
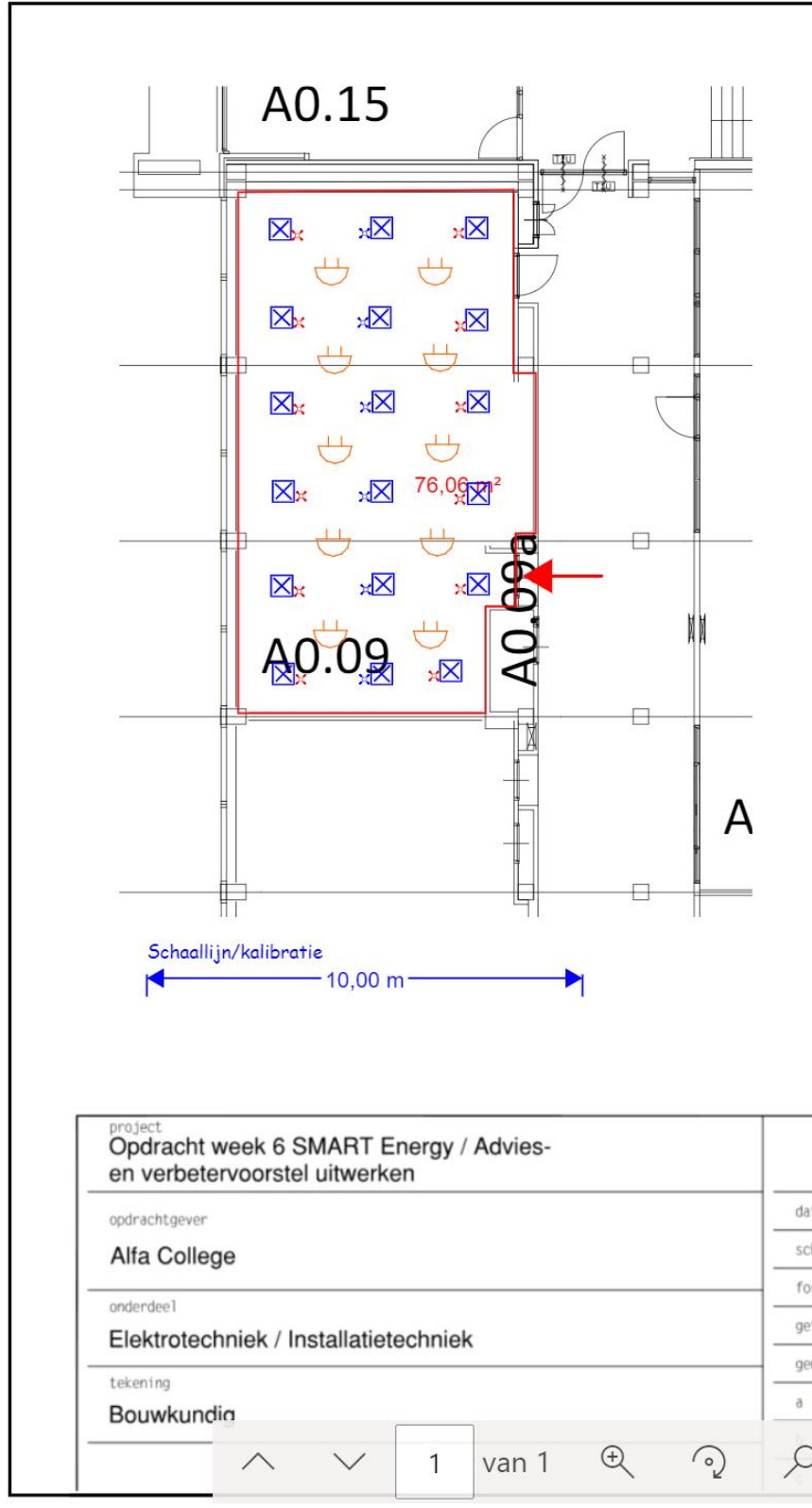



<b>Aspect 1</b>	<b>Toolkit on “Smart Energy Management” – Training Modules Piloting</b>	
<i>Specific Modules</i>	M4: Smart Lighting	
<i>Piloting group’s qualification</i>	Higher Technician in Installations and Electrics	
<i>SQF level</i>	4	
<i>SEM qualification : Aggregated Unit of LOs (Learning Outcomes)</i>	U1 - Design and Implementation of Smart Lighting	LO1. Identification of different types of lighting LO2. Implementation of smart lighting systems, including devices and control systems LO3. Designing lighting systems to reduce energy consumption
<b>Aspect 2</b>	<b>Definition of the Project Task</b>	
<i>General task</i>	Design and Implementation of a Smart Lighting System in a classroom in school	
		
<i>Specific tasks which cover LOs of Training Modules</i>	<ul style="list-style-type: none"> <li>- Analysis of existing lighting systems in the classroom, designing new lighting systems to reduce energy consumption, implementing new lighting systems.</li> </ul>	


- Task was changed after lockdown: implementing the lighting system could not take place.



project	Opdracht week 6 SMART Energy / Advies- en verbetervoorstel uitwerken	
opdrachtgever	Alfa College	da
onderdeel	Elektrotechniek / Installatietechniek	sc
tekening	Bouwkundig	fo
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<b>Aspect 3</b>	<b>Time arrangements</b>
<i>Teachers</i>	The teaching team (teachers who deliver classes to the group) has been set up so as to have their workload concentrated, as much as possible, with the same group. That way there is the possibility to be flexible in terms of the specialist teacher taking charge of the group as the Project progresses and the need of guidance changes (in terms of subject covered by Project that time) for students. The team did work as a self-managed one.
<i>Students</i>	The student's timetable changes radically while they are carrying out the Project so there is no división in terms of subject taught but a continuous time during the day devoted to the Project.
<b>Aspect 4</b>	<b>Adaptation of spaces and infrastructure</b>
<i>Furniture</i>	<p>There were different kinds of classrooms. One classroom specifically had black out blinds so that measurements on lighting could be carried out independent on the sunshine.</p> <p>There was a digital board available.</p>  <p>Due to Covid lessons were moved exclusively to online lessons after 3 weeks. For several days there were no lessons at all as everyone had to download Microsoft Teams and had to adapt.</p>
<i>ICT connections</i>	Each student has a portable computer so it is easy for him to move and work on a team basis or individual basis. There is wifi coverage so as to work on the Internet.

	<p>During the lockdown it was more difficult. All students had laptops and the internet coverage in The Netherlands is good but some students had no camera on the laptop or had difficulties to adopt new digital skills. It took some time to help everyone online but after +- a week a new online working environment was established.</p> 
<b>Aspect 5</b>	<b>Process management: Teacher role/Student role</b>
<i>Teacher role</i>	<p>At the beginning the role of the teacher has been more guiding students through complexities of the Project rather than delivering just contents. It has been very important to establish some check-points through the Project development so students don't lose the objective and cope with such a long work without getting lost or really depressed. This new role is not easy at first and pedagogically requires a change for the teacher who feels sometimes more comfortable delivering contents and not forcing students to get the results on their own. During the lockdown the role of the teacher became even more that of an organiser, supporter and facilitator.</p>
<i>Student role</i>	<p>Especially during the lockdown the Toolkit was a really helpful tool for them as it enabled them to have the knowledge related to the Learning Outcomes in a way (online) much more flexible. This means each group could have Access to the different concepts needed throughout the development of the Project in their own time. The teacher was online, of course, to give support while doing the tasks and for any query related to the online course itself. But it was a shame that the practical tasks could not be carried out. Students told us they learned a lot but are not sure if they can apply the lessons learned. They were happy with the online content in a uncertain time but they missed the execution of the tasks.</p>
<b>Aspect 6</b>	<b>Team building</b>

<i>Techniques</i>	<p>In our piloting experience, we did not use any technique for building up the teams since our group was a second year group so we knew how each student was in terms of character and profile. We did try to mix up people in groups of 2-3 people in which their characters (creative, manager, hard worker...) did have a balanced structure so as to have a better experience. Nevertheless, sometimes it is better to mix up homogeneous character students so as to force them to take up roles they are not used to.</p> <p>Nevertheless, the use of any technique or dynamic should be envisaged in case students from the group are new and there is not any experience with them by the group of teachers.</p>
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<b>Aspect 7</b>	<b>Assessment / Qualitative experience</b>
<i>Assessment</i>	<p>Students were assessed both in technical and transversal skills. Technical aspects were corrected by each corresponding teacher and the transversal skills were assessed by the group of teachers together. These late ones were based on evidence taken about initiative and responsibility, team working and communication skills. Implementation was not assessed due to modifications done in lockdown.</p>

<b>Technical competences (%60)</b>	<b>Transversal competences(%40)</b>			
<b>Design,Analysis and Implementation of Smart Energy Lighting Systems</b>  (%100)	<b>Report and presentation</b>  (%10)	<b>Team Work</b>  (%10)	<b>Individual work (implication and autonomy)</b>  (%10)	<b>Advisory skills</b>  (%10)
<b><u>U04: DESIGN AND ANALYSIS OF SMART ENERGY MEASUREMENT SYSTEMS</u></b>				

Assessment criteria	1	2	3	4
<b>Learning Outcome-1. Is able to identify different types of lighting in the system</b>				
<ul style="list-style-type: none"> <li>He/She does not know which are the parameters (different types of light, standards for lighting, standards for light calculations) to analyse light and neither how to calculate lighting plans.</li> </ul>	1			
<ul style="list-style-type: none"> <li>He/She does know which are the parameters to analyse but is not able to calculate lighting plans.</li> </ul>		2		
<ul style="list-style-type: none"> <li>He/She knows which are the parameters to analyse and, is able to calculate a basic lighting plan.</li> </ul>			3	
<ul style="list-style-type: none"> <li>He/she knows which the parameters are to analyse and is able to calculate an elaborate lighting plan.</li> </ul>				4
<b>Average</b>				
<b>Learning Outcome-2. Implementation of smart lighting systems, including devices and control systems</b>				
<ul style="list-style-type: none"> <li>He/She does not know which Smart lighting device to place in the Smart lighting system and does not know how to gather and analyse the data</li> </ul>	1			
<ul style="list-style-type: none"> <li>He/She does know which Smart lighting device to place in the Smart lighting system but does not know how to gather and analyse the data</li> </ul>		2		
<ul style="list-style-type: none"> <li>He/She does know which Smart lighting device to place in the Smart lighting system and does know how to gather the data yet the analysis is very basic</li> </ul>			3	
<ul style="list-style-type: none"> <li>He/She does know which Smart lighting device to place in the Smart lighting</li> </ul>				4

system and does know how to gather and analyse the data				
<b>Average</b>				
<b>Learning Outcome-3. Designing lighting systems to reduce energy consumption</b>				
<ul style="list-style-type: none"> <li>■ He/She can not use the sensors nor the actuators in a Smart Lighting system to reduce energy consumption and influence the users</li> </ul>	1			
<ul style="list-style-type: none"> <li>▪ He/She can use the sensors but not the actuators in a Smart Lighting system thereby he/she can gather datas but can not reduce the energy consumption</li> </ul>		2		
<ul style="list-style-type: none"> <li>■ He/She can use the sensors and actuators in a Smart Lighting system to reduce energy consumption but he/she can not influence the users</li> </ul>			3	
<ul style="list-style-type: none"> <li>■ He/She can use the sensors and actuators in a Smart Lighting system to reduce energy consumption and influence the users</li> </ul>				4
<b>Average</b>				

- The transversal competences to assess in this challenge will be teamwork, communication (in written support), individual performance and advisory skills and they will be assessed individually.
- The ponderation of the transversal competences will be as shown below.
- The way to assess these will be done in different ways: teachers, auto-assessment by students and coevaluation among them. Finally, we will do an average of all the marks.

COMPETENCE	Who will assess			
	Teachers (google forms)	Teammate	Auto-assessment	AVERAGE
Teamwork (%10)				

Report, presentation (%10)				
Individual work and autonomy (implication) (%10)				
Advisory skills (%10)				
<i>Qualitative experience</i>	<p>The experience was really interesting for both students and teachers since after lockdown it was a real piloting of distance learning. Students judged the implemented material very useful for the Project development since it was possible for them to access the needed knowledge in a moment of their choosing within limits. Because teachers choose to give weekly deadlines to retain some control in these first weeks of online learning. The last three weeks of the project students only got the last deadline and a weekly progress interview.</p>			