Project 2015-1-RO01-KA202-015230
“Collaborative learning for enhancing practical skills for patient-focussed interventions in gait rehabilitation after orthopedic surgery”
COR-skills

Project Output 4: Authoring Guidelines
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1. Introduction

The goal of this document is to provide an overview of the existing installation from a user’s point of view and a step by step how-to creating courses comprising of cases and quizzes.

The on-line training process is done on the server of the Greek partner NCSR Demokritos at https://moodle.cor-skills.org/. Everybody can access the system but it is required to register properly in to access the course’s content.

The software used to organize the content of case studies is the Moodle LMS (Learning Management System) and can be found at https://moodle.com/. This platform is suitable for the delivery of distance learning, in particular through Internet.

The platform is distributed under the GPL license which is the standard licence for Open source software. There are no fees to pay for installing it on a web server to provide professional E-Learning courses through Internet.

The on-line students on previous project (ORTHO-eMAN) have found this platform very easy to navigate and use.

Furthermore Moodle LMS is currently at something less of 80000 registered installations. See https://moodle.net/stats/. With so many users over the globe it is evident that the usability of the system is very high.

Finally Moodle LMS caters to the latest web development best practices of responsive layouts. That means that mobile users will be presented with the content in a manner best matching their devices’ abilities, geometry and layout.

1.1. Communication

News, announcements, deliverables and progress reports are posted regularly in project’s site at https://www.cor-skills.org/, at facebook group page https://www.facebook.com/groups/1481197605227435/ and at the project’s twitter page https://twitter.com/cor_skills.
Registration

Before anybody can use the system it has to be registered first. The registration is a two step process.

1. The user must first create an account using the standard Internet procedure of account creation by e-mail verification. From now we will refer to the first step of the process as authorization or account creation, and the users that completed that step as authorized users.

2. Then the user must offer a set of required credentials that can be reviewed manually by the project participants. If the candidate pass the review he will be registered (enrolled in Moodle speak) in the appropriate course. From now on we will refer to these users as registered users or students.

Project members that are designated as authors and tutors need to complete only the first step of the procedure. They will be manually assigned the role of teacher, or the non editing teacher in the relevant courses.

The documentation of the process, also known as “Registration Guide”, is available here [https://moodle.cor-skills.org/course/view.php?id=10](https://moodle.cor-skills.org/course/view.php?id=10) and it is also part of this document.

The whole process is streamlined and it is available here [https://moodle.cor-skills.org/course/view.php?id=9](https://moodle.cor-skills.org/course/view.php?id=9) as a moodle course that any authorized user can take under the name “Registration Application Guide”.

1.2. Registration Guide: A step by step how-to.

Step 1: Account creation

Go to [https://moodle.cor-skills.org](https://moodle.cor-skills.org) and click the log-in link in the top-right corner or go to [https://moodle.cor-skills.org/login/index.php](https://moodle.cor-skills.org/login/index.php) directly.

Find the fist time here section and click the Create Account button as it is displayed in the image below.
The Create account form will be presented to you:
It is imperative to answer with your real personal data properly capitalized as these will be displayed and printed in every output of the project (i.e. credits). Fortunately you can change most of the data later.

After you finish entering your data and press the Create my new account button a verification e-mail will be sent to the e-mail address you have specified. Note that may be significant delay with yahoo users.

Follow the link in that e-mail back to the e-learning platform in order to verify your account creation.

Congratulations you are now a verified authenticated user of the system.

**Step 2: Register to the COR-Skills project**

Although you are now an authenticated user of the system, you still need to register your self in order to gain access to the available material such as case studies or videos. You will have to answer a few questions and submit a PDF with requested credentials in order to prove your competencies. After careful examination of the applicant credentials an appointed representative for each country will enroll the applicant as student in the relevant course.

So login to the system with your newly created account. You will be presented with this:
The system has automatically enrolled you to a "course" (so to speak) named Registration Application Form depicted below (short name RA). Press the red circled RA to proceed to the actual Registration Application Form below.

There are 2 main activities in the registration form.

1. Basic questions
2. Additional scanned credentials

Step 2.1: Basic questions

If you following the link in the first activity you will be presented with a set of questions to answer like this.
Note: You will not be able to resubmit or change the data in this form without administrator intervention so please be extra careful in this step before you press the Submit your answers button.

Step 2.2: Upload Credentials

Read carefully the credentials required for each country and discipline. You will need to scan or take a "good enough" photo of the required documents. Collate them in one PDF file that is not excessively big in size.

Press the Submit Credentials button and a facility to upload the newly generated PDF with your credentials will be displayed.
Click the **Add submission** button in order to be give the ability to upload your file.

Upload your file and **don't forget to submit it**.

**Note:** Please be patient while you are uploading the PDF file. Typically the uploading takes more time than the downloading and it may appear that the computer is stuck. Make sure the upload procedure has finished before you continue with the submission.
Note: You will not be able to resubmit or change the data in this form without administrator intervention so please be extra careful in this step before you press the final submission button.

That's it. Now your application will be examined by a COR-Skills member and you will notified accordingly. If your application is granted you will be enrolled in the relevant course for your discipline and you will have access to the videos, the case studies, the assessment quizzes and other educational material.

2. Course Architecture

In moodle LMS the course is basic building brick of information so it is convenient to define informational material as courses although they are not really courses. The total number of courses in this project is four.

In this project there are two non courses defined as courses.

- **Registration Guide** available even to non authorized users
- **Registration Application Form** available to authorized users only

The application form specifically requires input from the applicant and thus it is impossible to defined in any other way in Moodle. These “courses” are open for everyone so everybody can have the chance to register.

Courses are built from several activities such as

- Documents
  - External
  - Internal from the builtin editor
- videos
- quizzes

and many more…

Finally there are the two actual courses
• Orthopedics Surgery - Surgical procedures and case studies
• Rehabilitation - Rehabilitation procedures and case studies

Each course has the following structure
• Guidelines
• 10 Videos (5 from each relevant partner)
• 30 case studies (15 from each relevant partner) available in PDF and in original form
• 20 Quizzes (10 from each relevant partner)

The quizzes are implemented with Moodle facilities. See here for available capabilities [https://docs.moodle.org/33/en/Quiz_activity](https://docs.moodle.org/33/en/Quiz_activity) of the Quiz Activity.

The users are assigned manually (by the administrator) to the proper course based on the registration info they provided with their application form.

In this project we use the following 4 types of users
• Admin
• Teacher (has editing capabilities)
• Non Editing Teacher
• Student

### 2.1. Tracking Students’ progress

Moodle LMS has full tracking capabilities. See here for details [https://docs.moodle.org/33/en/Tracking_progress](https://docs.moodle.org/33/en/Tracking_progress).

Specifically Moodle can track the activity of a student, the resources that visited and its completion status.

In the picture below logs of a user’s activity is displayed.
Moodle also sports gradebook where several activities can have grades attached per student. In this project the quizzes will have grades attaches and they will fill the gradebook automatically upon student’s completion. The weights of each quiz question will be determined by the content author.

3. Authoring Courses

3.1. Background

In this document we assume that the curriculum structure has been settled and the administrator has created the required and agreed upon courses. Further more we assume that the content authors (editing teachers in Moodle speak) have been authorized and given write access to the relevant courses and so these administrative tasks are out of the way.

Although it is possible to use a mobile to author courses it is strongly advised not to. Mobile devices are mostly for consuming content and not creating. However for small administrative tasks such as checking a student’s progress or manually enrolling or resetting a student it is entirely possible to use a mobile device or your smartphone.

3.2. Navigating to the course

When login the teacher is presented with something like this
You are encouraged to update your profile with your photos so your student can identify you visually.

Click on the course you want to add content. A newly created course looks like this.
Notes:

- Announcements: Don’t delete them. Entries there notify All your students.
- Topics: Rename them to add your Topics. It is easy to add, delete, rename, move around and generally manipulate topics.
- Settings Cog: It is used to turn editing on.

By far the most confusing part is how to turn editing on. You have to click on the menu of the settings cog. If you do this is what you get:
The first option “Edit settings” will lead you to the general configuration of the course. There are a ton of settings there worth exploring but they are out of scope for this document.

Let’s proceed to the second option and click it. This turns editing on and now our course is like this.
Little pencils indicate editable things.

There is the option to “Add an activity on resource” or “Add topics” as promised. Let’s see what is an activity and what is a resource. Let’s click in one of them. Note when you select one of them in left panel a helpful description is shown in the right panel.
Activities are when the student can do something such as Quiz, Survey, Forum etc and Resources are for content to be consumed from the student.

So in this light: Announcements (top level item in the course) is actually a forum activity. We could delete it or rename it to “Very Important Messages” with no loss of functionality but the default one has a very useful property. It auto subscribes students to itself. It is a setting somewhere but it may not obvious to find if you create a new forum manually.

We will concentrate our attention to a few of them, namely:

- Resource: File
- Resource: Label
- Resource: Page
- Activity: Quiz
3.3. Writing Content (cases) for a course

The **Label** resource is used for small texts that are displayed in-line between the topics that act like heading or chapters in the course. Here is a visual example of how it looks like.

If you click the “Edit” link of the label a menu will pop up. Select “Edit settings” in order to access the label’s contents and other settings.
All in-line content is written with the internal HTML editor. The editor is WYSIWYG (what you see is what you get) so in theory you will never have to break out in raw HTML. However let’s see how this is done because it is actually needed even for rudimentary cases.

Click the left top icon which has the tooltip “Show more buttons”.

Some more buttons are shown. They look like:

If you click in “Reveal HTML Tags” you finally get access to the HTML tags.
The internal editor is the same also for the **Page** resource so that little trick will come handy as your familiarity with the system grows. One other direct application is to display uploaded videos in YouTube or Vimeo.

**Videos as resources**

In todays world a video may be the best educational material for some aspects of a course. In this project we have several videos and now we will describe how we display them in-line in our courses.

The best way to host a video is to upload your video to a hosting provider such as YouTube or Vimeo. The traffic required by a moderate number of concurrent viewers is more than most sites can handle. Usually if the video is uploaded in these sites then it will be publicly available. For most educational material this may be a sensible compromise. However in our case there are medical videos that

- do not address the general public.
- are a great asset of this project content and it would be unwise to dilute this value by sharing it.

Looking in YouTube there is an option to unlist a video that you have uploaded. That means that the specific video will not be returned in searches or relevant videos or any other kind of suggestions. However it would still be possible for someone that has access to the video (a registered student) to share the link of the video with unregistered users.

Vimeo on the other hand has a paying feature under its privacy settings that allows only designated sites to embed the video. So even if a student tries to share the link of the video, it will be unplayable even in Vimeo itself. Furthermore the only place that can play this video is the cor-skills.org site so if somebody wants to see the video it has to register and take the course.
Displaying the video in-line

Both YouTube and Video offer the capability to embed a video in any other site. They are offering a small HTML snippet that is required to be inserted in the page that will display the video. Here is how it is done in Vimeo.

In Moodle this is easily done with the Label resource after you toggle the HTML tags on.
See below for a real video example from the Rehabilitation Course.
Page vs File resource

The question is how do we choose between the two. Both can play a similar role. After all it is a text that the student has to read.

It has to be stated clearly that the Page resource is way more preferred than the file resource. The reason is simple and it is the mobile users. A hand crafted with the internal editor HTML document is superior in every way to a PDF or worse a Microsoft Word document for a mobile user.

First of all mobile devices don’t have a PDF or a Microsoft Office viewer application pre-installed. The user must install one or both from the store in order to be able to open PDF or Microsoft Office. Even if the user has the necessary software to view PDF and Microsoft Office files the text layouts an A4 page and does not flow according to the mobile screen.
So in which circumstance should we prefer the **File** resource? Practically is not the preferred form but it may be the only solution is cases such as:

- The source of the original document does not exist and there is only a PDF file.
- There is no time to transcribe the Microsoft Word content into the **Page** resource.

Although copy paste from Office documents works reliably it still takes considerable time to clean up the text, the headings and the rest of the formatting options.

So in this project we started by uploading the files in PDF and Microsoft Office form. As a proof of concept we transcribed one case to pure HTML **Page** resource, so the particular case is available in all 3 forms. The case can be found here

### 3.4. Writing a Quiz

**Background**

The Quiz is a standard Moodle activity that comes with the rest of Moodle. So there are no extra barriers for its adoption and usage. You can learn more in the following urls.

- [https://docs.moodle.org/33/en/Quiz_settings](https://docs.moodle.org/33/en/Quiz_settings)
- [https://docs.moodle.org/33/en/Building_Quiz](https://docs.moodle.org/33/en/Building_Quiz)

The quiz answers are normalized but leaving the defaults is a good starting point.

Now we will document step by step how to create a Quiz. The quiz is the number 4 from the Mersin University and goes under the topic “MU Quizzes” in the Orthopedics course [https://moodle.cor-skills.org/course/view.php?id=7](https://moodle.cor-skills.org/course/view.php?id=7).

**Quiz Creation**

The first step is always to turn editing on (via the settings cog – top right). Then proceed to add an activity at the appropriate place. Activities can be reordered later so it’s not a big problem if they are initially misplaced.
After the quiz selection the system drives you to the Quiz settings where we have to fill things such as quiz name, description, behavior etc.

Hints:

- Timing: Leave it alone for now. If there are many quizzes you will have to do the same edit again and again.
- Grade: Make sure you change the “Attempts Allowed” option otherwise students will be able to take the quiz as many times they like.
- Layout: Make sure it is one page per question but you can change it according to your needs.
- Question behavior: Shuffle within questions: Select yes.
- Question behavior: The option “How questions behave” requires a bit of discussion. At this point you need to specify if the feedback for **each and every** question will be immediate or deferred. Immediate means that the feedback is show immediately during the attempt. After that the student knows if his answer is correct or not and cannot revisit the question. Deferred means that the student may select to check all questions first and start replying to them in random order. The feedback is deferred until the final submission of the full quiz. We select **Immediate feedback** because otherwise students may revisit the question after they have seen the following questions. In this project the answer of the current question is explicitly stated in the next questions. We can mitigate the issue by selecting **Immediate feedback**. In other workflows the deferred feedback may be a valid option. If the teacher wants for the student to try multiple times **each and every** question he has to select **Interactive with multiple tries**.
• Review Options: Depending on the previous selection you may have to select a number of checkboxes in this option. Basically if Interactive with multiple tries is selected then we need to enable Specific feedback. General feedback is also useful sometime so it is advised to be turned on. If you leave the relevant box empty then it is not shown anyway so it’s not a problem. Right answer must be also ticked in this case.

Note that none of the above is set in stone. There is room for experimentation for teacher that wants to perfect the learning experience of her students. The above suggestions are merely a good enough starting point for the specific project and its requirements.
After finishing the configuration of the Quiz click on the “Save and return to course” button. We are presented with this (we may have to scroll at the end of the course).

We have to hide the new Quiz MUQ04 from students since it’s not ready yet. Furthermore the quizzes have to remain hidden until the examination period starts. Again this is a faculty issue and the opinions may vary. The safest thing to do is hide the quiz from students for now. Here is how:

- Click the Edit menu button
- Select Hide

Adding Questions

Now let’s enter the quiz to start adding content.

Click on the quiz itself (text MUQ04). The system will lead you to an intermediate page like the one below:
Finally click the “Edit Quiz” to enter the quiz content.

- Click the “Add menu button”
- Select “New Question”
- Select “Multiple Choice” from the popup

This how it should look like. At this point we start copy pasting from the original source of the quiz. This is usually a power point presentation. Copy pasting from Office applications to the Internal HTML Editor is very easy and works quite nicely event for pictures.
Tips and Tricks:

- First copy paste to a simple text editor such as notepad, notepad++, gvim, kate. This way most of the heavy weight formatting will be filtered. From the simple editor copy paste to the internal editor.

- Use an increasing number for the Question Name unless you can remember everything now and forever.

- Use Heading3 for the header of its subsection (H1 is for the site, H2 for the current page).

- Adding Images
  - Copy paste the image you want.
  - If you want to fill the whole available width then edit in HTML tag mode and add `style="width: 100%;"` to the `img` tag.
  - If you want to have two images side by side then use this snippet:
    ```html
    <div style="overflow: auto;"
    <div style="display: inline-block; width: 49%; float: left;">
      <img style="display: block; width: 80%; margin: auto;"/>
    </div>
    <div style="display: inline-block; width: 49%; float: left;">
      <img style="display: block; width: 49%; float: left;"/>
    </div>
    ```
◦ if you want to have 3 images side by side then use this snippet:
  <div style="overflow: auto;"
  <div style="display: inline-block; width: 32.5%; float: left;" style="width: 90%; margin: auto;">
  </div>
  <div style="display: inline-block; width: 32.5%; float: left;" style="width: 90%; margin: auto;">
  </div>
  <div style="display: inline-block; width: 32.5%; float: left;" style="width: 90%; margin: auto;">
  </div>
  </div>

◦ If you think this is too complicated stay with the copy paste from the Office environment one image at a time.

Here is how it looks if we add an image and the actual question.

And this how it looks like if you attempt to take the quiz.
If there is a need for more choices you can always select the option to **Open 3 more Choices**. Don’t worry if that is too excessive. The choices that will be left empty they won’t be shown to the student during examination so there is no problem.

**Feedback**

Each question may have an associated feedback. The teacher may decide to use specific feedback to give hints to the student.

Then there is the **General Feedback** which is not used during this project quizzes so it is best to avoid it by leaving it empty.

Finally there is the **Multiple Tries Feedback** If the teacher decides to employ a question with multiple tries it is imperative to provide this kind of feedback to the student so he can plan accordingly. Typical entries for this feedback are:

- You just lost 1/3 of the question. You have 2 more attempts.
- You just lost 2/3 of the question. You have 1 more attempt.
Of course the penalties listed here must be in accordance with the grading of each question.

**Security**

It is imperative to properly lock the question to prohibit students to wander further down in the quiz. This is done by simply clicking in the padlock icon when the quiz lists its questions.