## CLIL Module Plan

| Author(s) | LEONARDO DE CARO |  |  |  |  |  |
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| School | MARTINO MARTINI |  |  |  |  |  |
| School Grade | O Primary |  | O Middle |  |  | ○ High |
| School Year | $\bigcirc 1$ | O2 | $\bigcirc 3$ |  | $\bigcirc 4$ | $\bigcirc 5$ |
| Subject | Altro - MECHANICS-MECCANICA E MACCHINE |  |  | Topic |  | 3D DRAWINGMECHANICS |
| CLIL Language | ○ English |  |  | O Deutsch |  |  |

Personal and social-cultural preconditions of all people involved

The class is made up of eight students, two of whom are foreigners (mother tongues: German and Pakistani language). Some of them are motivated, others need to be stimulated in order to achieve the right level of attention. Within the group there are divisions and tensions, given by racial and social factors, so groups cannot be put together randomly; with accurate choices made by the teacher, problems can be overcome in the application of strategies of the CLIL methodology and cooperative learning especially. This year, this class has been doing CLIL modules in Mechanics, Law and Electronics. However, the average CEFR level of the class is B1. There are no Special Needs students.

## Students' prior <br> knowledge, <br> skills, competencies

## Subject

Euclidean geometry previously studied in Maths and geometry (during middle school and early years of secondary school): lines, circles, arcs, intersections, parallelism, perpendicularity, simple solids, prisms, creation of solids through the extrusion and revolution of a plane surface.

## Language

BICS. Tenses: present simple, present continuous, past simple. Grammatical structures: zero conditional. Lexis: specific terminology related to geometry: line, intersection, circle, centre...

Description of teaching and learning strategies

The aim of this module is to introduce other students to a freeware tool of 3D modeling. Being proficient in solid geometry creation is the beginning of 3D printing. Ideally students will continue the job by adding modules in order to show how to print the geometry created. The module consists of 2 units, the first of 6 lessons, the second of 4 lessons. The lessons are of 100 minutes ( $2 \times 50$ minutes lessons). Jigsaw and cooperative learning, peer to peer. The learning pyramid will all be used within the module: students will be asked to read, watch and listen audiovisuals, use demonstration and discussion, practice doing and teach others, in order to put into practice Bloom's Taxonomy: remember, understand, apply, analise, evaluate, create.

## Overall Module Plan

Unit: 1
familiarization with the online tool
Unit length: 12h (6 lessons of 100 mins each)

## Lesson 1

3D modeling
Familiarization 1

## Lesson 2

3D modeling Familiarization 2

## Lesson 3

3D modeling
Familiarization 3

## Lesson 4

3D assembly
Familiarization 1

## Lesson 5

3D assembly
Familiarization 2

## Lesson 6

Drawing Contest

## Unit: 2

creation of a glossary of all studied commands, record of small video tutorials

Unit length: 8h (4 lessons of 100 mins each)

## Lesson 1

Command list

## Lesson 2

Command list

## Lesson 3

making tutorial pills

## Lesson 4

making tutorial pills 2

## CLIL Lesson Plan

| Unit number | 1 | Lesson number | 1 | Title | 3D modeling Familiarization 1 |
| :--- | :--- | :--- | :--- | :--- | :--- |



| 2 |  |  |  |  | Whole classGroup workPair workIndividual work | - U1_L1_ALL1.docx video: link | The teacher walks around the class and listens to pairs analysing the words. |
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| 6 | 10 | Thands out a new worksheet containing useful words and asks students in pairs to discuss their meanings and answer related questions. | Thands out a new worksheet containing useful words and asks students in pairs to discuss their meanings and answer related questions. | Skills |  |  |  | Whole <br> class Group work Pair work Individual work | - U1_L1_ALL5.docx | Thelps when needed and gives feedback |
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|  |  |  |  | L | S | R | W |  |  |  |
|  |  |  |  | Key vocabulary circles, squares, rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches |  |  |  |  |  |  |
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|  |  |  |  | Communicative structures <br> simple present, zero conditional |  |  |  |  |  |  |
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## CLIL Lesson Plan

| Unit number | 1 | Lesson number | 2 | Title | 3D modeling Familiarization 2 |
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| Activity | Timing | Learning Outcomes | Activity Procedure | Language | Interaction | Materials | Assessment |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 15 | Students will remember and revise the concepts of the first part of the video seen in the previous lesson. They will be able to re-elaborate and transform key active sentences into passive forms. | the teacher delivers a handout with sentences taken from the script of the video, to be re-written in the passive form. At the end of the activity, the T swaps the pairs, and students share their answers in order to correct them. T projetcs the sentences on the digital board and gives feedback (in the document on every line there are the correct sentences written in white. To make them appear, T needs to select the text and turn it into black. | Skills | Whole <br> class Group work Pair work Individual work | - U1_L2_ALL1.docx | T circulates and monitors. T checks the text produced by students and feedback |
|  |  |  |  |  |  |  |  |
|  |  |  |  | Key vocabulary <br> Key sentences extracted from the video. |  |  |  |
|  |  |  |  | Communicative structures passive form |  |  |  |
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## CLIL Lesson Plan

| Unit number | 1 | Lesson number | 3 | Title | 3D modeling Familiarization 3 |
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| 2 | 20 | the students will share handouts containing the exercises. each group will do the exercises. each group will share the exercises made only with one group scaffolding by the teacher | Skills | Whole <br> class Group <br> work Pair work Individual work |
| :---: | :---: | :---: | :---: | :---: |
|  |  |  | L S P R W |  |
|  |  |  | Key vocabulary |  |
|  |  |  | circles, squares, rectangles, polygons, |  |
|  |  |  | height, two dimensions, |  |
|  |  |  | features, outline, |  |
|  |  |  | workspace, plane, faces, dot, selected, |  |
|  |  |  | deselect, rotate, views |  |
|  |  |  | flat profile, sketches |  |
|  |  |  | Communicative |  |
|  |  |  | structures |  |
|  |  |  | simple present, zero |  |
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| 4 | 10 | Students will be now aware of the use of an assessment shared criteria | T will give a feedback to each group and asseses the work done by each group. He or she will use the rubric used by students to evaluate solids and will evaluate the group work attitude by using the rubric attached | Skills |  |  | Whole classGroup workPair workIndividual work | sommative assessment |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | L S | R | W |  |  |
|  |  |  |  | Key vocabulary <br> circles, squares, rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches |  |  |  |  |
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|  |  |  |  | Communicative structures present simple, zero conditional |  |  |  |  |
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| 5 | 20 | Students will be able to create new real solids and will be aware that many construction elements are defined by regulations | The teacher asks students to create new solids, by drawing real parts taken from these pages (see links below): I shape beams and T shape beams Screws and Nuts L shape beams | Skills |  |  |  | Whole classGroup workPair workIndividual work | link link link link | Teacher monitors the activity and helps when needed |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | L | S | R | W |  |  |  |
|  |  |  |  | Key vocabulary <br> circles, squares, rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches |  |  |  |  |  |  |
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| 6 | 20 | feedback | One student per each group shows the rest of the class their solids and explains the correspondence to the first task. Then the real solids are shown, according with the tables of the regulation | Skills |  |  |  | Whole <br> class Group work Pair work Individual work | Teacher takes notes and gives feedback, answers doubts |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | L | S | R | W |  |  |
|  |  |  |  | Key vocabulary circles, squares, rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches |  |  |  |  |  |
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|  |  |  |  | Communicative structures present simple, zero conditional |  |  |  |  |  |
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## CLIL Lesson Plan

| Unit number | 1 | Lesson number | 4 | Title | 3D assembly Familiarization 1 |
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| Activity | Timing | Learning Outcomes | Activity Procedure | Language | Interaction | Materials | Assessment |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1 | 10 | Students will be aware of methods to build an assembly, by following the steps shown in the tutorial | The teacher divides students in pairs. T hands out a worksheet containing useful words and asks students in pairs to discuss their meanings and answer related questions. Teacher shows the first episode of a video tutorial, containing the first steps to draw a solid object and the methodology. the video will be split in two parts | Skills | Whole classGroup workPair workIndividual work | - U1_L4_ALL1.docx | Teacher monitors the activity and helps when needed |
|  |  |  |  | L S S R $\quad \mathrm{R}$ W |  |  |  |
|  |  |  |  | Key vocabulary |  |  |  |
|  |  |  |  | circles, squares, rectangles, polygons, |  |  |  |
|  |  |  |  | height, two dimensions, |  |  |  |
|  |  |  |  | features, outline, workspace, plane, |  |  |  |
|  |  |  |  | faces, dot, selected, |  |  |  |
|  |  |  |  | flat profile, sketches |  |  |  |
|  |  |  |  | Communicative structures present simple, zero conditional |  |  |  |



| 4 | 10 |  | At this stage, T shows the first part of the video, from min 2:23 to the end, during the video the students will fill the gap of a handout text given by the teacher, working in pairs. the video will be viewed two times | Skill |  |  |  | Whole <br> class Group <br> work Pair work Individual work | - U1_L4_ALL4.docx <br> link |  | T gives a feedback of the test |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
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|  |  |  |  | Key vocabulary |  |  |  |  |  |  |  |
|  |  |  |  | Communicative structures |  |  |  |  |  |  |  |
| 5 | 40 | Students will be able to create an assembly, by drawing the components and putting them together | working in pairs, students will be asked to build solid elements and then assembly them, according to the attached drawing. Each pair is asked to organize themselves: each person will draw one half of the components, using the sharing functions of onshape. The students will draw at least the first four components. note that, depending on the skills of the class in reading drawings, this activity could be splitted into subactivities, drawing the pieces one by one | Skills |  |  |  | Whole <br> class Group work Pair work Individual work | - U1_L4_ALL5.pdf |  | Teacher monitors the activity and helps when needed, taking notes for the next step |
|  |  |  |  | L | S | R | W |  |  |  |  |
|  |  |  |  | Key vocabulary circles, squares, rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches |  |  |  |  |  |  |  |
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|  |  |  |  | Communicative structures <br> present simple, zero conditional |  |  |  |  |  |  |  |


| 6 | 20 | Teacher gives a feedback on the work made, highlighting to each group what is wrong in their models, asking to make corrections when needed. | Skills |  |  |  | Whole classGroup workPair workIndividual work | -U1_L2_ALL5.pdf <br> - U1_L4_ALL6.xIsx | T assesses the work made and the attitude to work in pairs using the rubrics |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | L | S | R | W |  |  |  |
|  |  |  | Key vocabulary |  |  |  |  |  |  |
|  |  |  | Communicative structures |  |  |  |  |  |  |

## CLIL Lesson Plan

| Unit number | 1 | Lesson number | 5 | Title | 3D assembly Familiarization 2 |
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## CLIL Lesson Plan

| Unit number | 1 | Lesson number | 6 | Title | Drawing Contest |
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| 4 | 10 | Students at this point have created a new solid, rewarded with a print, deciding the winner by using a shared criteria | each group will assess all the products including their own one, by expressing an evaluation from 1 to 4. The product with the higher score will be printed. A rubric is delivered by the teacher. | Skills |  |  |  | ■ Whole <br> class Group work Pair work Individual work | - U1_L6_ALL1.xIsx | Teacher guides the process |
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|  |  |  |  | L | S | R | W |  |  |  |
|  |  |  |  | Key vocabulary |  |  |  |  |  |  |
|  |  |  |  | Communicative structures |  |  |  |  |  |  |

## CLIL Lesson Plan

| Unit number | 2 | Lesson number | 1 | Title | Command list |
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| 2 | 25 | students <br> will <br> evaluate <br> one <br> another's <br> job | each group will pass the job to another group. the latter will follow the indications written in "operative steps" cell and verify if the instructions are reliable. To help the process, T will deliver a rubric | Skills |  |  |  | Whole <br> class Group work Pair work Individual work | - U2_L1_ALL3.x\|sx | Teacher takes notes and gives feedback, answers doubts. |
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|  |  |  |  | L | S | R | W |  |  |  |
|  |  |  |  | Key vocabulary circles, squares, rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches |  |  |  |  |  |  |
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|  |  |  |  | Communicative structures present simple, zero conditional |  |  |  |  |  |  |
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| 4 | 25 | students <br> will <br> evaluate one another's job | each group will pass the job to another group. the latter will follow the indications written in "operative steps" cell and verify if the instructions are reliable | Skills | Whole <br> class Group work Pair work Individual work | - U2_L1_ALL3.xIsx | Teacher takes notes and gives feedback, answers doubts |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | L S R W |  |  |  |
|  |  |  |  | Key vocabulary |  |  |  |
|  |  |  |  | circles, squares, rectangles, polygons, |  |  |  |
|  |  |  |  | extrude, volume, height, two dimensions, |  |  |  |
|  |  |  |  | features, outline, |  |  |  |
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|  |  |  |  | flat profile, sketches |  |  |  |
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|  |  |  |  | structures |  |  |  |
|  |  |  |  | present simple, zero |  |  |  |
|  |  |  |  | conditional |  |  |  |

## CLIL Lesson Plan

| Unit number | 2 | Lesson number | 2 | Title | Command list |
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## CLIL Lesson Plan

| Unit number | 2 | Lesson number | 3 | Title | making tutorial pills |
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performance. there is also a spreadsheet that could be
used to collect and
elaborate the resultrs of the assessment. in tis case, the speadsheet allows to take
into account the T's
assessment and the
student's assessment,
giving to each one different weights ( $40 \%$ students' and $60 \%$ teacher's)

microphone, the other will execute the instructions being said. a coordination effort is required. Now and then, during the recording of a group, the other groups are required to be silent, unless a separate environment is available. Alternatively, the pairs who are not recording, can use the attached rubric to assess the other's performance. there is also a spreadsheet that could be used to collect and elaborate the resultrs of the assessment. in tis case, the speadsheet allows to take into account the T's assessment and the student's assessment, giving to each one different weights (40\% students' and 60\% teacher's)

## Key vocabulary

circles, squares,
rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches

## Communicative

 structurespresent simple, zero conditional

| 4 | 25 | students <br> will <br> evaluate <br> one <br> another's job | each group will pass the job to another group. the latter will follow the indications shown in each video and verify if the instructions are reliable. the attached rubric will make this evaluation easy | Skills |  | Whole <br> class Group work Pair work Individual work | - U2_L1_ALL3.xIsx | Teacher takes notes and gives feedback, answers doubts, uses the rubrics |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  | L S | R W |  |  |  |
|  |  |  |  | Key vocabulary circles, squares, rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches |  |  |  |  |
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## CLIL Lesson Plan


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used to collect and
elaborate the resultrs of the assessment. in tis case, the speadsheet allows to take
into account the T's
assessment and the
student's assessment,
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microphone, the other will execute the instructions being said. a coordination effort is required. Now and then, during the recording of a group, the other groups are required to be silent, unless a separate environment is available. Alternatively, the pairs who are not recording, can use the attached rubric to assess the other's performance. there is also a spreadsheet that could be used to collect and elaborate the resultrs of the assessment. in tis case, the speadsheet allows to take into account the T's assessment and the student's assessment, giving to each one different weights (40\% students' and 60\% teacher's)

## Key vocabulary

circles, squares,
rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches

## Communicative

 structurespresent simple, zero conditional

| 4 | 25 | students <br> will <br> evaluate <br> one <br> another's job | each group will pass the job to another group. the latter will follow the indications shown in each video and verify if the instructions are reliable. the attached rubric will make this evaluation easy at the end of this unit, the school could choose to publish, even only internally, the tutorials. | Skills |  |  | Whole <br> class Group work Pair work Individual work | - U2_L1_ALL3.xlsx | Teacher takes notes and gives feedback, answers doubts, uses the rubrics |
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|  |  |  |  | L S | R | W |  |  |  |
|  |  |  |  | Key vocabulary circles, squares, rectangles, polygons, extrude, volume, height, two dimensions, features, outline, workspace, plane, faces, dot, selected, deselect, rotate, views flat profile, sketches |  |  |  |  |  |
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|  |  |  |  | Communicative structures present simple, zero conditional |  |  |  |  |  |
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