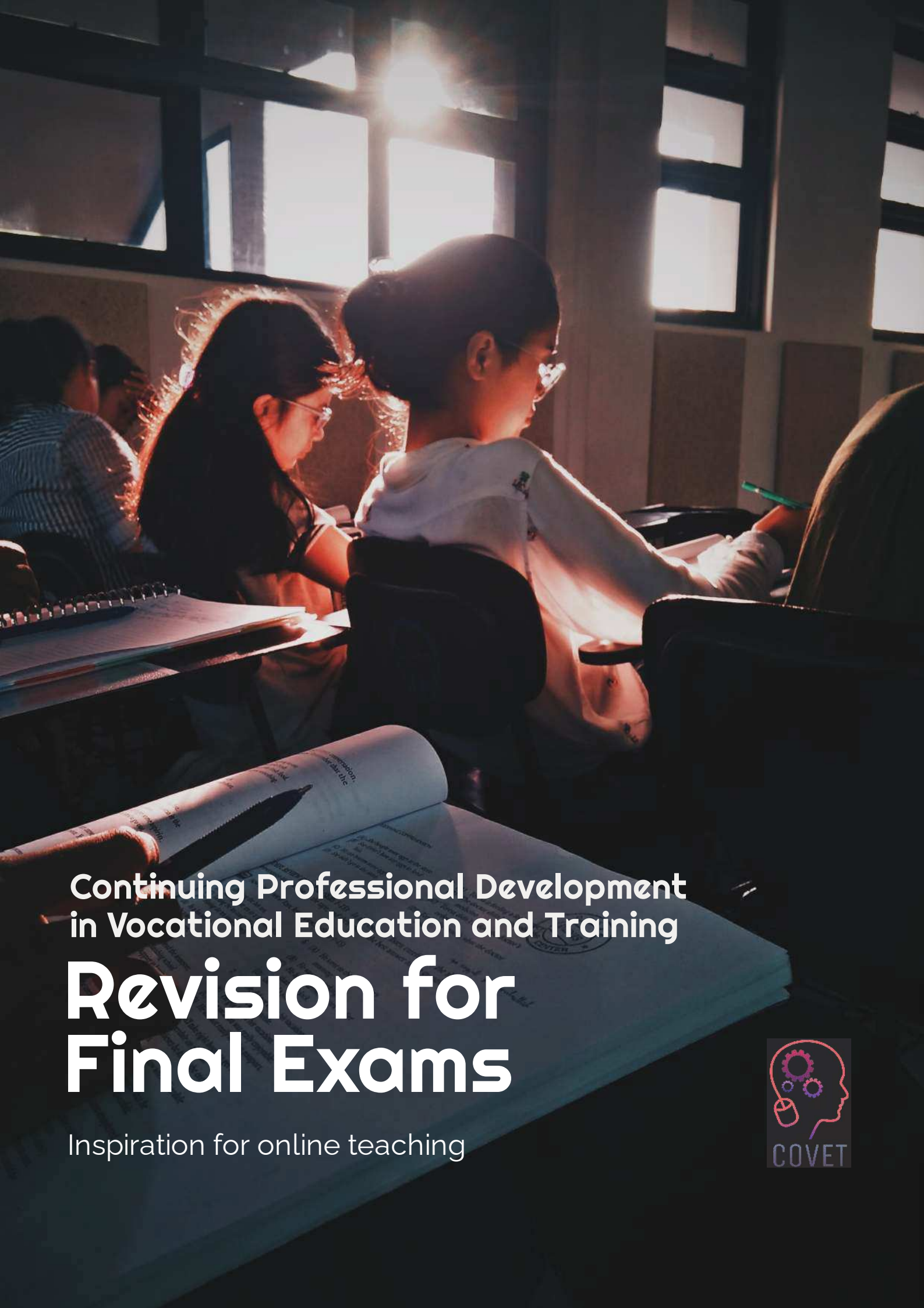

Continuing Professional Development in Vocational Education and Training

Revision for Final Exams

Inspiration for online teaching

COVET

In the COVET project, we have collected many great examples of teaching that have been transformed from the classic off-line version into a modern online learning method.

These sample lessons have been created by VET teachers from different EU countries. We present them to you as inspiration for your work.

The lessons are particularly suitable for vocational teachers, but can also serve as a training tool for teachers, trainers and lecturers in other educational settings.

All sample lessons, training materials as well as all information about the project are available at:
https://www.covet-project.eu/

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The European Commission support for the production of this publication does not constitute an endorsement of the contents which reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

Co-funded by the
Erasmus+ Programme
of the European Union

Revision for Final Exams

Off-line version of the preparation

Goal

Students of the three-year apprenticeship proramme in Metalworking will prepare for two parts of the final examinations in their field, written and oral.

They will prepare for the written part of the exam, which has seven parts, primarily focusing on two parts in the long term. The more difficult and essential parts for their future practice are: drawing of simple and reading of more complex engineering production drawings and proposal of a production process according to a production drawing.

They also prepare for the oral part of the exam throughout the school year. They will prepare for a 15 minute individual oral presentation for each of the 25 questions. They prepare in stages, first focusing primarily on understanding and knowledge of each question, and then over the next few months for the oral presentation of their knowledge of each question.

Teaching methods

problem-based interview; demonstration of aids; preparation of individual questions for the FE divided and written by the teacher into 10 to 20 sub-questions; numbers of questions to be randomly drawn by students

Materials

PPT presentation of all three years, printed sub-questions

Course of action

- Reading drawings in class, the drawing is projected by a data projector.
- Proposal of the production process as a homework - production drawing in printed form. There is always a discussion before and after the production process is drawn up. Ongoing consultation outside the classroom.
- Review of one question in class using PPT presentations and other aids
- Next, the students are given multiplied forms where one question for the FE is always divided into 10 to 20 sub-questions, constructed in such a way that when answered in a complete sentence they all form a text that takes up no more than 1 to 2 A4 pages.
- From the second half of the year onwards, every lesson, 2-3 pupils rehearse a written preparation for a drawn question during the class and then an oral presentation in which they communicate their knowledge of the question. They must use sketches in their written preparation.
- Ongoing consultations in the classroom outside the actual lesson

Online version of the preparation + face-to-face teaching

This experience describes the case of face-to-face teaching in a school **combined with the** use of online teaching software.

Combining these methods and means, **we can increase the effectiveness of traditional teaching and meet the individual needs of students in a much better way.**

Teaching methods

problem-based interview; demonstration of aids; preparation of individual questions for the FE divided and written by the teacher into 10 to 20 sub-questions; numbers of questions to be randomly drawn by students + preparation of one FE question by each pupil as a test in iTrivio, learning through tests (quizzes) of iTrivio questions. During the last month, 2 times a week two hours of afternoon tutoring via Teams according to the needs and demands of the students (the recorded lesson can be downloaded and played to by non-participants)

Materials

PPT presentations of all three school years, sub-questions in electronic form, LMS iTrivio application, MS Teams

Course of action

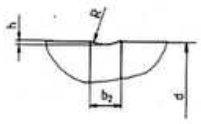
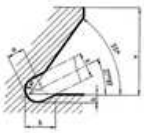
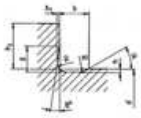
- Reading drawings in class, the drawing is projected by a data projector **+** input of drawing and drawing queries using Team. These are further processed by the student individually and at a time that suits his/her needs as a homework.
- Proposal of production procedures as a homework - entering a production drawing in electronic form using Teams. There is always a discussion before and after the development of the production process in school. Ongoing consultation outside the classroom and via chat in Teams.
- Review of one question in class using PP presentations and aids
- Presentation of individual questions for the FE using Teams, one question on the FE is always divided into 10 to 20 sub-questions, constructed in such a way that when answered by one complete sentence they form a text that takes up no more than 1 to 2 A4 pages. Based on the teaching material from the previous years (written or electronic in Teams) pupils prepare their answers to the sub-questions.
  They upload it to Teams and receive comments on their work individually also in Teams.
  All of the completed questions are made available to everyone in an electronic form in Teams.
- Each student will prepare one question for the oral FE as a quiz in the iTrivio LMS system. He/she uses the type of questions about selecting a drawing, marking the place in the drawing, proposal of the production process in the correct order, etc. Teacher corrects, completes and makes it available to all pupils. The quiz is set up to instantly show the wrong and the right answer, while allowing for each quiz question to change the answer. Answers are mixed up and the correct answer is always in a different place.
- From the second half of the year onwards, every lesson, 2-3 pupils rehearse a written preparation for a drawn question during the class and then an oral presentation in which they communicate their knowledge of the question. They must use sketches in their written preparation.
- Ongoing consultations in the classroom outside the actual lesson + during the last month, 2 times a week two hours of afternoon or evening tutoring via Teams. The pupils choose the

topics to be discussed and their questions are answered. The lesson is being recorded and can be downloaded and listened to by the non-participants.

- Sometimes the pupils record their verbal speech on their mobile phones, listen to it and evaluate it after some time (they are usually shocked).

A look at the quizzes in iTrivium

Které z těchto normalizovaných zápichů můžeme udělat na klasickém soustruhu na rotační části?

- ☐ 
- ☐ 
- ☐ 
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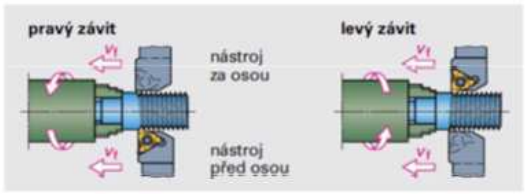
Seřaďte úkony, které děláme při správné kontrole válečkovým kalibrem

1. do kontrolované díry vložíme kalibr dobrou stranou
2. když zmetková strana neprojde, jedná se o dobrý kus a expedujeme ho třeba na montáž
3. když dobrá strana kalibru neprojde, jedná se o opravitelný zmetkový kus a pošleme ho na opravu
4. když projde dobrá strana, kalibr vložíme do díry zmetkovou stranou
5. když projde zmetková strana, jedná se o zmetkový kus neopravitelný a vyřadíme ho

Odeslat

Sample questions within one FE question for students to prepare

10) VÝROBA ZÁVITŮ NA SOUSTRUHU

1. Co značí kóta na výkrese M20 x 0,75?
2. Co značí kóta na výkrese Tr40 x 8?
3. Co značí kóta na výkrese Tr40 x 8 (4)?
4. Vyjmenujte nástroje, kterými e mohou na soustruhu vyrábět závity.
5. Jaký je postup výroby vnějšího závitu na soustruhu pomocí závitové kruhové čelisti?
6. Jaké znáte závitové soustružnické nože?
7. Jaké tři druhy VBD pro výrobu závitů znáte?
8. Jaký je postup soustružení závitu závitovými noži na hrotovém soustruhu?
9. K čemu používáme závitové šablony při soustružení závitů závitovými noži?
10. Vyjmenujte způsoby prohlubování závitové drážky.
11. Který z těchto způsobů prohlubování závitové drážky se dá použít jen na CNC stroji?
12. Načrtněte prohlubování drážky bočním přísuvem.
13. Porovnejte prohlubování drážky závitu bočním přísuvem a radiálním přísuvem.
14. 

    Popište způsob výroby pravého závitu, kdy je nůž za osou.
15. Kdy se používají držáky se sníženou hlavou a proč?
16. Vyjmenujte způsoby kontroly závitů.

And what do the correct answers look like, here on two A4 pages

10) VÝROBA ZÁVITŮ NA SOUSTRUHU

1. Co značí kóta na výkrese M20 x 0,75?
   Metrický závit o velkém průměru 20mm s jemným stoupáním o velikosti 0,75mm
2. Co značí kóta na výkrese Tr40 x 8?
   Trapézový závit (lichoběžníkový rovnoramenný) o velkém průměru 40 se stoupáním 8mm
3. Co značí kóta na výkrese Tr40 x 8 (4)?
   Trapézový závit (lichoběžníkový rovnoramenný) o velkém průměru 40 se stoupáním 8mm s roztečí 4 mm. Je dvouchodý: 8:4=2
4. Vyjmenujte nástroje, kterými e mohou na soustruhu vyrábět závity.
   Nůž závitového nože musí mít profil negativu profilu závitu, který vyrábíme.
   Pro výrobu závitu na konvenčních soustruzích používáme závitové nože vnější a vnitřní, kotoučové nože, hřebínkové kotoučové nože a můžeme použít i závitníky a závitové čelisti.
   Na CNC strojích používáme VBD s plným profilem, VBD s Vé profilem a VBD hřebínkové. Pro výrobu závitu nožem upnutým VBD dolů používáme nože se sníženou hlavou.
5. Jaký je postup výroby vnějšího závitu na soustruhu pomocí závitové kruhové čelisti?
   Obrobek je upnut ve sklíčidle, závitové čelisti jsou upnuty ve vratidle. Vratidlo drží pracovník v ruce nebo je opřeno o nožovou hlavu nebo nožové saně suportu, aby se neotáčelo. Při řezání se závitová čelist mírně přitlačuje čelem hrotové objímky koníka na obrobek. Obdobné je to se závitníky.
6. Jaké znáte závitové soustružnické nože?
   Pro výrobu závitu na konvenčních soustruzích používáme závitové nože vnější a vnitřní, kotoučové nože, hřebínkové kotoučové nože a můžeme použít i závitníky a závitové čelisti.
7. Jaké tři druhy VBD pro výrobu závitů znáte?
   Na CNC strojích používáme VBD s plným profilem, VBD s Vé profilem a VBD hřebínkové. Pro výrobu závitu nožem upnutým VBD dolů používáme nože se sníženou hlavou.
8. Jaký je postup soustružení závitu závitovými noži na hrotovém soustruhu?
   Nastavíme posuv podle tabulky (stoupání). Upneme obrobek, který podepřeme koníkem. Upneme závitový nůž přesně do osy, zkontrolujeme jeho kolmost k ose obrábění.
   Páčku pod nožovou hlavou dáme vlevo, zapneme vodící matici
   Nastavíme otáčky, spustíme stroj, zabereme kontrolní třísku

The course of teaching has therefore changed as follows:

The following activities were added to the face-to-face teaching activities:

- Assigning and commenting on work done at home in Teams
- Assigning the reading of drawings also as a homework in electronic form
- Assigning preparation of questions processed into sub-questions in an electronic form, correcting them, making the correct answers available in Teams (some pupils are likely to lose the printed copy)
- Turning the questions into the iTrivio quizzes - correcting additions, making it available to everyone until the end of the school year
- Consultations via chat in Teams throughout the entire school year
- Consultations in Teams a month before the FE every week 2x two hours, recording the consultations so that the absent students can listen to them

One more note:

Assigning via Teams allows students to always have the assignment at hand, printed assignments get lost. It also allows you to send individual notes to the pupil on their work.

Feedback

The iTrivio enables learning through quizzes, which is much appreciated by the pupils and this year, when the school could not afford to buy it, the pupils bought it themselves.

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2020-1-CZ01-KA226-VET-094350

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