Possibilities for use in competency-based lessons

Competencies that can be gained through building and working with the wooden vehicle:

- describing materials specifically; choosing materials; working with materials whilst taking into account technology and function

- presenting own design ideas with drawings and technical terms and developing them further

- experimenting with design elements (form, colour,...)

- dividing work processes into meaningful chunks; execution, reflection and evaluation

Suggestions for the use of the materials in lessons:

1. Look at the construction task ('students' material' or several wooden pieces that have been prepared by the teacher) and consider how the shape of the vehicle would provide the least possible wind resistance.

2. To determine the resistance of a shape, a set of wooden shapes (OPITEC Art. 569344) can be used. Attach them to the [illegible] cord and let them glide through an elevated container filled with water (a plastic tub, the sink in the workroom). The supplied weight will pull the shapes. Measure the time needed with a stop clock and find out which shape provides the least resistance and glides the fastest.

3. Sketch a shape yourself and create a template, cut out the template and transfer it. Perform further steps according to the assembly instructions.

   Differentiation: the hollow can be omitted if the form is chosen freely. Alternatively, it could be made a necessary element and could be designed in different ways (see suggestions). In this case, the hand should not be glued on (pay attention to the safety of the driver!); the chassis is closed.

4. Write down the results in the students' material' and evaluate.

5. Design the wheels depending on the amount of time available and motoric ability:

   a. use Beech wood wheels or treaded natural wood
   b. add nicks to beech wood discs with a round file, and then add colour
   c. paint grooves and nicks on to beech wood discs
   d. use a colourful design on treated wooden wheels

6. Differentiation: add a colourful design to the vehicle that emphasizes its streamlined shape.

7. Cross-curricular task: in English classes write a non-fiction text (instructions, description), find out more about the development of the automobile,...

The background: Technology Education

It is important in terms of successful technology education that the children use their prior knowledge to express assumptions and prepare drawings for this. After the experiment the results are compared with these assumptions and evaluated. Students' own suggestions are preferable to our given ones - our instructions should only be seen as one way to ensure a safe and successful construction of the vehicle. Variations are desirable and welcome; therefore additional materials can be ordered. To do the diversity of children in a class justice, or to use these experiments with children of different ages, there are several opportunities for differentiation in the level of difficulty. Every child should improve their ability to solve problems and to structure work processes.