

Activity: Water Management in the Context of Climate Change – Flood Events

Objectives

- Discuss with the learners the effects of extreme weather phases on their own environment.
- Work out the basic idea of Nature-Based Solutions with the learners as well as ways to deal with flood events using the Think-Pair-Share method.
- Carry out a model experiment with the learners.
- Relate the findings of the model experiment Straightened vs. Meandering River to a real implementation.

Materials/Resources

For each student:

Worksheet I & II

For each group:

plastic tub, sand, small wooden, clay and stone elements, measuring cup, sloping base (wedge), stopwatches

Instructions for Teachers

The lesson begins with a silent impulse. To do this, select two pictures that ideally represent the issue in your region so that there is a personal connection to the learners. Let the learners look at the pictures for a few minutes. If you realise that the learners need orientation in terms of content, you can add the following question:

- **What is the relationship between river floodplains and flood events?**

The learners discuss this question. The teacher has the task of moderating the discussion and guiding the content. At the end of the introduction, the learners should know that the content is about extreme weather events.

As soon as a thematic orientation has been established, start working on the content. To do this, use the guidelines from Activity I. The *Think-Pair-Share-Method* is recommended. This is divided into a 10-minute work phase for individual work, a 5-minute work phase for partner work and a 5-minute work phase for the entire learning group. First, the learners work on the content on their own. Questions and results can then be compared and discussed with a partner. The final phase in plenary serves to clarify the last difficulties and open questions from the pair phase. This method does not involve writing down the answers together. During the first two phases, the teacher has the opportunity to respond individually to the learners and analyse any pre-concepts.



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Activity II is about carrying out an experiment. Analysing the learning group in advance is very important here. You need to assess for yourself how open and independent you can allow the learning group to work. All materials and instructions are listed in the worksheet section. As the teacher, you supervise the realisation of the experiment. The learners complete the observation protocol based on the guiding questions. The observations are discussed and analysed in the learning group after the experiment. It is recommended that the experiment be carried out in small groups of three to four learners. Before discussing the observation results with the entire learning group, the learners should discuss the observations in a small group. After the lesson, plan a time buffer for yourself to store the materials from the experiment.

The lesson concludes with an evaluation and transfer phase. This is particularly important because the Thinking Tool and NBS must always be considered in terms of concrete implementation in reality. Otherwise, the concept loses its holistic nature.

The following key questions serve as orientation for the learners:

- **Where are the issues with flood events in the region/city?**
- **Where is there potential for river restoration, or where have rivers been straightened in the past?**

As a teacher, you again have the task of moderation. To ensure that all learners can exchange ideas, it is advisable to divide the entire phase into a 10-minute partner phase and a 10-minute phase for the entire learning group to exchange ideas. Make sure that regional circumstances are addressed with the help of the guiding questions. In this case, NBS should be considered regionally.

Conclusion

A renaturalised riverbed can absorb more water in the event of heavy rainfall without causing flooding.

Reflection Questions for Teachers/Students

- **How did different ideas within your group help improve your work/decision?**
- **How did you decide which ideas to use? Did everyone have a chance to contribute?**
- **What would you change/do differently?**
- **What kind of challenges did you face and how did you manage them?**