

Usage of EDU4.0 for peer learning

Example and case study

Date of Delivery:	2023-01-18
Authors:	See the 'Document control' chapter
Keywords:	Digital tool, learning, 3D models with augmented reality, virtual simulation of processes, Mechanical engineering, Electrical engineering, Automation
Description:	The document contains description of usage of digital tools for peer learning. IO3 - Repository with peer assisted ...

Project No. 2020-1-BG01-KA226-VET-095211

This project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Document control

Document history

Date	Version	Change	Author
2023-01-18	0. 1	Template and Initial texts	Velichka Savova
		...	
		Proofreading	
		Confirmed by the consortium	

Document distribution list

Internal (iPeer project group)	Internal (iPeer extended Project group)	Public
X	X	

Table of contents

Document control	2
Document history	2
Document distribution list	2
Description of the EDU4.0 application for peer learning	4
Basics	4
The problem	4
Objectives	5
Context	5
Real life usage - the story	5
Step-by-step scenario	7
What is EDU4.0?	7
Advantages and disadvantages	8
Additional information	8

Description of the EDU4.0 for peer learning

Basics

Tool name: EDU4.0

Related peer learning methodology: Peer Coaching

Category: **Mobile application** Physical accessory

Target group: Students

Age group: Secondary

Context: Practical skills

Topic: Learning via virtual simulation of various processes in the fields of Mechanical engineering, Electrical engineering and Automation.

Relation to specific class:

EDU4.0 is a free tool supporting 10th, 11th and 12th grade students of vocational high schools who are preparing to work in professions such as Mechanic, Electrician and Automation Technician, Fitter, Welder.

Link to EQF level¹:6

Link with Bloom's taxonomy²,

- **knowledge domain:** understand
- **emotion domain:** organizing
- **action domain:** adaptation

Relation to in-class (or PAL) pedagogy: 3D models with augmented reality supporting the learning content in vocational training subjects in the fields of Mechanical engineering, Electrical engineering and Automation.

The problem

A fundamental component in professional education is the link between theory and practice, i.e. theory assumes an outcome, while practice allows you to test the theory and see if it is accurate. The platform facilitates the practical understanding and perception of the lessons by the learners, as it will enable virtual simulation of different processes as a result of production commands and actions, showing the corresponding results of these actions. The analysis of these results will help to make optimal decisions

¹ <https://europa.eu/europass/en/description-eight-eqf-levels>

² https://en.wikipedia.org/wiki/Bloom%27s_taxonomy

in different real production situations in the future professional development of the students.

Objectives

This is a platform funded by the Erasmus + program and developed between 4 different countries (Bulgaria, Slovenia, Croatia and Poland) that is determined to help students learn about metalworking technologies and other engineering-related fields with the help of 360 Virtual Reality and Augmented Reality.

Context

The application is used in the lessons of automation, electrical machines and devices, electrical installations, power supply and electrical equipment, welding, metalworking machines and tools, and other subjects of vocational training for students of the 10th, 11th and 12th grades in vocational high schools.

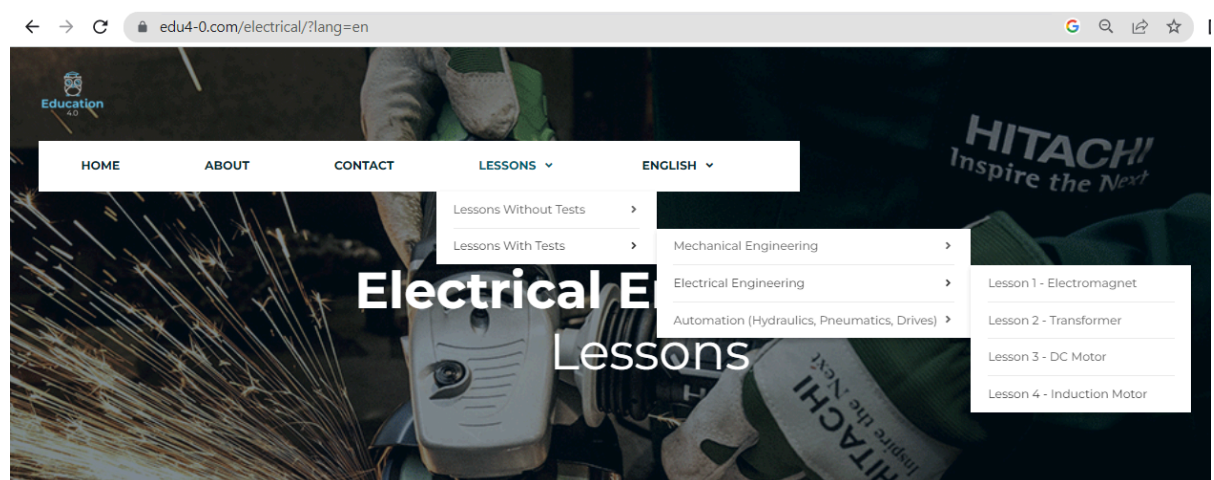
Real life usage - the story

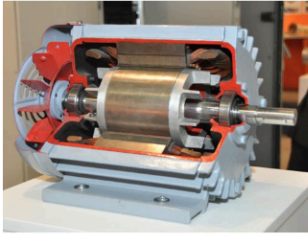
A student from the "Automation" specialty - 11th grade in a vocational school studies the principle of operation of Asynchronous motors. The student knows about the EDU 4.0 tool and decides to use it. All he needs is to download the FREE app on his Android phone.

After launching the application, the student has the option to select a language in which to use it. The options are in English, Bulgarian, Polish, Slovenian and Croatian.

The next step is to **select** the category of the lesson - **with or without a test and** from the drop-down menu to select **the topic of the lesson**.

In this case, our student chooses a lesson with a test from the *Electrical Engineering* category, unit - *Induction motor*, which is accompanied by a short theoretical part.





LESSON 4 – INDUCTION MOTOR

Learn about **induction motor** by watching the interactive 360° VR Experience.

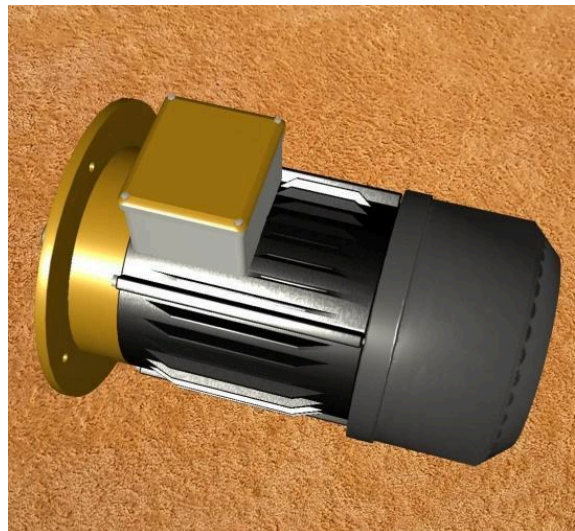
[GO TO LESSON 4](#)

Induction motor

6 pole induction motor with slipring rotor on the crane lifts the load at the speed of 1.2 m/s. The rotation speed is 960 rpm and is connected to the 50 Hz power grid. At which speed will the motor lift the same load if the rotation ring is connected through sliprings to the resistors so that the resistivity increases N times a phase.

[Close](#)

The student gives permission to the camera of his device to access this application and once it is activated, the student selects a plane (surface) on which to place the 3D engine model. The student can interact with the object by rotating it, zooming in and out to view it in details. The visualization of the object allows all its constituent parts to be seen separately. Meanwhile, a simulation of the engine disassembly and assembly processes is carried out.

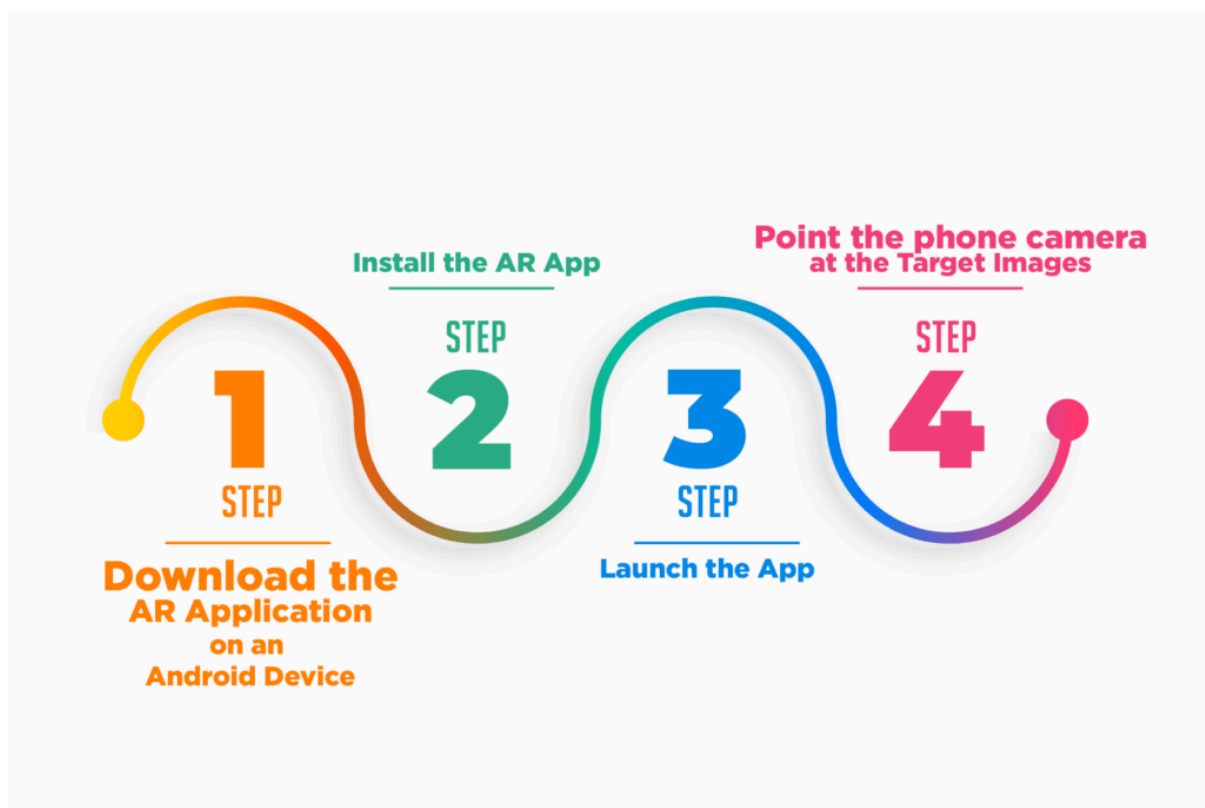


After completing the lesson, the student has the opportunity to check his knowledge by taking a lesson test.

Step-by-step scenario

(short instructions for teachers/educators)

1. Install the Edu4.0 App on your Android Device.
2. Choose a language.
3. Open a lesson of your choice.
4. Point the camera towards the image.
5. Enjoy the 3D visualization.
6. Test what you have learned (*optional*).



What is EDU4.0?

The EDU4.0. application is developed within 26 months under an Erasmus + project, in cooperation with:

- Vocational School of Mechanical and Electrical engineering – Pirdop, Bulgaria;
- SMC Industrial Automation Bulgaria EOOD;
- SMC INDUSTRIAL AUTOMATICS Ltd., Slovenia;
- Technical School, Croatia;
- Perfect Project, Poland.

The aim of the project is to create educational content using augmented reality and 3D visualization technologies in the fields of Electrical and Mechanical engineering and Automation.

The application can be downloaded for free on any android device giving the opportunity to use augmented reality while learning, as well as, virtual simulation of various processes and detailed explanation.

Advantages and disadvantages

Advantages:

- Free application
- Easy to download
- Easy to use
- Easy to understand
- 3D visualization with augmented reality of individual objects, units, production processes.

Disadvantages:

- Low popularity
- Functional upgrade is needed – sometimes the app sticks on loading
- Available for Android devices only.

Additional information

<https://edu4-0.com/>