Situation:

Not (only) a question of politics: Left or right?

Be honest: Who hasn't experienced the following situation?
You receive the spontaneous command to turn left, and in a sweat-soaked moment, after intense decision-making, you inevitably turn right.

The abstract concept of "left" and "right" plays a crucial role in mathematics and in our everyday lives. Yet, especially in spontaneously occurring situations the decision what is left and what is right poses an important problem for many people.

Overview "Left or right?"

How to deal competently with the concepts of left and right?

Context
Everyday life
Recreation

Cognitive processes
Analysing situations
Processing information
Mathematising

Target group (incl. necessary prior skills and competences)

Adults and young adults with basic numeracy competences who experience problems in dealing with the concepts of left and right.

Content
Quantity and number
Dimensions and shape

Dispositions
Self-confidence
Affection
Flexibility
Math difficulties

Outcomes and results

Learners become competent in dealing (also spontaneously) with the concepts of left and right and feel self-confident in applying them.

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Main information

Content	Spatial orientation Working with maps
Target group	Adults and young adults with basic numeracy competences who experience problems in dealing with the concepts of left and right.
Learning intention	What is the intention of adults to face this problem? – Numeracy for personal and private purposes – Numeracy for professional issues
Duration	Approx. 3 lessons
Material and resources	Visual elements like arrows (see appendix 1) Printed maps or digital maps (google) Handouts or powerpoint presentation (see appendix 3)
Group size	Range from 5 to 12 learners
Problem statement	Exploring the challenges of distinguishing left from right: In both mathematical contexts and daily life, the distinction between "left" and "right" holds significant importance. This issue becomes particularly prominent in spontaneous situations, where individuals often find it challenging to determine the correct orientation. This exploration aims to delve into the difficulties associated with discerning left from right and its implications in various scenarios.
Working questions	• How does a heightened awareness of left and right contribute to overall spatial understanding? • Can learners identify practical scenarios in daily life where a clear understanding of left and right is crucial? • What strategies or mnemonic devices can be employed to enhance the ability to distinguish left from right?
Learning outcomes and results	• Learners can follow clear instructions to figure out left and right in different tasks. • Learners find ways to get better at understanding where things are in space by using clues and techniques. • Students identify situations in everyday life where we use left and right.

Working plan

Time (lessons)	Description of content/activities	Material	Methodical and didactic information[1]
15 min	**Activation**: The learners are placed in the situation by a short discussion about the meaning of "left" and "right" in the context of our daily activities. If they want, the learners can report on possible problems they experienced with the concepts of left and right.	Optional: visual aids such as arrows or models to illustrate the directions – see appendix 1 for an example	Questioning Collaborative learning
35 min	**Activity 1:** Memorize for spontaneous decisions. If the problem has not yet been mentioned in the previous discussion, the teacher points out that the concepts of right and left often become a challenge, especially in spontaneous decision-making situations. Together the learning group collects cues, techniques, aids and mnemonic devices that learners may already use to help themselves in such situations. If necessary, the teacher adds such aids and techniques. These could be: - Dominant hand: Quickly think of the hand one is writing with or doing most things with. - Visualizing an L with the left hand. - Wearing jewelry or a watch on a specific wrist can serve as a reminder. - Heart side: Some people remember that the heart is on the left side of the body. - Associate right and left with sort stories or images could aid in better retaining the connection. - …	See appendix 2	Collaborative learning Hands on learning
	Activity 2: Decisions The learners are shown pictures (vehicles, people walking, animals, …) and are asked to make decisions and	Handouts or powerpoint presentation – see	Questioning Hands on learning

[1] for description and explanation of kinds of tasks, HITs and other background information please consult the teachers'/user's guide

	chose “right” or “left” accordingly. They can also pose questions referring to the pictures to the learning group themselves: • Which direction does the cat look? • Is the planning moving to the left or the right side? • … Alternatively, the learning group can also work with things to be found in the classroom: • True or false: The windows are on the left side of the classroom. • Which side can we find the wastepaper pins? • …	appendix 3 for examples	It may be necessary here to mention the “problem” of perspective when deciding if something is on the left or on the right side.
15 min	**Activity 3: Classroom sports** The learners work together in pairs and give each other instructions on how to move around the room using the terms “left” and “right”. The teacher makes sure that the learners not only understand the directions, but are also able to give clear instructions. Still in pairs: Learner A gives a command; learner B does the movement accordingly. Then the change roles. Possible commands: • Lift your right hand. • Hop on the right leg. • Touch your left ear (with your right hand). • Turn your head to the right. • …	Optional: A list of possible commands prepared by the teacher.	Hands on learning Collaborative learning
30 min	**Transfer: Working with maps** The learners are given simple maps of the city or use Google Maps. In pairs, they alternately dictate routes through the city taking into account “left” and “right”. In self-control, the pairs check whether the correct target has been found and, if necessary, try to find out where a problem occurred.	Printed maps Or devices to use google maps	

Suggestions for the teacher/user

The example presented here should be considered as exemplary and inspirational material presenting a guideline with a high range of possibilities of adapting those suggestions to a specific group of learners or an individual learner with his or her very personal requirements.

In concrete terms, the example "Let's care about… screen time" can be an interesting way to raise students' awareness of the application of math concepts in the context of their daily activities. Depending on the learners' interests and daily life routines the example could be adapted these ways:

- Individualization and differentiation: The terms left and right may pose major problems for some learners in everyday life, while this concept presents little to no difficulty for other learners. The teacher should be aware of this and, if necessary, only carry out the exercises listed above with part of the group, while those learners who are very familiar with the concepts work on alternative content. However, it is also possible to appoint those learners as experts (e.g. in the pair exercises).
- Learning setting: The learning environment must be designed in such a way that even learners with major right-left difficulties feel comfortable enough to work openly on their deficits.

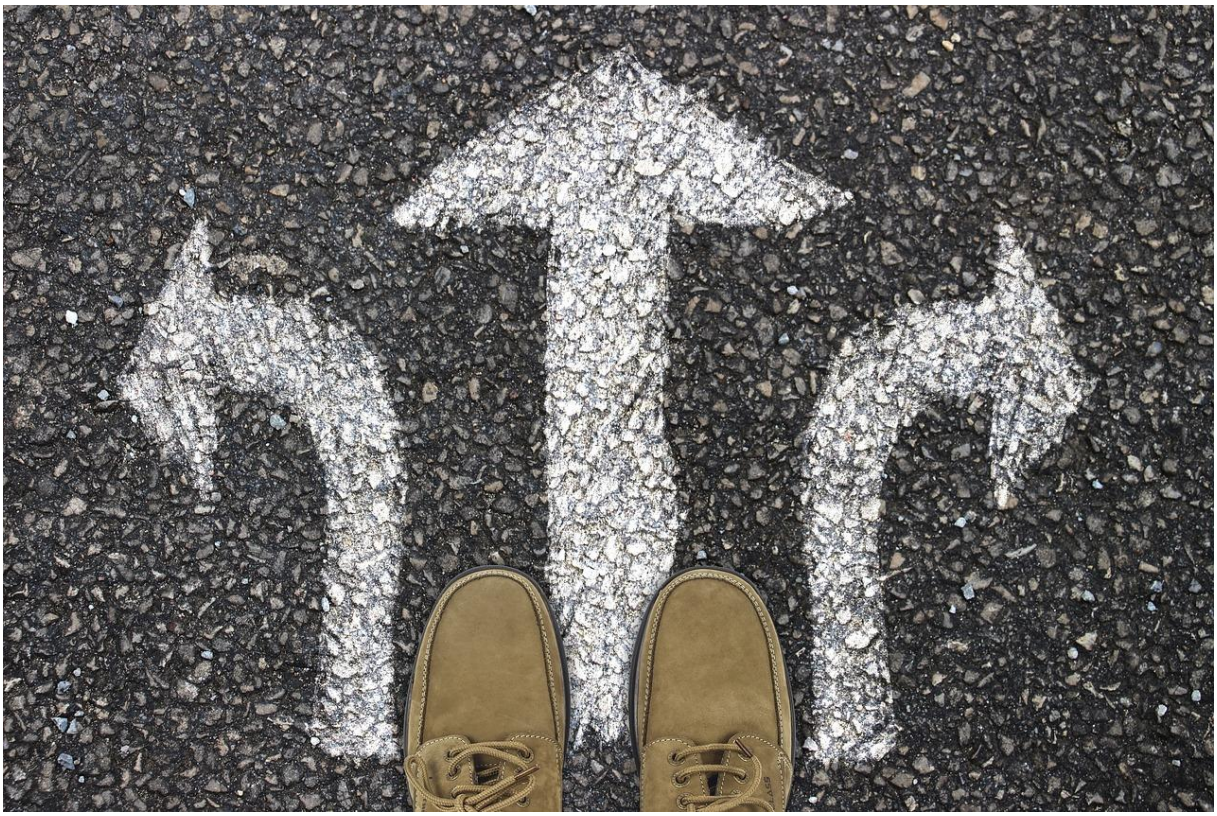
Our educational activities aim at numeracy skills being not only memorized, but first of all being practiced and functionally used by the learners in daily life or/and vocational situations. It is therefore recommended to implement the idea of HITS[2] (higher impacts of teaching skills) as far and often as possible: ...

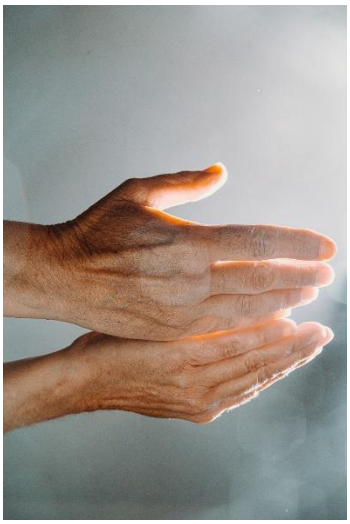
- ... work with concrete and authentic material that learners will recognize from everyday life situations.
- ... ask the learners questions and let them raise questions themselves. It can be crucial to discuss numeracy themes, contexts and numbers.
- ... think of possible ways of transfer: The distinction between left and right is crucial in many aspects of daily life and contributes to the safe and efficient execution of activities. It is crucial to encourage learners to consciously apply their newly acquired skills in everyday life and to continue practicing them. It is therefore important to determine, together with the learners, authentic situations in which they personally need the concepts of left and right. Such situations can be found in the context of navigation and orientation, traffic and driving, use of tools or operating machinery, clothing and fashion, sports and fitness, medicine or even social etiquette.

[2] For general information and explanation on HITS please see teachers'/user's guide

Appendix 1

Visual elements for activation phase (Sources of pictures: pixabay.com [31.12.2023])

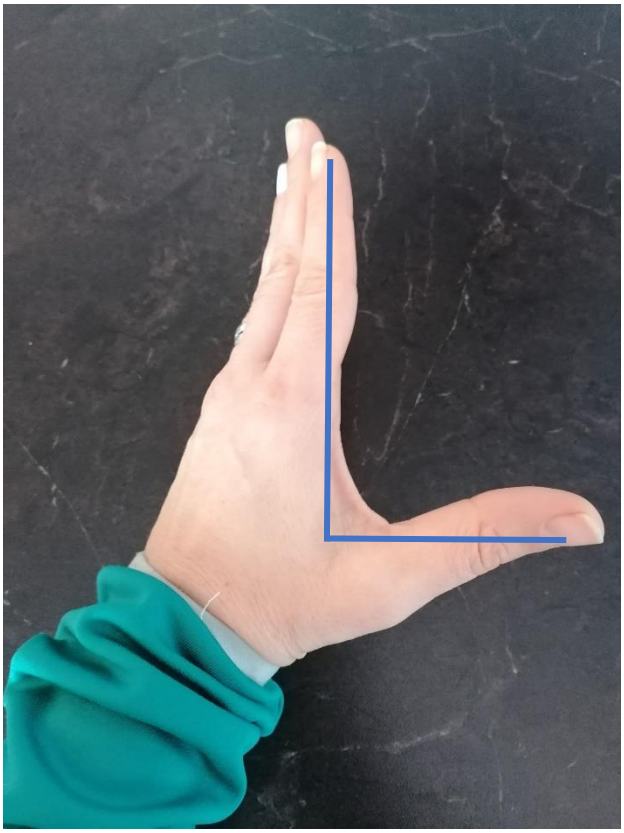




Appendix 2

Sources of photos: pixaby.com [31.12.2023] and own)

Visualizing an **L** with the **L**eft hand (



Which hand do you write or usually work with?

I am right-handed.

I am left-handed.

Appendix 3

Handout or powerpoint presentation:

This material was produced in the Erasmusplus project Numeracy in Practice, projectnumber 2021-1-NL01-KA220-ADU-000 026 292. In this project, 11 partners in 11 countries worked together in designing, evaluating and improving the materials. All materials can be found on the website (www.cenf.eu).