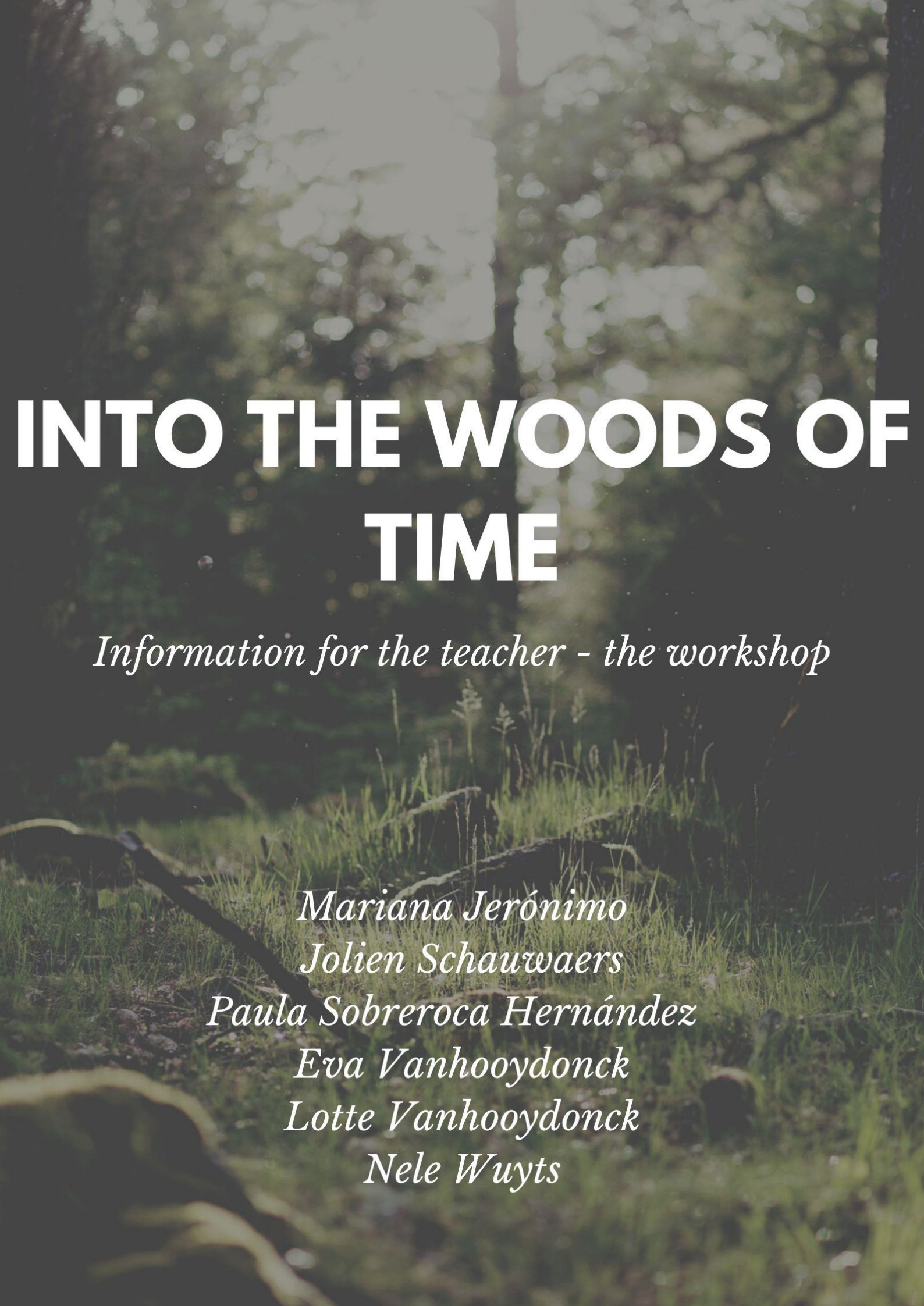

INTO THE WOODS OF TIME

Information for the teacher - the workshop

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Introduction

Dear teacher(s)

This folder is created to inform you about the set-up of this workshop. Information about the content and the working process are involved in this document.

Furthermore, you will get inspired to go outside with your pupils. There is information about outdoor education described in this file. If you would like to know more about this subject, you can always read the reference book.

At the end of the folder, you can read how to finalize the workshop with the children in class. The lesson suggestions are not compulsory follow-up lessons. However, there is the opportunity to continue in the classroom. It can serve as a moment of reflection.

This workshop is developed for 'Innovations in education', a course at the Thomas More Kempen University of education in Vorselaar. The institution NIRAS asked to work together on their project 'Tabloo'. NIRAS is creating an exhibition where the various aspects of radioactivity are central. To emphasize and clarify the perception of time even more, a workshop is designed. The workshop focusses on time perception among students aged 10 till 12 years.

Time mixed with outdoor education finally brought us to this result.

Primary school ‘weg-wijzer’ in Dessel was willing to work together on the development of the workshop. Doing a survey with the children of the school helped us to start working on the workshop.

We are very thankful for the collaboration with all our partners.

Why outdoor learning?

The exhibition inside ‘Tabloo’ involves a lot of new technologies. In the outdoor workshop the children will go back to basics so they get to discover time in a different way.

Outdoor education is a phenomenon that is gaining more and more supporters. Schools are starting to set up spaces for this purpose and there are some important reference points to be found.

The activity is based on 'flow learning' from Cornell. It is a method worked out in four phases. It indicates the importance of using your senses in nature. You make children quite warm for the activity, followed by the use of all your senses to conclude with a moment of reflection. In this folder some reflection suggestions are included. With this document you can ensure that children in the classroom will share their different experiences.

Another interesting author is Juliet Robertson:

"Learning outside is messy, but children don't learn in a nice order, they learn messy.

She studied outdoor education and makes some important statements. Children learn very well outdoors and experience new skills that will be important in their future lives. The outside environment but also a lot of natural materials will be used in the workshop. You can also easily collect natural materials for your follow-up lessens if you get inspired. Children love structure, but nobody says you can't give it outside. Provide a paper with the steps on, offer the children an overview.

Another inspiration was Mark Mieras. A man who speaks out on different themes. One theme is outdoor education. He expresses several advantages of outdoor education.

We love to take the children

Learning outcomes and goals of the workshop

Following attainment levels and goals are involved (Dutch):

'Eindtermen':

De kinderen verwerven kennis, inzicht, vaardigheden en attitudes ten aanzien van de oriëntatie in de dagelijkse en historische tijd.

Dagelijkse tijd
De leerlingen
- 3.1 kunnen de tijd die ze nodig hebben voor een voor hen bekende bezigheid realistisch schatten.
- 3.2 kunnen een kalender gebruiken om speciale gebeurtenissen uit eigen leven in de tijd te situeren en om de tijd tussen deze gebeurtenissen correct bepalen.

Historische tijd
De leerlingen
- 3.5 kunnen belangrijke gebeurtenissen of ervaringen uit eigen leven chronologisch ordenen en indelen in periodes.
- 3.6 kunnen hun afstamming aangeven tot twee generaties terug.
- 3.8 kunnen aan de hand van een voorbeeld illustreren dat een actuele toestand, die voor kinderen herkenbaar is, en die door de geschiedenis beïnvloed werd, vroeger anders was en in de loop der tijden evolueert.
- 3.9* tonen belangstelling voor het verleden, heden en de toekomst, hier en elders.

Goals:

Katholiek Onderwijs Vlaanderen
- **OWti2** Tijdsbegrippen en verschillende soorten kalenders functioneel gebruiken
  - Verschillende soorten kalenders functioneel gebruiken: agenda, kalender van het burgerlijk jaar, kalender van het kerkelijk jaar.
  - Courante aanduidingen van tijd die verwijzen naar het lineaire of historische karakter van tijd onderzoeken en daarbij woorden gebruiken.

- **OWti3** Gebeurtenissen uit het eigen leven en uit de geschiedenis verkennen en in de tijd situeren
  - Belangstelling tonen voor het verleden, heden en de toekomst, hier en elders

- **OWti4** Vaststellen en uitdrukken hoe de geschiedenis doorwerkt in de samenleving van vandaag en morgen en hoe je als mens deel uitmaakt van de geschiedenis
  - Actuele toestanden, gebeurtenissen en erfgoed uit de omgeving verbinden met het verleden
  - Vaststellen en uitdrukken dat je in de ketting verleden-heden-toekomst een rol speelt en dat je zo actief deel uitmaakt van de wereld - nadenken over de eigen toekomst in een veranderende wereld

- **OWti5** Ervaren, onderzoeken, vaststellen en uitdrukken hoe de werkelijkheid verandert en de kennis erover evolueert in de tijd
  - Ervaren, onderzoeken, vaststellen en uitdrukken hoe hun levenswijze gelijkenissen en verschillen vertoont met die van mensen uit vroegere periodes en andere plaatsen en culturen - fantaseren en uitdrukken hoe het leven er in de toekomst of op een andere plek uit kan zien

GO!

- **3.4.5.38** De leerlingen tonen belangstelling voor het verleden, heden en toekomst, hier en elders.
- **3.4.2.35** Vaardig en functioneel omgaan met een gevarieerd aanbod aan kalenders (verschillende soorten weekkalenders, maandkalenders, jaarkalenders).
- **3.4.2.39** Volgende gegevens op kalenders onderscheiden en interpreteren: feestaanduiding, zonsopgang, zonsondergang, weeknummer, dagnummer …
- **3.4.3.9** De tijd die ze nodig hebben voor een voor hen bekende activiteit realistisch inschatten.
- **3.4.5. 25** Enkele actuele toestanden en gebeurtenissen relateren aan het verleden.

OVSG

- **DL-WO-TIJD-02.11** De leerlingen betonen belangstelling voor het verleden, heden en toekomst, hier en elders.
- **DL-WO-TIJD-01.19** De leerlingen kunnen vanuit hun ervaring de duur verwoorden: van een week, een werkweek, een weekend, een verlengd weekend; van elk van de maanden, van elk van de seizoenen; van een trimester, van een schooljaar, van een kalenderjaar.
- **DL-WO-TIJD-01.22** De leerlingen kunnen op hun niveau verschillende kalenders gebruiken om de tijd tussen twee gebeurtenissen te bepalen.

Short content

Children learn the perception of time in the far future when they get to use a lot of terms (time related words), when time is visualised, when they recognise time related materials and when they can explore time in an active way.

The workshop focusses on the abstract term ‘time’. The perception of ‘time’ gets clarified.

The children work with a linear view of time in the workshop. We pass time periods from 1 second to 300 years and eventually to infinity.

1 second → 1 minute → 1 hour → 1 day → 1 week → 1 month → 1 year → 10 years → 50 years → 100 years → 300 years → infinity

300 years is an important time. Within 300 years, the radioactive waste in Dessel will be less harmful. An important fact is that the children realise that radioactive waste becomes less and less harmful as time progresses. They experience this by removing radioactive particles themselves as they move on in the workshop.

The perception of time is addressed by starting from the living environment. The pupils play small clarifying games about the concrete times they already know well (up to 1 year).

Then they explore the unclear times (1 year to the future). To further investigate the perception of time, a questionnaire was made for pupils at ‘weg-wijzer’ in Dessel with an age of 10 till 12 years. After the interpretation of the results, you can see that pupils easily quote historical time when they want to look back to the past. From the moment they start to estimate for themselves how long something will stay, they doubt. Their sense of historical time is good, but personal time can and must develop further.

Time in the workshop is always suggested by building a tower, making a family tree, counting year rings, seeing waste evolve, ... There will be other contents. These are not the essence, but a means to reach the essence.

Activity's in the workshop

Before

This folder comes with badges. These come in four different colours. This allows you to form teams in advance based on your class composition. Furthermore, the badges contain prints of tasks. The students have a task during the game. These are briefly described below.

	If you have this responsibility, you can hold the map and lead the way.
	If you have this responsibility, you can take pictures of the challenges you and your group execute. Show them to your teacher so she/he knows what your group did.
	If you have this responsibility, you make sure that the group does not forget to go to the 'board' to put the atom further and to take half of the radioactive balls out.
	If you have this responsibility, you remind the group that they can look around and enjoy the nature.
	If you have this responsibility, you are the glue of the group. Has everybody the chance of doing something? You can make sure of it.

Introduction

As an introduction phase of the workshop, the children will play a game in the escape room. The room is full of riddles about time. The short periods of time such as 1 second, 1 minute, 1 hour, 1 day, 1 week and 1 month are covered here. In the escape room they will already play in teams. This is why they should have their badges on.

When they have solved all the riddles, they will find a video to play. This one will explain the game. They will also find the maps they will need for the game.

Game

After the escape room the rest of the workshop takes place outside. There you can see a large path, a timeline. Next to the timeline, there will be clear indications of time leading to the future. On both sides of the timeline are coloured circles for each group. It works as a game board. The game starts at 1 year. Every group has their own bucket filled with balls, this is there pawn. The teams have to reach 300 year as soon as possible. They do that by fulfilling tasks. The groups use their own coloured map to find these tasks (in boxes). When the students find a box and have completed the challenge, they take a picture. After every task, the students return to the timeline. They show the picture to the teacher and may replace their bucket to the next stop.

When the students move their bucket to the next stop, they may take half of the balls out of the bucket. Removing the balls as you move forward in time, symbolizes the neutralization of a radioactive atom and therefore the reduction of radioactivity. It is not completely scientifically correct, but we wanted to symbolize the half-life, the ever decreasing radioactivity.

A short overview of the activities of each group can be found here:

	1 year	Build a tower of a year
	10 years	Count the annual rings
	50 years	going further or going back?
	100 years	Hopping 100 years
	300 years	Smelling the future
	1 year	Make a graph about your birthday
	10 years	Build your own timeline
	50 years	Make your own family tree
	100 years	Hundred field of art
	300 years	Looking to the future
	1 year	Build a tower of a year
	10 years	Count the annual rings
	50 years	Make your own family tree
	100 years	Hundred field of art
	300 years	Feeling the future
	1 year	Make a graph about your birthday
	10 years	Build your own timeline
	50 years	going further or going back?
	100 years	Hopping 100 years
	300 years	Looking to the future

End

They all have to try to reach the end, so they all feel different times. When everyone has reached the finish, the students all get a stone and some markers. They need to draw something on the stone that they think will stay forever. With these stones a whole path is formed on the domain.

The rest of the reflection can then be held in the classroom.

Teacher's task in the game

Before the start of the activity you may already hand out the coloured badges. In this way you can choose which students form a group together.

Task teacher in the escape room:

The workshop starts inside the 'Tabloo' building. The students will be placed in an escape room. The goal is to crack the codes as quickly as possible together with the whole class. The escape room is designed in such a way that the students can start immediately without instructions or help from the teacher.

However, you can read the outlines of the escape room here. This way, you can still intervene when the students are unable to continue. Please do not discuss this with the students yet. This way they can experience the escape room to the fullest.

Structure of the escape room

In the escape room, the students work in the group of their pre-arranged badges. In the room there are several assignments on coloured paper. The students have to think for themselves to make the assignments that belong to their colour. In small groups they carry out two assignments each time.

Once they have completed an assignment correctly, they find a code of numbers. This code is also written on the wall full of keys. If the students take the right key, they can open a box. This box contains a puzzle piece. Eventually, the students have to put all the collected puzzle pieces together. In this way they come to an image of natural materials. They have to link this to the box of natural materials in the room. In this box they will find an USB-stick and treasure cards for each group.

The USB-stick has to connect with the computer at the end of the escape room, a brief instruction follows. In some cases, you will have to assist with the connection between the USB-stick and computer.

Teacher's task during the outside workshop:

When you get out of the escape room, you gather the students to the field in front of the 'Tabloo' building. A big timeline will be visible. The pupils can start in their groups without further instructions. As teacher, and supervisor, you get a good overview of the game at the timeline. The pupils will return to the timeline when they finish a task. Tasks that require control will be in the field, close by the timeline. The students will receive a simple camera, they need to take pictures as evidence. You can use the pictures to check the tasks, to put on the school website, to discuss the workshop later in class, …

After the workshop?

1. Teaching conversation

The students did different assignments during the workshop. It is nice to inform the others about this. You can do this by using the different pictures the students took themselves.

Escape room

Essence
The students can express what you can do in a minute, an hour, a day, a week and a month. They can estimate how long a minute, an hour, a day, a week and a month take and can link this to their own world and experiences.
Questions
- What did you think of the escape room? What did you like/less like? - What can you do in a minute/an hour/day/week/month? - What different types of calendars do you know? When do you use these calendars? - How did you calculate the sum on the ceiling?

Assignment 1 year: make a graph of your birthdays

Essence
The students make a graph of their birthdays and think about the time of it by combining all the months together with a robe and cards
Questions
- How did you build the graph? Did this go smoothly? What went troublesome? - What did you have to do with the red rope?

Assignment 1 year: build a tower of a year

Essence
The pupils understand they need twelve months to make a year by building themselves a wooden tower and ordering the blocks according to their knowledge of the months.
Questions
- How many months are there in a year? - Was it easy to build a tower of twelve blocks? - What did you have to do on the top of the tower?

Assignment 10 years: build your own timeline

Essence
The pupils become aware of the time span of ten years by making their own timeline.
Questions
- Can you remember the theme of each colour on the stone? - What were some examples of milestones you already achieved/ didn’t achieve yet?

Assignment 10 years: count the annual rings

Essence
The students feel what ten years is by comparing it with their own age. They compare it by counting annual rings and searching for trees.
Questions
- How can you calculate how old a tree is? - How many year rings did the trees you counted have? How old are the trees? OPTION 1: Did you find a tree with the same age as you? How did you know this? OPTION 2: How much older was the tree that you found?

Assignment 50 years: going to the future or going back?

Essence
The students see and feel how long 50 years is by sorting pictures of 50 years ago and 50 years further from now. They need to earn the pictures first.
Questions
- How could you throw the cans away? - What did you had to do with the pictures that were in the cans? - Give some examples of things you have seen on the pictures? - Did it made you think of things that can happen in 50 years? Give examples.

Assignment 50 years: make your own family tree

Essence
The students feel how long 50 years is by going back in the past and going further in the future and looking at people in their family.
Questions
- Did you find it difficult to build your own family tree? - How many years are there between you and your grandparents? - How did your family tree in the following 50 years look like?

Assignment 100 years: 100 field of art

Essence
The students can create an artwork for things that happen in 100 years and they think about the duration of those things while creating.
Questions
- What did you represent in your work of art? - Where could you choose from? - Where do you think of when I say 100 years?

Assignment 100 years: hopping 100 times

Essence
The students feel what 100 year is by hopping and counting every year through a game. That way they need to count to 100 on a special way.
Questions
- Where did you have to hop to in the hundred field? - Where there easy/ difficult hints in the game? Can you give examples? - Who was first to get to 100 years?

Assignment 300 years: looking into the future

Essence
The students experience how unclear 300 years in the future becomes by using glasses to describe their surroundings to each other.
Questions
- What differences did you notice between the different glasses? - Was it easy to describe what you saw with 300-year-old glasses on your head in the future? What difficulties did you experience? - Why could you hardly see through the 300-year-old spectacles? What does this tell you about the future?

Assignment 300 years: smelling the future

Essence
The students experience how unclear 300 years in the future becomes by using their sense of smell.
Questions
- Did all the different smelling boxes smoke the same strength? What differences did you notice? - Could you still smell what herb was in the last box? - Why couldn't you smell almost anything in the 300-year-old bag? What does this tell you about the future?

Assignment 300 years: feeling for the future

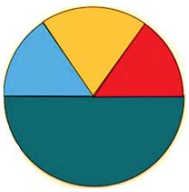
Essence
The students feel how long different wastes exist. They notice that some wastes stay for a very long time (300 years).
Questions
- Were all the jars filled? - Were the jars of radioactive waste all filled to the top? Why in the jar of '300 years' was only the bottom filled and the jar of 'now' was completely filled? - How long does a plastic bag/mug/wat stick remain harmful to nature?

Final assignment: reflection stones

Essence
The pupils can draw their own image of the future on a stone.
Questions
- What did you draw on your stone? - What do you think will exist forever? What makes you think that?

2. Possible activities about the perception of time

2.1 Drama – tableau vivant

Goals: ZILL		
MUge2 De muzische bouwstenen beleven, herkennen, onderzoeken en hanteren. **MUva2** Gericht beschouwen van beelden, muziek, dans en drama met oog voor de muzische bouwstenen, werkvormen en vormgevingsmiddelen. **MUgr2** Durven fantaseren en verbeelden		
Concept:		
	**Subject**	Standbeeldentheater – *zet even op pauze!*
	Technique	Non-verbale technieken: tableau vivant
	Building block	Scèneverloop: fantaseren en timing
	Goal	Technische vaardigheden beheersen

Tip: Students can do this outside. Let them use natural materials in their statue theatre.

STEP 1: Warming up

Let the students warm themselves up. Do this with a fun game. For example, put them in pairs. One has to move on the music. The other has a remote control fixed. When the person with the remote control clicks on pause, the other should become a statue. Change roles a few times.

STEP 2: Acquisition phase

Explain to the children what the intention is. If necessary, show them films of the 'mannequin-challenge'. Tell them they're going to be statues. How can you do that? What do they have to look out for? How can they tell what they're doing?

(ATTENTION: Make sure you are in balance/ completely still (breathe calmly, eyes may blink), make sure your posture/movement is big, extra: make it clear with your face what you are doing).

STEP 3: Processing phase

Divide the children into groups of four/five pupils. Give them a location. Have them make a tableau vivant at that location. They are not allowed to use objects. Tell them to stand for a minute. They're going to have to feel this for themselves. (You can't say when the minute is done.)

STEP 4: End

Let the groups show each other's statue theatre. Let the spectators guess where they are. Let them say what they liked and what less. Also reflect on standing still for one minute. Did you get this right? How did they handle it? Were they close?

TIP: Have them make a series of statues. Every time the light goes out, something changes. So they play stage with statues.

2.2 Art – Dali

Goals: ZILL
MUge2 De muzische bouwstenen beleven, herkennen, onderzoeken en hanteren. **MUva2** Gericht beschouwen van beelden, muziek, dans en drama met oog voor de muzische bouwstenen, werkvormen en vormgevingsmiddelen. **MUgr2** Durven fantaseren en verbeelden
Concept:

Subject	Smeltende tijd – Dali
Technique	Schilderen met takken in de natuur op papier
Building block	Vorm: vormsoorten
Goal	Durven fantaseren en verbeelden

For this lesson you can go to the playground/outside. Make sure there are branches to be found.

STEP 1: Introduction
First, you tell who Salvador Dali is and what he does. Be sure to show his work with the melted clock. Discuss it with some observation questions. Make sure the students get enough background information.

STEP 2: Acquisition phase
Explain to the children what the intention is. They will work with organic forms. Explain this by explaining the difference with geometric forms. Organic forms have no corners. *(Let them sort forms, draw, ...)* If you want to see if they understand, let them all draw three different organic forms with chalk. Walk around with the group and look at each other's drawings. Talk briefly about good things and less good things.

STEP 3: Acquisition phase
They're going to paint with branches. Let them all look for a big leaf to put their paint on. Let them also look for a long branch. There they can attach their brush. Then show them how to tape their brush to their branch. Give them paint on their leaves as well. Give them an empty A3 paper as well.

STEP 4: Processing phase
They first paint an organic form. Then they change their shape into a clock. Their clock looks like it's melted! Can they paint their numbers as if they were melting? Give them a lot of freedom.

STEP 5: End
Put all the results together. Discuss the process and the product. Ask how the painting with the branches worked. Also ask about the organic forms, ...

***Variation**: Let the students work with shadows to make it clearer that the clock has melted. This makes the assignment a little more challenging. (New construction: space - shadows)*

2.3 Religion

Goals: ZILL
Ontwikkeling van een innerlijk kompas – levensbeschouwelijke grondhouding: **IKlg1** Dieper ingaan op de eigen levensbeschouwelijke en spirituele ontvankelijkheid en groei *(Existentiële vragen stellen - open filosoferen en theologiseren zonder sluitende antwoorden te verwachten)*

This activity is ideal to go outside. Sit in a quiet place in nature. Make a big circle.

STEP 1: Introduction

Tell the children that they have thought about the time during the workshop in 'Tabloo'. Ask what they remember. What time period did they find very clear? What did they find less clear? Ask mainly limited questions.

STEP 2: Acquisition and processing phase

Talk to the students about the past. Do they know things about the past? Can we know things about the past? Are there things that are unclear? What is the past?

Then switch to the future. Do we already know everything about it? Are there things we can be sure about the future? Are there things we can't know?

What is the future? Let different students speak. Don't let the students stray too far. Occasionally ask a new question to bring them back to the future.

What did they paint on their stones? Why did they do that? Why do they think things will stay forever? Why do others think they won't? Can we be sure?

Are we all seeing the same time? Would everyone think the same about the future? Do we experience time differently than others?

STEP 3: End

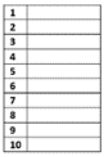
Has their image of the future changed? Have them draw something on the playground with chalk that they are sure will stay forever. Let them draw the same as on their stone or something completely different.

2.4 Mathematics

Goals: ZILL
Meten en metend rekenen **WDmm3** Schatten, meten en rekenen met maateenheden *Tijd: tijdsduur berekenen in uren en/of minuten en/of seconden*

For this activity you will hide several stones outside. The students will have to look for them and write things down.

STEP 1: Introduction



Tell the children you've been hiding stones outside. They all get a note with a frame with a number in front of it. Outside there are stones with those numbers on top. The stones also have times on them. For example: two minutes → seconds. The pupils need to convert two minutes to seconds on their sheet.

STEP 2: Processing phase

The students search for all the stones and solve all the assignments. Who comes back first with all the correct solutions?

STEP 3: End

Check all the solutions they found.

2.5 Language

Goals: ZILL
Taalontwikkeling – talige grondhouding: **TOtg1:** Plezier beleven aan taal en het spelen met taal **TOtg4:** Mondeling en schriftelijk willen en durven communiceren en het nut daarvan inzien Taalontwikkeling – schriftelijk taalvaardigheid Nederlands: **TOsn3:** Een schriftelijke boodschap overbrengen *Zich expressief uiten (over gevoelens, gedachten, meningen, fantasieën)*

For this lesson the students can go outside. Search for a quiet place. Provide writing plates with paper and pencils.

STEP 1: Introduction

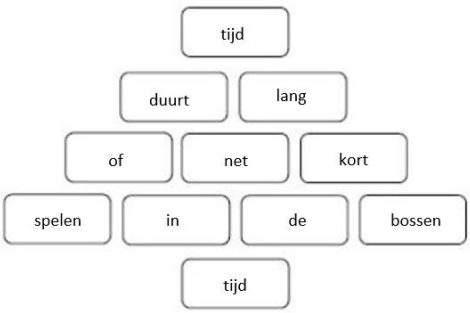
Tell the students that they have to think about the visit to 'Tabloo'. Ask what the pupils remembered. Place the things they list in a big word web.

Tell the students that they are going to write poems today.

STEP 2: Acquisition phase

Show a poem to the students. You can use a poem of yourself or the poem next to the text.

The students are writing an elf today.
Explain this style by using the structure on the right.



Explain the steps to write a good poem.
(Choosing words -scrap words -arrange words -write down the poem - re-read - rewrite)

STEP 3: Processing phase

The pupils go to work according to the steps of writing a poem.
The experiences of the trip and more specifically the workshop is central here.

(Choosing words -scrap words -arrange words -write down the poem - re-read - rewrite)

STEP 4: End

The pupils read their poems to each other. Certain experiences can be discussed in more detail.

Afterwards, a common place will be found to hang the poems.