the question “*Would this approach help you to better learn a foreign language?*” compared to the students learning styles

To the closed question “*What is your general opinion about the experiment?*”, the answers according to the students’ learning styles are shown in Table 3. We can deduce that most of the students appreciate this approach, whatever their learning styles are, and there is no specific learning style for which this approach is not convenient. Consequently, in this small learner sample, it seems that the learning style does not influence the learner’s opinion about the approach.

Opinion	Strongly negative	Negative	Neutral	Positive	Strongly positive	Total
Learning styles						
Visual	0	0	2	6	1	9
Auditory	0	0	4	2	1	7
Kinesthetic	0	0	0	0	0	0
Visual-Auditory	0	0	0	3	2	5
Visual-Kinesthetic	0	0	1	4	0	5
Auditory-Kinesthetic	0	1	0	4	0	5
Total	0	1	7	19	4	31

Table 3. Results of the question “*What is your general opinion about the experiment?*” compared to the students learning styles

(4) Does the creation of cartoons as lesson notes influence the students’ opinion about the prototype?

To the open question “*Reasons why you found the approach positive*” already tackled in the research question (2), the answers are of three categories: fun, use of senses, and relations with learning styles. Comments about the fun were the following:

- “*a funnier way to learn*”,
- “*play activity to learn with images, text and sound; the learning becomes less tedious*”,
- “*we learn by creating our-selves, this is thus easier to retain*”

To the open question “*What was liked?*”, the majority of answers concerns three aspects: the fun aspect, the originality of the approach, and the creativity aspect. For the fun aspect, the learners’ comments were:

- “*funny, we create our cartoon*”,

- *"we can learn by playing",*
- *"the fact that it was like a game",*
- *"play activity for learning",*
- *"the amusing aspect; the new method, not much common, to learn",*
- *"learn by playing"*

The originality of the approach was depicted with the following comments:

- *"the idea",*
- *"the originality",*
- *"the original formatting (cartoon) for a new point of view of the course content"*

And the creativity aspect was described with:

- *"creative aspect",*
- *"merging images and texts",*
- *"the fact to create something",*
- *"this is amusing, creative, personalized, to our taste",*
- *"the practical work aspect",*
- *"interactivity"*

A particular answer concerned the software mastering (*"master new software"*).

Consequently, it can be considered that a certain number of students appreciated this approach because of the creation of cartoon lesson notes.

5. Conclusion

We think *"doing is the best way of learning"*. Therefore, by creating their own cartoon for a lesson, learners may be more motivated, they may better appropriate its content, and better memorize the lesson, by replaying it as often as they wish. In this chapter, we proposed a prototype for learners to choose a set of preferred images within an image collection or downloaded from their computer, and to handle them in their own way within frames, to create their personalized cartoon. Then, the learners can select some text from existing pedagogical resources, copy it in bubbles, legends or annotations within the frames, and highlight it as they wish. Moreover, the prototype allows them to add sound files to perform the *"audio lecture"* of the text, to combine the visual and sound media, to improve the learning of foreign languages.

We performed an experiment with students to assess their level of acceptance of the prototype. It appears that mostly, students appreciated the proposed approach, and gave as pros the fun and the creativity of this approach and the fact of mixing learning styles. However, only half of them really think that this approach would be useful to learn a foreign language. Cons were arguing that such tools could never replace living experiences, an opinion that we share. Nevertheless, in the case of completing the current study of foreign language at school, the proposed prototype can greatly be envisaged as a supplementary means. The prototype can however be improved with other functionalities to further support students in their learning process of foreign language.

Indeed, other useful functionalities can be added to our prototype such as the possibility, within the same cartoon, to switch the tense (past, present, future, etc.) for learners who have difficulties with this aspect, or to perform a rough translation into another language directly from the cartoon, which can help the learner to easily remember the meaning of the words in his/her own language, or in another language s/he is more familiar with.

Another extension should consist of animating the cartoon, so that one frame is present at a time. This requires some buttons to be added, in order to play all the frames, go to the desired speed between frames, or to go forward or backward in the frames, as required.

Memorizing as a way to learn languages is stressed in the chapter. However, learners also need to be able to apply words they learn in one situation into different situations. Therefore, cartoons also can be created for different scenarios where just learnt words can be put into practice. In this way, taking notes is not only a matter of memorizing but also of applying knowledge in new contexts. The teacher could also use the learners' resulting productions as an evaluation of the lesson.

To check the validity of the prototype, the relevance of the prototype also needs to be assessed, by comparing the teacher evaluation of this lesson for learner groups compared to other control groups of learners who did not use the prototype for this lesson. To obtain pertinent results, other experiments must be performed on a larger learner sample and for several different lessons.

Finally, our prototype was first thought for an individual use. However, since the prototype is based on a Moodle platform, learners can work on their own, or share their material with other learners. Besides, learners can also communicate between them, and compare their respective progression and results. Therefore, we could envisage experimenting group learning activities, and even peer activities with foreign students whose mother tongue is the one studied in the class, like in (Ramzan & Saito, 1998).

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