



Train2Sustain – developing capacity to teach sustainability in VET

Learning Activity nr. 12

Waste analysis

Projektnummer: 2020-1-FI01-KA202-066632

ACTIVITY NAME	A12 Waste analysis
OBJECTIVES	<ul style="list-style-type: none"> ▪ Identify wastes at work using the 8 wastes of Lean ▪ Relate the 8 wastes of Lean with environmental impacts ▪ Plan actions to reduce wastes and related environmental impacts
DESCRIPTION	<p>1. Explain the activity to the students (briefing) The group(s) will look for wastes in a specific area/workplace of the workshop/lab, using the 8 wastes of Lean approach. Each waste has to be registered in the available template, by:</p> <ul style="list-style-type: none"> ▪ identifying the environmental impact associated with the waste ▪ describing the waste ▪ defining a way to eliminate or reduce the waste and the associated environmental impact <p>2. Run the activity</p> <ul style="list-style-type: none"> ▪ Explain the activity and the available time to the group ▪ Introduce the different areas/workplaces that will be evaluated ▪ Split the class in groups of 3 or 4 students or work with the group as whole ▪ Assign an area/workplace or process to the group(s) ▪ Distribute one template for collecting wastes to the group(s) ▪ The group or several groups of students identify and register wastes using the template and the associated environmental impacts ▪ The group(s) define actions to eliminate or reduce the wastes and the associated environmental impacts ▪ Each group presents the results of the investigation and the actions to be taken ▪ The group(s) decide together with the teachers what changes should be made in the learning environment ▪ Implementation of the changes <p>3. Evaluation (debriefing) Questions that can be asked by the teacher in the evaluation phase:</p> <ul style="list-style-type: none"> ▪ Which Quality problems or/and defect errors do we have that cause rework, scrap, and misinformation? ▪ How could this be improved? ▪ Is there something that we are overproducing or producing too early so that it gets wasted? ▪ How could we avoid this? What could we do instead? ▪ Is there some waste of time as we wait for the next step in the process causing material deterioration or component damage leading to waste or energy wasted through heating, cooling and lighting during production downtime? ▪ How could we avoid this? What could we do in a different way?

	<ul style="list-style-type: none"> ▪ Do we have unnecessary/extra inventory in store causing more packaging to store, waste resulting from deterioration or damage, more energy used to heat, cool and light the storage space? ▪ What inventory could we reduce and how could we arrange the stores and the processes in the stores to reduce waste? Is there something we could recycle? ▪ Do we have some unnecessary transportation or movements of products or materials causing energy consumption, emissions, need for more packaging to protect components during movement? ▪ How could we try to avoid this? What actions do you think that we should take? ▪ Do we have any unnecessary movements by people here? Could we somehow affect environmental issues by reducing this? Is there something that we could do virtually/digitally instead? ▪ How could we arrange the work and the processes here to reduce unnecessary movements? ▪ Are we doing some extra processing here? Are we doing more work or higher quality than the customer demands resulting in more parts and raw materials consumed per production unit/service or unnecessary processing increasing waste, energy use and emissions? ▪ What work, processing, raw material/components or service could we remove without reducing the value for the customer/us? ▪ Are we underutilizing some human talents, skills or knowledge here that could improve environmental issues? ▪ How could we use these talents to improve the waste and environmental issues? Is there someone else that for example could use our scrap? Or someone else that could resolve our problems? Would we get some good environmental impacts by cooperating or sharing resources with other departments, industries/companies? Is someone having some good ideas or solutions that are not being used? Are we listening to others ideas?
<p>TIME TO PLAY</p>	<p>Total time: Without implementation: 2h With implementation: up to several weeks depending on the proposed and implemented changes</p> <p>-----</p> <p>Preparation time: 30 min – 2 hours (identification of the working areas or processes to be analysed, print the templates) Briefing time: 45 min (explain the exercise) Activity time: 2-3 hours Evaluation time: 2-3 hours</p>
<p>INDIVIDUAL or GROUP</p>	<p>Group activity</p> <p>Number of groups: according to the size of the class. Number of students per group: preferably 3 to 4</p>

	<p>Teacher's role:</p> <ul style="list-style-type: none"> ▪ The teacher is explaining the task to the students and gives examples ▪ The teacher is guiding the students and give them guiding questions during the activity. ▪ The teacher is leading the evaluation of the outcomes together with the students. ▪ Leading students in the implementation of changes ▪ Developing monitoring mechanism with the students <p>Students role:</p> <ul style="list-style-type: none"> ▪ The students are analysing the working environments together with fellow students according to the instructions of the teacher and present ideas, improvements and solutions. ▪ Implementing the changes in practice together with teachers ▪ Monitoring of the implementation results <p>This activity can be carried out as one large group or by individual students</p>
<p>MATERIAL FOR TEACHER</p>	<ul style="list-style-type: none"> ▪ Activity explanation ▪ Template collecting wastes ▪ List with examples of waste in different types of industries ▪ Practical example (video)
<p>MATERIAL FOR STUDENT</p>	<ul style="list-style-type: none"> ▪ Template collecting wastes
<p>LAY OUT</p>	<p>According to the workshop/lab</p>