A colorful scarf for my friend

Age-group: 3-6 years old
Number of hours: … hours
Short description of activity: (max. 4 sentences)
Children design a scarf as a present for their friend. They learn to know different textiles and how they can be put together (e.g. crochet) and be dyed in different colors. In this way they also learn the principles of subtractive coloring.

CT-competences:

- Data collection, analysis and representation
- Algorithms & procedures
- Debugging
- Pattern recognition

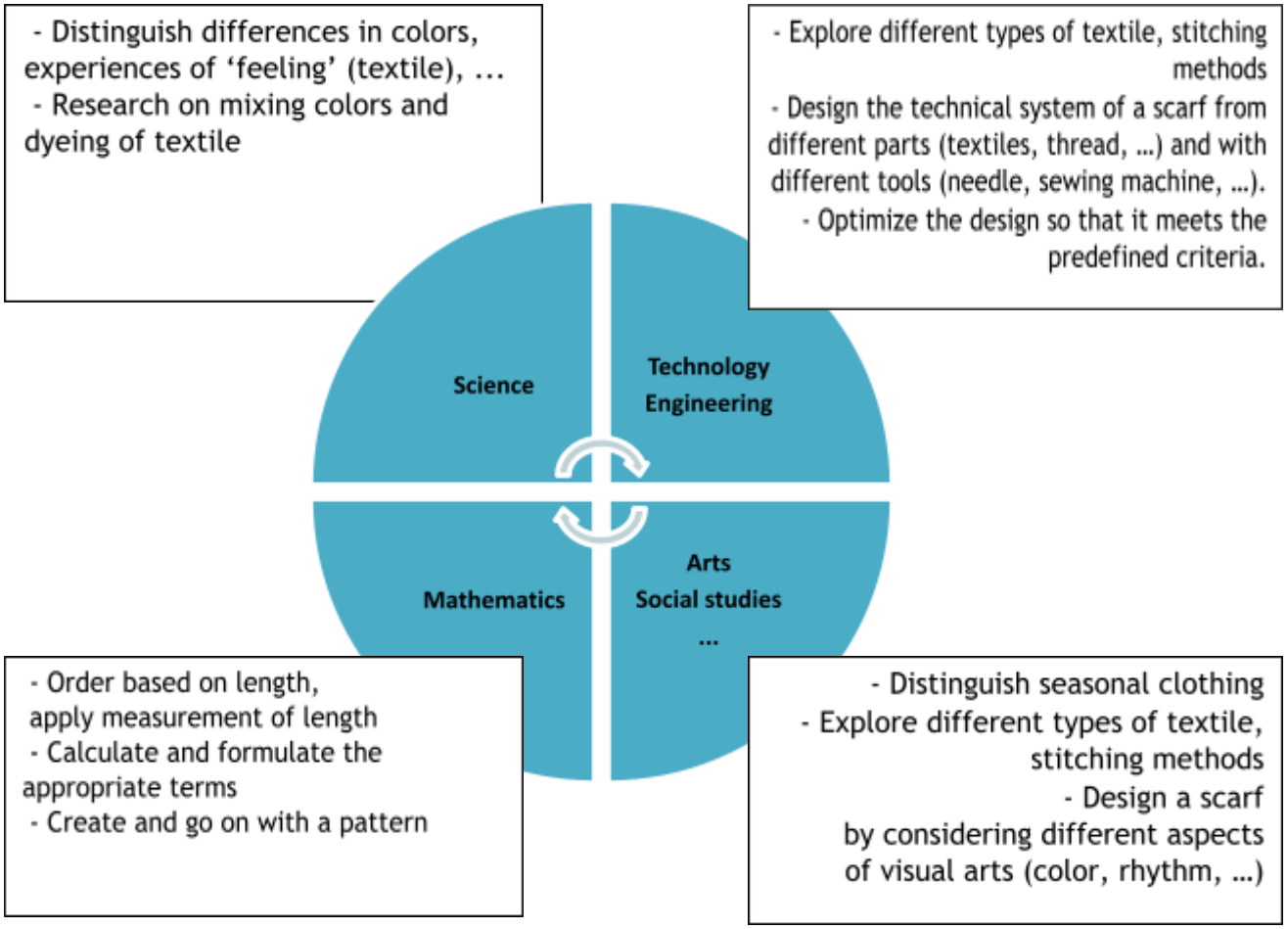
Goals

- Explore the production process of a scarf (from natural resources to final product)
- Exploring materials (such as wool > scarf)
- Distinguish different kinds of textile (wool, fabric, …).
- Explore different ways to bind textile together.
- Apply specific techniques to bind textile together (eg using mini loom).
- Distinguish different sewing patterns within clothing.
- Explore how subtractive coloring works (mixing colors).
- Apply subtractive coloring onto textiles.
- Design a scarf taking different visual aspects (color, rhythm, …) in consideration (link with Art)
- Explore computational thinking skills such as abstraction (focusing on 1 feature at a time), data collection analysis & representation (compare, grouping, ordering), pattern recognition, algorithms & procedures, debugging (while sewing,..) (for details see Methodology)

Realistic STEAM-context

The context used here comes from a picture book about a giraffe who receives a present from his friend 'the sheep'. The book *'The surprise*' by Sylvia van Ommen (2003) is about a sheep that shears itself, dyes its wool and uses it to make a scarf for his friend, the giraffe.
https://books.google.be/books/about/The_Surprise.html?id=CcWb_BrK9IEC&redir_esc=y
It is not necessary to use the book. You can also use the idea, and it is nice to invent a story together with the children and design an own book.

(short justification of STEAM-integration)

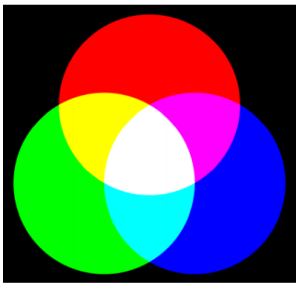


Methodology

Based on learning by doing (with different levels: from imitation to creation)

Part	Description	Timing
1	**Exploring the context** Read the story 'The surprise', or use the idea of the book and invent the story with the children in order to design an own story book. *The Surprise Hardcover – Picture Book, April 1, 2007* *by Sylvia Van Ommen (Author)* Combine it with the school puppet or dramaclass to strengthen the experience of the story. Within this story of 'the surprise', the following elements are interesting to talk about with the children: - First of all: Where does the wool come from? (relates with the sheep of course) - The sheep wants to make a scarf as a present for a good friend … Eventually we can watch a short movie about making a thread with the spinning wheel, discover some interesting information in books, …	15'

	This theme can be made visible in the classroom by making an inspiration corner with books, different kinds of wool (thick, thin, bobbins, …)	
2	**Discover different kinds of scarfs** These scarfs can be brought by the children, but also the teacher can foresee different scarfs. Foresee scarfs that can be used for different purposes (warm scarfs, but also nice and fashionable scarfs..) – Observe and compare different scarfs. Let's find out what makes a scarf a scarf. What are the criteria? A scarf or tie is an elongated piece of cloth worn around the neck. Scarves are often used to keep warm, and then often made of wool or cotton. A scarf can also be worn as a fashionable accessory, for example as part of a costume. Often it is a printed cloth made of silk or polyester. In some cultures, a scarf is part of the national costume. Scarves are also popular within certain subcultures, such as among soccer fans, who wear scarves in the club colors and with the team name or a slogan on them. – When we look at the different scarfs we have collected, we want to put them in different boxes in our cupboard so that we can find them back easily. How would you group/order them? – So the scarfs can be grouped and ordered based upon different features: length, thickness, the way of putting it on (e.g. scarfs with a slit), the way they look (color, pattern, print, ..), material (e.g. fleece, cotton, wool), the way they feel (soft, ribbed, rough, …) – Discussion: ○ Focus on different features ○ When are we wearing a scarf? Why? ○ Bought, self-made. ○ A lot of scarfs are knitted (sheep – wool), but not all, so there are also other ways to make a scarf, e.g. with materials such as cotton, fleece, silk, … ○ Focus on math, e.g. how can you measure which one is the longest? CT: abstraction (focusing on 1 feature at a time), data collection analysis & representation (compare, grouping, ordering)	30'
3	**Exploration: Different kinds of textile and methods of attaching** **This part can be split up in 2 different sessions:** **1. exploration in 2 corners:** - Discover different kinds of wool (different thickness, length, color, presentation: loose threads, bobbin, a ball,…) - Discover different pieces of textile (different thickness, material, color, print, texture, presentation: folded, rolled up,…)	20'

	2. methods of attaching: Give children some time to discover and explore and then after a while give them the challenge to put different pieces of wool/textile together: How can we make a long thread or a long piece of textile? (e.g. by making knots) E.g. How can we make a scarf from a ball of wool? This activity can evolve into a more focused activity in which children have to use tools in order to put the wool or textile together, e.g. by sewing with needle and thread (link), learning to crochet (link), …, using mini-loom. Different patterns can be applied. (https://www.youtube.com/watch?v=AWLIy-Um7_0) (Grand)parents can certainly be involved in this! This is really responding to the living environment of the children. A visit to a textile shop, a sewing workshop are also possibilities to go deeper into this theme. In the sewing workshop, they can learn how to sew a rag scarf. CT: pattern recognition, algorithms & procedures, debugging (while sewing,..)	60’
4	**A challenge: To color wool and textile** Discussion: - Start from white wool and white textile. Also a sheep is often white and wool can have different colors. How can this be? How can we get different colors now? How to color wool ourselves? 1. How can we make different colors? - First investigate how we can mix colors, e.g. by using paint on a piece of paper. (let children try with the primary colors) - After this, the children have to find out for themselves how they can mix colors in order to get a specific color… with which they can make a pattern, e.g. on a paper scarf. In fact, this is an application of subtractive coloring. So in this activity we focus only on subtractive coloring:  *Subtractive coloring* *Additive coloring* Subtractive coloring (painting) differs from additive coloring (sunlight) When 2 of these colors are mixed *(subtractive)* you are creating secondary colors: Red + Blue = Violet Blue + Yellow = Green	30’

	Yellow + Red = Orange - When a primary color is mixed with a secondary color you get again different colors … Using the coloring wheel… (more info through this link) Findings of the children are discussed in class (e.g. by using hands: yellow hand kisses blue hand – one gets a green hand) 2. How can we color wool or textile? Trying out different kinds of methods to color textile, wool. - The children explore themselves how the color can stick onto the wool (both natural and non-natural materials). *(eventually children can be challenged to extract dye from natural materials, such as beetroot, spinach, carrots, ..)* Give time: *When this activity was piloted in class, the children had been trying with cold water for a full week, until one of the children brought up the fact that her mom put her tea in warm water.* ○ Is it possible to put dye directly on the textile? ○ Which material is coloring / which material is not coloring? *Natural materials such as beetroot, spinach, curcuma can be tried… These work quite well. Carrots is less successful.* ○ Material can be placed in cold or warm water, crushed or not, stirred or not, kept in the water for a short or longer period of time. ○ The effect on the coloring of the textile can be investigated: textile is kept in the water to see whether the color is absorbed by the textile. Possibilities to investigate: - the length of time (how long do you keep the textile in the colored water), - does the color remain after drying, after washing the cloth? Leave colored textile on the windowsill and follow up daily. Findings of the children are discussed in class. CT: data collection, analysis and representation (findings are captured and verified), pattern recognition (mixing colors, completing patterns), debugging (mixing colors – finding errors in finding the right colors), decomposition (all colors consist of 3 main colors. So children can understand, that color orange is made from 2 components: yellow and red)	30’
5	**A challenge: Making a scarf for e.g. a giraffe, the teacher, the class puppet, …** - Brainstorming with the children about how to make a scarf. It is good to put forward some criteria such as 1 time around the neck, nice, warm, certain patterns, … - The children draw their design on a piece of paper. They can use their findings from before (see part 2). Stimulate creativity… - The design drawings from the children are discussed, and grouped based upon common features.	60’

	- Based upon this, the children work in little groups on their scarf and use techniques they learned before (sewing, crochet or by using mini looms with cardboard: see link). - By using the mini loom to create patches: join them to create a longer scarf. There are patterns in every patch, and also in the final scarf. There is also a bit of math: counting numbers of strings, and number of patches, total length of the scarf, etc. - Scarfs are tested (e.g. long enough?) and optimized in order to get a satisfying result. In this stage it can be interesting to ask (grand)parents again to the class. CT: abstraction (defining criteria), problem decomposition (brainstorm), data collection, analysis & representation (grouping of design drawings), debugging (optimizing scarfs)	

Organization

Materials:

- the story 'The surprise'.
  The Surprise Hardcover – Picture Book, April 1, 2007
  by Sylvia Van Ommen (Author)
  (see also tips&tricks)

- different kinds of scarfs (long/short, wool or other textile, different colors, different materials,…)
- different kinds of wool and textile (ball of wool, pieces of textile in order to explore and use)
- mini loom and other tools in order to sew or crochet (depending upon your own choice)
- different colors (dye, paint) in order to mix and explore subtractive coloring
- paper
- hot/cold water (in order to see how the dye sticks onto the wool or textile)

Use of ICT: (only mention when relevant)

Opening of classroom: (only mention when relevant)

Coaching

Useful questions:

- Part 1 of methodology: Exploring the context
  - What is the story about?
  - Where does the wool come from?
  - How to make a scarf from a ball of wool?
- Part 2 of methodology: Discover different kinds of scarfs
  - When we look at the different scarfs we have collected, we want to put them in different boxes in our cupboard so that we can find them back easily. How would you group/order them?
  - When are we wearing a scarf? Why?

    - Scarfs are made of different materials? How do these different materials feel? Do the scarfs have different purposes?
- Part 3 of methodology: different kinds of textiles and methods of attaching
    - Ask questions about the characteristics of wool and the different kinds of textiles. How do they feel? How can you use them? How are they presented in shops?
    - How can we make a long thread or a long piece of textile? (e.g. by making knots)
    - How can we make a scarf from a ball of wool?
    - how to make a pattern in the scarf?
    - How can you make a patchwork out of different pieces of textile?
    - How to put patchwork together?
- Part 4 of methodology: to color wool and textile

  How can we make different colors?
    - A sheep is often white and wool can have different colors. How can this be?
    - How can we get different colors from white wool?
    - How can we color wool ourselves?
    - How do we mix colors in order to get a specific color? Let's find out…
    - How can we make a pattern for our scarf? e.g. on a paper scarf.

  How can we color wool or textile?
    - How can the color stick to the wool?
    - Is it possible to put dye directly on the textile?
    - Which material is coloring / which material is not coloring?
    - Does it make a difference if we put material in cold or warm water, crushed or not, stirred or not, kept in the water for a short or longer period of time?
- Part 5: Making a scarf for …
    - How can we make a scarf with criteria? 1 time around the neck, nice, warm, certain amount of patterns, … (choose between the criteria, not all are necessary)
    - Is the scarf long enough? How can you make it longer?
    - Does the scarf contain a certain amount of patterns? How many?
    - Does the scarf meet the criteria? Why or Why not? What can you do to optimize?

Stimulation of self-management: (concrete opportunities/remarks adapted to the project)

Stimulation of cooperation: (concrete opportunities/remarks adapted to the project)

Teamwork:

- Groups consist of 2 or 3 students.
- Competences needed in a group:
    - Children need to act and think. It is important that children are mixed so they can share ideas and can be stimulated to make decisions and work together

Formative assessment: (concrete description/summary adapted to the project)
As a teacher you observe the children throughout the project. It is important to concentrate on the process of their thinking and acting. When they come to a result, reflect on it with the children. Teacher is a coach who tries to improve the learning and learning needs of the students.

Adaptations

- General ideas:
- Ideas with younger/older children: (3-6 <-> 6-9 / 9-12 <-> 12-15)

Maybe sewing or crochet is not an explicit learning goal and may be too complicated for 3-6 y olds, but we propose to use small mini looms in cardboard.
Use of the coloring wheel in order to focus on secondary and tertiary colors is possible with older children.

Difference between subtractive coloring and additive coloring (see also the activity on colors for 12-15 y olds)

Tips & tricks

cleaning texture: eg. cold water / hot water: comparing (making the link with washing clothes at high temperatures, and the problem with wool, because it shrinks when washing at high temperature)

there are also other options:
Look for similar or related story books.
For example, there is one that could be interesting with a slightly different approach. It is called My side of the Scarf (by a Spanish author Carmen Parts Luque) and talks about the length of a scarf relating it to friendship and relationships.
https://books.google.pt/books/about/My_Side_of_the_Scarf.html?id=AkfQyQEACAAJ&source=kp_book_description&redir_esc=y

You don't need to use the stoy book. You can also use the idea and it is nice to invent the story with the children and design an own book.

It's always a success to design a scarf for the school puppet!

Dying with natural products can be a challenge, but beetrooth, curcuma, spinach works quite well.