

Content:

- Light art
- Making light paintings

Target group:

- Children ages 8 to 12
- Level: A1/A2

Language goals:

The children will be able to

- Understand a short (technical) film
- Find precise information in a text
- Expand their passive and active vocabulary
- Understand technical terminology in context
- Understand and answer simple thematic questions
- Formulate their ideas/opinions using simple verbal tools
- Use and develop learning strategies (make conjectures, correctly spell words)
- Prepare and hold a short presentation for the group
- Reconstruct the storyline of the short film with the help of pictures and captions
- Understand and follow instructions

Word bank

Kunstmaler (painter), *Pinsel* (brush), *Leinwand* (canvas), *Farbe* (paint), *Gemälde* (painting), *Lichtmaler* (light painter), *Taschenlampe* (flashlight), *Fotoapparat / Kamera* (camera), *Farbfolie* (colored filter), *Lichtbilder* (light paintings), *fotografieren* (to photograph), *im Dunklen* (in the dark), *leuchten* (to light up), *beleuchten* (to illuminate), *Belichtungszeit* (exposure time), *Foto* (photo)

Materials

- Laptop and projector
- Audio speakers
- Blackboard and chalk (white, red, blue, green)/Whiteboard and markers (black, red, blue, green)
- Box
- Art canvas
- Paintbrushes
- Tubes of paint
- Flashlight
- Camera
- Watch/Stopwatch
- Students' workbooks
- Students' portfolios

Materials for printing and/or copying

- *Light Elephant* (Lichtelefant) worksheet
- *Light Elephant* (Lichtelefant) answer key
- *Light Elephant* (Lichtelefant) word bank
- My word bank sheet *Light Elephant* (Lichtelefant)
- *Now I know* (Ich kann schon) questionnaire

Duration

2x45 minutes

Before the lecture/film												
Step	Content	Materials										
1	<p>Instructor welcomes the children and places a box on the teacher's desk. Instructor unpacks the contents of the box, and names each item as he or she takes them out and places them on the desk: <i>This is a paintbrush. These are tubes of paint. This is an art canvas. This is a flashlight. This is a camera.</i> The children repeat the words together.</p> <p>Note: So that the children can better remember the words, the instructor starts a short game: he or she puts everything back in the box. One child reaches in, takes an item in his or her hand and the others guess what it is.</p> <p>This topic can be used to start a discussion about classic or modern art or photography.</p>	Box; Paintbrushes; Tubes of paint; Art canvas; Flashlight; Camera										
2	<p>Instructor holds up the art canvas and asks: <i>Who needs an art canvas for their work?</i> Instructor writes the answer, <i>Painter</i>, on the board, and writes <i>Art canvas</i> underneath.</p> <p><i>What else does a painter need?</i> Instructor also writes the words <i>Paintbrushes</i> and <i>Tubes of paint</i> on the board.</p>	Blackboard and chalk/Whiteboard and markers										
During the lecture/film												
Step	Content	Materials										
3	<p>Instructor says: <i>So you don't think that painters need a flashlight or a camera? I'm not so sure. Let's watch a film and see whether there are painters who work with a flashlight and a camera..</i> (Minute 1:46-4:08)</p>	Laptop and projector; Audio speakers										
4	<p>Instructor says: <i>What do you think?</i> The instructor and the children formulate the answer together: <i>Painters need an art canvas, paintbrushes, and paint for their work. Light painters need a flashlight as their paintbrush and the camera as their canvas and the light is their paint. Painters make paintings, Light painters make light paintings.</i></p> <p>Instructor records this information on the board:</p> <table style="margin-left: 20px;"> <tr> <td><i>Painter</i></td> <td><i>Light painter</i></td> </tr> <tr> <td><i>Painting</i></td> <td><i>Light painting</i></td> </tr> <tr> <td><i>Canvas</i></td> <td><i>Camera</i></td> </tr> <tr> <td><i>Paintbrushes</i></td> <td><i>Flashlight</i></td> </tr> <tr> <td><i>Paint</i></td> <td><i>Light</i></td> </tr> </table>	<i>Painter</i>	<i>Light painter</i>	<i>Painting</i>	<i>Light painting</i>	<i>Canvas</i>	<i>Camera</i>	<i>Paintbrushes</i>	<i>Flashlight</i>	<i>Paint</i>	<i>Light</i>	Blackboard and chalk/Whiteboard and markers
<i>Painter</i>	<i>Light painter</i>											
<i>Painting</i>	<i>Light painting</i>											
<i>Canvas</i>	<i>Camera</i>											
<i>Paintbrushes</i>	<i>Flashlight</i>											
<i>Paint</i>	<i>Light</i>											
5	<p>Instructor says: <i>Now let's see how one makes light paintings.</i> (Minute 4:09-6:12)</p>	Laptop and projector; Audio speakers										

<p>6</p>	<p>Instructor says: <i>Exciting, isn't it? A light painter paints the picture in the air and takes a photograph of it! The trick is that he or she needs to use a longer exposure time.</i></p> <p>Instructor invites the children to gather around, and takes out the camera for the next explanation: <i>When I take a photo, you hear a rapid clicking sound.</i> Instructor takes a photo, and then continues: <i>The camera's shutter opens for a brief moment and then closes again very quickly. The light therefore rapidly enters through the shutter. This is called exposure time. The longer the shutter is open, the more light comes through.</i></p> <p>Instructor then draws the path of the light on the board: into the lens, through the aperture, through the shutter, onto the sensor (A good resource on this is: http://www.openfoto.de/wp-content/uploads/2009/01/grafik_3a.gif)</p> <p>Instructor comments: <i>This is also shown in the experiment with the balls in the film. Shall we watch this again?</i> Instructor shows the corresponding sequence again (Minute 4:40-5:13)</p>	<p>Laptop and projector; Audio speakers; Camera; Blackboard and chalk (white, red, green, blue) or whiteboard and markers (black, red, green, blue)</p>
<p>7</p>	<p>Instructor says: <i>Professionals only need 6 seconds to make a light painting. Let's see how much that is.</i> Instructor takes out a watch/stopwatch and counts: <i>One, two, three, four, five, six seconds! Wow, that goes by quickly! You have to paint very quickly to do that! Let's try it out. Everyone take out a pencil and draw a face in your workbook. I will keep the time and say "stop" after six seconds.</i></p> <p>Note: If the children are enjoying it, the experiment can be repeated multiple times, and with other themes.</p>	<p>Watch/stopwatch; Workbooks and pencils</p>
<p>8</p>	<p>Instructor says: <i>Here's another interesting question: On the photo you see the light painting but not the light painter. Do you know why?</i> The children discuss the question. Afterwards, the instructor shows the next film sequence (Minute 6:11-6:39)</p> <p>Instructor and children summarize what they have seen: <i>In the dark, one only see what lights up, or what is illuminated.</i></p>	
<p>9</p>	<p>Instructor says: <i>In the last film sequence we will see how the light painters paint an elephant very quickly. And we also see how they make a whole (animated) movie out of lots of light paintings. Let's watch!</i></p> <p>Note: If the children are interested, the instructor can show them the page with the "Elephant" (www.wdrmaus.de/elefantenseite). The "Elephant" is a character from a popular German TV show that has been around for more than 40 years. He is friends with the "Mouse" (see http://www.wdrmaus.de). The children can look at the website in more detail in the next German class or on their own at home.</p>	

Nach der Vorlesung/dem Film		
Schritt	Inhalt	Material
10	Instructor hands out the <i>Light elephant</i> (Lichtelefant) worksheet. The children put the pictures in the sequence in which they appeared in the film. The image captions help them in the process. When they are done, they discuss their answers in pairs, then check their work with the help of the answer key, which the instructors hangs in three-four places throughout the classroom.	<i>Light Elephant</i> (Lichtelefant) worksheet <i>Light Elephant</i> (Lichtelefant) answer key
11	Instructor projects the <i>Light Elephant</i> (Lichtelefant) word bank and stands looking away from the children. He or she selects a word and paints it in the air. The children call out the word. Then the children take turns playing the role of the instructor and each paints a word in the air. Afterwards, the instructor hands out the word bank sheet <i>Light Elephant</i> (Lichtelefant) and they copy all the words from the screen.	Laptop and projector; <i>Light Elephant</i> (Lichtelefant) word bank My word bank sheet <i>Light Elephant</i> (Lichtelefant)
12	Instructor and children end the unit with a reflection round, in which they discuss what they have learned. Each child then fills out the <i>Now I know</i> (Ich kann schon) questionnaire to find out whether they have achieved the learning objectives. Instructor also gives feedback on student performance.	
13	The children hold onto the following in their portfolios: <ul style="list-style-type: none"> - <i>Light Elephant</i> (Lichtelefant) worksheet - My word bank sheet <i>Light Elephant</i> (Lichtelefant) - <i>Now I know</i> (Ich kann schon) questionnaire 	Portfolios

Further ideas for subject matter or CLIL teaching (physics, art):

- Photo workshop (<https://digitalefotoschule.de/4875/lichtmalerei/>)
- Invite a photographer to class and hold a discussion (prepare questions in advance)
- Learn about the structure and functions of a camera
- Experiment with exposure time
- Create light paintings
- Plan and carry out a light painting project
- Learn about Picasso's light paintings
- Learn about Eric Staller and display the information on a poster.

Suggestion for the children at the end of the learning scenario

At the very end, the children gather around a computer or the instructor projects a computer desktop onto a screen. They look at the home page of the German Digital Kinderuniversity together. The instructor explains to the children that they now have completed the *Light Elephant* (Lichtelefant) lecture in the *Technology* faculty together and draws their attention to the fact that there are many more interesting lectures in this faculty and in the *Nature* and *Humankind* faculties.

The instructor and the children click together on the At Home link and discover how the website works. As an example, the instructor logs in and goes to the lecture that they just worked through.

The instructor shows the children that the lecture begins with an introduction by Professor Einstein and Ms. Schlau and that their work is supported by Jowo and Christoph, the field researcher. Professor Einstein and Ms. Schlau also wrap up all the lectures and thereby frame the work on each theme.

The instructor explains to the children that they can re-watch the film at home and can even set the subtitles to German or English. That way, they can “catch” key words while watching and use these to collect points and solve three exercises and a bonus exercise on the film. The children can also get help from their parents or grandparents, from registering to solving the exercises. The whole family can have fun learning and everyone gradually becomes a professor at the Kinderuni.