



USE CASE SCENARIOS

ART IN EDUCATION – A NEW APPROACH TO EDUCATION USING THE ARTS

Contents

Introduction	1
ARTinED USE CASE SCENARIOS: DANCE	2
Dance and Maths	2
Dance and Science	3
Dance and Language Learning	4
ARTinED USE CASE SCENARIOS: MUSIC	7
Music and Math	7
Music and Science	7
Music and Languages	10
ARTinED USE CASE SCENARIOS: CREATIVE WRITING	11
Math through Creative Writing	11
Science through Creative Writing	13
Creative Writing and Languages	15
ARTinED USE CASE SCENARIOS: VISUAL ARTS	17
Visual Arts and Maths	17
Visual Arts and Science	18
Visual Arts and Foreign Language	19

INTRODUCTION

In this paper we show 12 use case scenarios that give examples of how to integrate different forms of art (dance, music, drama, creative writing and poetry, visual arts) into the teaching of maths, science, and languages at primary education level.

The ideas will inspire primary school teachers to use the ideas or even better, their own ideas. The ARTinED project team will be happy to see your ideas and feedback which you can share on the project wiki space.

The ARTinED methodology based on relevant academic literature about how to integrate arts into the teaching of curricular subjects is available on the project website. You can also find lesson plans, and best practice case study reports.

The examples below include:

- Teaching maths through dance

- Teaching science through dance
- Teaching languages through dance
- Teaching maths through music
- Teaching science through music
- Teaching languages through music
- Teaching maths through creative writing and poetry
- Teaching science through creative writing and poetry
- Teaching languages through creative writing and poetry
- Teaching languages through visual arts
- Teaching maths through visual arts
- Teaching science through visual arts

ARTINED USE CASE SCENARIOS: DANCE

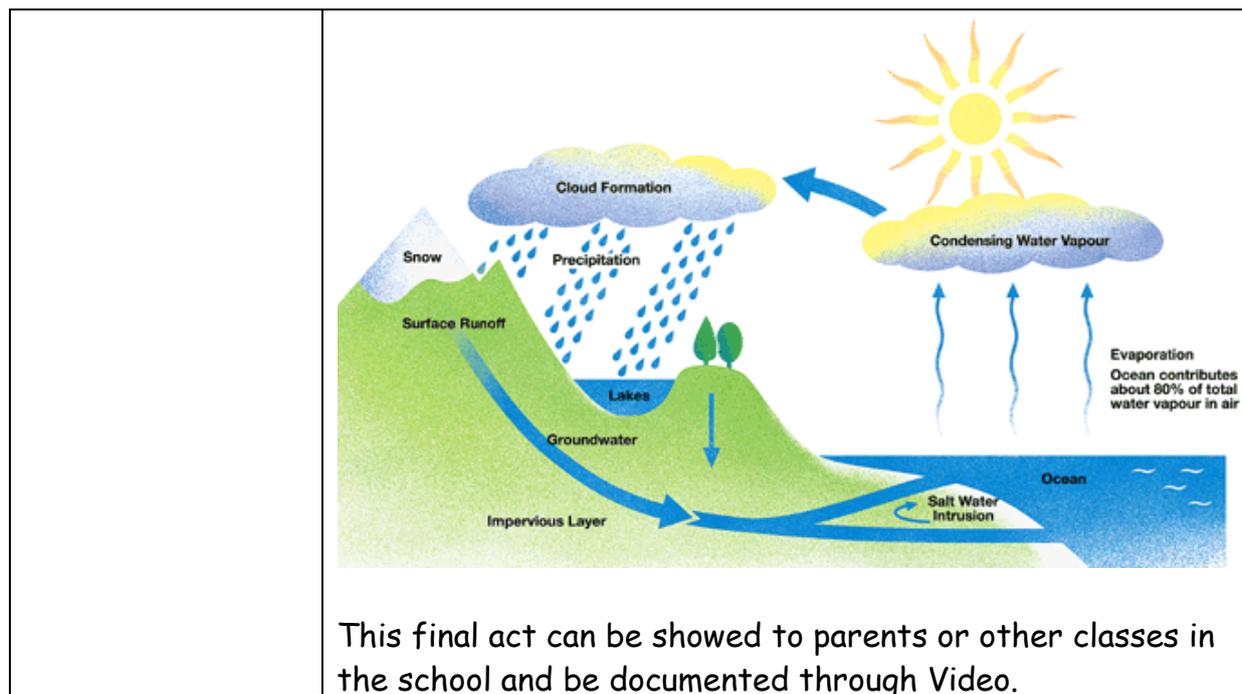
DANCE AND MATHS

Art Form and Curricular Subject	Dance and Maths
Teaching Point(s) (The subject matter of the lesson)	Division, shapes and counting rhythms/beats
The Teaching Procedure	<p>For example, the teacher asks the students to divide themselves into 4 groups; of equal numbers. Then the students divide each group into half.</p> <p>The teacher explains the counting of a song, using the most common example of a 4/4 beat. The student's practice holding count to the beat and figuring out how many "8s" they can collect during the playing of one tune, (in dance we use the counting 1-8, to make it easier to know what movement to do on a certain count).</p> <p>The teacher then asks each group to make a choreography of four "8s" and to start that choreography after two "8s". The choreography should have a clear shape of a triangle, square or rectangle (how the dancers stand) and it should be expressing numbers in shapes (inspiration). The choreography can have other elements than the examples given here but should be connected with the subject of maths.</p> <p>The student's choreographies are then shown to each other in the classroom, or to other invited classes. The choreographies can also be videoed for documentation.</p>
Learning Outcomes	<ul style="list-style-type: none"> • Learning mathematical division

	<ul style="list-style-type: none"> • Practising counting • Practising concentration • Learning how to hear and count rhythms • Practising to work and collaborate in groups • Practising to be creative and openly expressive • Learning different methods of story telling
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DANCE AND SCIENCE

Art Form and Curricular Subject	Dance and Science
Teaching Point(s) (The subject matter of the lesson)	Water stages
The Teaching Procedure	<p>The teacher begins the lesson by telling the students some short facts about water in the world, for example; its importance and its existence on earth.</p> <p>Then the teacher asks the students to talk about what kind of different water and water stages there are:</p> <ol style="list-style-type: none"> 1. Ocean, sea, lake, river. 2. Frozen water - ice, rain, hail, snow, and steam. <p>The teacher plays different expressive songs that are connected with the feeling of the different water states, a slow song for a small river or an intense song for rain or hail. To these songs the students are asked to creatively express the feeling, speed and shape of the water state in movement. It is very important to tell the students that there is no wrong or rights; they have a free choice to interpret.</p> <p>The students are then divided into groups and each group takes one water state and put together an act where they dance and show this state. After each group has finished the teacher helps them put together all the groups into one act where the whole cycle of water is presented.</p>



This final act can be showed to parents or other classes in the school and be documented through Video.

<p>Learning Outcomes</p>	<ul style="list-style-type: none"> • Learning about the water cycle and its different shapes • Practising how water moves and works in reality by reflecting it through their body. • Learning how to work in groups • Learning important facts about the water's different shapes and states • Increasing their awareness and understanding of the importance of water for life • Being creative and feeling unique • Learning how to present a conclusion through the body, instead of orally.
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DANCE AND LANGUAGE LEARNING

<p>Art Form and Curricular Subject</p>	<p>Dance and Foreign Language</p>
<p>Teaching Point(s) (The subject matter of the lesson)</p>	<p>Practising vocabulary through English songs</p>
<p>The Teaching Procedure</p>	<p>The teacher introduces a song in English with a clear message and text so it is possible for the children to</p>

	<p>connect to the song's lyrics.</p> <p>Together the teacher and the students listen and analyze the song, discuss what it is about and also talk about words that are easy or difficult to understand. If there is uncertainty about the songs context the teacher explains it accurately to make sure everyone in the class gets it before going to next step.</p> <p>The teacher then teaches the children a simple choreography that is based on the lyrics of the song. Some movements should be repeated several times, for example in the refrain, which usually is repeated several times. After teaching the choreography the children then practise the dance several time until it's remembered.</p> <p>Then practise both saying/singing the words of the song and moving the body at the same time, in this way they practise what is the meaning of the word a step of the learning phase.</p> <p>The class is then divided into groups and each group shows to the class the dance and says/sings the word at the same time.</p> <p>Additional: To follow up this kind of lesson it is possible to give the class a new song and to let them practise how to explain the word through movement themselves and then to evaluate and show each other the result.</p> <p><u>Song suggestions:</u></p> <ul style="list-style-type: none"> - All you need is love - The Beatles - Speed of sound - Coldplay - Dance, dance, dance - Lykke Li - Euphoria - Loreen
Learning Outcomes	<ul style="list-style-type: none"> • Learning vocabulary in 3 phases • Analysing contents of lyrics and discussing it • Learning how to synchronise body expression with vocals • Practising rhythms and body movement • Practising to stand in front of an audience and explaining a content through body and words • Learning how to be creative in groups
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ARTInED USE CASE SCENARIOS: MUSIC

MUSIC AND MATH

Art Form and Curricular Subject	Music and Math
Teaching Point(s) (The subject matter of the lesson)	Additions and subtractions
The Teaching Procedure	<p>The teacher calls six students and gives them some musical instruments. Three receive shakers. The others have bongos. They are going to play them.</p> <p>Alternatively, the students can beat different parts of the body to produce two kinds of different sounds.</p> <p>The teacher announces the problem to solve: an addition or a subtraction.</p> <p>Then, Group one produces a number of beats with the shakers (or body parts) and group two produces a number of beats with their bongos.</p> <p>The class responds with a number of claps according to the problem addressed (addition or subtraction).</p> <p>Example: the teacher asks for addition. Group one plays 3 beats, groups two plays four beats. The class responds with 7 claps.</p>
Learning Outcomes	<ul style="list-style-type: none"> • Acquiring the concept of addition and subtraction through the use of sounds. • Listening skills.
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MUSIC AND SCIENCE

Art Form and Curricular Subject	Music and Science
Teaching Point(s) (The subject matter of the lesson)	Photosynthesis
The Teaching Procedure	<p>A) The teacher explains the subject and divides it into two parts.</p> <p>Here is an example of a simplified explanation of the subject:</p>

Photosynthesis is a process in which green plants use energy from the sun to transform water, carbon dioxide, and minerals into oxygen and organic compounds. It is one example of how people and plants are dependent on each other in sustaining life.

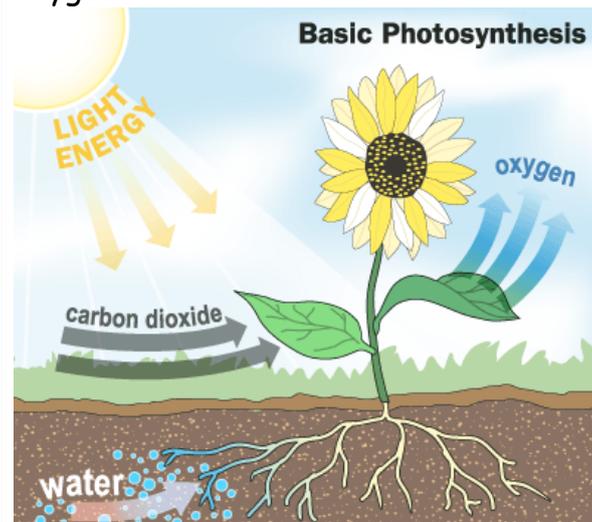
Part 1: Sun and Light

The light from the Sun shines on the surface of the Earth. Light is energy. When that energy shines on a green plant, some reactions take place to store energy in the form of sugar molecules.

Part 2: Chlorophyll

Chlorophyll is the compound that can grab the sunlight and start the whole process. The green pigment chlorophyll is uniquely capable of converting the energy of light into a form that can be stored (as food - glucose) and used when needed.

Carbon dioxide and water (taken from the roots) combine with light by Chlorophyll to create oxygen and glucose (food). Glucose is used in various forms by every creature on the planet. Photosynthesis provides us with most of the oxygen we need in order to breathe. Animal cells require oxygen to survive.



B) The teacher helps the children to create very short sentences to sum up the process, such as: "The Sun creates light; the plants catch it; the chlorophyll transforms the sun's energy into food; thank you, thank

	<p>you, thank you, Sun and plants, to give us oxygen and life...".</p> <p>C) The teacher gives the children percussion instruments: hand percussion, shakers, frame drums, bongos, congas, etc.</p> <p>Alternatively, if the teacher has no music instruments available, children can make rhythms by clapping hands or parts of their body, and by using pens and pencils to beat on books and desks.</p> <p>All children form a circle and 'play' the Sun that sends the light to the surface of the Earth.</p> <p>D) The children are then divided into three groups. Group one continues to 'play' the Sun sending energy. The children within this group use the percussion instruments, very softly.</p> <p>Simultaneously group two sings 'la, la, la, la' in a simple melody of few notes. This melody could be the starting notes of <i>Frere Jacques</i> (Do-Re-Mi-Do/C-D-E-C), repeated several times. This group symbolizes the chlorophyll at work. The children will sing softly.</p> <p>Again simultaneously, the children in group three read, in a choir formation, the text created at the beginning (point B) and ends the text by singing 'thank you' several times in tune with the 'la, la, la, la' of <i>Frere Jacques</i>.</p>
Learning Outcomes	<ul style="list-style-type: none"> • Knowledge of a science subject which will be easily remembered because of the music activity. • Working as a team. • Listening skills.
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MUSIC AND LANGUAGES

Art Form and Curricular Subject	Music and Languages
Teaching Point(s) (The subject matter of the lesson)	Awareness of phonemes of three different languages and acquisition of six words of three different languages.
The Teaching Procedure	<p>The teacher finds three children's folk songs in three different languages. A good source is the EU FolkDC project www.folkdc.eu.</p> <p>The teacher will look at the songs before starting the activity.</p> <p>The teacher plays the first song (mp3) on a class computer or portable CD player and asks the students to guess the language.</p> <p>Then tells them the correct answer, translating its title into the native language and asks the children to guess (or invent) the content of the song, starting with the feelings that the melody inspires in them.</p> <p>Children reply by using their creativity and then the teacher reads the lyrics of the song to the class.</p> <p>The teacher writes on a flipchart (or whiteboard) two words included in the song, giving the words' meaning and then plays the song again asking children to raise their arm when they hear the words in the song.</p> <p>All together the children say the two foreign words loudly.</p> <p>The teacher continues with the next two songs in different languages, following the same steps as before.</p> <p>At the end, the teacher asks the children to stand up and whisper in to their hands joined and concave, a word out of the six foreign words that they have learnt. The children will have to 'send' their word up to the ceiling by throwing it from their hands and shouting it at the same time.</p> <p>After that, the teacher tells the children that the words will stay on the ceiling and be available to them whenever they want to use them.</p>
Learning Outcomes	<ul style="list-style-type: none"> • Enhancing awareness of sounds and phonemes of three foreign languages. • Learning six words in three languages that will be

	remembered thanks to the retaining power of music.
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ARTINED USE CASE SCENARIOS: CREATIVE WRITING

MATH THROUGH CREATIVE WRITING

Art Form and Curricular Subject	Math through Creative Writing
Teaching Point(s) (The subject matter of the lesson)	Problem solving, developing thinking and reasoning, recognition of the different systems of measurement in the world, simple unit conversion, map scales, converting map distances. System of measurement, unit conversion, foreign currency
The Teaching Procedure	<p>The teacher begins the lesson by telling the story and the main characters of the selected book (see below). Then with the help of a globe or a World map the teacher will ask the children to identify the different locations and countries across the globe that the main characters of the story visit.</p> <p>The children will make notes about the names of the different countries. Then working in groups of 4/5 will analyze the text trying to find out the currency and the system of measurement used in each country. This exercise will allow the students to memorize and link the different countries with the system of measurement and the distances between two different locations or countries and finally the students will have a collection of data to compare.</p> <p>The teacher will ask the children to create a new story or a poem with the information they have collected and using some personal experiences gained during their own travels. This will enrich the students' participation in the discussion, through personal experience, the different findings in the selected book. The creation of new stories</p>

	<p>or poems will promote creativity and a problem solving attitude.</p> <p>Once the new stories are created the teacher will use them to prepare, in collaboration with the students, simple exercises of unit conversion within the same system of measurement or with different systems of measurement: e.g. from meters to kilometers and or from kilometers to miles or money exchange e.g. from English Pounds to Euros or US dollar or the other way around and using all the different currencies and unit of measure mentioned in the students stories.</p> <p>The teacher can also pose simple questions: "Which is almost equal to 1 meter? One foot or three feet? And to arrive at the correct answer she can ask the children to measure the shape of her foot print and compare it with a meter.</p> <p>Lot of exercises can be developed using currency exchange to improve the ability to count money but also for developing responsible attitudes towards money: it will be very useful as adults.</p> <p>Proposed Children's books for this activity:</p> <ul style="list-style-type: none"> • Around the World in Eighty Days by Jules Verne • The Wonderful Adventures of Nils by Selma Lagerlof - Note for the teacher: <i>Not every book is appropriate for enhancing mathematics lesson and literature. Researchers and educators have developed criteria for selecting literature that can be integrated effectively into mathematics instruction. Tip: when selecting a book for this activity the "wow" factor is very important.</i> - For further reading: https://s3.amazonaws.com/quantile-resources/resources/downloads/static/ChildrensLiterature.pdf
Learning Outcomes	<ul style="list-style-type: none"> • Developing thinking and reasoning

	<ul style="list-style-type: none"> • Enhancing creativity and literary development • Learning to solve problems • Recognition of different system of measurement used in the world • Memorizing mathematical concepts through personal experience • Practicing simple unit conversion of the measurement systems • Convert map distances • Using map scales • Learning to link math subjects to personal experience • Developing responsible attitudes towards money • Practicing to work in a collaborative way
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SCIENCE THROUGH CREATIVE WRITING

Art Form and Curricular Subject	Science through <i>Creative Writing</i>
Teaching Point(s) (The subject matter of the lesson)	Flowers life cycle and the concept of heliotropism applied to solar energy Sunflowers and solar energy
The Teaching Procedure	<p>The teachers introduce students to the topic and the learning objectives.</p> <p>The teacher shares background information about what plants need for growth and shows the students the selected resources using a computer and/or some pictures. Then the teacher reads aloud a poem about sunflowers and introduces the concept of plant heliotropism and its application to solar energy using some videos.</p> <p>The students divide into groups of four or five and the teacher using a torch (as sun) ask them to move like sunflowers for 2 or 3 minutes. Students will be encouraged to use their imagination and express their feelings about</p>

what they have learnt about sunflowers and their life cycle. The teacher will ask them to create a poem or a short essay about the different stages of the sunflower lifecycle.



To here



To create the poem or the short essay the teacher may ask the first child of a group to make up one sentence and the second child has to repeat the same sentence adding something more and so on till the last child of the group. Each group will create a collective poem or short story.

At the end of the session all the poems and the stories can be written in a notebook or performed and commented on by the children and then videoed by the teacher.

Suggested poems and videos for this activity:

Poems

- *Bring Me the Sunflower* by Eugenio Montale
- *Ah Sunflower!* by William Blake

	<p>Videos:</p> <ul style="list-style-type: none"> • http://www.youtube.com/watch?v=VOVJRP7kY50 • http://www.youtube.com/watch?v=VygzzQWPA84 <p>Sun tracker idea video:</p> <ul style="list-style-type: none"> • http://www.youtube.com/watch?v=VygzzQWPA84
Learning Outcomes	<ul style="list-style-type: none"> • Learning to express feelings and emotions • Improving communication and collaborative learning • Increasing interest and participation in science • Increasing students understanding of scientific concepts • Learning new words and improving the scientific vocabulary • Reinforcing learning process in natural science • Understanding a flower lifecycle • Identifying the parts of a plant: seed, roots, stem, leaves • Understanding the importance of the sun on the life of plants • Developing an understanding of ecological principles • Discovering how mirroring nature inspires new technologies
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CREATIVE WRITING AND LANGUAGES

Art Form and Curricular Subject	Creative Writing and Languages
Teaching Point(s) (The subject matter of the lesson)	<p>Vocabulary practicing and learning</p> <p>Poems and target languages</p>
The Teaching Procedure	<p>The teacher selects short poems in the target language with simple linguistic patterns and presenting themes that the students are familiar with or spontaneously have an interest in.</p> <p>The children working in pairs or in small groups will receive a printed poem sheet. This contains the poem in the target language where key words have been deleted. The full</p>

	<p>version of the poem in the target language and a list of the deleted key target words in no particular order.</p> <p>If a second language teacher or a student speaking the target language is available then the full poem will be read aloud to the students. The teacher will ask the children to fill in the blank spaces in the poem sheet with the key target words they have received. The teacher calls out the correct words or phrases and the children mark their papers.</p> <p>The teacher will ask the children to read aloud their writing and to mime the word or the full sentence they have prepared.</p> <p>The mime might become very funny when an appropriate poem is selected. This activity can be further developed in 4th and 5th grade asking the children to create new sentences with the words they have learnt and to mime them or to experiment with some phonetic exercises to improve their phonemic awareness and reading skills.</p> <p>Further reading on phonemic awareness:</p> <ul style="list-style-type: none"> • http://www.paec.org/itrk3/files/pdfs/readingpdfs/cooltoolsall.pdf • http://www0.tacoma.k12.wa.us/schools/curriculum/subjects/literacy/elementaryliteracy/ELI/12-PH-PHONICS-SA.pdf
Learning Outcomes	<ul style="list-style-type: none"> • Increasing students understanding of the foreign language • Enhancing acquisition of vocabulary in an enjoyable way • Improving the ability to listening the foreign language • Supporting the ability to construct new sentences in a foreign language • Improving self- esteem and desire to learn
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ARTInED USE CASE SCENARIOS: VISUAL ARTS

VISUAL ARTS AND MATHS

Art Form and Curricular Subject	Visual Arts and Maths
Teaching Point(s) (The subject matter of the lesson)	Geometrical figures (summary lesson)
The Teaching Procedure	<p>The teacher asks the students to identify geometrical figures (circle, triangle, rectangular, square, rhombus, parallelogram, trapezoid) from a poster and to define each geometrical figure.</p> <p>The teacher asks the students to make different geometrical figures by using paper of different colours and texture (crepe paper, glossy paper, matte paper, newspapers, magazines etc.).</p> <p>The teacher asks the students to work in groups of four and use the geometrical figures they created in order to make a collage on a large sheet of cardboard. The collage will represent a stylised nature scene.</p> <p>All the collages produced will be exhibited in the school.</p>
Learning Outcomes	<ul style="list-style-type: none"> • Identifying the geometrical figures • Defining the geometrical figures • Making geometrical figures • Making a collage representing a scenery of nature • Expressing visual and spatial thinking • Being creative and feeling unique • Developing social and emotional interaction skills by using discussions with other students and sharing experiences
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VISUAL ARTS AND SCIENCE

Art Form and Curricular Subject	Visual Arts and Science
Teaching Point(s) (The subject matter of the lesson)	Soil layers (teaching lesson)
The Teaching Procedure	<p>The teacher begins the lesson by asking the students some lead-in questions connected to the soil.</p> <p>The teacher uses videos and animation on the soil in order to show the students the layers of the soil and their importance.</p> <p>The teacher asks the students to create a product which can show what is soil, the importance of soil for life, the contents of soil, formation of soil, soil layers, soil types.</p> <p>The teacher asks the students to work in pairs and create a final product: some use paper to draw the sun and then to colour it using water colours, others use crepe paper to create the mountains, the fields, the hills, others use plasticine to create plants and animals, others use egg shells painted in water colours and representing the layers of the soil etc.</p> <p>Then the students put the pieces together to make the final product.</p> <p>The final product will be exhibit in the school.</p>
Learning Outcomes	<ul style="list-style-type: none"> • Learning what soil consists of, its types and layers • Developing an understanding of the formation of soil • Increasing their awareness and understanding of the importance of soil for life • Creating an assembly representing the soil layers • Expressing visual and spatial thinking • Being creative and feeling unique • Developing social and emotional interaction skills by using discussions with other students and sharing experiences
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VISUAL ARTS AND FOREIGN LANGUAGE

Art Form and Curricular Subject	Visual Arts and Foreign Language
Teaching Point(s) (The subject matter of the lesson)	Clothes (teaching lesson)
The Teaching Procedure	<p>The teacher invites a girl and a boy to the front of the classroom and the teacher describes his and her clothes. The vocabulary, in the target language, is written on the whiteboard.</p> <p>The teacher shows the students fashion catalogues containing different items of clothing, in the target language, The new words are added on the whiteboard.</p> <p>The teacher repeats the words and the students repeat them in a chorus. Then the teacher nominates students to repeat the new vocabulary individually.</p> <p>The teacher repeats the words and the students repeat them in a chorus. Then the teacher nominates students to repeat the new vocabulary individually.</p> <p>The teacher divides the students in to four groups, each one representing a season. Each group is given a board on which a boy and a girl are drawn, coloured paper, scissors, glue, pencils. Each group creates clothes by using coloured paper and then they stick the items of clothing on the boy and the girl drawn on the board so that they dress them according to the season each group represents.</p> <p>Successively each group presents their collage. They talk about the items of clothing they made.</p>
Learning Outcomes	<ul style="list-style-type: none"> • Learning vocabulary connected to various items of clothing • Creating items of clothing • Making collages • Creating moods and emotions • Developing visual expression • Developing social and emotional interaction skills by using discussions with other students and sharing experiences
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