



Train2Sustain – developing capacity to teach sustainability in VET

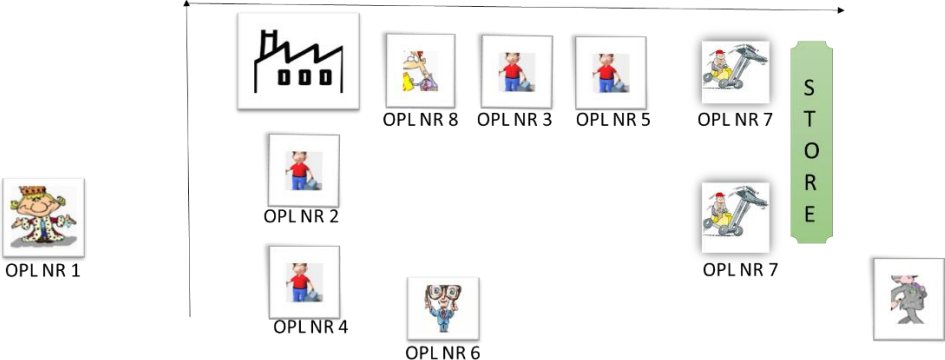
Learning Activity nr. 11

Ballpoint pen game (sustainability version)

Projektnummer: 2020-1-FI01-KA202-066632

ACTIVITY NAME	A11 Lean ballpoint pen game (sustainability version)
OBJECTIVES	<ul style="list-style-type: none"> ▪ Discover all 5 basic principles of LEAN thinking and working. Especially the process is important in this game ▪ Know how to consider sustainable aspects in the work ▪ Understand a more efficient company can contribute to a better environment. ▪ Understand how a more efficient company can contribute to a better social environment.
DESCRIPTION	<ol style="list-style-type: none"> 1. Explain the activity to the students (briefing) <ul style="list-style-type: none"> ▪ It is an imitation of a process in a production factory of ballpoint pens. ▪ The aim is to put built the number of ballpoint pens required by the customer. ▪ The factory has a director (teacher), who is helped by a process guard. ▪ On the working floor there are four production workers; all specialized in one part of the production of ballpoint pens. ▪ A quality controller checks all the ballpoint pens before they are transported to the customer. ▪ To transport the ballpoint pens there is the possibility to use two carriers. They can transport only 4 ballpoint pens or parts of the pen intern to the production workers and quality controller and extern to the customer. ▪ Each activity/working task is consuming a certain number of energy units, as described in the PowerPoint document. ▪ The factory is built in 1953. The production line is not logical anymore. ▪ There is a store in the back of the building. The working places of the employees are far away. The quality controller works in the office. ▪ The aim is to put this ballpoint pen of good quality on the market. ▪ The process guard will give the KPI to the Director. 2. Run the activity <ul style="list-style-type: none"> ▪ During the first round everybody starts in the start position as shown on slide number 5 of the PowerPoint document. Use a clock to measure the time. ▪ You get 10 minutes of preparation time, in which you start thinking about improvements. You can then eliminate wastes and experiment (how do we tackle it, etc.) ▪ The working day takes 4 minutes. ▪ There are a total of 3 production days. ▪ The various activities are recorded in one-point lessons (PowerPoint document). Given the nature of the work, an employee can't make the entire ballpoint pen. ▪ The customer demand is 28 ballpoint pens each day. 3. Evaluation of the first round

	<ul style="list-style-type: none"> ▪ The key performance indicators (KPIs) are evaluated at the end of each day: <ul style="list-style-type: none"> ○ Time to produce 1st ballpoint pen ○ Number of well-supplied ballpoint pens ○ Number of incorrect ballpoint pens ○ Number of semi-finished products in the process ▪ Questions you could ask? <ul style="list-style-type: none"> ○ What happened? ○ How did you feel? ○ Did we meet the goals? Why not? ○ How can we do it better (don't forget sustainability issues like energy consumption, waste)? <p>4. Improve and replay During the preparation time of the second and third rounds, everybody may renovate or reduce the waste (and change the places of the workstations).</p> <p>5. Evaluation (debriefing) Hint: Remember that the second and third rounds are played in chapter 5. Conclude the game regarding the LEAN principles:</p> <ul style="list-style-type: none"> ▪ Principle 1: What is the value for the customer? ▪ Principle 2: Does each step in the chain add value for the client? ▪ Principle 3: Is there a continuous flow in the process? ▪ Principle 4: Was there Pull production? Did you only deliver what the customer asked for? ▪ Principle 5: Could we do it even better? How can we pursue perfection? ▪ Principle 6: Was it difficult to change the mindset in this game? And in real life? ▪ Have you considered sustainable aspects when planning and performing the game? Do you feel you have used less energy in the 2nd and 3rd rounds? ▪ What could the company do with the higher profit they have? What about social aspects (e.g. better working conditions, social programs for the community, etc?)
<p>TIME TO PLAY</p>	<p>Total time: 140 min. ----- Preparation time: 60 min (have the material beforehand) Briefing time: 5 min Activity time: 10 min. preparation time & 5 min. time working day (round) Evaluation time: 10 min. per round</p>
<p>INDIVIDUAL or GROUP</p>	<p>Done in a group.</p> <p>Number of groups: 1 or 2 Number of students per group: 9 Adaption is possible with fewer players (leave out the customer, although he is important).</p>

	<p>If there are more students, they can observe the process and propose improvements, be the timekeeper.</p> <p>Roles: refer to the PowerPoint document</p>
<p>MATERIAL FOR TEACHER</p>	<ul style="list-style-type: none"> ▪ Activity explanation ▪ Video tutorial ▪ PowerPoint presentation ▪ timer or stopwatch: 10 min. preparation and 4 min. working day ▪ writing board or flap-over to write down the KPI's results ▪ It is important to have a pen with multiple parts, to follow the instruction cards. ▪ 7 parts pens are used for the instruction cards.
<p>MATERIAL FOR STUDENT</p>	<ul style="list-style-type: none"> ▪ 9 one-point-lessons; instruction of the customer, production workers, quality controller, carriers, process guard and the director/game leader. ▪ 72 ballpoint pens for two groups (if possible 36 red and 36 black ballpoint pens) ▪ 7 plastic trays to store the parts of the ballpoint pens ▪ 2 trays to transport the ballpoint pens ▪ 10 centimeters ruler ▪ 1 timer or stopwatches.
<p>LAY OUT</p>	<p>A big classroom for a group of 9/18 people. Tables and chairs to make working areas and a store. Enough space to walk.</p> <p style="text-align: center;">FLOOR PLAN PEN FABRIC</p>  <p>The floor plan shows a layout of 9 One-Point-Lessons (OPL) and a STORE. OPL NR 1 is a customer icon. OPL NR 2, 3, 4, 5, 6, 7, and 8 are production worker icons. OPL NR 9 is a director icon. A STORE is located on the right side. The layout is arranged in a grid-like fashion with a central aisle.</p>