



ACTIVITY NAME:	T003-E2 Individual exercise: Trolley
OBJECTIVES:	<p>Discover the value for the customer, waste time in working. Important is to help players to find waste by themselves and to understand the importance of order and visualisation. Find some of the principles of Lean.</p>
DESCRIPTION :	<p style="text-align: center;">1) Explain the rules</p> <p>This is an imitation of a one persons work process to assembly a Trolley by the instructions. There is a workstation with all needed parts in a box and istructions for producing the Trolley.</p> <p>The aim is to assembly a good quality Trolley to the customer. It's important to be very efficient because of the competition in the market. The customer is the most important thing in the world, so every worker gives a sign to the instructor when they have the Trolley ready for the customer. The company will always strive to meet the expectations of the customer, which wants to get the Trolleys as fast as possible.</p> <p><i>The Instructor shows the picture of the Trolley (PowerPoint slide 2) that the workers are going to assembly for the customer. The Instructor asks the workers how long they think it will take to assembly the Trolley in the picture. Write down the estimated times on the board/flipchart (on the left), so that it is visible to every one.</i></p> <p style="text-align: center;">2) Assembly 1. round</p> <p><i>The Instructor distributes the 2xA4 working instructions faced down on the table and the box of parts for every assembly worker.</i></p> <p>In the beginning of the first round the worker has the instructions faced down on the table and the closed box of parts in front.</p> <p>Every worker starts at the same time when the instructor gives permission to start working and at the same time the instructor starts a timer; this means that the workers turn around the instructions, open the box and start to assembly the Lego-trolley by the instructions.</p> <p>When the worker informs that the Trolley is ready for the customer, the instructor writes the production time to the right of the estimated production time. The Instructor writes all the working times down.</p> <p>The assembly work usually takes 1,5 - 3 minutes. <i>If some one does not get it ready in 5 minutes the instructor can continue: "Okay you can stop now and we have a discussion about this work." The Instructor can show PowerPoint slides 3 and 4 as a basis for the discussion.</i></p>



3) Evaluation of the first round

The various working times are recorded on the board/flipchart. Discussion. Questions you can ask and how to draw conclusions from the work regarding the Lean principles:

- How did the assembly work succeed?
- How did you feel while working?
- How efficient were you?
- If you wasn't efficient, why?
- What do you think about your working instructions?
- How can we do this work better?
- Principle 1: What was the value adding part of this work for the customer?
- Principle 2: Does each step of your work add value for the customer?
- Did you find any waste of your work or at your work station?
- What kind of waste did you find? Did it affect to your work?

4) Assembly the 2. round

The Instructor distributes the A3 Work station instructions to the workers. Workers may disassemble the Trolley and place the lego parts on the same images on the A3 Work station instructions.

In the beginning of the second round the player has all the needed parts on the Work station instructions.

Every worker starts at the same time when the instructor gives the permission to start working and starts the timer; means that workers assembly the Lego-trolley by the Workstation instructions starting from  -mark and ending at  -mark.

When the worker informs that the Trolley is ready for the customer, the instructor writes down the production time to the right next of the 1. round production time. The Instructor writes down all the production times.

The assembly work usually takes 0,5 - 1 minutes. *If some one does not get it ready in 2 minutes the instructor can continue: "Okay you can stop now and we have a discussion about this work."*

5) Overall evaluation

The various working times are recorded on the board/flipchart. Discussion. Questions you can ask:

- How did the assembly work succeeded now?
- How did you feel when you assembled this 2. round?
- How about your efficiency during this round?
- What was changed?
- What do you think about the new work station?
- Did you find any waste of your work or at your work station during round 2?

	<p>Principle 5: Could we do it even better? How can we pursue perfection? Do you have some further ideas to improve your work?</p> <p>Principle 6: How did you feel to change the way of working? In real life? Which Lean tools you can you use in order to improve results at your work assembly?</p>
TIME TO PLAY:	<p>Sharing the materials for the 1. round, explaining the rules and asking for estimated assembly time before the task begins: about 8 min.</p> <p>Working and discussion per round: about 10 min (2 rounds)</p> <p>Distributing the A3 Work station instructions: about 2 min</p> <p>Total playing time: about 30 min.</p> <p>Add the instructors preparation time; study the game instructions, printing A3 work station instructions, etc. if needed.</p>
INDIVIDUAL or GROUP:	<p>Individual exercise, that can be played as a group. Students can observe value for the customer, wastes, etc.</p>
MATERIAL FOR TEACHER:	<p>Timer or stopwatch.</p> <p>Writing board or flipchart to write down the results.</p>
MATERIAL FOR STUDENT:	<p>1 box (plastic container) for the parts of the 1 Lego-trolley and extra parts to each player. Parts of a one Trolley, see picture of the assembly parts is in the PowerPoint slide 6. In addition it is needed about 30 extra parts to the same box. These can be picked from an office or be other parts (with parts 1. round assembly work is even harder.) Picture as example of the extra parts below.</p>  <p>For the 1. round: Color print A4; the PowerPoint slides 3 and 4 as working instructions.</p> <p>For the 1. round: Color print scaled to A3; the PowerPoint slide 5 as a work station instruction.</p>



LAY OUT:

A normal working space in classroom for each palyer.