



Plan a sight-seeing route

Topics

Speed
Scales
Distances
Estimating
Arithmetic

Time needed

At least 90 minutes
(2×45 minutes)

To prepare before class

Worksheets for students,
worksheets for students,
a scaled map of the town,
blank sheets of paper,
office materials, universal
Design Thinking Wheel.

Other teachers to work with

Nature/geography/
history teacher, IT/physics
teacher

Take a look at

The student worksheet

The task is to plan an interesting one-day sight-seeing route for a friend from a different town. Students are to create a plan which includes local attractions and important places. Throughout the process, guided by the design thinking method, they will be estimating distances and the time necessary to go from one place to another using different mean of transport. They can also use their ideas for a route during a school excursion. What is important is that the route be feasible and in line with the actual needs of the teacher and students.

Possible modifications

1. You can make the task more difficult by introducing additional details or restrictions, e.g. we should go to one place outside the town, one in the centre, visit diverse places, etc. You can also limit the time allocated for each activity, set a minimum and maximum distance, and the like.
2. You can combine your lesson with hands-on experience concerning the surrounding area and make the students measure the distances in the field.
3. You can combine this challenge with "Organise a school trip" and plan a sight-seeing route to be followed during a longer trip.
4. Other teachers to work with: nature/geography/history teacher, IT/physics teacher.

Tips for teachers

Below, you will find some practical tips that will help you organise students' work on this particular topic. You can decide at what point you want to introduce the challenge: before discussing certain concepts or afterwards, as a summary exercise. If you use the challenge to introduce a new topic, try to make students intuitively arrive at the solutions on their own. Then sit down together and decide which of the solutions are most effective and why. If you use the challenge as a summary exercise, make sure the students refresh their memories concerning the theory behind it and show them at which stages the theory was actively used. In any case, remember to point to the practical application of the knowledge gained in the process. Suggest using the information gathered at each of the stages. You can also use other examples apart from those referred to in the scenario.

Stage 1: Empathising and identifying needs

The aim of this stage is to think about the needs of all the parties interested in the trip. Remember that at the end of the activity you should go back to the identified needs and check if they were met.

- During this stage, all the students can work together or they can be divided into smaller groups.
- Encourage the students to formulate questions on their own. If they have a problem with formulating questions, you can do it together with them. You can also prepare sample questions that will inspire your students. This is especially important if you are only beginning to work with your students using the DT methodology.





- Think about things like:
 - which places you like to go to in your free time
 - which places you consider the most interesting in your neighbourhood
 - what is the most interesting thing about your town.
- Together, decide whether any of the students has specific needs or limitations that should be taken into account.
- The results of all discussions and decisions should be written down. In this way students will easily refer to them at subsequent stages.



Stage 2: Analysing needs and resources

The aim of this stage is to gather as much information and precise data as possible. This will constitute a point of reference for future work..

- From this moment on, students should be working in small groups.
- They should determine some basics at this point:
 - the time that can be devoted to sight-seeing,
 - the number of places to visit,
 - the maximum distance to cover during a single day.
- Decide whether the students will be responsible for establishing this information or you will provide it before the class. The list of the basic guidelines can be edited as needed.
- Check whether the students took into account the possibilities and limitations of the guest, rest time and meals.



Stage 3: Generating ideas

The aim of this stage is to generate ideas that lead to achieving the goal.

This is not the time for finding the ultimate solution. Instead, students are to propose various solutions that will be later tested and refined.

- Decide whether you want to organise a general brainstorming session or divide students into groups.
- The aim is to get different concepts of what might meet the identified needs. There should be no bounds as to where the students go with their ideas.
- At this stage the students will only estimate the time necessary to implement each of the plans.
- At the next stage, they will check their estimates against reality.
- Ideas for routes should be marked on the town map. This can take the form of a note that will later help the students decide which route to choose.
- Remind the students that they should choose at least two different modes of transport for moving between each two points on the map.
- Decide how ideas should be presented: as a drawing, collage or other graphic form, or as a simple description or table.



Stage 4: Prototyping

The aim of this stage is to verify how the presented ideas work.

- This is a key phase in your project during which you will make precise calculations. It is worth allocating enough time for this stage.
- Students should take a critical look at their proposals and choose the one that is realistic and best fits the needs of the group determined beforehand.
- At this stage, the students should calculate the distances and the time necessary to complete the route using the chosen means of transport. These calculations should be compared to the estimates made at the previous stage.
- Encourage students to use different methods when calculating the distances, e.g. using the scale on the map or an online application.



- If you decide to modify the challenge, the calculations can be made in the field with appropriate means, e.g. a tape measure or a cord.
- Encourage students to make sure that the chosen solution fulfils all the needs and assumptions before moving on to the testing phase.
- This is a good time to introduce changes and make improvements.



Stage 5: Testing

The aim of this stage is to test the chosen solution and put the selected idea into practice.

- Start with a general discussion of the projects prepared by each group. Use the summary questions provided below.
- Make sure that students present their projects in a way that enables their direct comparison.
- During the discussion jointly check whether the students took into account some additional factors, e.g. parking options and distance from the parking spot (if they chose going by car or by bike), traffic, distance from the bus or tram stop, time necessary to move around the visited places, the number of participants (which may be relevant in the case of calculating the time needed to eat), etc.
- Depending on your possibilities, choose a set of projects or project parts that you can test in the classroom.
- Jointly determine the rules and the time necessary to implement the proposed ideas.
- If you manage to invite guests (e.g. from a different school), you can organise an excursion with the use of your ideas from this challenge.
- After the testing phase, jointly discuss the matter and decide whether the proposed ideas addressed the needs of the group and whether you will be using such solutions in the future.

Summary questions

Remember to devote some time for discussion. This can be combined with student presentations. Talk to your students about their working process and what they learned. You can make use of our list of questions or formulate your own set of questions to make students aware of what they did and how it helped them. Useful questions:

- What were your base assumptions?**
- What needs did you identify?**
- Which idea did you choose and why? How did this idea correspond to the base assumptions?**
- How did you make the measurements? Was every measurement method equally effective?**
- How did you divide work among group members?**
- Did everything go as planned?**
- Did you have problems? If so, how did you solve them?**
- Would you do some things differently next time?**
- How can you make use of what you learned in everyday life?**

During the discussion it may surface that students made their measurements inadequately or inefficiently and their results are not in line with the base assumptions. Treat this as a learning situation: avoid giving students the correct answers, encourage them to explore on their own; make sure their group potential is fully exploited.