TEACHING SCIENCE TO ENGLISH LANGUAGE LEARNERS THROUGH PICTURE BOOKS. WISH OR REALITY?

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ABSTRACT

The objective of this article is to demonstrate that it is possible and beneficial to teach Science to English Language Learners through storytelling in Primary Education. Picture Books (PBs) in English are the launch pad of an action research undertaken by a future ESL Primary teacher, who aims at enhancing her practice as well as fostering her reflective capabilities in educational arena. The article describes the adaptations that were needed to appropriately teach Science through PB's to young, beginner English language learners. In addition, it focuses on scaffolding as an essential support for building comprehension. Quantitative and qualitative data gathered from the activities after the storytelling are presented. The results show second graders are able to learn Science in a foreign language through storytelling, even when the experience takes place for the first time.

Keywords: Storytelling, Picture Books, Science learning, communication skills, Scaffolding.

INTRODUCTION

In the last few years, integrating subject-content and foreign language learning has become a growing concern in the great majority of schools. Storytelling appears to be an effective resource to achieve this goal. However, other strategies and supports seem to be more than advisable in this endeavour. Actually, scaffolding and directed thinking strategies need to be considered by the teachers aiming at improving their students' learning skills.

CONTEXT

A Teaching Sequence (TS) about the butterfly's life cycle was created to be implemented in a state subsidised private double-line school in the province of Barcelona. After asking for permission to the Head of the school, a meeting was held with the Primary Education director. Different TS could be created, depending on the topic and the grade where it would be put into practice. After some discussing, it was decided to work on the butterfly's life cycle with second graders, as an introduction to a content, which would be further developed one grade later –dealing with virus and germs topic was dismissed as the pupils had already studied it throughout the first term.

Semi-structured interviews were conducted between the researcher and the tutors as well as the English teacher before starting the design of the TS. Detailed data about the students' learning level, possible learning difficulties and special needs were collected. Moreover, the teachers were asked their opinion about teaching Science through a foreign language and through storytelling, both before and after the three CLIL sessions had been implemented.

The tutor in Class A had a First Certificate (FCE) and was currently studying for the Advanced English Certificate (CAE). Some years before, she had implemented a

Science Unit about the systems of the human body in English for 5th graders. The experience had been proved to be very positive. Nevertheless, it was never repeated again. She was not in that grade anymore, but teaching 1st and 2nd graders instead. However, the tutor in Class B had a low command of the English language and had never performed a session in English.

Both tutors considered interchangeability between teachers as a possibility to carry out this beneficial practice. They supported their proposal by arguing that tutor of Class A would implement the English Science Unit in both classes (A and B). Likewise, the tutor of class B would teach a different Science Unit –in Catalan- in both classes as well. In addition, they stated it could be done once per term or twice along the year –since preparing the teaching sequence and the class material involved a great deal of work and, at that moment, other projects were being performed and would continue in the future, e.g. improving learners' reading comprehension skill).

It seems very likely that this new approach –even if implemented twice along the year- will imply a greater difficulty to arrange the school timetable. However, following the tutors' opinion, it would be worthwhile.

Participants

Two classes of second graders aged 7 to 8 were studied. "Class A"[1] was composed of 25 students, whereas "Class B" consisted of 24 pupils. The groups were heterogeneous in both classes. Spanish was the majority L1 used among the students. Catalan was spoken at home only by a few. However, Catalan was the medium of instruction for all the subjects, except in Spanish language subject and English. 52% of the students in Class A studied English in a language school compared to only 39% of the students in Class B.

There were some pupils with learning difficulties in both groups. In Class A, there was a pupil diagnosed with Attention Deficit Hyperactivity Disorder (ADHD) and another with ADD. The latter, had dyslexia and dyscalculia as well. Three more students had learning disabilities. However, only one of them needed to follow an Individualized Education Program (IEP) in all the subjects and was learning to read. Additionally, in the same class, a pupil with serious behavioural disorder was being formally assessed but still not diagnosed by the specialist. With regard to Class B, almost half of the students had a low learning level. Although there were no students with a formal diagnosis, some of them had developmental maturity disorders, or were experiencing emotional disorders related to family matters, which influenced their academic performance.

According to the learners' tutors, in general terms, Class A appeared to have a higher level of knowledge than Class B. Nevertheless, last reading comprehension tests (commonly known as "ACL", which stands for "Avaluació de la Comprensió Lectora" in the schools of Catalonia) did not reflect a very significant difference between the two classes. Actually, the results showed that a third of the learners had scored below the minimum level in both groups. At the beginning of that year, the school had started

[1]Classroom names were labelled as "Class A" and "Class B" to preserve their anonymity. Being "A" or "B" does not imply any ranking or seniority.

implementing a "reading intervention plan" in order to reinforce this skill and overcome reading comprehension difficulties in all the grades. Furthermore, following the English teacher's opinion, even if Class A seemed to have a better academic performance than Class B, the latter had a better achievement in Foreign Language Learning than the former. As a matter of fact, pupils in Class B were more disciplined, relaxed and aware of their actions, which seemed to result in being very competent in English. One girl in this classroom needed a little adaptation of the tasks because she had a slower pace than the average. Contents being the same, the adaptation consisted of clearly define the tasks to be done and, in some cases, shorten the number of exercises.

According to the English teacher, Class A had a lower English level due to the lack of attention. She stated that succeeding in concentration would imply the improvement of its level, even reaching a better level than the one in Class B. In Class A, the boy with an IEP succeeded in matching and circle activities.

Throughout the second level, students worked all the skills, i.e. speaking, listening, reading and writing. Nevertheless, speaking was the most practised one. On the contrary, it was not until the third grade that the school focused on writing deeply. Certainly, whereas in third grade compositions started being made, along the second grade students only wrote short sentences by following a model.

At the time of implementing the teaching sequence, pupils were supposed to have a good command of the verbs *to be, to have got and can*; likewise, they mastered the prepositions *in, on, under, next to, behind, between, in front of*, and the adjectives *long, short, slow, big, small, new, old, fast*; finally, they already knew the expressions *there is / there are*, and the most common question words, such as *where, how, how many, what*, among others.

Regarding the rest of the subjects, the tutors of both classes argued that Class A knowledge was better than Class B knowledge and that students' level could be even higher than actually it was, if they set their minds to it.

Procedure

Once the information about the two groups was gathered, an extensive research to choose an appropriate picture book was made.

Certainly, it was not easy to find a PB which met the criteria required for this study. Initially, "The Very Hungry Caterpillar", by Eric Carle, was chosen for the storytelling to second graders. Nevertheless, after some time working on it, it was found that the chosen PB was not scientifically accurate in all of its terminology nor did it accurately describe the actual behaviour of the animal to be studied. In fact, it appeared that one of the key terms used by Carle –"cocoon"- had been probably used wrongly, since the correct term is "Chrysalis" (see the link in "references" section to learn more about the author's justification of this usage). Moreover, even if in literature all kind of licenses are allowed, the content appearing in the PB did not correspond to the real world (caterpillars do not eat sausages, nor cheese). Furthermore, misconceptions could occur, as it may be difficult for some pupils to distinguish reality from fiction –specially to those with a low mastery of English as well as having a low academic performance. Finally, lots of resources and plans about "The Very Hungry Caterpillar" had been already made and

were easily available by surfing the web. As a result, an intense deep search of an adequate PB started. *The Butterfly*, by Anna Milbourne and Cathy Shimmen, was chosen among other PBs based on the selection criteria found in reliable sources (refer to the literature review below, particularly Pringle & Lamme, 2005). Likewise, the National Science Teachers Association (NSTA) was consulted in depth -see bibliography for further details.

Apart from the selection criteria related to teaching Science through PBs, other features were considered as determining factors of the story's choice -see Ioannou-Georgiou and Ramírez (2011, pp. 142-143). First, key vocabulary repetitions, e.g. "munch, munch, munch", "hungry caterpillar"; second, connectors and sequencers abundance, e.g. "First", "and", "and then", "but", "now", "so", "then"; third, time expressions, e.g. "One day", "at night", "When it's time", "A few days later"; fourth, vocabulary richness –abundance of adjectives to review colours, shapes, size, appearance, i.e. descriptions; finally, direct questions addressed to the reader/listener both at the beginning and at the end of the book, which allowed to make predictions: "What do you think it's been doing all the day?", "Can you guess what happens next?", i.e. predictability.

Once the PB was chosen and ordered from the UK, an adaptation of the vocabulary was needed in order to be comprehensible to second graders learning English as a foreign language. In addition, having decided to teach about the butterfly's life cycle, it became mandatory to learn all about that science topic before planning the sessions, since it would give me much more ideas to better explain the process after reading the PB (see the *references* section for more details).

Taking into account that language development involves a continuing process of authentic meaning making, I assumed Gibbons' assertion about the essential need of developing ongoing language across the curriculum (2015, pp. 9-14). With this concern in mind and following Gibbons' advice, a teaching sequence integrating language, science content and thinking skills was created. Furthermore, a student-centred learning was taken into consideration in order for the pupils to actively participate and collaborate with the teacher in knowledge acquisition.

From a caterpillar to a butterfly is the title of a TS with a time frame of 3 class periods of one hour. Four key competences were fostered in the unit, i.e. Scientific competence, Communication in foreign languages, Cultural awareness and expression and, finally, Learning to learn. However, only the first two competences were analysed in detail in the present research.

With regard to topic-related content, by the end of the unit, learners were expected to be able to describe the four stages of butterflies' life cycle by using key scientific vocabulary. In addition, identifying changes in organisms over time and family likeness were two contents to be assessed throughout the TS.

Concerning the content-obligatory language, pupils were supposed to understand the classroom vocabulary and expressions used by the teacher –i.e. greetings, classroom rules, doing actions, instructions, recapping and closing down. Likewise, they were expected to ask for permission and requests in the target language (see flashcards in the TS Appendix), as well as to recognise and use metalanguage (e.g. *What is the word in Catalan for "X"?*), commonly used during the implementation of the activities (e.g. *Is*

this sentence "True" or "False"?). No quantitative analyse of communicating in the target language was undertaken.

Different strategies and methodologies were taken into consideration for the TS design. First and foremost, comprehension strategies, which strengthen thoughtful reading and critical thinking skills before, during and after the storytelling were needed. Directed Reading Thinking Activity (DRTA) -Stauffer, 1969- seemed to be the most appropriate method. As everyone knows, DRTA consists of leading pupils in making predictions about a text by asking questions before and throughout its reading. Once the text is read, the learners are asked to confirm or refute their predictions and discuss the wrong ones in light of new information.

As Renn, C. (1999, p. 1) claims on her research about the effects of DRTA on second grade reading comprehension, it has been shown that this strategy involves both the instructor and the pupils "in an active, on-going pursuit of meaning construction". She argues that successful reading comprehension requires "making connections between ideas in a text and ideas in a reader's mind". Renn base her statements on Koppenhaver & Erickson (1998), who postulate that assisting learners in making these connections through direct instruction in comprehension strategies enhance learners' reflective control of the reading (in Renn, 1999, p. 2). She also advises of the convenience of regularly conducting these activities with a variety of literary genres in language arts curriculum during the school years (following Adams, Treiman, & Pressley, 1996).

Not only should these strategies be conducted in language classrooms but also in many other subjects -see Escobar (2013); Hallywell (1992); Gibbons (2015); Ioannou-Georgiou & Pavlou (2011), and many others-, which is the case of this research.

Since the aim of this study was not based on reading but on storytelling, an adaptation of the DRTA model was made before implementing the first activity of the unit (refer to the TS in Appendix 2 - A for a detailed analysis). As a result, it could be said that Directed *Storytelling* Thinking Activity –henceforth, *DSTA*- was used as a comprehension strategy in guided storytelling lessons.

The first approach consisted of showing the physical PB to the students and letting them know it would be available in the classroom throughout the TS to be consulted whenever they liked, e.g. when finishing an activity.

According to DSTA guidelines, having the pupils examine the title on the book cover was the starting point to exchange opinions and make predictions about the most important elements of the story, i.e. setting, characters, animals' features and actions taking place. With this concern in mind, a PowerPoint presentation had been previously created, with a variety of pictures and Science-content questions addressed to the pupils (see Appendix 2 – B, C). Actually, this tool aimed at scaffolding both subject-content and English language learning. On one hand, it met the students' needs to understand the story, by introducing the key content vocabulary. On the other hand, the students were presented and started using the linguistic structures they were expected to master at the end of the unit.

Finally, by making predictions, it was possible to activate and identify the learners' prior knowledge and, if necessary, adapt the TS to their real needs. Even though the tutors

had been interviewed before the TS was planned, improvements could have been required –which was not the case.

As stated above, other recommended strategies were considered apart from *DSTA*, such as simplifying vocabulary to adapt it to the students' level and eliminating non-essential information. Likewise, asking guided concrete questions (e.g. *what* and *where* questions) and avoiding complex and abstract ones, made it easier for the learners to provide us with a correct answer. In addition, breaking down questions into several parts and avoiding broad open questions proved to be a very effective strategy to foster pupils - teacher interactions. Compare the following oral question posed by the instructor: *Where do butterflies live?* with *Why do butterflies live in the garden?* Obviously, it would have been far more than difficult that second graders with a low mastery of the target language could answer correctly to the *Why* question. On the contrary, no problem arose when the learners were asked to respond to the *Where* question. Moreover, the teacher's oral question was projected on the whiteboard, together with a real picture of the animal and accompanied by the first part of the answer the children were expected to give.

Visual aids, such as those provided by the instructor, were also essential to scaffold pupils' oral comprehension. Therefore, they played a main role throughout the three sessions. On one hand, a Power Point for making predictions (see Appendix 2 - B). On the other hand, a Power Point of the PB (Appendix 2 – C). In addition, a great deal of flashcards -both laminated and projected on a screen- to sequence the storytelling (second session, activity number two, Appendix 2 - H). Moreover, classroom rules were shown on the whiteboard when needed and were always available on the classroom walls (Appendix 2 – D). Finally, the activities' design, most of them colourful and varied.

Pictures were not the only visual aids used by the instructor. Facial expressions and gestures helped the pupils building comprehension too. Total Physical Response (TPR) inspired the design of the TS. This method, based on the coordination of language and physical movement, was used to help learners to remember the new vocabulary as well as the life cycle of butterflies.

In addition, kinaesthesia had an important role throughout the unit, especially when pupils had been asked to sequence the story –see activity number 2, session 2, Appendix 2). Since diversity was a common characteristic at schools, all learning styles were fostered in order to benefit all the students.

No special adaptations for students with special needs were done (except individual teacher's help, provided directly while doing the activities). As stated before, there was only one learner with adaptations in all the subjects. His level was under average. At that moment, he was learning to read and was able to write only few words. His participation was encouraged throughout the whole sequence by asking him the easiest questions, allowing him to speak when he raised his hand and being one of the pupils showing the pictures for sequencing the story, among others.

Given that only three sessions were devoted to implement the unit and the necessity to keep to the schedule, no changes in organising the space were made. Hence, tables stayed grouped as in an ordinary session. Lights were switched off to create a pleasant atmosphere.

LITERATURE REVIEW

Considering the goal of this study, it was necessary to undertake an extensive literature review regarding not only science learning through PBs but also English as a foreign language learning at schools.

As everyone knows, storytelling has been proved to be a creative and effective method to teach curricular content to students. Pérez, D. et al. (2013, pp. 3-18) argue that stories are a noteworthy tool at kindergarten and at Primary Education. Stories can be adapted to the reader's pace and be re-read if necessary. Likewise, they are easily adaptable to different grades, cycles and contents and allow a transdisciplinary work. Moreover, teachers can modify them following the pupils' needs. On the assumption the story told by the teacher is experienced by the learner as a positive event, it has been demonstrated that learnings stemmed from storytelling endure in children's mind. Consequently, stories are an excellent alternative to rote learning. Pérez et al. state that educators play an important role when teaching through storytelling since they have to actively take part in the experience in order to foster all the advantages of this method.

Among the different kinds of storybooks, PBs are preferred by the majority of experts to be used in the classroom. Kelemen et al. (2014, p. 3) consider that PBs' "child friendly format invites a beneficial joint-attentional learning context". Based on Mayer and Moreno (2003), they add that cognitive load is reduced by their "image-enriched narrative".

Although stories can and should be used at schools to teach any subject, they are particularly appropriate for science learning (Pérez, 2013, p. 4). Actually, it seems that the imaginary world of literature leads to a better comprehension of the abstract concepts students are expected to learn in Science.

Kelemen et al. (2014, pp. 1-2) state that "theory-driven interventions using PBs with rich explanatory structure are beneficial" and demonstrate that it is possible and highly recommended to teach about some complex concepts from kindergarten. They study one of the most widely misunderstood scientific processes in the educational world: Adaptation by natural selection, which seems to cause trouble not only among the students but also among many of the educators having to teach this concept. They point at a piecemeal approach to instruction as one of the possible causes of learners' misconceptions. Following the authors of the study, children are "natural explanation seekers who organize their knowledge into theoretical frameworks" (2014, p. 2). It appears that delaying an explicit explanation of natural selection until grade eight would worsen students' understanding because they would have been deprived of the advantages of being offered "an age-appropriate but accurate and causally comprehensive version of the theory".

Kelemen et al. contend that by kindergarten infants already know some isolated biological facts. Nonetheless, they are not able, by themselves, to relate these facts to counterintuitive scientific explanations. It seems that custom picture-storybook interventions would facilitate young children's natural theory-building, by familiarising them with comprehensible scientific explanations since the early learning stages -when

"alternative commonsense explanatory frameworks are still relatively fragmentary" (2014, p. 2).

A collaborative research project undertaken by Pringle and Lamme (2005) demonstrates PBs are an excellent classroom resource to support science learning. They specifically focus on learning about animals. Two main reasons appear to sustain their statement. On the one hand, when scientifically accurate, illustrations in PBs offer a detailed description of the animal or the phenomenon to be studied. Likewise, freezing time, magnifying size and showing endangered animals in nature are some of the advantages afforded by pictures. For example, the whole life cycle of an animal can easily be depicted in detail "whereas in class it can be told but not seen, for it might take a year" (2005, p. 2). They add it seems to be "not practical for students to study many animals in their natural habitat". On the other hand, explanations "accompany the illustrations" and "provide readers with good science content in a structured, easy to follow way". Pringle and Lamme (2005, p. 3) reinforce their assertions following Galda (2001) and Kaser (2002), who pointed at children's books as an opportunity to broaden the scientific principles and contents through literature, resulting in a more attractive way to learn them. The latter, states that at the end of some PBs the reader can find an expository informational piece of the scientific topic, which combined with a narrative storyline offer two distinct ways of acquiring scientific knowledge.

There was no expository informational piece at the end of *The Butterfly*. Nevertheless, it seemed to be an excellent PB to be used in the classroom since it finished with a question directly addressed to the readers "Can you guess what happens next?", which invited to reflection.

As a result of the study undertaken by Pringle –a science methods specialist- together with Lamme –a specialist in children's literature- different criteria for book selection are provided, which help teachers to choose appropriate storybooks for their students. Following Marriott (2002), they warn teachers interested in working on animals learning against the use of some PBs that "transform and domesticate animals and their habitat" (Pringle and Lame, 2005, p. 3). A thorough choice becomes, therefore, indispensable, in order not to teach misleading information to the learners. As expounded on the "procedure" section, this was one of the main causes for dismissing *The Very Hungry Caterpillar,* by Carle.

Pringle and Lamme propose the criteria for book selection below:

- Accurate science content
- Accurate, realistic illustrations with photographic quality
- Accurate relational sizes and proportionality for illustrations; magnification needs to be obvious
- Different perspectives of the animal –illustrations or narrative
- Animal in natural habitat (setting)
- Well-written and entertaining, but with good science knowledge text
- Writer's ability to tell a story without embellishing the truth
- Precise accurate scientific terminology
- Communication of accurate science information

Pringle and Lamme (2005, p. 4)

The two specialists distinguish different types of PBs (2005, pp. 11-12). According to their statements, it could be said that *The Butterfly* would be considered as an "animal biography" since it explores the animal's natural habitat and the changes taking place across time in its life –i.e. growing up, nutrition, skin shedding, chrysalis making, metamorphosis, egg laying, hatching.

Pringle and Lamme argue that good PBs about animals not only focus on animals themselves, but also deal with different science related concepts. In this sense, the PB chosen for our study appeared to meet this criterion, since life cycle concept was widely depicted.

PBs about animals not only arouse the students' curiosity about the animal of the story but also lay the foundations for becoming observant and being more concerned about their environment. Thus, PBs foster an essential skill in science knowledge.

Finally, Pringle and Lamme warn of the danger of combining literature and science at schools without a deep supervision by a science educator. Certainly, literature licenses could result in science content misconceptions because of an inappropriate use of the scientific terminology appearing in the story. Therefore, teaching science through PBs is a highly demanding task, which implies a previous detailed analysis by the teacher, apart from a close planning of the logical connections to be arisen between the natural world and the science learning in the classroom.

A growing number of experts, such as Frederick (2003), Kaser (2001) and Rice (2002) are cited by Pringle and Lamme to support their statements about the inarguable value and impact that PBs have on science learning. They contend that, even though books cannot replace first hand experiences with learning about animals, they "can bring to students the world of animals that would not necessarily be readily accessible" (2005, p. 13). Furthermore, PBs improve pupils' observation skills and foster critical thinking.

As stated above, an extensive literature review regarding not only science learning through PBs but also English as a foreign language learning at schools was necessary. The latter being considered as not a simple linear process, different sources were

consulted. *Scaffolding Language, Scaffolding Learning: Teaching English Language Learners in the Mainstream Classroom*, by Gibbons (2015), inspired me both before and throughout the study. Certainly, she provides readers with a complete overview of what language development means as well as a clear demonstration of the processes it involves:

> *It is not simply a matter of getting the basic "grammar" correct, but of knowing the most "appropriate" language to use in a particular context, or, in other words, to know how to use the appropriate register.*
>
> *Gibbons (2015, p. 9)*

She states that the necessity of developing academic registers in schools implies all students learn through programs that integrate subject teaching with its associated language. Following Cummins (2000) in Gibbons (2015, p. 9), conversational second language learning is developed within a short time while in contrast academic language learning "may take up to seven years for the learner to develop at a level equivalent to a competent native speaker of the same age".

Halliwell (1992, pp. 130-131) claims that learning other subjects in English will improve children's learning of the target language, because "in the process, they will be handling real meaning rather than just words and structures for their own sake". She adds that students need to learn the new language as something normal and natural, as something to use and not something to manipulate in language classes. Therefore, it seems that receiving and producing contextualised, real and meaningful messages in English will foster English language learning.

Gibbons asserts that "learning about language is most meaningful when it occurs in the context of actual language use" and advises that integrating language, subject content and thinking skills "is not a straightforward task" (2015, pp. 9-14). Escobar and Evnitskaya (2013) argue that CLIL settings have proved to be particularly rich in the use of scaffolding procedures and modelling. Actually, as it could be deduced from Gibbons' book title, scaffolding is essential to guarantee students' learning.

The term "scaffolding" was first used by Wood, Bruner and Ross in 1976 when examining parent-child talk in the early years. According to Gibbons (2015, p. 16), two years later, Bruner described it as "the steps taken to reduce the degrees of freedom in carrying out some tasks so that the child can concentrate on the difficult skill she is in the process of acquiring". It was in 1992 that Maybin, Mercer and Stierer referred to this vocable in the classroom as "temporary, but essential, nature of the mentor's assistance" in supporting students to achieve their tasks. Gibbons underlines "scaffolding" is not another word for "help" but a "special kind of help" assisting students in "moving toward new skills, concepts, or levels of understanding". Thus, the support needed when learners work within their ZDP (Zone of Proximal Development –Vygotsky).

Following Dr. Gibbons, the support provided by the teachers is, therefore, "of crucial importance in the educational success of their students". Likewise, educators should maintain "high expectations of all students" (2015, pp. 15-18), based on Thomas and Collier's research (1999). It has been shown that "where the teachers' expectations of their students were high, EL learners' achievement was also high". Consequently,

Gibbons emphasises that, whenever possible, all learners should be engaged with authentic and cognitively challenging learning tasks –scaffolding being provided by the teachers. It seems that, otherwise, a reductionist curriculum would guide the learning process.

Six different principles are stated by this professor to support second language development. Firstly, learners need to understand what is said to them and what they read -what Krashen (1982) named "comprehensible input", which is different from "simplified input". It seems that to attain this principle without resorting to simplification, using realia, practical demonstrations and pictures to illustrate complex ideas are needed. Likewise, taking advantage of technology resources, relating the topic to students' previous knowledge as well as rephrasing important ideas are more than suitable to achieve understanding.

Secondly, learners are expected to use the new language themselves –what Swain (2000, 2005) called "comprehensible output". Again, scaffolding here is needed.

Thirdly, teachers are supposed to provide pupils with opportunities to use "stretched language". Gibbons (2015:26-27) clarifies this term was used by Swain to refer to the language students are not still able to control, producing probably ungrammatical structures. Gibbons refers to these situations as "moments of struggle", which should take place –as she underlines- in supportive contexts in order for the learners "to feel able to take risks with language".

The fourth principle regards modelling of new language, particularly the academic registers of school. Gibbons cites Schleppegrell (2012) to emphasise the importance of the teachers' role in whole-class formats when providing models of academic language. Actually, it appears group working cannot supply these models "by itself" since the learners need to familiarise with the academic register previously. Some recommendations to achieve modelling are given: On one hand, subject-based language should be taught explicitly. On the other hand, integrating the specific language needed "in a particular unit of work" (Gibbons, 2015:28). Moreover, phrasing, rephrasing and extending the pupils' talk –among others.

With regard to modelling specific language, Escobar (2012) arrays a wide list of useful strategies to extend and enhance the students' communicative skills in the content-subject. Three major groups gather these strategies depending on the educators' goal, i.e. using learner-convergent language (catching and maintaining pupil's attention as well as making teachers' speech comprehensible); facilitating interactional space (learners' active participation in the "co-construction" of the lesson being expected); last, but not least, shaping students' contributions to improve their "discursive and communicative skills in the field" they are working on.

Concerning principle number five, Gibbons considers students' mother tongue as a resource for learning. It could be incorporated into the classroom by allowing the students using their L1 in special occasions, such as when introducing a new complex concept difficult to understand or when instructions to do an activity are given: *Ideally, use of the mother tongue in these contexts will "precede" related work in English* (Gibbons, 2015, p. 29).

As in the present research, the sixth principle concerns using the new language to learn other things, e.g. subject content:

> *Subject-based language can be a highly effective context for language development as long as a language focus is carefully planned, integrated, and scaffolded into the teaching program*
>
> *(Gibbons, 2009-2012; Mohan, Leung, and Davison, 2001), in Gibbons (2015, p. 30)*

Ioannou-Georgiou and Ramírez (2011, p. 137) explore the potentiality of stories in CLIL settings and cite Curtain (1995), Dickinson (2001) and Richards & Anderson (2003) to support their ideas: "Stories can provide a natural and meaningful learning context to learn about a particular content focus using specific language within a CLIL perspective".

Among the different examples they give to justify their statement, Ioannou-Georgiou and Ramírez refer to topics directly related to curricular content, i.e. animals, environment or experiments (among others), as a way to "present, practise, consolidate and/or extend children's knowledge". They add that even at the early stages of a CLIL programme, when used creatively, stories provide students with opportunities to learn and increase language fluency and content knowledge. In authors' words:

> *Stories become incredible bridges to use and understand a new language and a great source of content, which will progressively prepare students to interaction and global communication about a large variety of themes and topics discovered through stories in the CLIL classroom.*
>
> Ioannou-Georgiou and Ramírez (2011, p. 139)

To sum up, it appears that accurate PBs support the "essence" of science learning since they allow students to make observations, raise questions and predictions as well as to form conclusions from evidence. They would also provide with good feelings and emotions.

DATA

- Data compilation procedures

Following Lambert (2012), a variety of research instruments were used throughout the study to collect both quantitative and qualitative data.

As Blaxter et al., (2010, p. 199) state (in Lambert, 2012, p. 106), "Observation involves the researcher watching, recording and analysing events of interest". There exist different kinds of observations and distinct ways of participating according to the researcher's needs.

A semi-structured observation with the teacher as a participant was chosen for the study in order to record particular situations and relevant events, i.e. storytelling, giving instructions before doing the activities, students on-task, hands-on activities, among others. Data were drawn from video recorded sessions with a moveable camera. Three sessions of one hour and ten minutes each were registered by the students' tutor and by the teacher implementing the sessions at different times. The main reason for choosing video-recording was the possibility of watching a particular situation as many times as necessary to be analysed in detail. Likewise, an overall view of the learners while working in groups and doing the tasks could be provided together with the written article.

As evidence of the teaching practice, and aiming at a further study of the students' learning process, a request for videotape permission was made before undertaking the research (refer to Appendix 3 to examine the forms the school was provided with). Anonymity and confidentiality of the data generated by the students were assured throughout the study.

In addition, a questionnaire survey for the students and a semi-structured interview to the tutors were administered for more data compilation. With regard to the survey, despite the age of the pupils -7 years old in the majority of cases-, the questionnaire was implemented in order to obtain both quantitative and qualitative data as regards the learning of the foreign language (extracurricular classes, likeness and difficulty) as well as their opinion about learning science through storytelling (in general and particularly through "The Butterfly" Picture Book).

Once the teaching sequence finished, the respondents were given a written questionnaire in Catalan to be answered with the guidance of their respective tutors to avoid possible misconceptions (see a sample of the questionnaire in Appendix 1). The latter conducted the survey for one particular reason: It must be answered honestly. It was essential to know the students' real opinion about the storytelling experience. Consequently, without feeling influenced by the person who had implemented the unit.

Considering the age of the learners, filling in a questionnaire could be a cognitively demanding task. Therefore, the questions were explained in detail one by one before being answered by the pupils. Actually, it was not until one item was answered individually by every child, that the instructors started clarifying the possible following questions. Based on Lambert (2012, Pp. 118), mixed open and closed questions had been designed, although the latter were more frequent in order to get factual data as well as to avoid ambiguity and, hence, lack of reliability.

On the other hand, testing and keeping a diary seemed good resources to gather relevant data. Thus, specific activities and tasks had been designed to be completed during normal classes in order to evaluate the learners' comprehension of both Science content (refer to worksheets in Appendix 2 - F) and language learning (2 - G). There were no specific written activities, since writing skills would start being worked throughout the third grade.

Besides, personal impressions after each session were noted down in order to analyse them and to be compared with the recorded sessions (see a sample in Appendix 2 – O).

Document analysis was also used before designing the study, such as other researches in the scientific world, a wide variety of articles (see references below), pupils' work, drawings, photographs, displays and other illustrative materials.

- Quantitative data

As stated in Lambert (2012, p. 162), quantitative data can be analysed by using different procedures. In the present research, respondents' achievement of the different activities in the TS was analysed by counting, separating out Class A from Class B and comparing the results both intragroup and intergroup. In addition, data from questionnaire surveys in Appendix 1 were considered as possible factors influencing the students' academic performance.

Excel was the computer software used for analysing quantitative data. The graphs below were drawn from the information gathered in Table 1 (Class A) and Table 4 (Class B) in Appendix 1.

- Students' achievement
  - True – False activity

Figure 1 below showed that more than half the students had successfully completed the True-False activity. Certainly, 33% of the learners had answered all the items correctly and 38% had answered 7 out of 8 items correctly. The rest of the class had responded correctly to 6 items -17% of the pupils- while 12% had done it in 5 out of 8 statements.

In comparison, figure 2 showed that the number of the learners in Class B succeeding 100% the task was double, since 65% had achieved 8 out of 8 statements correctly. Furthermore, 18% of the children had provided us with 7 right answers. Therefore, 83% in Class B compared to 71% in Class A had scored a high percentage of correct answers.

Surprisingly, against all odds, even though students in Class A were most likely to achieve the activities successfully, Class B had obtained better results in the True – False activity than Class A. As stated above, according to the tutors of both classes, Class A was supposed to have a higher learning level. Nevertheless, as reported by the English teacher, it was the former and not the latter the class with better learning outcomes in the foreign language. The specialist teacher had argued this success might be due to the pupils' discipline throughout the sessions. However, other causes could have also fostered the obtaining of this result. Certainly, learning English as an extracurricular activity would probably enhance the respondents' learning level.

Data gathered revealed that not only the number of students learning English in a language school was fewer in Class B than in Class A (39% compared to 52%) but also some of them had learning difficulties: 9 students in Class B out of 23, were doing extracurricular English classes, (2 of them having learning difficulties).

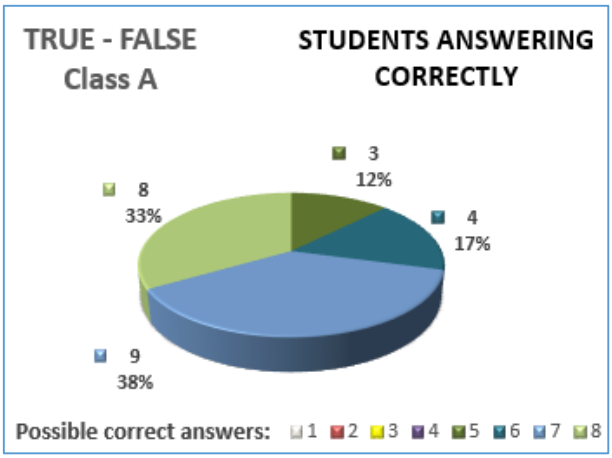


Figure 1

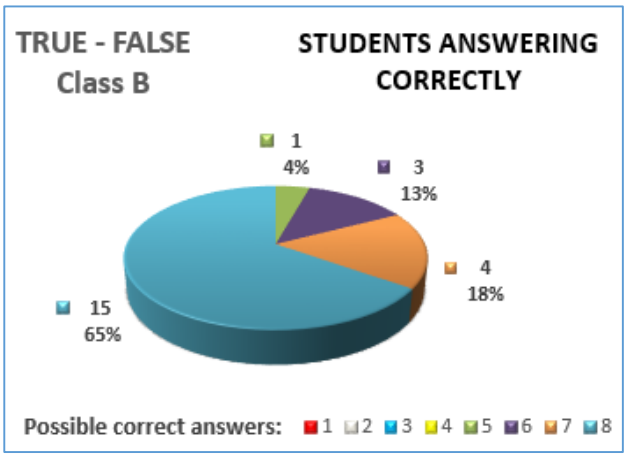


Figure 2

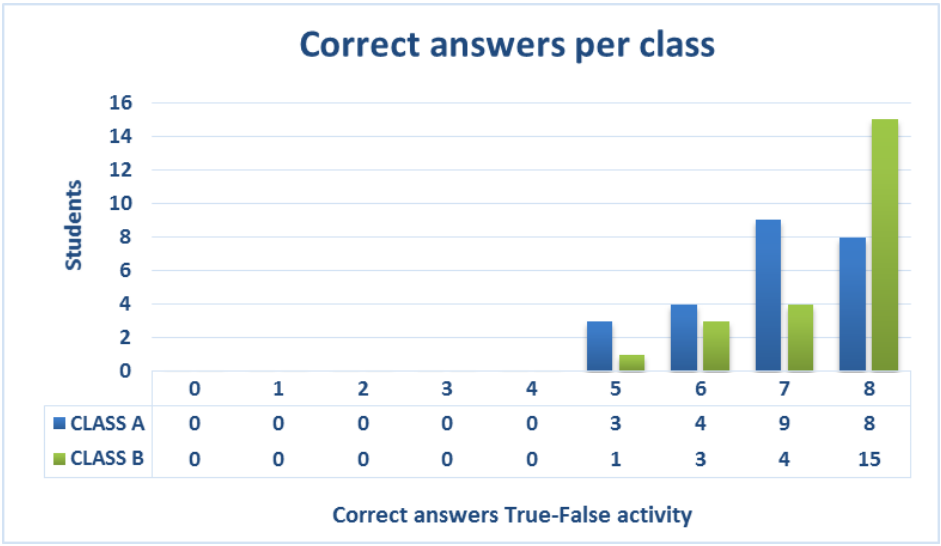


Figure 3

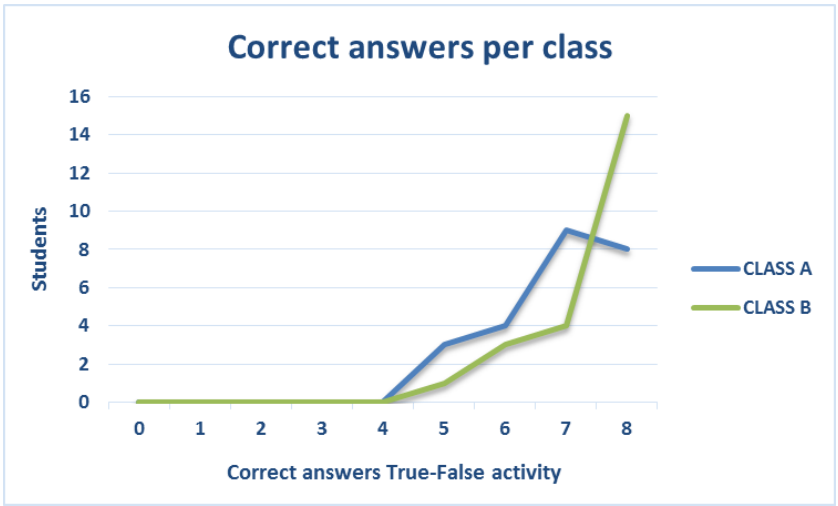


Figure 4

Likewise, as illustrated in figures 3 and 4, in Class B there was a considerable difference between the number of pupils answering correctly all the items (15 pupils) and the rest of their classmates (4, 3 and 1 learners, with 7, 6 and 5 correct answers respectively). In Class A, in contrast, the number of respondents with less correct answers was higher than in the other class. Moreover, the average of students who had scored 7 and 8 items correctly was almost the same. Hence, it seemed that the intra-group difference was much more notable in Class B than in Class A.

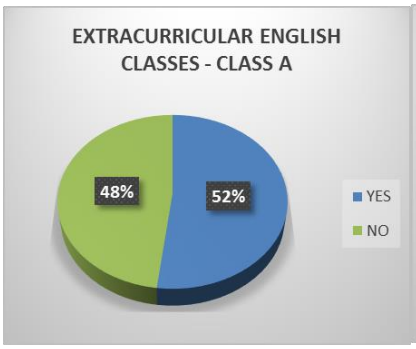
A deepen analysis of particular cases in Class B showed that the great majority of the pupils with learning difficulties had achieved the activity as successfully as the rest of their classmates: 4 of them had scored 8 out of 8 items; 2 other children, 7 out of 8; 2 more students 6 items out of 8 (the learner with a low pace belonged to this group); finally, only one of the pupils with learning problems had answered correctly 5 items. Furthermore, there were some respondents with no learning disabilities who had not obtained 100% (see Students number 12, 16 and 21 –S12, S16, S21- in Table 4, Appendix 1).

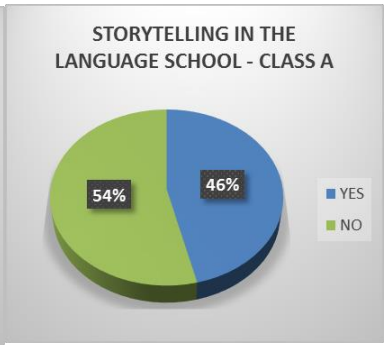
Language schools implement different methods and strategies to teach English. Since storytelling was a key point in our research, and one of the possible techniques to be used in language schools, it was necessary to ask our respondents about their particular cases (refer to Appendix 1 – Tables 2 and 5).

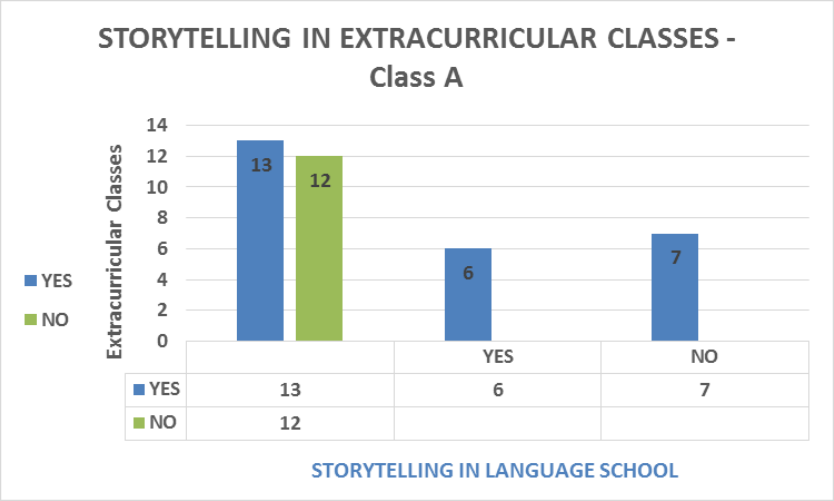
- English language learning

Class A

EXTRACURRICULAR ENGLISH CLASSES		STORYTELLING IN THE LANGUAGE SCHOOL	
		YES	NO
YES	13	6	7
NO	12		

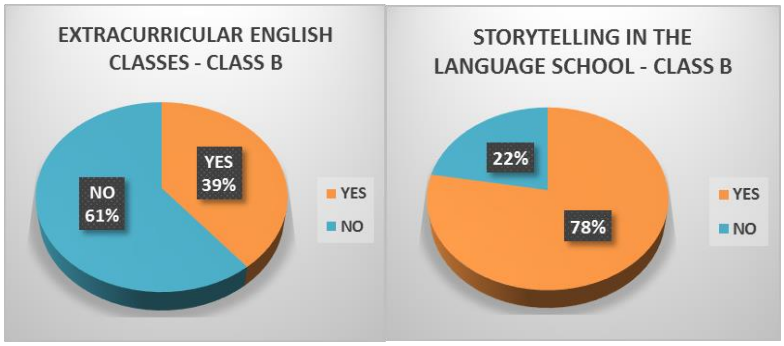


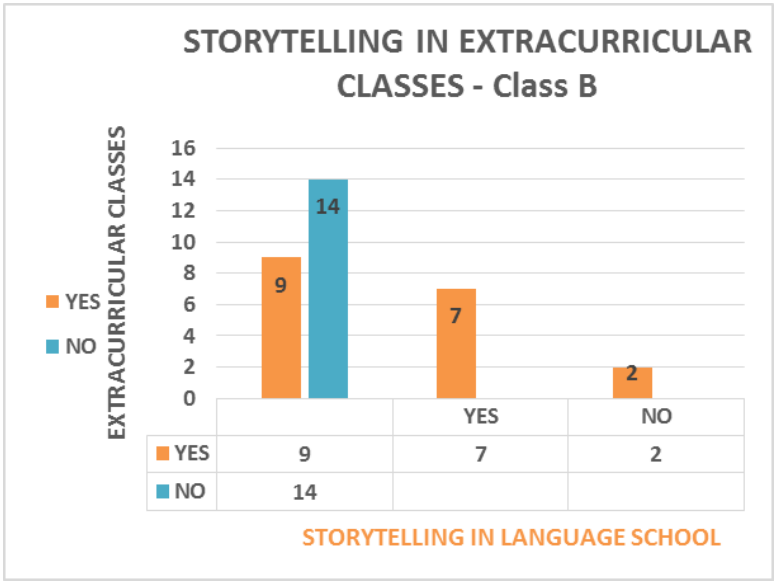




Class B

EXTRACURRICULAR ENGLISH CLASSES		STORYTELLING IN THE LANGUAGE SCHOOL	
		YES	NO
YES	9	7	2
NO	14		





- Naming – Ordering activity

With regard to the activity about naming and ordering the four stages of butterflies' life cycle, it appears that it was easier naming than ordering in both classes. These results are not surprising since naming is a low level thinking skill (see Bloom's Taxonomy), whereas ordering implies a greater difficulty. Nevertheless, the difference in the results obtained between these two skills is much more significant in Class A than in Class B. Certainly, 92% of the pupils named correctly in comparison with 76% who ordered accurately. Learners in Class B, however, obtained similar results (79% of students in the naming activity, in contrast with 71% in ordering). The difference between both classes is much more evident in naming (92% of students in class A compared to 79% in class B). On the contrary, the percentage of ordering between classes is almost the same.

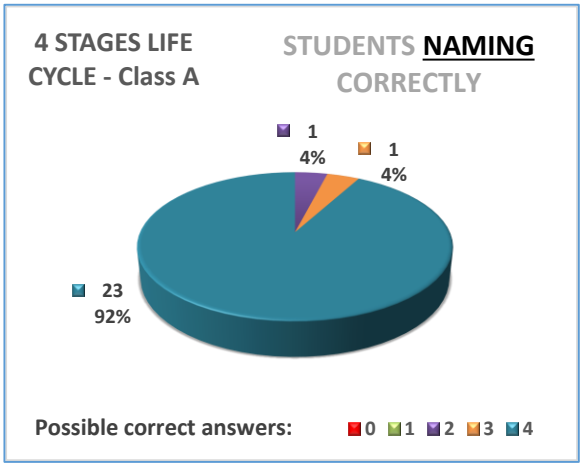


Figure 5

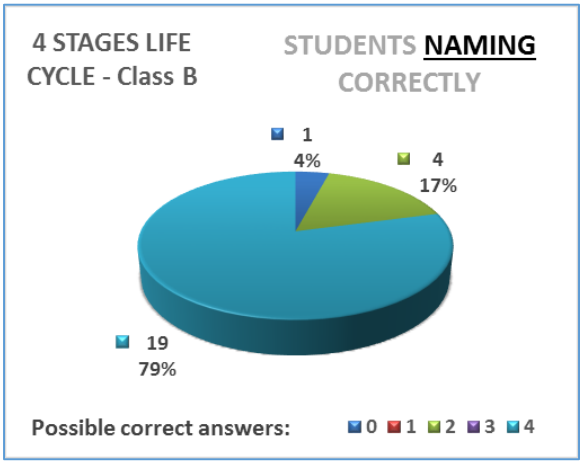
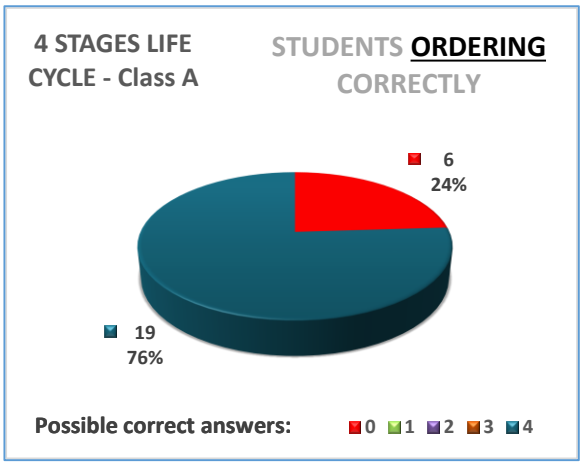


Figure 7



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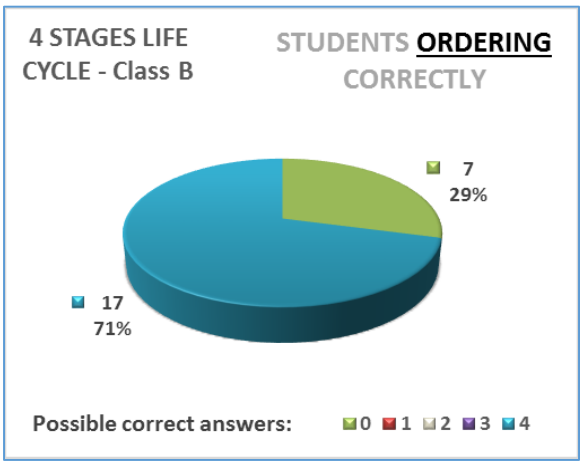


Figure 8

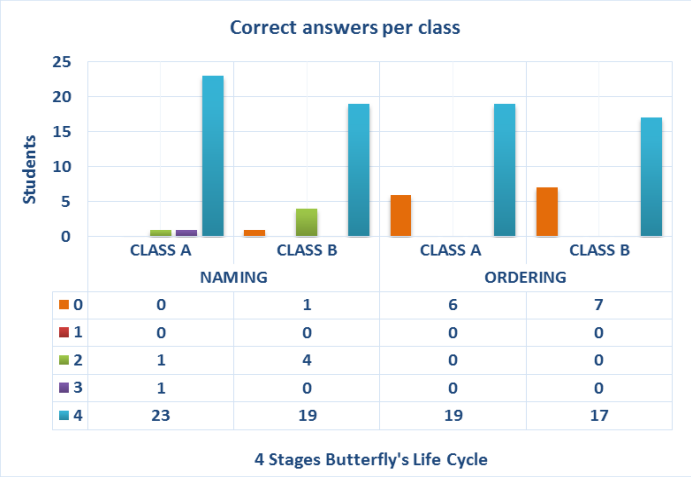


Figure 9

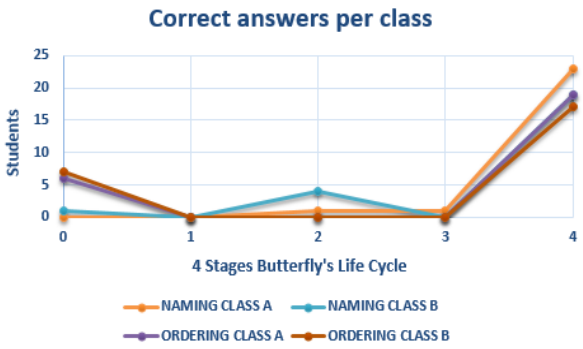


Figure 10

Concerning the activity about identifying family likeness, pupils were supposed to match 6 caterpillars with 6 butterflies. As figures 11 to 14 below show, half the students in each class completed the activity successfully (52% in Class A and 50% in Class B). There were no appreciable differences between classes.

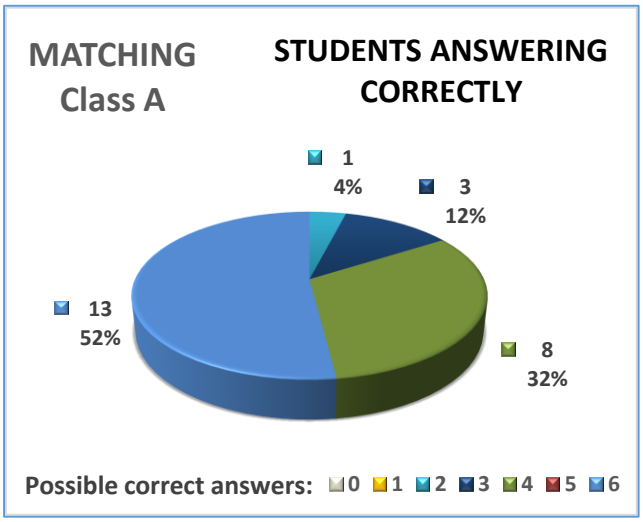


Figure 11

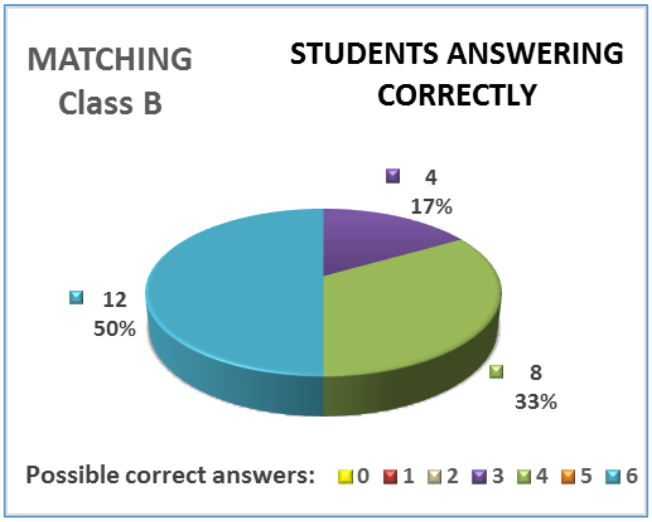


Figure 12

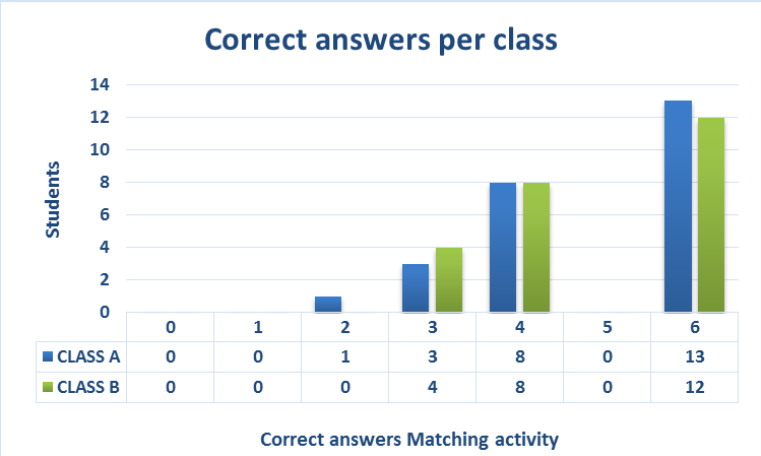


Figure 13

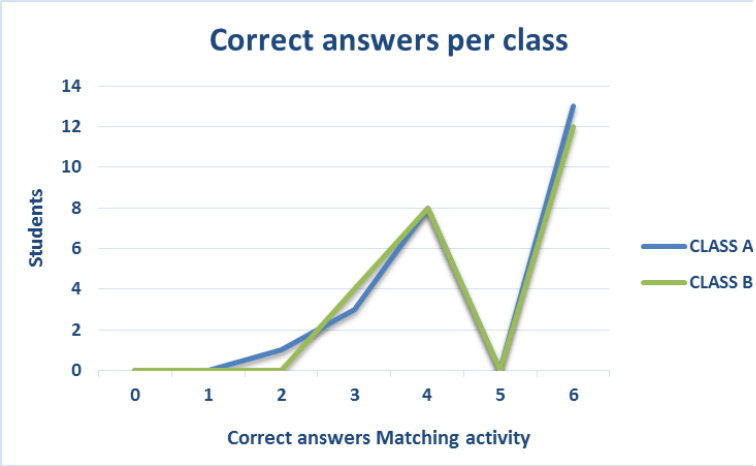


Figure 14

- Qualitative data

As stated by Gibbons (2015) and Escobar (2011), some of the students used their mother tongue almost throughout the whole sessions, specially when being introduced to complex concepts (refer to video recording). Likewise, pupils deployed their L1 while listening to the instructions given by the teacher before doing an activity. This is what was argued by Gibbons (2015, p. 29) in the literature review above: Principle number five.

- Learning taking place

The analysis of the data showed that not all the pupils in the small groups had got the same answers. It seemed that some of the students did not succeed in group working. Although both tutors argued that the learners were used to working in groups, there is some evidence showing that some pupils experienced difficulties to share their ideas with their classmates. Actually, the degree of difficulty varied depending on the activity. In fact, it could be said that the kids cooperated to look for the key vocabulary appearing in the story –i.e. first activity- as well as throughout the completion of depicting the

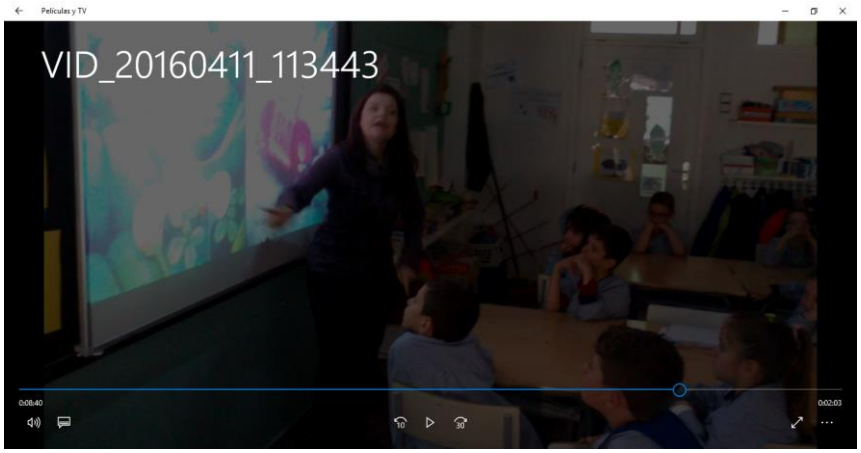
butterfly's life cycle (final product). Nevertheless, the "True-False" activity, which consisted of reading, understanding and deciding on the veracity of different statements, resulted on having different answers within the same group of work. The difficulty of the activity seemed to be one of the main reasons on the basis of this "non-cooperation", whereas the more a task is difficult the more they are supposed to need help from their buddies (see Appendix 2 – K1 to check some of the different answers provided by the students).

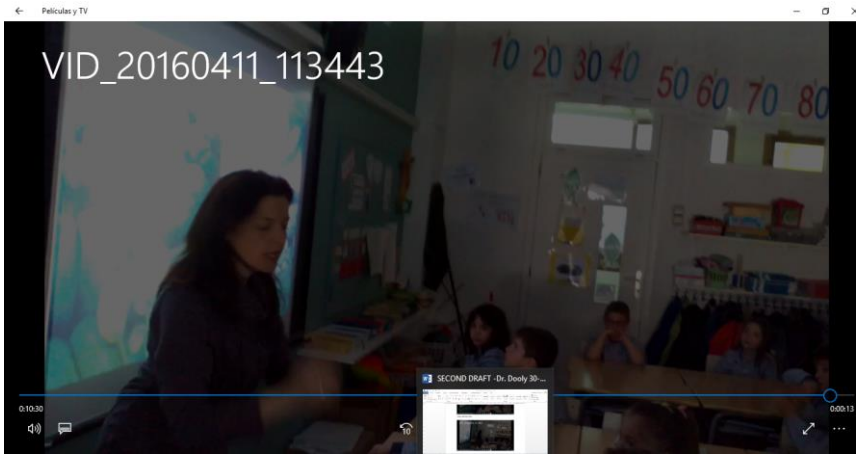
Concerning the activity where the pupils were expected to order the life cycle of the butterfly –i.e. the second part of the third activity-, some members in one or two groups appeared to copy the drawing of a classmate, usually the one with the higher level in the group. Certainly, some of them did not provide the right answer when they were asked about their decision.

Sometimes, they seemed to work better in pairs. As a possible reason for the difficulties experienced in group working, it could be argued that they were not used to work in groups in the English classroom as well as that group working was not always deployed in their daily routines.

Some particular examples about interesting moments are provided below:

Class A students showed comprehension during the storytelling, because they answered the teachers' questions and, in some cases, they provided the educator with answers in the foreign language before being asked to do it, e.g. the teacher said: "It is not small" and immediately after, the statement "It's big" was heard.





Video 2609 –"Becoming word hunters": Despite the fact that the word "metamorphosis" had been placed in the middle of the flower, in a bigger font than the rest of the vocabulary, pupils in Class B did not identified it. This was probably due to the fact that it had not appeared throughout the storytelling. It was done in purpose. Actually, three main reasons obeyed to this decision. On the one hand, because it was a weird word for second graders and it was preferable to use the words "change" and "transformation" when the story was being told –easily recognisable by the pupils and much more close to their daily use. On the other hand, because there were a great deal of other necessary key words to be introduced, for which there were no specialised synonyms. Finally, to prevent misunderstanding and a possible anxiety or stress. It should be noted that once the word "metamorphosis" was pointed at, one of the kids not only pronounced it correctly –it was the first time this concept was pronounced in the classroom-, but also provided his classmates with its correct meaning. This was another way to introduce new vocabulary –specially difficult for the students- in a different manner, catching their attention. It was easier to be familiar with the words "change" and "transformation" for afterwards relating these concepts to the word "metamorphosis" than doing it the other way round.

PEDAGOGICAL IMPLICATIONS AND FUTURE STUDIES

Storytelling was the only resource to be used in the study. Other resources could have complemented the storytelling, such as videos, songs and games, available on internet and commonly used by the teachers to strengthen the new knowledge. These powerful sources were not exploited so as not to interfere in the research. Otherwise, the results of the study would not actually relate to the research topic. Furthermore, the data would not have been valid because of possible contamination. Hence, it would have been impossible to know if the learning achievements stemmed from the storytelling, from the internet resources or from a combination of both (the last one being the most probable option).

Further research should be done implying a larger sample size –other schools and different contexts- to compare the results with the findings drawn from this study.

Likewise, prolonging the number of sessions appear to be advisable to compare the students' learning improvement -their comprehension and production skills after a period of time working both Science and English throughout storytelling.

Time limitations and small samples seem to make difficult to detect large differences between groups as well as within the same group. Focusing on pupils with learning difficulties or special needs could be a profitable study. Actually, some of the results drawn from the experience showed beneficial effects of storytelling on this group. Certainly, in Class A, the learner with ADHD could rest sitting down while listening to the story and while making predictions, which is not the case throughout the common sessions. Moreover, the pupil with a serious behavioural disorder was completely concentrating on the story and participated a lot. Nevertheless, it was difficult for her to focus on the tasks after storytelling. Finally, the student with an Individualized Education Program (IEP) could provide his classmates with isolated key vocabulary in the target language and seemed to understand the story.

With regard to Class B, as stated in the data analysis, the case of the learner with a slow pace surprised not only the researcher but also her tutor, demonstrating a quick response capacity.

Special cases were not considered in depth in the present study because of time limitations (only three sessions) and due to the low number of learners having a formal diagnosis in the sample. It seems to be beneficial and, consequently, of interest, to do research into how storytelling fosters and improves their skills (both content and language).

As mentioned in the *Procedure* section, no quantitative analyse of students' communication skills in the target language was undertaken. An additional future research seems to be required.

CONCLUSION

As stated in the theoretical framework as well as it had been experienced throughout the implementation of the teaching sequence "From a caterpillar to a butterfly", PBs have been proved to be an excellent tool to teach Science to English Language learners at Primary Education, as well as to encourage and enhance pupils' communication skills.

On the one hand, PB's selection criteria should be considered before starting planning the sessions. On the other hand, scaffolding should be carefully planned in order to foster students' real use of the target language and, therefore, a meaningful learning. This language real use relates both to conversational and academic language (the latter, being much more difficult to develop, especially by ELLs).

Likewise, provided that the stories and the activities related to them are used in a creative and progressive way, educators can assure an easier and better understanding of Science curricular content by their students. PBs allow to introduce dynamically some of the contents the learners have more difficulties with. Actually, some abstract contents related to science learning, such as the animals' metamorphosis process, can easily be tackled through storytelling.

Nevertheless, storytelling should go hand in hand with other learning strategies, such as DSTA ("DRTA"), to enhance building comprehension, particularly in those grades where students with learning difficulties score lower levels than average in reading comprehension.

Finally, this research showed that literature, particularly PBs because of their illustrations, their narrative and expository writing, and many other characteristics, opens a door to the magic world of learning, motivating not only the students but also their teachers.

AKNOWLEDGEMENTS

I would like to acknowledge my enormous debt to the school, especially the students and the teachers who have contributed to this research.

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APPENDIX 1: Data sources

NOM: _____

Qüestionari sobre l'aprenentatge de la Llengua Anglesa (Educació Primària)

1. Estudies anglès fora de l'escola?

    a. No

    b. Sí → A quina acadèmia? .....

    Utilitzes llibre a l'acadèmia? Sí No

    Es fan jocs a l'acadèmia? Sí No

    S'expliquen històries, contes a l'acadèmia? Sí No

2. T'agrada aprendre anglès?

    a. Molt

    b. Bastant

    c. Normal

    d. No gaire

    e. No, gens

3. Creus que l'anglès és difícil?

    a. Sí, molt

    b. Bastant

    c. Una mica

    d. No

    Per què penses això? .....

4. Què et costa més...?

    a. Parlar en anglès

    b. Escriure en anglès

    c. Entendre'l quan els mestres parlen

    d. Llegir en anglès

5. T'ha agradat aprendre el cicle vital de la papallona a partir de la història "The Butterfly"?

    a. Sí

    b. No

6. Ha estat fàcil o difícil aprendre el cicle vital de la papallona a partir d'un conte en anglès?

    a. Fàcil

    b. Difícil

7. Penses que els contes ajuden a entendre millor el Medi Natural?

    a. Sí

    b. No

8. Penses que les imatges que apareixen al conte ajuden a entendre'l millor?

    a. Sí, molt

    b. Una mica

    c. No

9. Creus que les repeticions (per exemple “eating, eating, eating, munching, munching, munching”) i els moviments i gests que fèiem durant l’explicació de la història t’han ajudat a entendre-la millor?

    a. Sí, molt

    b. Una mica

    c. No

CLASS A Students – Achievement of the activities

STUDENTS	TRUE - FALSE	4 STAGES LIFE CYCLE		MATCHING
		NAMING	ORDERING	
S1	8	4	4	6
S2	7	4	4	6
S3	7	4	0	4
S4	7	4	4	3
S5	5	4	4	6
S6	7	4	4	6
S7	8	4	4	6
S8	6	4	4	4
S9	6	4	4	6
S10	7	4	4	4
S11	7	4	0	4
S12	8	3	0	2
S13	8	4	4	4
S14	5	4	0	6
S15	6	4	4	6
S16	6	4	4	6
S17	7	2	4	3
S18	8	4	4	6
S19	8	4	4	4
S20	8	4	4	6
S21	8	4	0	4
S22	7	4	4	3
S23	5	4	4	4
S24	7	4	0	6
S25	Absent	4	4	6

S2	TDAH
S3	Reading & writing
S4	TDA – Dyslexia - Dyscalculia
S5	Reading & writing
S8	Reading & writing
S9	Learning difficulties – Do not want to work
S11	Reading & writing
S12	IPE
S14	Behavioural Disorder
S17	Learning disabilities
S23	Reading & writing

Table 1

CLASS A Students – Questionnaire survey "English learning"

STUDENTS	EXTRACURRICULAR ENGLISH	LANGUAGE SCHOOL	STORYTELLING IN LANGUAGE SCHOOL	FONDNESS FOR ENGLISH LEARNING	ENGLISH LEARNING DIFFICULTY	MOST DIFFICULT SKILL
S1	0			4	0	R
S2	1	KIDS & US	1	4	0	
S3	1	GLOBAL	0	4	1	W
S4	0			1	3	R - W - L - S
S5	0			3	2	S - L
S6	1	GLOBAL	0	4		S - L
S7	1	GLOBAL	0	4	0	
S8	1	GOOD	0	4	1	S - L
S9	0			3	1	S - L
S10	0			4	0	R
S11	0			2	1	S - L
S12	0			1	3	R - W - L - S
S13	1	KIDS & US	1	4	0	W
S14	1	GLOBAL	0	2	2	W
S15	0			3	2	R - W - L - S
S16	0			3	1	R - W - L - S
S17	0			4	1	W
S18	1		1	4	1	R - W - L - S
S19	1	GLOBAL	0	3	1	W - L
S20	1	CAMBRIDGE SCHOOL	1	4	1	S - W - R
S21	1	KIDS & US	1	3	1	W
S22	0			4	1	W
S23	1	EDUKIDS	0	3	1	R - W - L - S
S24	1	KIDS & US	1	3	1	W - R
S25	0			4	0	

Table 2

S2	TDAH
S3	Reading & writing
S4	TDA – Dyslexia - Dyscalculia
S5	Reading & writing
S8	Reading & writing
S9	Learning difficulties – Do not want to work
S11	Reading & writing
S12	IPE
S14	Behavioural Disorder
S17	Learning disabilities
S23	Reading & writing

No answer

Extrac. English	Storytelling
YES= 1	YES= 1
NO= 0	NO= 0

Fondness Eng. L.	Eng. L. Diffic.
A LOT= 4	NO= 0
QUITE A LOT= 3	A LITTLE= 1
NORMAL= 2	QUITE A LOT= 2
NOT MUCH= 1	A LOT= 3
NOTHING= 0	

L= Listening	W= Writing
R= Reading	S= Speaking

CLASS A Students – Questionnaire survey "The Butterfly" story

STUDENTS	LIKE-DISLIKE STORYTELLING	LEARNING DIFFICULTY	STORIES HELP SCIENCE UNDERSTANDING	IMAGES FOSTER UNDERSTANDING STORY	REPETITIONS, MOVEMENTS FOSTER UNDERSTANDING STORY
S1	1	0	1	2	2
S2	1	0	1	2	1
S3	1	0	1	2	2
S4	1	1	0	2	1
S5	1	0	1	2	1
S6	1	0	1	2	1
S7	1	0	0	1	2
S8	1	0	1	2	1
S9	1	0	1	1	1
S10	1	0	1	2	2
S11	1	0	1	1	2
S12	1	1	0	2	1
S13	1	0	1	2	2
S14	0	1	1	1	0
S15	1	0	1	2	2
S16	1	1	1	1	1
S17	1	0	1	2	1
S18	1	0	1	1	2
S19	1	0	1	2	2
S20	1	0	1	1	2
S21	1	0	0	2	2
S22	1	0	1	2	1
S23	1	0	0	1	1
S24	1	0	1	1	1
S25	1	0	0	1	2

Table 3

S2	TDAH
S3	Reading & writing
S4	TDA – Dyslexia - Dyscalculia
S5	Reading & writing
S8	Reading & writing
S9	Learning difficulties – Do not want to work
S11	Reading & writing
S12	IPE
S14	Behavioural Disorder
S17	Learning disabilities
S23	Reading & writing

LIKE STORYTELLING
YES = 1
NO = 0
LEARN. DIFFICULTY
EASY = 0
DIFFICULT = 1
HELP-FOSTER UND.
A LOT = 2
A LITTLE = 1
NO HELP = 0

CLASS B Students – Achievement of the activities

STUDENTS	TRUE - FALSE	4 STAGES LIFE CYCLE		MATCHING
		NAMING	ORDERING	
S1	8	2	0	4
S2	8	4	4	6
S3	8	4	4	4
S4	8	4	4	4
S5	7	2	0	6
S6	8	4	4	6
S7	8	4	0	4
S8	6	4	4	3
S9	8	4	4	4
S10	8	4	4	6
S11	8	4	4	6
S12	6	4	0	3
S13	6	2	4	6
S14	5	0	0	6
S15	8	4	0	4
S16	7	4	4	4
S17	Absent	4	4	6
S18	8	4	0	6
S19	8	4	4	6
S20	8	4	4	6
S21	7	4	4	3
S22	8	4	4	4
S23	7	2	4	3
S24	8	4	4	6

S1	Reading & writing
S2	Learning difficulties
S3	Slow pace
S4	Reading & writing
S5	Immaturity - Learning difficulties
S6	Learning difficulties
S7	Learning difficulties
S8	Reading & writing
S9	Reading & writing

Table 4

CLASS B Students – Questionnaire survey "English learning"

STUDENTS	EXTRACURRICULAR ENGLISH	LANGUAGE SCHOOL	STORYTELLING IN LANGUAGE SCHOOL	FONDNESS FOR ENGLISH LEARNING	ENGLISH LEARNING DIFFICULTY	MOST DIFFICULT SKILL
S1	1	EDUKIDS	1	3	0	S - W
S2	1	GLOBAL	1	4	0	
S3	1	KIDS & US	1	4	0	L
S4	0			2	1	L - W
S5	0			4	3	W
S6	1	GLOBAL	1	4	1	
S7	1	GLOBAL	1	4	1	L
S8	0			4	0	S - W
S9	1	CAMBRIDGE PARETS	0	4	1	W
S10	0			3	1	L - S
S11	0			3	2	L - S
S12	0			4	3	L - S
S13	0			4	1	S - W
S14	0			4	1	R - S
S15	Absent	Absent	Absent	Absent	Absent	Absent
S16	1	GLOBAL	1	4	0	S
S17	0			4	0	
S18	0			4	1	W - R
S19	1	GLOBAL	0	4	1	L
S20	1	GLOBAL	1	2	1	L
S21	0			3	2	S
S22	0			4	1	W - R
S23	0			4	0	L - S
S24	0			3	1	L

Table 5

S1	Reading & writing
S2	Learning difficulties
S3	Slow pace
S4	Reading & writing
S5	Immaturity - Learning difficulties
S6	Learning difficulties
S7	Learning difficulties
S8	Reading & writing
S9	Reading & writing
No answer	

Extrac. English	Storytelling
YES= 1	YES= 1
NO= 0	NO= 0
Fondness Eng. L.	**Eng. L. Diffic.**
A LOT= 4	NO= 0
QUITE A LOT= 3	A LITTLE= 1
NORMAL= 2	QUITE A LOT= 2
NOT MUCH= 1	A LOT= 3
NOTHING= 0	

L= Listening	W= Writing
R= Reading	S= Speaking

CLASS B Students – Questionnaire survey "The Butterfly" story

STUDENTS	LIKE-DISLIKE STORYTELLING	LEARNING DIFFICULTY	STORIES HELP SCIENCE UNDERSTANDING	IMAGES FOSTER UNDERSTANDING STORY	REPETITIONS, MOVEMENTS FOSTER UNDERSTANDING STORY
S1	1	0	0	1	0
S2	1	0	1	2	2
S3	1	0	1	2	2
S4	1	0	1	1	2
S5	1	0	1	2	2
S6	1	0	1	1	2
S7	1	0	1	2	2
S8	1	0	1	2	2
S9	1	0	1	1	2
S10	1	0	1	2	2
S11	1	1	1	2	2
S12	1	0	1	2	2
S13	1	1	1	2	2
S14	1	1	1	0	0
S15	Absent	Absent	Absent	Absent	Absent
S16	1	0	1	2	2
S17	1	0	1	1	2
S18	1	1	1	2	1
S19	1	0	1	2	2
S20	1	0	1	2	2
S21	1	0	1	2	2
S22	1	0	1	2	2
S23	1	0	1	2	2
S24	1	0	1	1	1

Table 6

S1	Reading & writing
S2	Learning difficulties
S3	Slow pace
S4	Reading & writing
S5	Immaturity - Learning difficulties
S6	Learning difficulties
S7	Learning difficulties
S8	Reading & writing
S9	Reading & writing

LIKE STORYTELLING
YES = 1
NO = 0
LEARN. DIFFICULTY
EASY = 0
DIFFICULT = 1
HELP-FOSTER UND.
A LOT = 2
A LITTLE = 1
NO HELP = 0

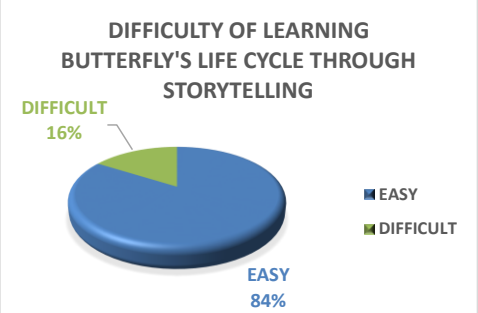
QUESTIONNAIRES ANALYSYS

CLASS A

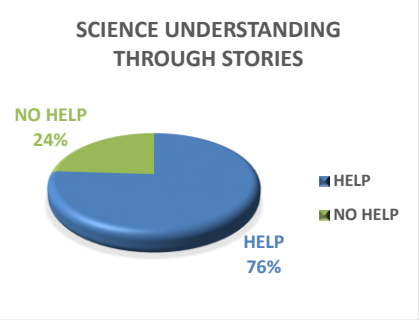
- **Learning Science through storytelling**

PUPILS WHO LIKED LEARNING THROUGH STORYTELLING	
LIKE	24
DISLIKE	1

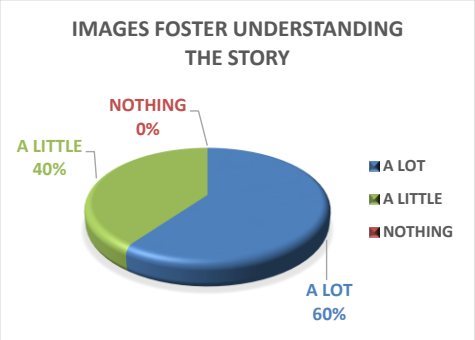
DIFFICULTY OF LEARNING BUTTERFLY'S LIFE CYCLE THROUGH STORYTELLING	
EASY	21
DIFFICULT	4



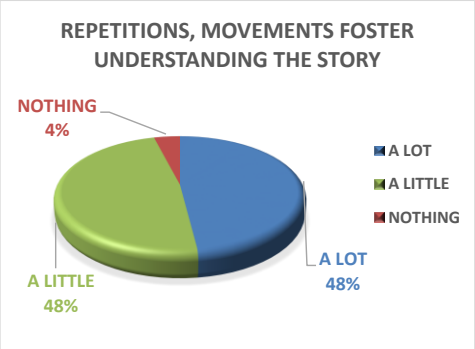
SCIENCE UNDERSTANDING THROUGH STORIES	
HELP	19
NO HELP	6



IMAGES FOSTER UNDERSTANDING THE STORY	
A LOT	15
A LITTLE	10
NOTHING	0

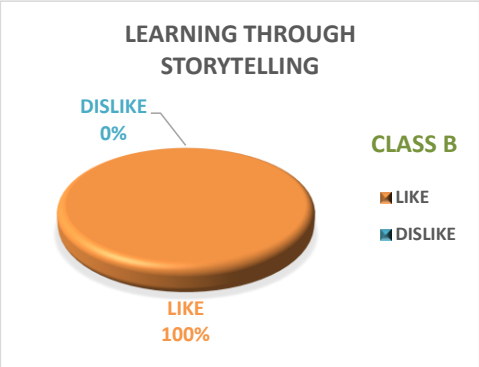


REPETITIONS, MOVEMENTS FOSTER UNDERSTANDING THE STORY	
A LOT	12
A LITTLE	12
NOTHING	1

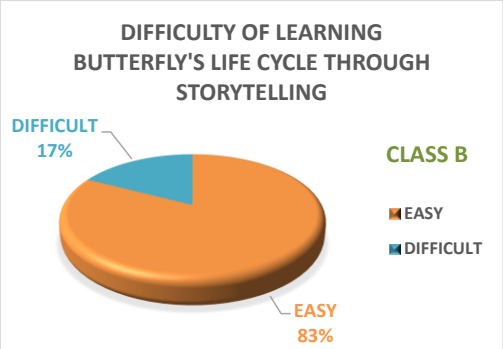


CLASS B

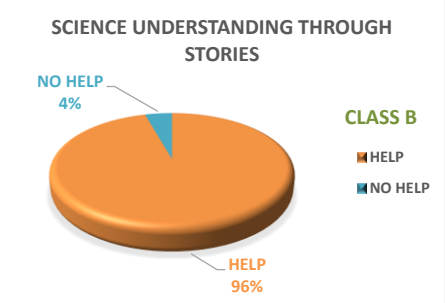
PUPILS WHO LIKED LEARNING THROUGH STORYTELLING	
LIKE	23
DISLIKE	0



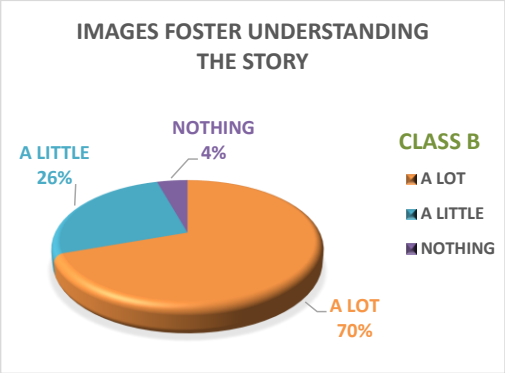
DIFFICULTY OF LEARNING BUTTERFLY'S LIFE CYCLE THROUGH STORYTELLING	
EASY	19
DIFFICULT	4



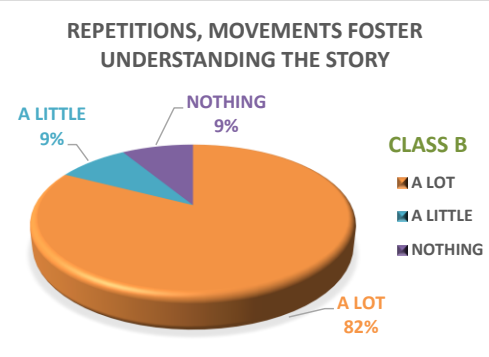
SCIENCE UNDERSTANDING THROUGH STORIES	
HELP	22
NO HELP	1



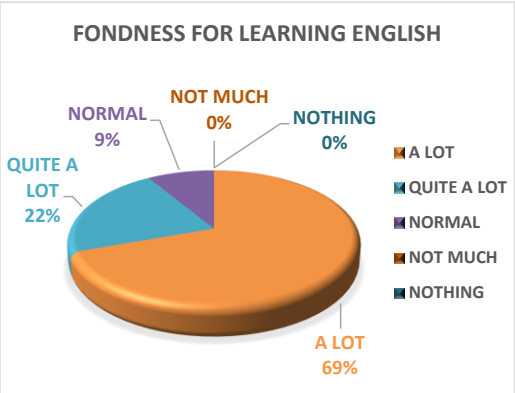
IMAGES FOSTER UNDERSTANDING THE STORY	
A LOT	16
A LITTLE	6
NOTHING	1



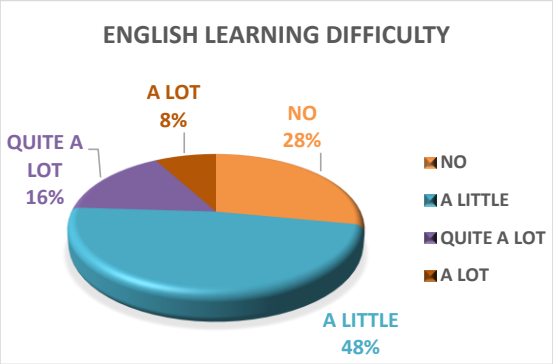
REPETITIONS, MOVEMENTS FOSTER UNDERSTANDING THE STORY	
A LOT	19
A LITTLE	2
NOTHING	2



FONDNESS FOR ENGLISH LEARNING	
A LOT	16
QUITE A LOT	5
NORMAL	2
NOT MUCH	0
NOTHING	0



ENGLISH LEARNING DIFFICULTY	
NO	7
A LITTLE	12
QUITE A LOT	4
A LOT	2



APPENDIX 2: Sessions' material

A- TS

TEACHING SEQUENCE PLANNING FORM

Unit title: From a caterpillar to a butterfly

Grade level: 2nd Grade (7 – 8 years old)

Subject: Science (CLIL) – Life Science

Time frame: 3 class periods (1 hour and 10 minutes each)

Group Size: Large groups

COE level: A1

Developed by: Carolina Gálvez Santos

INTRODUCTION TO THE UNIT

This unit is based on the Picture Book "The Butterfly", by Anna Milbourne and Cathy Shimmen. Storytelling is the departure point to illustrate the life cycle of a butterfly. However, before telling the story, pupils are asked to make predictions about its plot in order to introduce the unit topic and/or to review the essential content vocabulary needed to understand it.

It would be highly recommended to carry out this unit during springtime since practical, hands-on lesson activities could be implemented. As a result, students would be able to apply scientific methods and use scientific evidence to answer questions or to support their predictions and findings.

KEY COMPETENCES

- **Scientific competence**
- Communication in foreign languages
- Cultural awareness and expression
- Learning to learn

UNIT GOALS – Content outcomes addressed

Students will be able to:

1. Identify, classify and briefly describe through speaking the four stages of butterflies' life cycle
2. Recognise and use key scientific vocabulary, such as *egg, metamorphosis, chrysalis,* among others
3. Depict butterflies' life cycle creatively
4. Identify offspring resemble their progenitors

5. Make predictions based on storytelling and pictures
6. Work in groups collaboratively

INDICATORS of Goal Achievement or ASSESSMENT CRITERIA

IG 1.1 Identify, classify and briefly describe through speaking the four stages of butterflies life cycle
IG 1.2 Identify, classify and briefly describe through speaking some of the stages of butterflies life cycle
IG 1.3 Identify, classify and briefly describe through speaking few of the stages of butterflies life cycle
IG 1.4 Identify, classify and briefly describe through speaking none of the stages of butterflies life cycle

IG 2.1 Recognise and use key scientific vocabulary
IG 2.2 Recognise and sometimes use key scientific vocabulary
IG 2.3 Recognise key scientific vocabulary but hardly ever or never use it
IG 2.4 Do not recognise or use key scientific vocabulary

IG 3.1 Depict butterflies' life cycle creatively: Very neat work, assorted materials and colours
IG 3.2 Depict butterflies' life cycle creatively: Neat work, assorted materials and colours
IG 3.3 Depict butterflies' life cycle creatively: Somewhat messy work, monotonous style
IG 3.4 Depict butterflies' life cycle creatively: Sloppiness, monotonous style

IG 4.1 Identify offspring resemble their progenitors
IG 4.2 Do not identify offspring resemble their progenitors

IG 5.1 Make a great number of predictions based on storytelling and pictures
IG 5.2 Make quite predictions based on storytelling and pictures
IG 5.3 Make few predictions based on storytelling and pictures
IG 5.4 Make no predictions based on storytelling and pictures

IG 6.1 Work in groups collaboratively
IG 6.2 Sometimes work in groups collaboratively
IG 6.3 Occasionally work in groups collaboratively
IG 6.4 Do not work in groups collaboratively

CONTENTS

TOPIC-RELATED CONTENTS

Target content knowledge

- Life Science
- The processes of science: Butterflies' life cycle
- Changes in organisms over time: Change and conservation; introduction to the processes of reproduction and growth in animals; family likeness.

Content-related skills

- Making predictions about butterflies' life cycle, growth and family likeness
- Observing metamorphosis process thoroughly
- Identifying the four stages of butterflies' life cycle
- Communicating effectively using science language and reasoning

Content-related attitudes

- Active listening to the story
- Accuracy in drawing and writing descriptions about butterflies' life cycle
- Working collaboratively

CONTENT-OBLIGATORY LANGUAGE

Classroom language

- Greetings: *Good morning / How are you today?*
- Introduction: *Tell a story / Pay attention / Open BIG eyes, prepare your ears, zip your mouth (miming) / Listen carefully / Are you ready? / Go ahead / Making predictions / Thumbs up? Thumbs down? Or so-so? (gestures) / If you do not understand… / All right? / What do you think?*
- Doing actions: *Raise your hand / Repeat with me, please / Stand up / Sit down / Line up / Time to leave / Try again / Work in groups / Listen to your classmate Talk to your partner*
- Giving instructions: *Everybody, please / All together now / Pay attention / Be careful / Do not worry / Keep calm / Be quiet / Say "help me, please" / First of all / Afterwards / Wait a moment, please / Let's… / Take a… (stationery: cardboard, felt-tip pens, etc.)*

- Metalanguage: *Is it True or False? / Match the pictures on the left with the pictures on the right / Find the differences and the similarities / What is the word in Catalan for "X"? / What is the meaning of "X"? / Translate / Say it in… / Try to explain it in English*

- Congratulating: *Great / Brilliant / Excellent / Very good / Nice try / Congratulations / You made a great effort / Great job / That is interesting*

- Asking for permission – requests: *Can I go to the toilet, please? / Can I drink some water, please? / Can you repeat please? I don't understand*

- Others: *Raise - lower the blinds / Tide up / Turn the lights on – off / Open – close the door – window / Can you all see the board?*

- Recapping: *Remember / Let's summarize / We learnt / I – we know*

- Closing down: *Goodbye / See you next Monday – Friday*

Topic specific vocabulary

Leaf - leaves, caterpillar, butterfly, egg, chrysalis, metamorphosis, hungry, thirsty, life cycle, eat, drink, munch, chew, straw, tube, mouth, nectar, pollen, reproduction, leg, mouth, body, stripe, dot, wings, antenna, lay (eggs), stage, phase, grow, process, family.

General-academic jargon

Identify, describe, classify, observe, communicate, (make a) prediction, write, depict, draw, paint, complete a sentence, cut, stick.

Academic genre

Picture book, story, poster.

BACKGROUND KNOWLEDGE

Pupils are supposed to know living things can be sorted into groups in many ways and to develop a simple classification of animals by similar characteristics. They are also supposed to recognize individuals vary within every species, including humans.

Students have already classified some animals according to different criteria, that is to say their habitat, their birth or hatching and having or not having backbones and internal skeletons. Therefore, they should know the difference between *terrestrial – aquatic animals, oviparous – viviparous and vertebrate – invertebrate.*

UNIT PROGRESSION	
Session-by-session	
Main activities - Interaction	**Session 1** ○ Storytelling *The Butterfly,* by Anna Milbourne and Cathy Shimmen + Direct Reading Thinking Activity (DRTA): Making predictions before, while and after telling the story -Teacher (T) – Students (Ss) interaction. ○ Checking for understanding: Asking appropriate questions about the story, providing scaffolding by visual aids (images shown on the whiteboard) and the teacher's guide. T – Ss interaction. ○ *Dear pupils dear pupils, what do you see?* (True – False statements worksheet). Reviewing the concept of "variation" within species and introduction to butterflies' life cycle and family likeness: Images from the book *The Butterfly,* by Anna Milbourne and Cathy Shimmen + key content vocabulary. T – Ss interaction and group working (Ss – Ss). **Session 2** ○ Previous session review. ○ Storytelling. ○ Becoming "Word Hunters": Group work activity to identify in a Tagxedo creation the key content vocabulary in the story. ○ Story sequence activity: Storytelling review by arranging different flashcards in order (what Ss remember about the story). Appropriate questions, prompts and support will be provided by the T (flashcards and Power Point). T – Ss interaction. ○ Sorting out the 4 stages of butterflies' life cycle. Individual work. ○ Group working. Matching pictures activity: Identifying family likeness. Ss – Ss and Ss – T interaction. ○ Starting depicting the life cycle of butterflies in groups of 4-5. Ss interaction. **Session 3** ○ Group working: Depicting butterflies' life cycle. Ss interaction. ○ Presenting students' posters using specialised content vocabulary. Ss – Ss and Ss – T interaction.

Under the microscope	
Session 1	
Summary	The T tells the story *The Butterfly*, by Anna Milbourne and Cathy Shimmen. The book is projected on a whiteboard. However, prior to the storytelling Ss are asked to make predictions about the Picture Book. Likewise, by using DRTA, pupils will predict while and after the storytelling. In doing so, the T compiles information about the vocabulary the pupils know and, if needed, introduces the basic terminology to understand the story plot (i.e. *leaves, caterpillar, butterfly, egg, hungry, eat*, among others). Afterwards, the T checks for understanding by asking questions to the children, while providing scaffolding with pictures. He/she assists the learners to build up different utterances by modelling and shaping their answers. Finally, the pupils review the concept of "variation" within species –they have already studied it in a previous lesson- and start getting familiar with the concepts of "life cycle" and "family likeness". Oral questions about the pictures in the story are the starting point of a true-false exercise to be done in groups.
SWBAT's of the session	1. Make predictions based on storytelling and pictures. 2. Identify the main content of the story.
Previous language - knowledge needed	▪ *I think that… / The story is about… / I can see…* ▪ *All the time, always* ▪ *Big, small, little, thin, fat, long, short, beautiful, similar, different, transparent, hairy, curly, hungry, thirsty* ▪ *Colours* ▪ *First, second, third, fourth* ▪ *Garden, flower, egg, forest, countryside, pollen, nectar, mouth, tube, plant, wing, circle, type* ▪ *Eat – eating, drink – drinking, stop, sleep, move*
New knowledge - language to be introduced	▪ *Straw, stripe, dot, skin, shell, phase, stage, process, cycle, pupa, chrysalis, metamorphosis, a change* ▪ *Hard – strong, soft – flexible, shiny – bright – luminous – brilliant, fuzzy – curly* ▪ *Grow, crawl, become, change, start, end, bite, munch, chew, sip, pop out – hatch, lay*

<table>
<tr><td></td><td>▪ To lay eggs, to lose one's skin, to hang upside down, one more time – again, to fall asleep, sipping sweet nectar – drinking a small quantity, die</td><td></td></tr>
<tr><td>Specific output</td><td colspan="2">-------</td></tr>
<tr><td>Assessment</td><td colspan="2">✓ Teacher's observation throughout the session + Further recording analysis
✓ Worksheets correction</td></tr>
<tr><td>Materials</td><td colspan="2">Teacher: - Picture Book The Butterfly, by Anna Milbourne and Cathy Shimmen
- Power Point of the Picture Book to be shown on a whiteboard
- Slide "Classroom rules" for the storytelling time
- Power Point "Predictions"
- Worksheet "True – False statements" + Number cards
- Flashcards "Can you repeat, please?" / "I don't understand" / "Slowly, please" / "I think that" / "In my opinion"
- Camera
- Realia: A little cushion or a soft ball, a small wood case, a straw

Students:- Worksheet "True – False statements"</td></tr>
<tr><td rowspan="2">Introduction</td><td>Session procedure</td><td>Time frame</td></tr>
<tr><td>➢ Greetings, rituals, chores. The T explains that the Science class is going to be slightly different, since it is going to be in English and a story is going to be told. He/she points out that they should ask for repetition or further explanations if they have difficulties to follow the lesson (and sticks the flashcards with the expressions they must use on the blackboard).

➢ Briefing. Showing the Picture Book in front of the class. The T explains that the book has got very beautiful pictures and that it is very small for them to see completely. Therefore, it is going to be shown on the whiteboard after making some predictions about the story.

➢ Storytelling rules. The T shows a slide with three basic rules throughout the storytelling: To observe attentively + to listen carefully + to be quiet. There are no words written in.</td><td>5'

5'

5'</td></tr>
</table>

	Only three emoticons the T points to at the same time he/she says out loud the rules and mimics with his/her other hand. The Ss are asked both to repeat them and to move together with the instructor. The T focuses on the fact that it is very important to follow the rules in order to understand the story.	
Main tasks	➢ **Making predictions.** The T scaffolds both critical thinking and speaking by projecting a Power Point containing images from the book, key vocabulary and direct questions about the story (the characters appearing on it, i.e. caterpillars and butterflies, their behaviour, their diet, their habitat and the facts occurring throughout the story). He/she writes pupils' ideas on the blackboard. Furthermore, repetitions of the same structures help the learners to gain confidence along the activity. Likewise, the T sticks some flashcards on the blackboard and/or the wall with the structures the kids have to use when answering the questions –"I think that…", "In my opinion…": *- What is the story about? – The story is about a…* *- What is the butterfly doing? – It is… (eating)* *- Do butterflies like flowers?* *- Is the butterfly hungry / thirsty? – Yes, it is / No it isn't* *- Where do butterflies live? – They live in…* *- Where is the butterfly now? – It is on… (a leaf)* *- Why is the butterfly on a leaf? Butterflies do not eat leaves!* *- What can you see? – I can see…* *- What is the caterpillar doing? – It is… (eating)* *- Do caterpillars like leaves?* *- Why is the story about a caterpillar and a butterfly and not about a butterfly and a cat? Or a butterfly and a chicken? Or a butterfly and a sheep?*	20'
Main tasks	➢ **Storytelling.** Once students' predictions being made, the T tells the story by projecting the Picture Book on the whiteboard. First of all, the pupils are asked to remember out loud the three main rules during the storytelling. Then, the T shows the slide about rules and they all mimic him/her while saying "Big eyes" (hands opening one's eyes), "Open ears" (hands on one's ears), "Mouth closed" (imitating a zip on one's lips). Afterwards, throughout the storytelling the T provides the children with a reading model –"telling model" in this case-, by using pauses, specific expressions and gestures.	15'

	Besides, the educator prompts the learners with specific questions to keep them engaged in the narration and to build up meaning: *What is the caterpillar going to do? What do you think?* Likewise, they are encouraged to think and state if their predictions were right or wrong. As a general rule, the T fosters different learning styles. Indeed, auditory, visual and kinaesthetic learning styles are promoted all along the unit: Auditory (oral storytelling and predictions); visual (picture book projection on a screen + key vocabulary + other images shown on a screen as well as by the means of flashcards); in addition, kinaesthetic style is promoted by hands-on activities, such as the final output in the unit –depicting butterflies life cycle-, and the activity where the kids are supposed to order a sequence of flashcards to represent the plot of the story. In doing so, they both touch and move the flashcards around. Prior to the session, the T is supposed to have adapted the vocabulary liable to cause difficulties to the Ss, in some cases because of the concept nature; in other cases, because 2nd graders have not studied the words yet (refer to Annex below to learn about the language adaptations being made).	
	➢ ***Dear pupils, dear pupils, what do you see?*** *(True- False worksheet;* see Annex below). The T checks for understanding of the key contents and concepts in the story by asking questions that involve inferential as well as literal comprehension. This exercise is introduced as a sort of group game (though every child has got his/her own worksheet to fill in). There are as many cards as there are statements in the worksheet. Each card has got a number (*1, 2, 3*, and so on), which corresponds to *statement 1, statement 2, statement 3*, etc. One pupil in a small group – there are 6 small groups in total- stands up and places in front of the rest of the groups; he/she takes a card and says out loud the number on it while showing the card to his/her classmates. Then, another kid of the same small group reads the statement aloud and all the groups decide about the reliability of the assertions. Visual aids are provided by projecting the specific images of the picture book which help the students to answer the particular questions formulated by the instructor. The groups have 2 minutes to decide whether the statement is true (T) or false (F) and circle “T” or “F” to show their choice. Another member of the small group communicates the	15’

	decision taken and the T asks the rest of the groups if they agree. The T then fosters children's speaking skill by helping them to justify their decision (shaping, reshaping, buddies' help, and illustrations from the picture book).	
	➢ ***Recapping***. The T recaps the main Science content points that appeared throughout session and says goodbye to the learners.	5'
Session 2		
Summary	Firstly, the T tells the story again. On this occasion, the learners are not called to respond verbally. On the contrary, they are expressly asked to just listen to the story and to observe attentively the beautiful illustrations on the picture book. Secondly, the students remember the key content vocabulary of the story by looking for the words in a Tagxedo creation. Both the retelling and this word searching exercise are going to make it easier for the pupils to implement the next activity. It consists of sequencing the story –and therefore reviewing it one more time- by arranging some flashcards in order. Immediately after, they focus on sorting out the life cycle of the butterfly individually. Afterwards, Ss work in groups to identify the family likeness between caterpillars and butterflies by comparing different pictures. Once they finish, they correct the activity all together. Finally, the children start depicting butterflies' life cycle in order to create a beautiful mural.	
SWBAT's of the session	1. Sequence the story by using visual aids 2. Sort out the 4 stages of butterflies' life cycle 3. Recognise and start using key vocabulary 4. Identify offspring resemble their progenitors	
Previous language - knowledge needed	Refer to "Session 1" – "Previous language-knowledge needed" and "New knowledge-language to be introduced".	
New knowledge - language to be introduced	▪ *The story starts / The story continues / The story finishes - ends* ▪ *At the beginning / After that / Then / Finally*	
Specific output	-------	

<table>
<tr><td>Assessment</td><td colspan="2">✓ Teacher's observation throughout the session + Further recording analysis
✓ Worksheets correction</td></tr>
<tr><td>Materials</td><td colspan="2">Teacher: - Picture Book The Butterfly, by Anna Milbourne and Cathy Shimmen
- Power Point of the Picture Book to be shown on a whiteboard + Tagxedo creation
- Slide "Classroom rules" for the storytelling time
- Flashcards "Can you repeat, please?" / "I don't understand" / "Slowly, please" / "I think that" / "In my opinion"
- Flashcards to sequence the story
- Stationery, scissors, glue
- Cardboards of different colours
- Plasticine
- Tissue paper
- Different forms of pasta (conchiglione, farfalle, mafalda, fusilli), rice
- Twigs
- Camera
- Realia: A little cushion or a soft ball, a small wood case, a straw

Students:- Worksheet "Family likeness"</td></tr>
<tr><td rowspan="2">Introduction</td><td>Session procedure</td><td>Time frame</td></tr>
<tr><td>➢ Greetings, rituals, chores.

➢ Briefing. The T starts showing the Picture Book in front of the class and asks the Ss if they remember what they did on the previous session. He/she shapes and reshapes the pupils' contributions and finally explains they are going to listen to the story again but, this time, without asking them any question.

➢ Storytelling rules. The learners are supposed to respect the three basic rules throughout the storytelling. The T asks them if they remember the rules and shows the emoticons slide on the screen. They tell the rules out loud and represent them by making gestures.</td><td>3'

5'

2'</td></tr>
<tr><td>Main tasks</td><td>➢ Storytelling. The T retells the story from beginning to end by using different intonation and facial expressions, hands</td><td>10'</td></tr>
</table>

	and body movements. In addition, the T raises and lowers his/her voice volume, pauses to create expectation and keeps eye contact with the Ss, sweeping the classroom with the gaze to include all the learners. When he/she is finished, the kids are asked if they have any question about the story. If needed, the T rewords the terminology, expressions or parts that kids do not understand.	
	➢ **Becoming "Word Hunters".** The teacher's goal is the children get used to the key content vocabulary in the story, since they are supposed to use it later on. In small groups, the Ss have to identify some specific jargon in a word cloud made by using *Tagxedo* application and write the lexicon they identify on their worksheet. By taking turns, one member of each group says one of the words the group has spotted until there are no terms left.	10'
	➢ **Story sequence.** The T asks some students to go outside the classroom, where he/she gives each one a different flashcard, which represents a different part of the story. The pupils go into the classroom, line up in front of their classmates and show their flashcards at once. Since they are not in chronological order, the rest of the Ss have to arrange them, scaffolded by the expressions and the vocabulary the teacher provides them with. If needed, the Power point will be shown again by the T.	10'
	➢ **From a caterpillar to a butterfly.** This activity is supplementary to the previous one. Still with the pupils lined up in front of the classroom, the T focus their attention on the four stages of the butterflies' life cycle. The learners are expected both to identify and name them. Afterwards, the T hands out a worksheet where, individually, the Ss sort out and label the 4 stages of the life cycle of butterflies. The instructor supervises their work and helps them as required.	10'
	➢ **Who is who?** The T presents this group work activity by showing a collage of different caterpillars and butterflies on the whiteboard. The Ss should be able to identify similarities between a caterpillar and a butterfly and deduce they are the same living organism. The T guides the pupils by focusing their attention on how caterpillars and butterflies look like (having stripes, dots, hair, colours). Afterwards, the learners compare them and match each caterpillar with its corresponding butterfly.	10'
	➢ **Let's become artists!** The T explains to the children that they are going to become artists. They have to depict a beautiful artistic creation describing the butterflies' life cycle.	10'

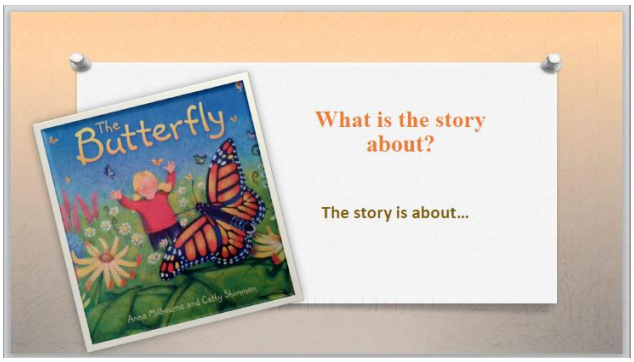
	Then, the teacher shows different materials to be used: Plasticine, a cardboard, different kinds of pasta, tissue paper, small branches, etc. Moreover, he/she projects on the screen a variety of models, which have already been made. The groups then decide the materials they want to use. Before they start creating, the Ss are asked to remember the four stages of caterpillars' metamorphosis and, simultaneously, the educator shows each and every stage on the whiteboard. The slide will be shown throughout the session.	

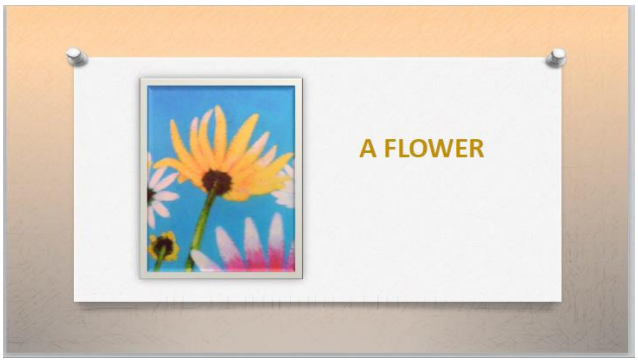
Session 3	
Summary	On the last session of the teaching sequence, the Ss continue depicting their "piece of art" and finally, the groups present their poster to the rest of the pupils.
SWBAT's of the session	1. Briefly describe the four stages of butterflies' life cycle (oral communication) 2. Depict butterflies' life cycle creatively 3. Label and describe every stage of the process concisely (written in the poster)
Previous language - knowledge needed	Refer to "Session 1" and "Session 2" – "Previous language-knowledge needed" and "New knowledge-language to be introduced".
New knowledge - language to be introduced	▪ *We are going to present our artwork / This is our artwork*
Specific output	→ Butterflies' life cycle artwork
Assessment	✓ Teacher's observation throughout the session + Further recording analysis ✓ Assessment grid (see Annex below)
Materials	**Teacher:** See "Session 2 – Materials"

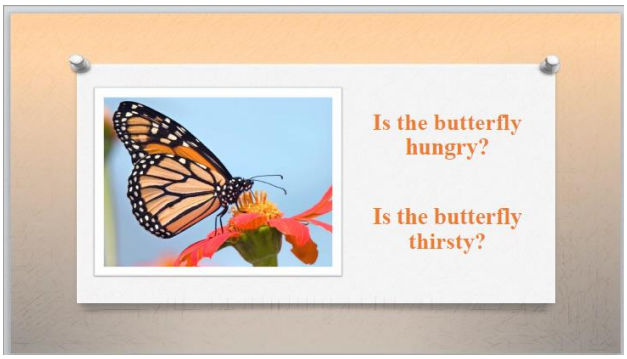
	Session procedure	Time frame
Introduction	➢ **Greetings, rituals, chores.** ➢ **Briefing.** The T explains they are going to continue working on their artwork and remind that all the groups will describe the butterfly's life cycle by doing an oral presentation. In addition, the T emphasises that, as they work in groups collaboratively, they are expected to share ideas, to make decisions and work together as well as to be responsible for their work and learning. He/she highlights they should be respectful and have an appropriate behaviour. The T also states they are expected to present their poster by using the specialised vocabulary learnt throughout the unit. Furthermore, the T writes down the assessment criteria of their task on the blackboard, i.e.: ➢ Depict, label and briefly explain the 4 stages of butterfly's life cycle ➢ Creativity and neat work ➢ Collaborative work	3' 10'
Main tasks	➢ **Let's become artists!** The Ss continue working in small groups. ➢ **Butterfly's life cycle presentation.** ➢ **Closure.**	35' 20' 2'

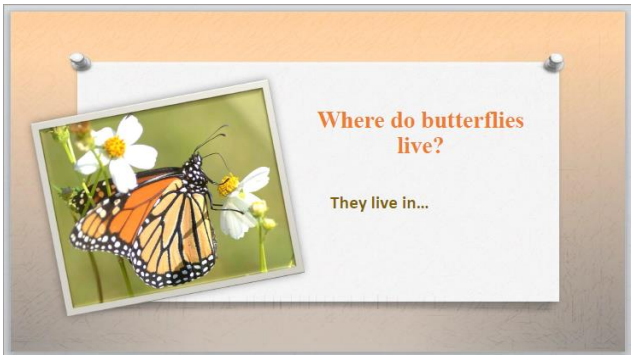
FIRST SESSION

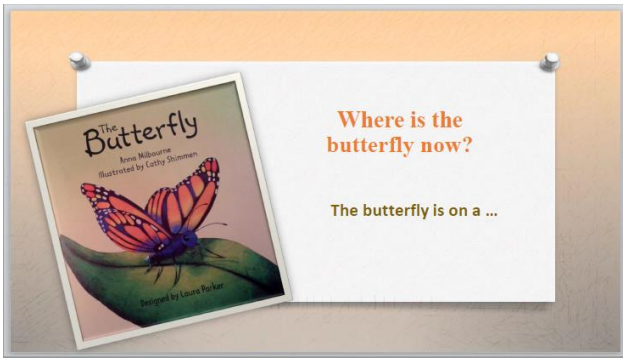
B- MAKING PREDICTIONS






Is the butterfly hungry?
Is the butterfly thirsty?


Where do butterflies live?
They live in...

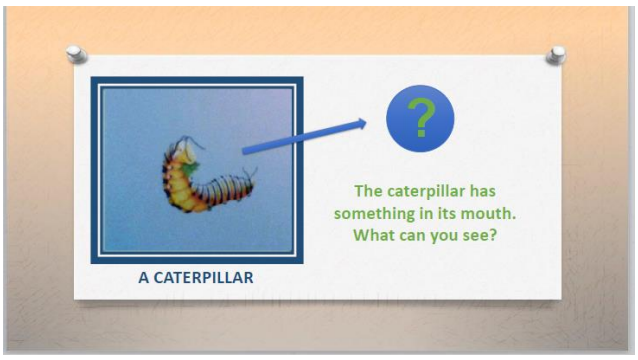

The Butterfly
Where is the butterfly now?
The butterfly is on a ...


A butterfly on a leaf?
A LEAF

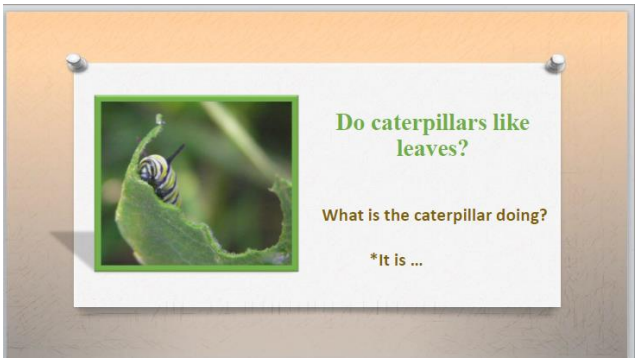

WHY?
Butterflies do not eat leaves!


What is the story about?
The story is about...

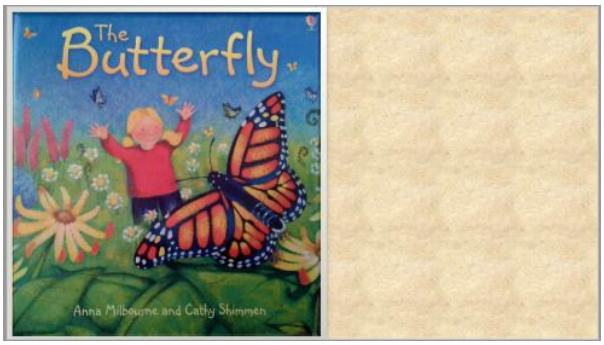

A CATERPILLAR

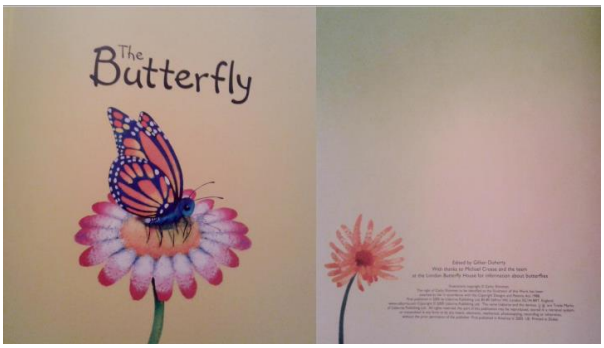

The caterpillar has something in its mouth. What can you see?
A CATERPILLAR


I can see...
A LEAF


Do caterpillars like leaves?
What is the caterpillar doing?
*It is ...

C- THE BUTTERFLY - Storytelling





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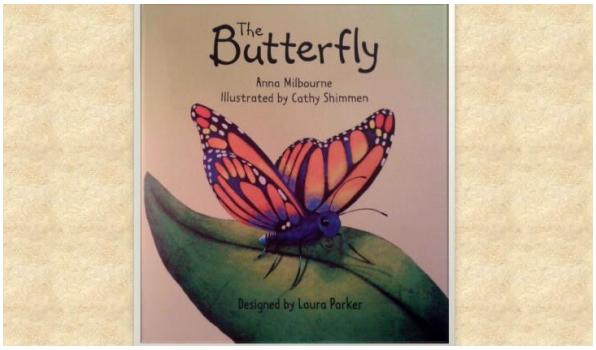
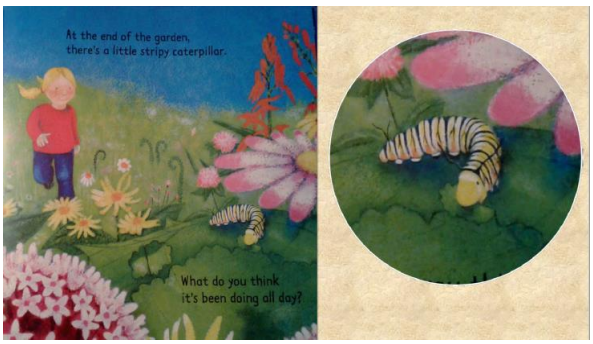
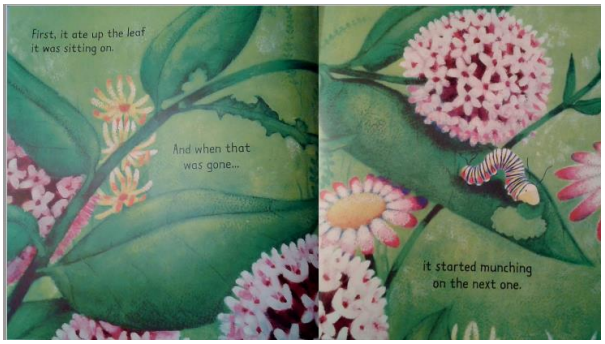
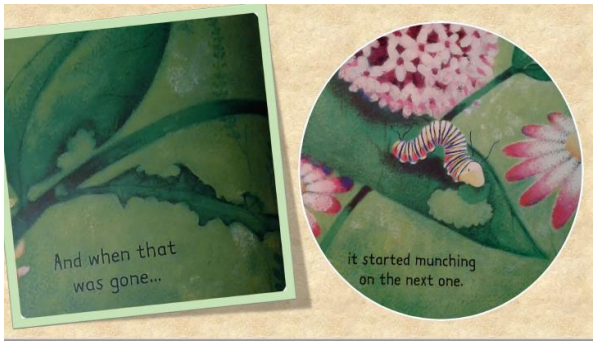
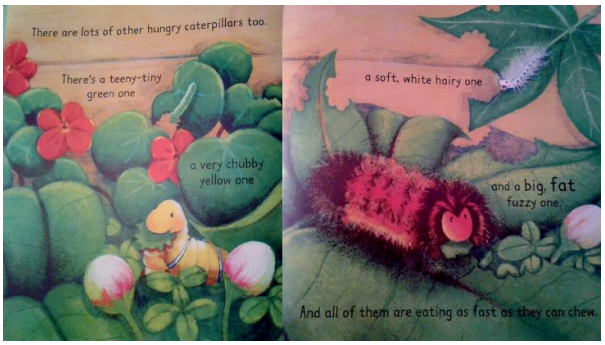


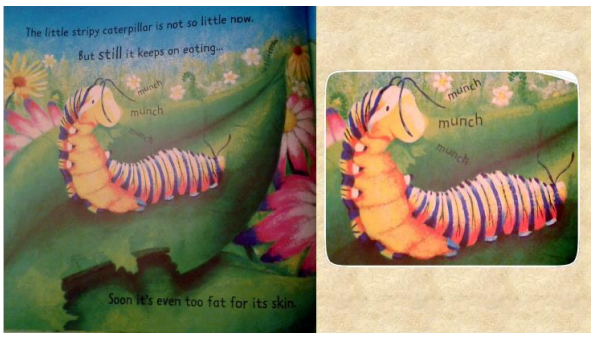


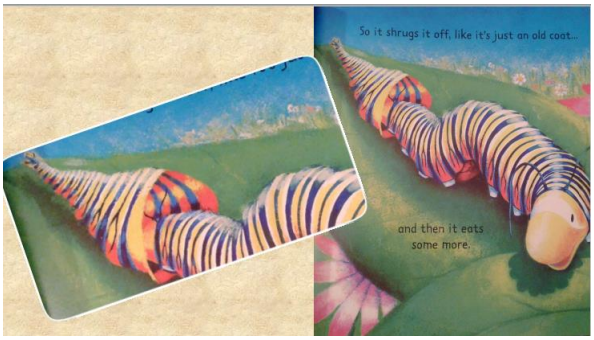


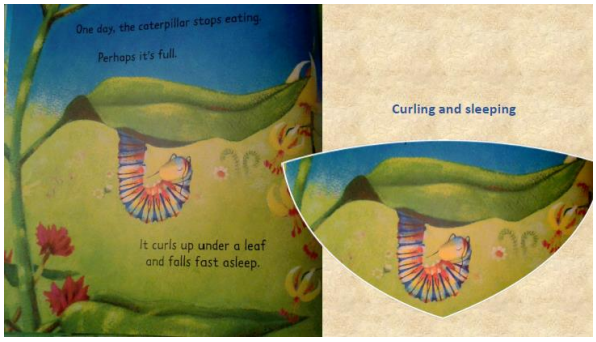


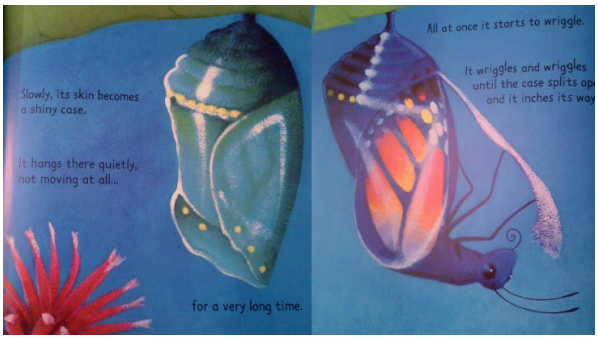


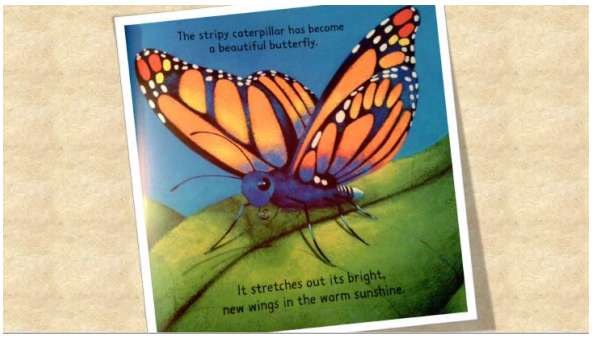

Soft white hairy caterpillar
Big fat fuzzy caterpillar

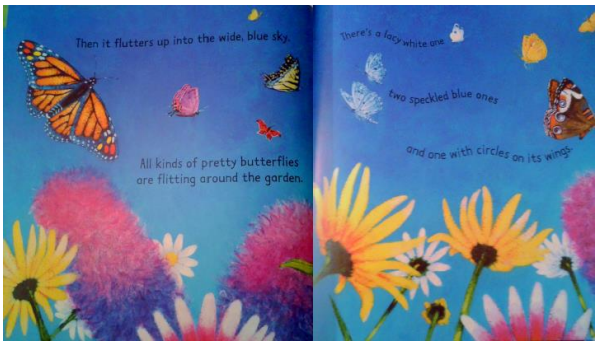

The little stripy caterpillar is not so little now.
But still it keeps on eating...
munch
munch
munch
munch
munch
Soon it's even too fat for its skin.


So it shrugs it off, like it's just an old coat...
and then it eats some more.


One day, the caterpillar stops eating.
Perhaps it's full.
It curls up under a leaf and falls fast asleep.
Curling and sleeping

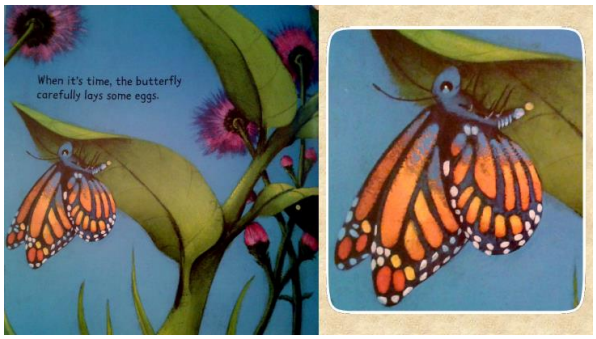

Slowly, its skin becomes a shiny case.
It hangs there quietly, not moving at all...
for a very long time.
All at once it starts to wriggle.
It wriggles and wriggles until the case splits op
and it inches its way

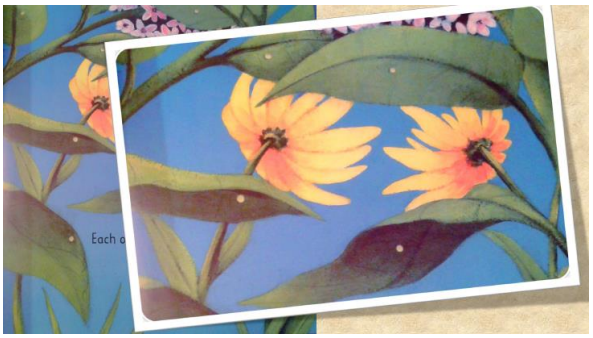

The stripy caterpillar has become a beautiful butterfly.
It stretches out its bright, new wings in the warm sunshine.

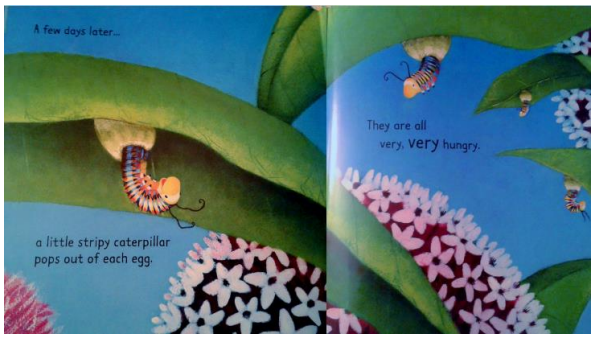

Then it flutters up into the wide, blue sky.
All kinds of pretty butterflies are flitting around the garden.
There's a fuzzy white one
two speckled blue ones
and one with circles on its wings

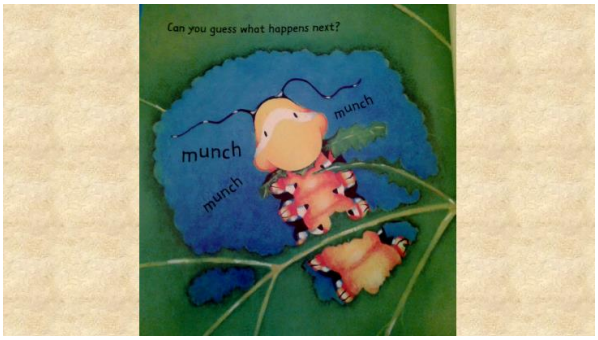

The butterfly flutters from flower to flower...
sipping sweet nectar from every one.
Sipping sweet nectar


At night, it folds its dainty wings...
and settles down to sleep.

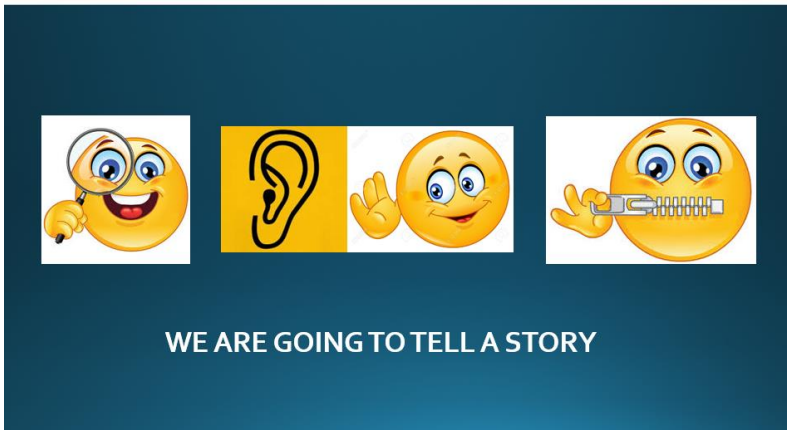

When it's time, the butterfly carefully lays some eggs.

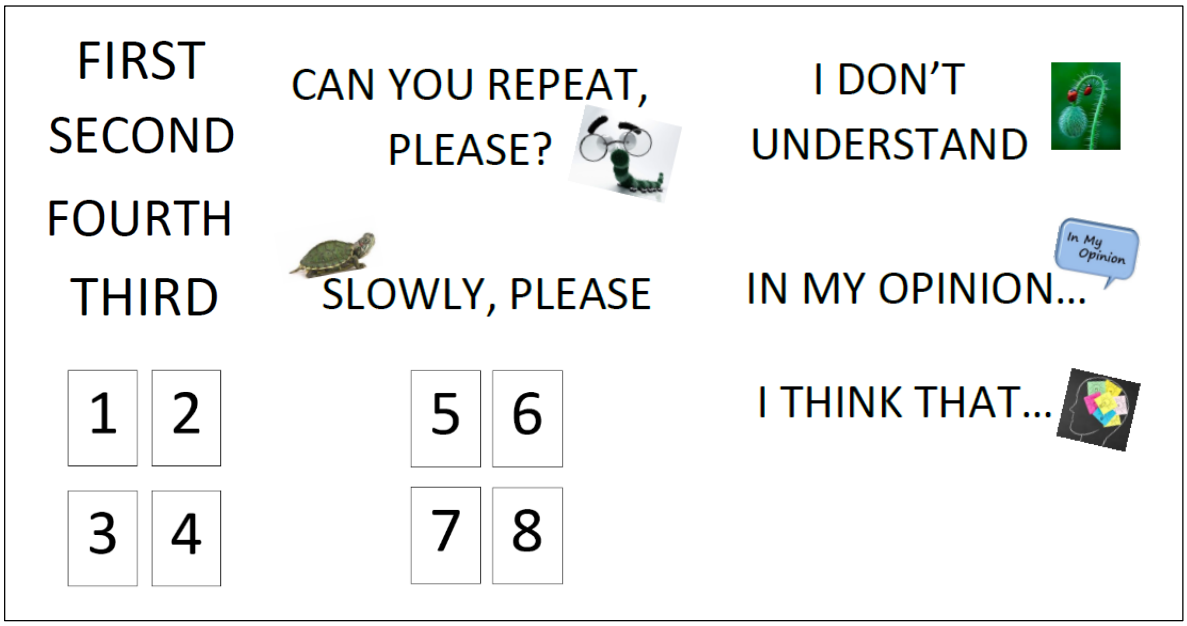






D- FLASHCARDS –Classroom rules for storytelling & Students-teacher talk





E- TEACHER'S SPEECH – Adaptation of the story

At the end of the garden, there's a little stripy caterpillar (with stripes, can you see the stripes, like zebras).

What's the caterpillar been doing all the day? Eating, munching.

FIRST, it ate up the leaf it was sitting on. THEN, when it finished eating this leaf, it started eating, munching another leaf.

There are lots of other HUNGRY caterpillars in the garden: There's a TEENY TINY GREEN ONE (a very small caterpillar), a VERY CHUBBY, FAT YELLOW ONE, a SOFT WHITE HAIRY ONE, A BIG FAT FUZZY ONE (with lots of hair, frizzy curly hair). And all of them are eating very fast. They are eating a lot!

Look! The little stripy caterpillar is not so little now. The little stripy caterpillar is bigger now. It continues eating, munching.

Then… what happens? The skin of the caterpillar changes. It has a new skin (What's the Catalan word for "skin"? My body is covered by skin. Another animal that loses its skin, that changes its skin? The snake, for example. OK, so, the caterpillar changes its skin and… do you know what the caterpillar starts doing again? Eating!

BUT, one day, the caterpillar STOPS EATING. Perhaps it is full. It places under a leaf. It curls up and falls asleep.

Slowly, the skin of the caterpillar changes. The skin becomes very shiny, very brilliant and it isn't soft anymore. It is hard. This is a **chrysalis** (like a shell, a case). The caterpillar doesn't move for a very long time.

All at once, the chrysalis starts to wriggle, starts moving. Show me how you wriggle, how you move. Let me see! Good! So, the chrysalis starts moving and… SURPRISE! A BUTTERFLY APPEARS! The caterpillar has become a butterfly, the caterpillar has changed into a beautiful butterfly. The butterfly has got WINGS. WINGS with stripes, like the caterpillar. It's a stripy butterfly.

Then, the butterfly starts flying in the sky. There are lots of butterflies. Are they identical? Or are they different? Are they the same colour? There's a white one. There's another butterfly with dots. This one with circles on its wings.

The butterfly flies from flower to flower. What is it doing? It's eating! It's **SIPPING** sweat nectar. What is "sipping"? Drinking little by little. Butterflies have got a like a tube on its mouth. It's like a straw to drink.

AT NIGHT, butterflies sleep.

When it's time, the butterfly CAREFULLY LAYS SOME EGGS ON DIFFERENT LEAVES.

A FEW DAYS LATER, a little stripy caterpillar hatches from each egg, appears, pops out. They are all VERY HUNGRY!!!!!

CAN YOU GUESS WHAT HAPPENS NEXT?????

MUNCH, MUNCH, MUNCH

A stripy caterpillar -------- with stripes, with lines + Image / picture / photo - Like zebras.

Munching: masticating (it is similar to Catalan) chewing, eating + miming

Teeny tiny: very small, very little, microscopic, miniature + gestures

Chubby: Fat / big and round + gestures

Hairy: With hair + gestures

Fuzzy: With lots of hair, frizzy, curly hair.

Skin: Gestures touching our arm. The external part of the body. Showing the picture and comparing with the snake:

At the end of the garden, there is a little stripy caterpillar

These are different types of animals' skins. A tiger skin, a zebra skin, and this one, do you know what type of skin is? A snake's skin. Snakes change their skin. Caterpillars grow a lot because they eat a lot. They need to change their skin. They lose their skin and get a new skin.

To curl up: To curve. Makes a spiral, a circle + gestures and pictures

To fall asleep: and finally, the caterpillar sleeps + gesture

F- TRUE OR FALSE. WHAT DO YOU THINK?

1. **Butterflies eat leaves and caterpillars drink nectar** **T** **F**

_____

2. **Butterflies lay their eggs on leaves** **T** **F**

_____

3. **Caterpillars change during their life** **T** **F**

_____

4. **There are different types of butterflies** **T** **F**

_____

5. **All the caterpillars are identical** **T** **F**

_____

6. **The life cycle of a butterfly is: 1) Chrysalis – 2) Butterfly – 3) Caterpillar – 4) Egg** **T** **F**

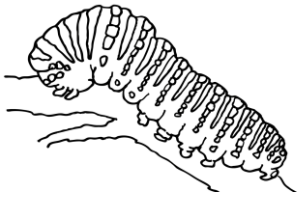
_____

7. **Caterpillars eat a lot and they lose their skin** **T** **F**

_____

Butterflies have wings and fly. Caterpillars crawl **T** **F**

_____



SECOND SESSION

G- BECOMING WORD HUNTERS!

Carolina Gálvez Santos
TFG (UAB 2015-2016)

From a caterpillar to a butterfly
Tutor: Dr. Dooly

- What words can you identify? Let's become "Word hunters"!

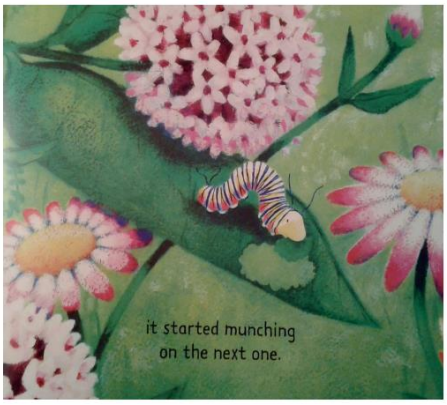
_____ _____ _____

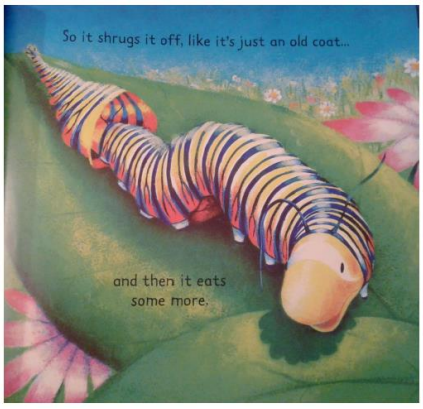
_____ _____ _____

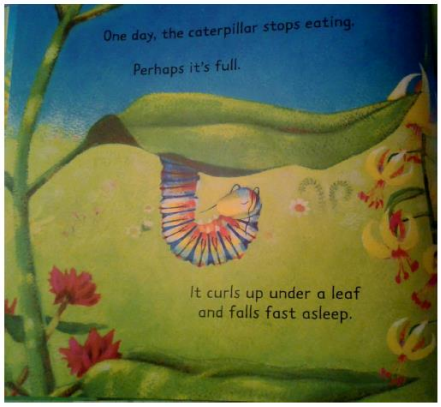
_____ _____ _____

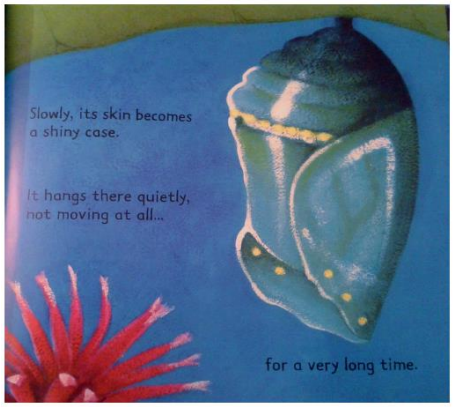
_____ _____ _____

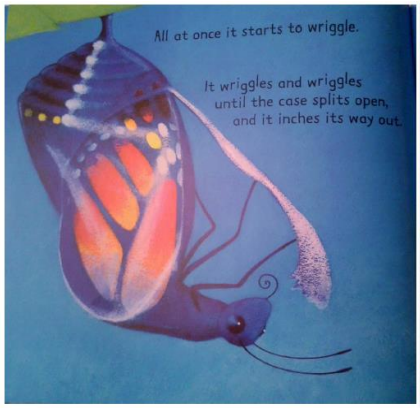
H- STORY SEQUENCE ACTIVITY

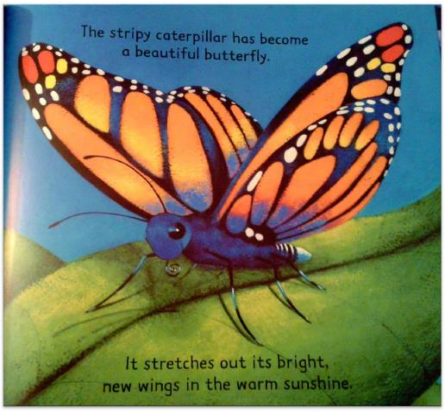


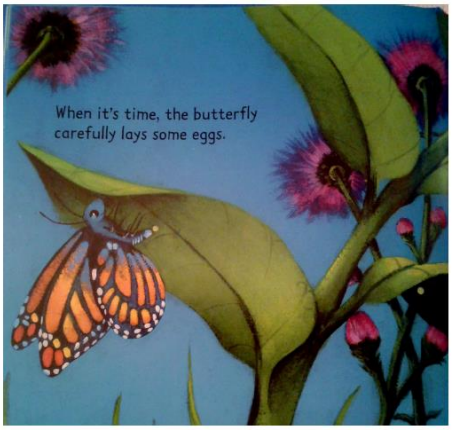


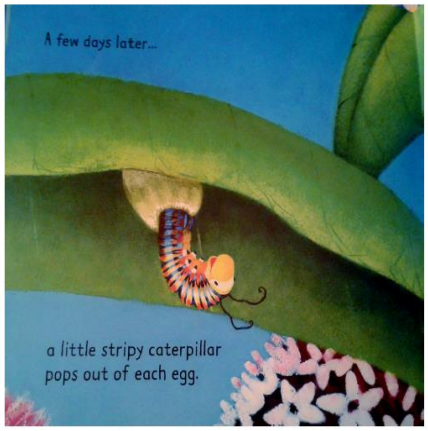




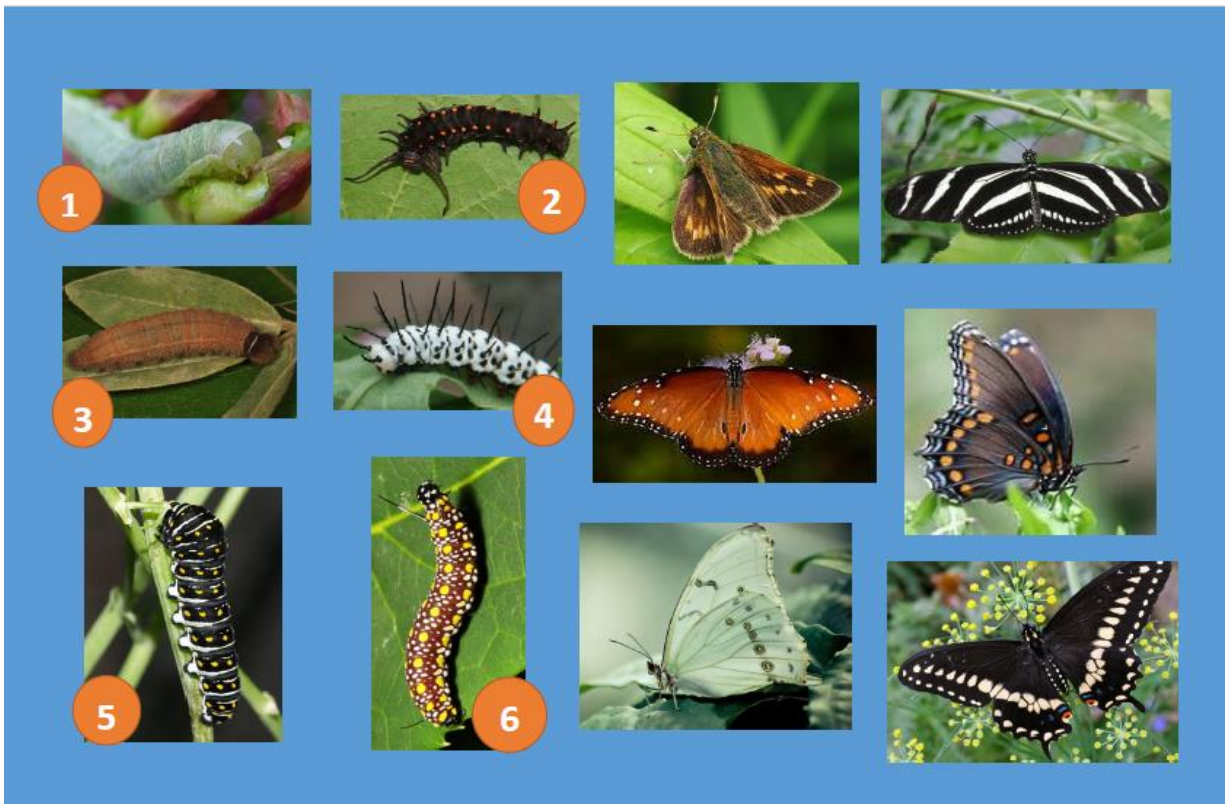








I- FAMILY LIKENESS



1. It's a green caterpillar with black dots. After metamorphosis, it's a green butterfly with black dots.
2. It's a black caterpillar with orange dots. After metamorphosis, it's a black butterfly with orange dots.
3. It's a brown hairy caterpillar. After metamorphosis, it's a brown hairy butterfly.
4. It's a white caterpillar with black spots and black spikes. After metamorphosis, it's a white and black butterfly.
5. It's a black caterpillar with yellow dots and white stripes. After metamorphosis, it's a black butterfly with yellow dots.
6. It's an orange caterpillar with yellow and white dots. After metamorphosis, it's an orange butterfly with yellow and white dots. The head of the caterpillar is black with white dots. The head of the butterfly is black with white dots.

CONCLUSION: Caterpillars and butterflies are the same living thing / the same organism / the same animal

J- ORDERING – Speaking activity (Introduction to the next one)

Carolina Gálvez Santos
TFG (UAB 2015-2016)

From a caterpillar to a butterfly
Tutor: Dr. Dooly

- What is the right order?







K- NAMING AND ORDERING

Carolina Gálvez Santos
TFG (UAB 2015-2016)

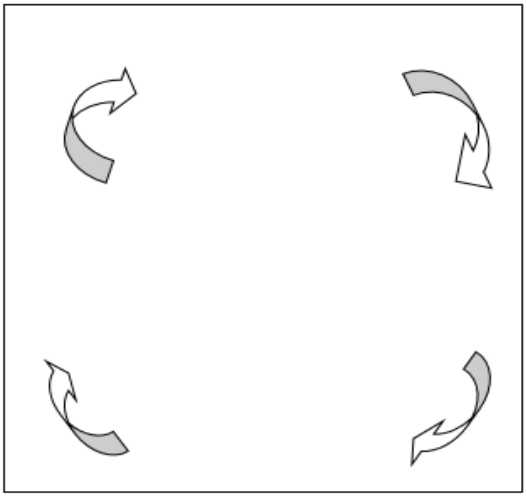
From a caterpillar to a butterfly
Tutor: Dr. Dooly

THE 4 STAGES OF A BUTTERFLY'S LIFE CYCLE

Can you put in order the following pictures? Can you name them?

CHRYSALIS | CATERPILLAR | BUTTERFLY | EGG

Butterfly's life cycle



IMAGES FROM:

http://www.quebec.butterflyguide.ca/families/skippers/long-dash-skipper

https://www.flickr.com/photos/riquochet/5662591880/?ytcheck=1

http://miriadna.com/preview/cabbage-white-butterfly

https://www.flickr.com/photos/itchydogimages/10774388264

http://imgarcade.com/1/queen-butterfly/

http://www.backyardbutterflygarden.com/pipevine-swallowtail-butterfly

https://www.flickr.com/photos/shitao/2860073950

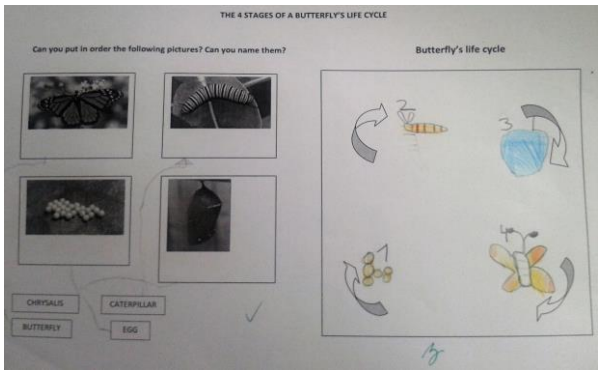
http://www.butterflyfunfacts.com/find-zebra-longwing-butterfly-eggs-caterpillars.php

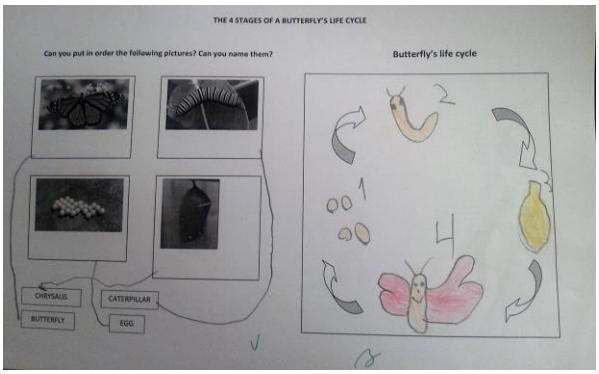
http://www.animalphotos.me/butterfly/hel-zeb2.htm

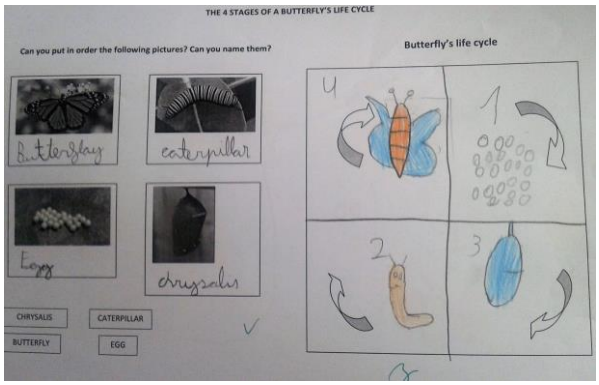
https://goodmorninggloucester.wordpress.com/tag/butterflies-of-the-east-coast/

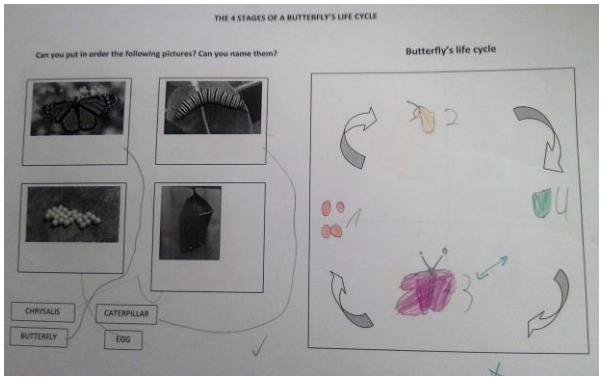
https://en.wikipedia.org/wiki/Papilio_polyxenes#/media/File:BlackSwallowtailColorVariations.jpg

K-1 Different answers provided within the same group team



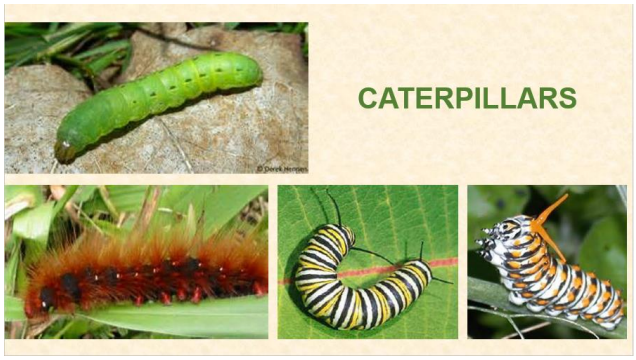


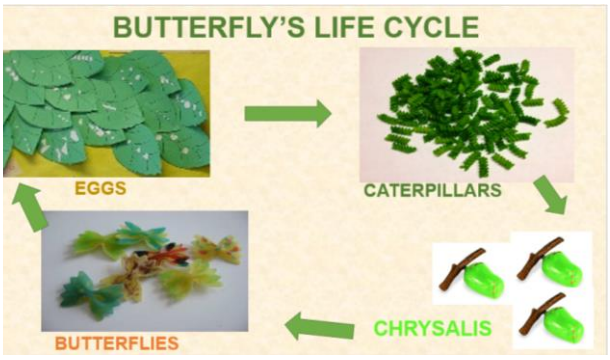




THIRD SESSION

L- MODELLING A POSTER





M- DEPICTING BUTTERFLY'S LIFE CYCLE

Final output

N- BUTTERFLY'S LIFE CYCLE ORAL PRESENTATION

O – SOME NOTES AFTER THE SESSIONS

- **Learning taking place**

Class A: 122909

S1: We can see caterpillars

S2: Different! (S1 forgot to say the adjective "different" before the noun "caterpillars" and S2 told him)

Class A: 123839

We can see how Ss move their arms (TPR) to mime the "circle", to represent the cycle: "And we start again".

Class A: 124238

Ss are happy. S with an IEP participates in the activity and is able to perfectly say "I can see eggs". Another S jumps and put his arm in the air smiling when they finish their presentation and we congratulate them.

Class B: Video 103253

S1: We can see different eggs (S with a low pace).

S2: We can see different butterflies.

S1: Nooooo! Caterpillars!

S with a low pace has understood the life cycle and gets a little bit angry.

Students translate when they have to deal with specialised vocabulary (9'27''), (10'00)

Students' L1 is the most used language in the classroom.

When the teacher asks about the life cycle, they provide correct answers directly in English. They say the specialised concept before the teacher. They remember the words that had been learned a few days ago, in the previous session (it is the first time they review this vocabulary but THEY REMEMBER!!!!: It seems that TPR works!)

****An exhaustive analysis was made in a video recording provided to the tutor of this research –it was not possible to include the link here because two videotape permissions had not been returned to the school's tutor****

APPENDIX 3: Images and videotape permission request

Benvolguda professor / Benvolgut professor AICLE o especialista d'anglès

L'assignatura AICLE (*Codi 103578*) forma part del currículum de 4rt curs Grau d'Educació Primària (GEP), Menció d'anglès
Un dels treballs principals que els estudiants matriculats en aquesta assignatura han de desenvolupar és l'enregistrament i posterior anàlisi de sessions de classe on l'estudiant fa de mestre/a un grup de nens i nenes de primària impartint en anglès continguts de caire interdisciplinari.

Som conscients que el vídeo-enregistrament de classes no ha estat una pràctica comú en els programes de formació del professorat a Catalunya, encara que si que ho és en aquells països del nostre entorn. La recerca educativa i la pràctica demostren que el vídeo-enregistrament i la posterior anàlisi de classes és la millor estratègia disponible per a superar l'excés de teoria que sovint lastra la formació de mestres. També d'ajudar a connectar les recomanacions teòrico-pràctiques que es presenten i discuteixen a les aules universitàries amb els problemes *reals* que els practicants troben a l'aula quan posen en pràctica enfocaments pedagògics innovadors.

Per aquesta raó li demano la seva col·laboració per tal que l'estudiant que vostè rep a la seva aula pugui enregistrar una de les classes que ell/ella faci amb el seu grup. L'estudiant, en un document signat, és compromet a fer un ús del material gravat amb la única finalitat de millorar la seva formació com a mestre/a.

Per últim, no cal dir que ni vostè ni l'escola estan obligats a permetre la sortida de l'escola de video-enregistraments de cap mena. Per aquesta raó, l'estudiant li mostrarà les imatges enregistrades per tal que pugui donar la seva conformitat al fragment triat per a l'anàlisi posterior. Si ho desitja, l'estudiant li farà arribar el text del treball d'anàlisi en la seva versió final.

Tot agraint la seva col·laboració; ben cordialment,

Cristina Escobar Urmeneta
Professora de l'assignatura AICLE del GEP

[Escribir texto] [Escribir texto]

Benvolguda tutora, benvolgut tutor,

Estic matriculat/da a l'assignatura ..... que forma part del currículum de 4rt curs Grau d'Educació Primària, Menció d'anglès, de la Universitat Autònoma de Barcelona.

Un dels treballs principals que es demana en aquesta assignatura és l'enregistrament d'una classe de qualsevol tema curricular ensenyada en anglès a un grup de nens i nenes de primària, per tal d'analitzar després les meves competències professionals i establir un pla de millora com a mestre/a de primària.
Per aquesta raó li demano permís per a enregistrar una classe en anglès de tipus interdisciplinari on jo faci de mestre/a i em comprometo a:

- ☐ Respectar el dret a la imatge dels alumnes que no vulguin ser gravats.
- ☐ Respectar el dret de l'escola a no fer servir fora del centre una gravació ja feta, si el centre ho estima convenient.
- ☐ Fer servir la gravació únicament com a instrument d'autoformació professional. L'anàlisi que faci de l'enregistrament es centrarà únicament en les meves competències com a mestre/mestra.
- ☐ No difondre la gravació per cap mitjà electrònic o digital (DVD, CD, memòria USB, Internet, etc.).
- ☐ Fer una còpia de la gravació per l'escola, si l'escola n'està interessada.
- ☐ Portar una còpia del treball final d'anàlisi si l'escola està interessada.
- ☐ .....[1]

Cordialment,

Signatura

Nom de l'estudiant: DNI/Passaport:
Data:

[1] Afegir altres compromisos suggerits per l'escola, si fos el cas.