



Create your dream classroom

Topics

Basic geometry
(surface areas)
Spatial geometry
Measures
Arithmetic
Mathematical inference
Scales

Time needed

90 minutes

To prepare before class

Worksheets for students,
measurement instruments
(rulers, tape measures,
etc.), blank sheets of
paper, office materials,
universal Design Thinking
Wheel.

Other teachers to work with

Art teacher, class tutor

Take a look at

The student worksheet

The goal is to create a dream classroom. This can be done to prepare space for groupwork, organise a meeting with a guest, organise a party or simply to propose a new setup for regular classwork. Following the design thinking method, the students will estimate classroom dimensions, take measurements, create appropriately scaled drawings of the classroom and prepare spatial designs.

The decision on the purpose of the new setup can be left for the students to make. You can also decide beforehand yourself or discuss it with the students at the beginning of the lesson. Most importantly, the purpose has to be feasible and in line with the actual needs of the teacher and students.

Proposed modifications

1. Make use of some unconventional measurement instruments (e.g. your own body, a cord);
2. If possible, determine the budget necessary to implement the change and make the necessary calculations;
3. Observe and discuss roles for the students to take on during groupwork;
4. Expand your project and make a new design of not only the classroom but also the corridor or other common areas.
5. Other teachers to work with: art teacher, class tutor.

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 that students refresh their memories concerning the theory behind it and show them at which stages theoretical concepts were actively used. In any case, remember to point to the practical application of the knowledge gained in the process. 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 changes we will be introducing. Remember that at the end of the activity you should go back to the identified needs and check if they were met.

- During the activity, all the students can work together, or they can be divided into smaller groups.
- If they have a problem with formulating questions on their own, you can do it together. 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.





▪ Sample questions will of course depend on the purpose of classroom changes; for instance, if you want to prepare the classroom for group or project work, you can consider the following:

How big will the project groups be?

Will any people work individually?

What equipment will you need?

Will you need access to light, electricity, etc.?

▪ The results of all discussions and decisions should be written down. In this way students will easily refer to them at subsequent stages.

▪ If you decide to take on the dream classroom challenge without a budget for additional equipment, remind your students that they have to make use of what is already in the room.



Stage 2: Analysing needs and resources

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

▪ Students should check and/or decide on the available equipment, the number of people, etc.

▪ Decide whether students will be responsible for establishing this information or you will provide it yourself. This basic information list can be edited as needed. For instance, by determining a budget or making it possible to use equipment from outside the classroom (e.g. corridor seats).

▪ It is also important for the students to establish strict requirements, such as the space necessary to move the chair away from the table, a comfortable passage between tables, etc.



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.

▪ Students are also not supposed to make any measurements yet. They should merely estimate the desirable furniture and classroom dimensions. They can then check whether these estimates are in line with the reality.

▪ Decide how ideas should be presented: as a drawing, collage or in other graphic forms, or as a simple description.



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 measurements and calculations. It is worth allocating enough time for this stage.

▪ Students should take a critical look at the proposals from the previous stage and choose the one that is realistic and best fits the needs of the group.

▪ They have to take measurements of the classroom and the equipment and prepare a project that presents the proposed idea in a proper scale.

▪ It is also a good moment to introduce and discuss theoretical concepts related to taking measurements, scaling and other useful math topics included in the curriculum. This will make it easier for students to implement the task.



- Encourage your students to take a critical look at their project before moving on to the next stage. Let them check once again if the assumptions taken at the previous steps were all taken into account. 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.
- At this stage, you can also talk about precision in measurement taking depending on the tools and methods used.
- 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 test the changes (e.g. 2 weeks).
- After the testing phase, jointly discuss the matter and decide whether the introduced changes were successful and whether you will be using such arrangements 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 about what they learned. You can make use of our list of questions or formulate your own set of questions to make students more 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 with 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.