

INNOMATH

MID day Design Activity Plan

You have identified gifted students, convinced an industry that their lateral thinking capacities might be worth a try, motivated academics to back you up, now you have to plan and design a MID-day, a Mathematics meets Industry Day. Here is a guideline for planning this.

First, discussing with the industrial partner, you have to decide on the type of MID-day to conduct. Here are a few proposals. For each one, you will have to setup a scratch course to level up the students to the adequate degree and we will provide a rough lesson plan in order to do that.

- A **Statistical Research Survey** will interest your industrial partner, they might want to know better the needs of their clients or employees, and a market or human resources research project is relatively easy to set up, fun and creative to design and can lead to unexpected results when seen from an unusual point of view: *“how to transform this bleak open-space in the covid context?”*. A lesson plan in statistics and survey methodology is in order before actually getting down to business.
- A **Scientific Trail** on the industrial site is a great way for the industry to promote their work during class visits, and for the students to become problem posers and look at their surroundings with a scientific eye: *“how large is this tank? how long will it take to fill it up?”* The lesson plan should concentrate on modelling and measurement methodology, discovering for example that your own body is a pretty precise tool for everyday quantities estimations.
- Discuss with your industrial partner. The mobility cluster in Lyon for example, working with the House of Math and Computer Science, is interested in **Artificial Intelligence** and autonomous driving. The lesson plan will involve some basic robotics and an introduction to Bayesian statistics and Reinforcement Learning, especially with an unplugged mechanical machine that learns how to beat you at Nim’s game!
- If you don’t have a direct contact with an industrial partner, don’t forget the **educational industry**, and have the students setup pedagogical games for you: let them invent new ways to teach by gamifying some of your content. Learn from them! The lesson plan should teach neural basis of cognition, gamification, determining aims and sub-aims, defining challenges and levels, ways to collaborate, helping the students understand their own cognitive process better. And you never understand better a concept than having to explain it, especially to a computer!

Once the main theme is set, you have to plan the lesson path to get the students from where they stand to the required competencies regarding the tasks at hand. Then you have to conduct the lesson in an introduction to the project. This first day at school should be relaxed and joyful, students working in teams and getting to know one another.

During the big day of the MID-Day, students visit the industrial site or at least discuss with representatives of the industry and work on their project together. They come back home with lots of observations, ideas and plans.

In the last phase, this work is presented to the industrial partner. This can be further used, for school fairs, schools twinning, integration weeks and so on in order to show what has been done.