Workshops developed by the Hungarian teachers

Project Reference: 2022-1-FR01-KA220-VET-000086996

Who the teachers are

- Tamás Vadai

- Tibor Zabari

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THE SCHOOL -

ÚJPESTI KÉT TANÍTÁSI NYELVU MUSZAKI TECHNIKUM

Facts & data... ☺

➢ 96 year

➢ 1002 students

➢ 102 teachers

➢ 45 classes

➢ 94 rooms

➢ 10 000 m^2

DI-STRUCT!

The digitally enhanced courses

1. Foundations of machine engineering

Digital content creator: Vadai Tamás

https://drive.google.com/file/d/1H7_AA84S3PI1sV0huBDC4LeyowMcW9HV/view?usp=drive_link

2. Practice in 3D engineering design software systems

Digital content creator: Tamás Vadai and Tibor Zabari

https://drive.google.com/file/d/1AQbr8VMKJ-hbpAplFQodCNLREz-bnkcZ/view?usp=drive_link

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The model and the point of the digitalisation

1. GAIN LEARNERS' ATTENTION
Watch a video, for instance, and give them a task.

2. INFORM LEARNERS OF OBJECTIVES LESSON.
Tell students what they'll be able to do by the end of the lesson.

3. STIMULATE/RECALL OF PRIOR LEARNING
Use Kahoot!, Quizlet or any other quiz tool to recall prior learning.

4. PRESENT CONTENT
Students can use any platform suitable for presentations. Flipped classroom activity.

5. PRACTICE
Depending on the subject, different digital tools can be used, e.g. Kahoot!, Mentimeter, etc.

6. PROVIDE FEEDBACK
Show scores. Provide peer feedback, group feedback, teacher's feedback.

7. ASSESS PERFORMANCE
Moodle, H5P, Summative tests, etc.

8. ENHANCE RETENTION & TRANSFER
Simulation, spot mistakes, inaccuracies and errors in videos, AR, use Flipgrid, both to enhance retention and to transfer new knowledge to different contexts.

1. Foundations of machine engineering
   - Stimulate/recall of the prior learning
   - Present content
   - Assess performance
   - Learning Unit here

2. Practice in 3D engineering design software systems
   - Gain the learners attention
   - Stimulate/recall of the prior learning
   - Present content
   - Practice
   - Assess performance
   - Enhance retention & Transfer
   - Learning Unit here

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Foundations of machine engineering

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Foundations of machine engineering

keywords of the course: application of the computer to machine design, machine tools programming, manipulation and control of CNC machines.

Qualification to be achieved:
- Technician in mechanical engineering
- Mechanical technician CAD-CAM specialisation

Length of the study: 5 years in dual language (Hungarian and English, or Hungarian and German)

Related non-VET subject: field of study: foreign language for the workplace (for technical professions)

Total number of subjects in the field of study: 62/62 hours

Content summary of the field of study
- Applying for jobs in a foreign language.
- Drafting CVs and motivation letters, communicating effectively in a foreign language during job interviews.
- Effective professional communication at work
- Employability, employee skills

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Background information, context:

Some students are very active, talented, willing to learn independently and motivated to complete the tasks assigned to them. The majority of students are average in ability and, considering their age group, are less proactive and not always motivated.

Special educational needs: 2-3 students (behavioural disorder and/or lower learning and/or understanding ability than average.

Digital technology/applications: e-learning courses (teachers developed e-books) and video learning materials (OER) are used by the school. It was developed few years ago. The digital learning materials are used to meet the learning needs of SEN students too and are used to support the inclusion and equal opportunity too.

Time of the pilot is the beginning of June. This is the very last week of the VET education in Hungary. Both students and teachers are tired, and the weather is normally hot. The general motivation and the concentration level of the students are low. The digital tool could be used for increasing the learning motivation of the students.

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Topic(s) and learning objective(s) of the lesson(s):

Closing of the course, review of the whole year's curriculum and assessment of learned knowledge. Establishing and strengthening the curricular connection with the course "Basic Metalworking

Expected results of using EdTech:

- Identifying shortcomings of the mainstream students.
- Identifying the shortcomings of SNI and BTMN learners and helping them to catch up.
- Updating the knowledge and preparing students for the sectoral examination
- Understanding the curricular connection with the course "Basic Metalworking„
- Making shorter and more effective use of learning/study time

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Length of the learning unit:

Two one and half hour lessons (one week apart) in succession (3 hours in total) + appr. 30 minutes self-study before the first contact lesson, and 60 minutes between the contact lessons.

Each student having a personalised clear picture about the shortcomings and preparing an individual learning plan for the successful sectoral examination

Teaching methods:

- flipped classroom technics,
- self-assessment by digital tools at home,
- quizzes,
- OER materials,
- videos to check knowledge of the whole year's curriculum.
- peer learning in the classroom.

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Used EdTech

e-book

https://szega.hu/konyvek/gepeszet/femipari-alapmegmunkalasok/166

OER video:

https://www.youtube.com/watch?v=Tg_1tKVYk3c
https://www.youtube.com/watch?v=GaglyXEH1_I
https://www.youtube.com/watch?v=Tg_1tKVYk3c

Self-Assessments:

https://forms.office.com/e/NtFabgZJyN
https://www.baamboozle.com/game/2192456

Knowledge competition by Kahoot

1) https://create.kahoot.it/share/munkavedelem/4b20dcb8-6300-4b6a-9c9c-4ab5c05e8acb
2) https://create.kahoot.it/share/szereles/ccab4bcb-1ef0-4fd1-929b-371ced002f36
3) https://create.kahoot.it/share/keplekeny-hidegalakitas/6e2765ce-28ba-4f88-8b41-05040284107c
4) https://create.kahoot.it/share/merestechnika/2b1adf02-96bc-47b3-86ae-96c2cd5adf55
5) https://create.kahoot.it/share/mertekegysegek/190c2947-3f2c-4940-b269-b2e39a9b8e06
6) https://create.kahoot.it/share/anyagismeret/78b1d012-10bf-4288-ab7c-ba83744410f5
7) https://create.kahoot.it/share/turesek/2f95ffa3-c44d-4c0d-a005-5f86debdc2bd
8) https://create.kahoot.it/share/forgacsolas/c340cd59-caa9-4c01-b1bd-a8b2676bc710
9) https://create.kahoot.it/share/elorajzolas/65ec4a51-841c-4741-afb8-24f5e74e344a
10) https://create.kahoot.it/share/muszaki-dokumentacio/1b6b1e88-39e0-4493-8f1c-a0c2995c7cfc

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Structure of the learning unit:

Klick here

Pilot and pilot class:

The pilot took place in one class (similar to the pilot for the other subject), led by the one teacher who developed the digital materials:

- Tamás Vadai, in a class of 24 students, piloted in two groups of 12-12 students.

The splitting of the groups was necessary because the students had already done work in training in different companies

Practice in 3D engineering design software systems

Practice in 3D engineering design software systems

keywords of the course: application of the 3D design software to machine design, 3D design software tools programming, simulations, kinematical modelling, hands-on and inquiry learning/teaching.

Qualification to be achieved:
- Technician in mechanical engineering
- Mechanical technician CAD-CAM specialisation

Length of the study: 5 years in dual language (Hungarian and English, or Hungarian and German)

Relevant general education subjects and professional content

Mathematics, physics, computer science, unknown equations, engineering, plane geometry concepts, solids, materials and their properties

Practice in the companies

At least 50% of the course hours are spent in practical work (workshop, companies, etc.).

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Digital technology/applications: e-learning courses and video learning materials (OER) are used by the school. It was developed few years ago. The digital learning materials are used to meet the learning needs of SEN students too and are used to support the inclusion and equal opportunity too.

Time of the pilot was the beginning of June. This is the very last week of the VET education in Hungary. Both students and teachers are tired, and the weather is normally hot. The general motivation and the concentration level of the students are low. The digital tool could be used for increasing the learning motivation of the students and make the study time more effective and shorter.

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Topic(s) and learning objective(s) of the lesson(s):

At the end of the academic year, learn and practise a new section of the curriculum and prepare students for the practical application of the Solide Egde 3D engineering design software in the summer internship.

1. To develop the basic theoretical and practical knowledge required to use the 3D engineering design software
2. To learn to use the Solide Egde 3D engineering design software and to learn to use it with teacher/company trainer support.

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Expected results of using EdTech:

- Assess and refresh prior knowledge required to learn new material
- Introduction to and practice of modelling in Solide Egde engineering design software
- Understanding the operation and use of the slicing software and experimenting on a practical example.
- Learners become familiar with the typical configuration required to create output files
- Transferring output files to 3D printers.
- Learn about real business applications with the help of video lessons.
- Understanding the curricular connection with the other courses of the academic year.
- Making shorter and more effective use of learning/study time

- Gain the learners attention
- Stimulate/recall of the prior learning
- Present content
- Practice
- Assess performance
- Enhance retention & Transfer

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Length of the learning unit:

One 135 minutes lessons.

Teaching methods:

- flipped classroom technics: video intro of the topic - for generate preliminary interest in the topic,
- pre-knowledge assessment (diagnostic knowledge assessment) by digital tools at the lesson,
- hand-on learning in the classroom,
- Experimental learning &learning by doing
- virtual experiential learning by video (allowing students to see real-life applications of what they have learned)

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Used EdTech

e-book

https://szega.hu/konyvek/gepeszet/femipari-alapmegmunkalasok/166

OER video:

https://www.youtube.com/watch?v=8YiecvO-MeI&t=5s

Knowledge competition by Kahoot

https://create.kahoot.it/share/rajzi-alapok/a8ea2d5c-b36d-44da-9de4-66b1b837c1fc

Teacher's and video presentations,
https://www.youtube.com/watch?v=a4Bd199QkXI&t=26s
https://www.youtube.com/watch?v=KJ7g1ZXAVz0&t=5s
https://www.youtube.com/watch?v=A6WZBc2OPBA
https://www.youtube.com/watch?v=1ipQELDv94A

Self-learning Open Educational Resource:
https://nctakademia.hu/oldalak/solidedge
https://www.youtube.com/playlist?list=PL9r-PqhPPGxgue4lSkwausK2J3TKFzoe5

Demonstrate the implementation/practical use of what has been learnt (video case study) - (enhance retention + enhance transparency - OER video simulation/case study)

https://www.youtube.com/watch?v=6BvGbGKGQhI
https://www.youtube.com/watch?v=4jbn0ah3u9E

Structure of the learning unit:

Klick here

Pilot and pilot class:

The pilot took place in two classes (similar to the pilot for the other subject), led by the one teacher who developed the digital materials:

- Tibor Zabari (head teacher of the topic), in a class of 28 pupils, divided into 3 groups.

The splitting of the groups was necessary because the students had already done work in training in different companies

Date of the pilot
1st group – 04/06/2024
2nd group – 07/06/2024
3rd group – 11/06/2024

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Implementation of specific digital tools and connection to the model of digitaly enhancement of the traditional contact lessons

a. Generate preliminary interest in the topic (first step of the model: gain learners' attention and interest) – waching a motivation video lesson at home before the contact lesson in the school.
b. Prior knowledge assessment using a digital tool in the classroom. Aim is to assess the level of the required prior knowledge; to make the link with the prior learning (third step of the model: stimulate/recall of the prior learning). Tool: Kahoot (done by teacher)
c. Learning by doing/hands-on learning and inquiry learning (Teacher presentation, guided practice; shared use of software; individual use of software) - (fifth step of the model: Practice with different software/platform)
d. Demonstrate the implementation/practical use of what has been learnt. Objective is to demonstrate the practical use of the application in a real-world business environment (video case study) - (Step 8 of the model: enhance retention + enhance transparency - OER video simulation/case study)

External support to the pilot teachers

Tamás Vadai	Tibor Zabari
April	
Intro of the job – digitalisation of two courses	
May	
• supporting and metoring the developer VET teachers of the topic „Machine Manifacture design" with digital pedagogy 2 days	• supporting and metoring the developer VET teachers of „3D printing technology" with digital pedagogy 2 days
• supporting and metoring the developer VET teachers of the topic „Machine Manifacture design" wrinting/developing lesson plan 1,5 days	• supporting and metoring the developer VET teachers of „3D printing technology" wrinting/developing lesson plan 1,5 days
June	
• Planning the pilot with the teachers of the topic Machine Manifacture design 1 days	• Planning the pilot with the teachers of the topic „3D printing technology" 1 days
• Participating in the pilot of the topic Machine Manifacture design, group discussion and evaluation of the pilot 2 X 2 half days (first group)	• Participating in the pilot of the topic „3D printing technology", group discussion and evaluation of the pilot 4 half days (3 half days with the 2nd group + 1 half day discussion)
• Shared final evaluation of the pilots (3D printing technology & Machine Manifacture design) one day	
• wrining the final lesson plan, evaluation the staisfaction surveys 3 days	• wrining the final lesson plan, evaluation the staisfaction surveys 3 days

Thank you for your attention