YouTestMe

LTI-based Moodle Integration
with YouTestMe Proctoring

Table of Contents

1   Setting up Moodle

The integration of YTM proctoring system with Moodle is carried out using IMS LTI technology. Versions of Moodle 3.x and higher are supported.

1.1   SSL certificate

A valid SSL certificate must be installed on the Moodle web server so that the system pages open using the HTTPS protocol. You can check the validity of the certificate on your server using the SSLChecker.com service. This is a requirement for a browser security policy that does not allow you to access the camera and microphone via an unprotected HTTP protocol. You can also issue a free Let's Encrypt SSL certificate.

1.2   Moodle version

Since Chrome 80, the SameSite browser security policy has been tightened and by default when the page is opened in IFRAME, cookies are not sent. In this regard, it is necessary that the version of Moodle be at least 3.5.11, 3.6.9, 3.7.5, 3.8.2, because starting with only these versions the corresponding correction MDL-67175 has been made. An already configured assembly of the latest version of Moodle can be obtained from the Bitnami resource page.

If it is not possible to update the Moodle version, then you need to add to the ".htaccess" file (in the Moodle root directory on the server) a block of settings that change the response headers of the web server through the mod_headers module for Apache:

```
.htaccess

<IfModule headers_module>
    Header edit Set-Cookie (.*) "$1; Secure; SameSite=none"
</IfModule>
```

The "headers" module must be included in Apache, for this you can use the "a2enmod headers" command.

1.3   Server setup

Sometimes a "Message signature not valid" or "Missing or invalid consumer key or access token" error may occur when submitting a proctoring assessment to Moodle via the LTI Outcome Service. This error is due to an incorrectly configured server.

It is important that the time on the Moodle server is set correctly, otherwise OAuth authorization in LTI will not work.

This error could also be due to lack of ability to read the "Authorization" header in PHP. To fix this you can add the following rule to the Apache configuration file in the <VirtualHost :443> section associated with Moodle:

httpd.conf
`SetEnvIf Authorization "(.*)" HTTP_AUTHORIZATION=$1`

If this does not work, Moodle forum recommends adding the following mod_rewrite Apache rule to the ".htaccess" file (in the root Moodle directory of the server):

.htaccess

`<IfModule rewrite_module>`
`    RewriteEngine On`
`    RewriteCond %{HTTP:Authorization} ^(.+)`
`    RewriteRule .* - [E=HTTP_AUTHORIZATION:%{HTTP:Authorization}]`
`</IfModule>`

The "rewrite" module must be enabled in Apache, you can use the "a2enmod rewrite" command to do this. The Moodle directory must support parameter overrides from the .htaccess file:

httpd.conf

`<Directory />`
`    AllowOverride All`
`    Options FollowSymLinks`
`</Directory>`

1.4 Allow frame embedding

In order to display the Moodle page in the frame of the proctoring system, the option "Administration" → "Security" → "HTTP Security" → "Allow frame embedding" must be enabled under the user with the role "Administrator":

HTTP security

Secure cookies only Defined in config.php cookiesecure	☑ Default: Yes
	If server is accepting only https connections it is recommended to enable sending of secure cookies. If enabled please make sure that web server is not accepting http:// or set up permanent redirection to https:// address and ideally send HSTS headers. When *wwwroot* address does not start with https:// this setting is ignored.
Only http cookies cookiehttponly	☐ Default: No
	Enables new PHP 5.2.0 feature - browsers are instructed to send cookie with real http requests only, cookies should not be accessible by scripting languages. This is not supported in all browsers and it may not be fully compatible with current code. It helps to prevent some types of XSS attacks.
Allow frame embedding allowframembedding	☑ Default: No
	If enabled, this site may be embedded in a frame in a remote system, as recommended when using the 'Publish as LTI tool' enrolment plugin. Otherwise, it is recommended to leave frame embedding disabled for security reasons. Please, note also that for the mobile app this setting is ignored and frame embedding is always allowed.

1.5 Setting up the external tool

In the section "Site administration" → "Plugins" → "Activity modules" → "External tool" → "Manage tools" you need to go to the link "configure a tool manually". And there you need to specify the following parameters:

Tool name:
- **Proctoring**

Tool URL:
- **https://proctor-test1.youtestme.com/api/auth/lti**
  the proctor-test1.youtestme.com server is used for sandbox only, please specify the address of your proctoring server instead if you are connecting your Moodle with production

LTI version:
- **LTI 1.0/1.1**

Consumer key:
- **5s69JkjSOZfkBcqkky1PLkEN**
  this key is for the sandbox, please ask your YouTestMe point of contact for the consumer key for your proctoring server instead if you are connecting your Moodle with production

Shared secret:
- **L5C1t0shq0RBbleqL0HEH4rF**
  this secret is for sandbox, please ask your YouTestMe point of contact for the shared secret for your proctoring server instead if you are connecting your Moodle with production

Tool configuration usage:
- **Show in activity chooser and as a preconfigured tool**

Default launch container:
- **Existing window**

IMS LTI Assignment and Grade Services:
- **Use this service for grade sync only**

External tool configuration

▼ Tool settings

Tool name	❶ ❓	Proctoring
Tool URL	❶ ❓	https://proctor-test1.youtestme.com/api/auth/lti
Tool description	❓	
LTI version	❓	LTI 1.0/1.1 ⇕
Consumer key	❓	5s69JkjSOZfkBcqkky1PLkEN
Shared secret	❓	•••••• ✎ 👁
Custom parameters	❓	
Tool configuration usage	❓	Show in activity chooser and as a preconfigured tool ⇕
Default launch container	❓	Existing window ⇕
		☐ Content-Item Message ! ❓
Content Selection URL	! ❓	
Icon URL	! ❓	
Secure icon URL	! ❓	

Show less...

▼ Services

IMS LTI Assignment and Grade Services	❓	Use this service for grade sync only ⇕
IMS LTI Names and Role Provisioning	❓	Do not use this service ⇕

1.6   Automatic session closure

Optionally you can set up a proctoring session to automatically end when a test item is completed in Moodle. By default the session is terminated using the "Finish" button in the top proctoring panel (when the "finish" add-on is enabled) and is not associated with the completion of the test.

To set up automatic session completion you need to add a special JavaScript script to the Moodle page by adding the following code in the "Administration" → "Appearance" → "Advanced HTML" → "Before the closing BODY tag" field:

HTML

```
<script src="//proctor-test1.youtestme.com/sdk/supervisor.js" data-
supervisor="start"></script>
<script>
if (window.supervisor) {
  supervisor.on('load', function(iframe) {
    var pathname = iframe.contentWindow.location.pathname;
    if (pathname === '/mod/quiz/review.php') {
      supervisor.stop()
      .then(function() {
        return supervisor.logout({ redirect: true });
      })
      .catch(function(err) {
        alert(err.message);
        location.href = '/';
      });
    }
  });
}
</script>
```

*proctor-test1.youtestme.com is the domain of your proctoring server.

You also need to change the external tool setting by adding the "redirect" parameter to the tool URL so that it looks like this:

https://proctor-test1.youtestme.com/api/auth/lti?redirect=https://**your-moodle-domain**/my/

where "your-moodle-domain" is the domain of your Moodle server.

The automatic proctoring will terminate when the attempt view page opens after the test is completed, this page must be enabled in the test item settings "Review options" → "Immediately after the attempt" → "The attempt".
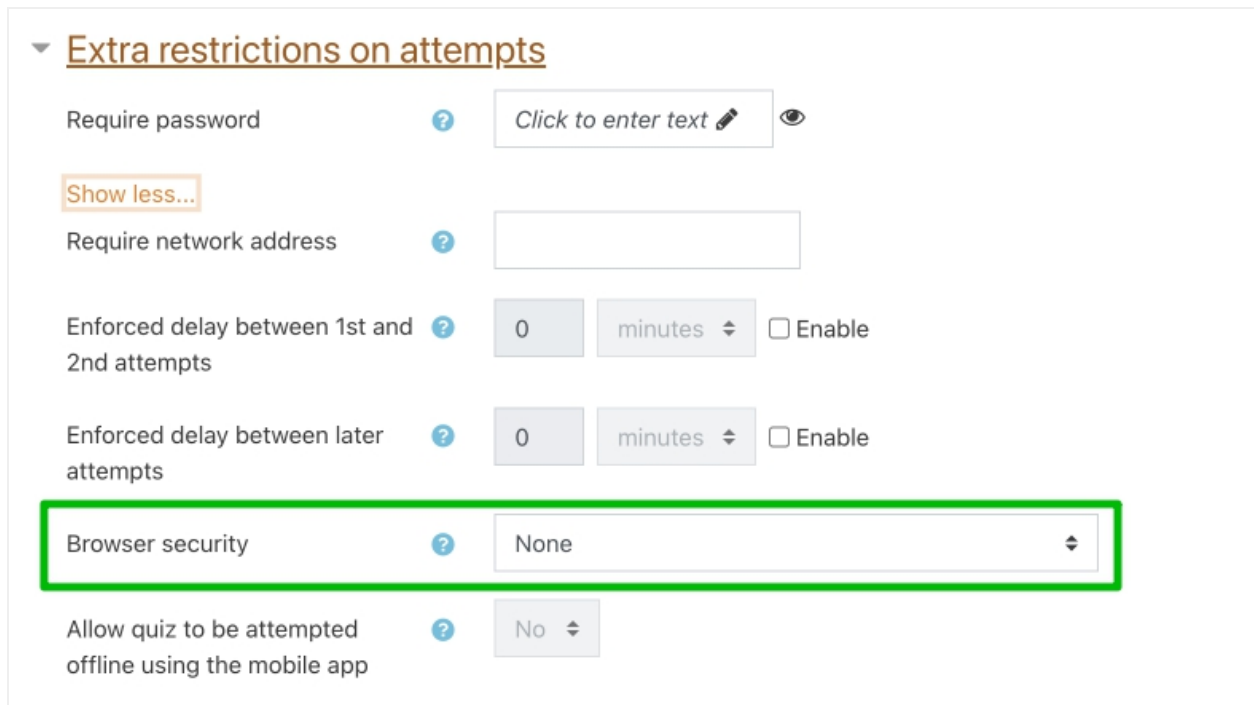
Now when the user is logged in they will be redirected back to the Moodle page where proctoring starts and the proctoring-related test item opens in IFRAME. Once the test item is completed the proctoring will also automatically exit.

2 Setting up course elements

2.1 Setting up the test element

In the settings of the test element find "Extra restrictions on attempts" → "Browser security", set it to "None", otherwise Moodle will open the test in a new window and this behaviour is blocked by IFRAME.
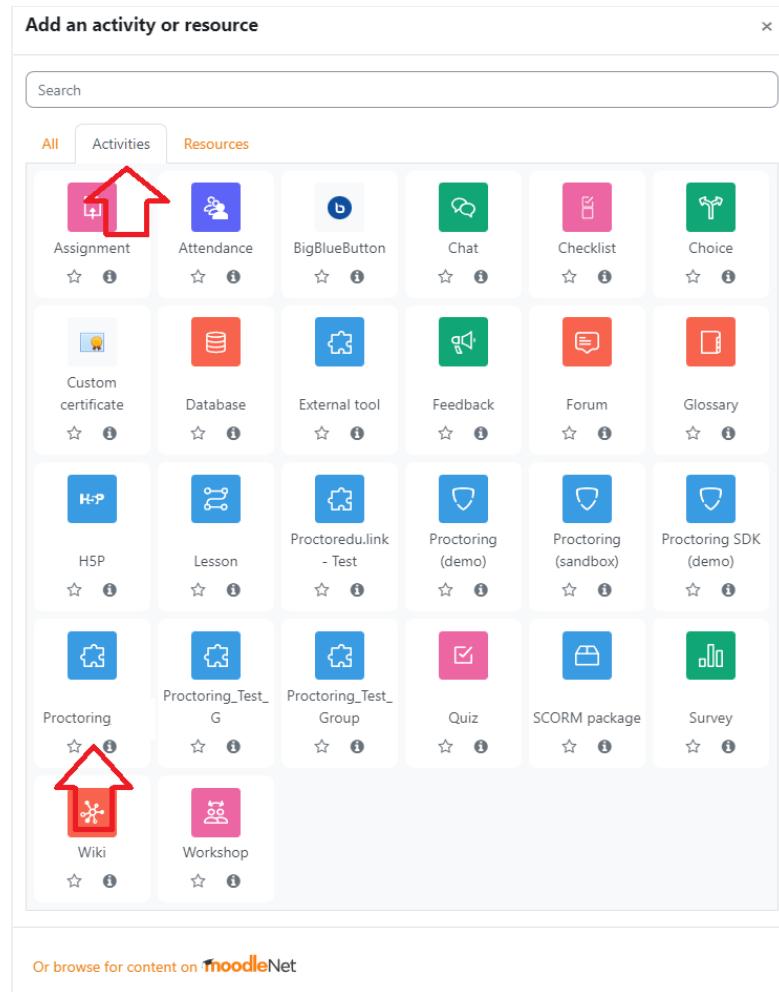

2.2 Getting a link to a course element

You need to find the test element in the course, right-click on it and select "Copy link address". This link will be needed when setting up the proctoring element.
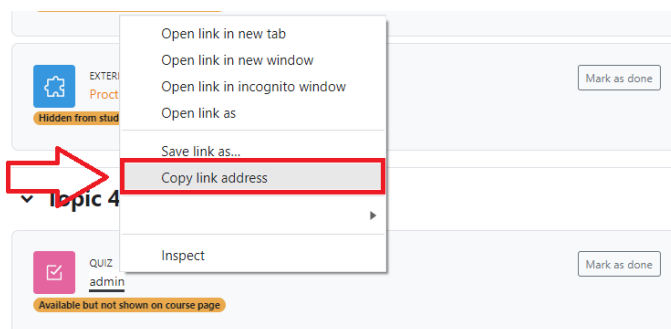
After you select an external tool, you will be asked to enter the name of the course element. This title will be displayed in Moodle and the proctoring system.

Next, you need to click "Save and return to course".

2.3 Adding proctoring element

For each test element to which you want to connect proctoring, you need to add a new element "Proctoring" (created by the administrator in section 1.5). This requires the role of "Manager" and edit mode switched on. You need to add a proctoring element to a topic separate from the test element so that later you could hide the test while maintaining access to it.
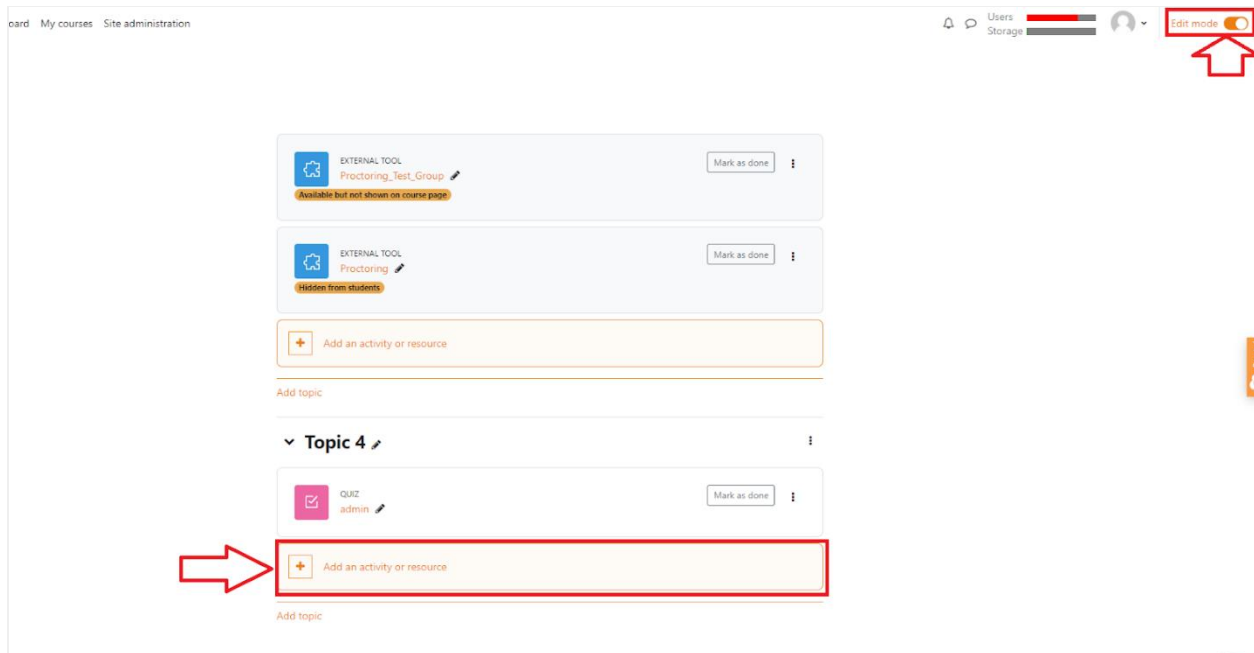
2.4 Setting up proctoring element

Configure the proctoring element by specifying the relevant parameters in the "Custom parameters" field in the format KEY=VALUE:

- **url=https://your-moodle-domain/mod/quiz/view.php?id=ID**
  This URL is a link to the test item (see the section 2.2) that the proctoring system will open in IFRAME as soon as the session starts (if not specified, the course page where the proctoring item is located will open in IFRAME).

- **template=demo_template_moodle**
  The settings in the specified template are used to create the individual session for each student. The template must be created in advance in the proctoring system under a user with the "Administrator" role.

- **members=@**
  this is the list of proctors logins (or user group logins) which is delimited by commas, and if the "@" symbol is specified, then by clicking on the proctoring item link the proctor will have access to all sessions that have been created and passed through by the participants on the same link.

Through the "members" parameter you can manage the assignment of proctors to sessions in three ways:
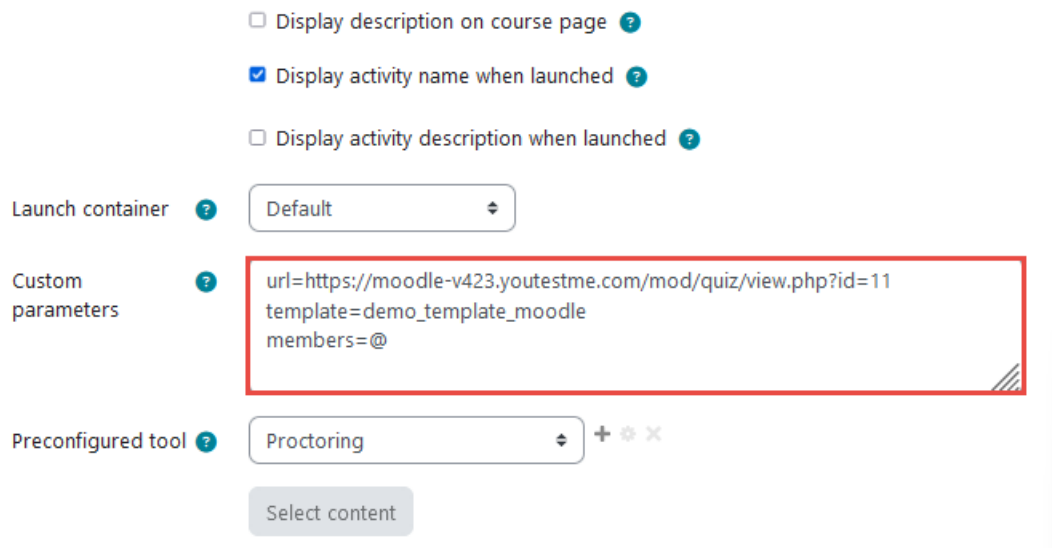
1. **Parameter "members=@"**
   Moodle users with the "Teacher" role who are assigned to a course will be able to log into the proctoring system as proctors through this external tool in the course. These proctors will only be able to observe (or access session protocols) for those participants who started a proctoring session through the same external tool in the course.

2. **Parameter "members=proctor1,proctor2,..."**
Access to sessions started through this external tool in the course will be provided only to proctors with the listed logins (list of proctor logins in the proctoring system with comma as separator). Proctors can either be created through the admin panel of the proctoring system, or they can be Moodle users with the "Teacher" role. In the second case, the proctor's login will be the user ID in Moodle.

3. **Not to use "members" parameter**
Rules for assigning proctors to sessions are configured in the session template through the admin panel of the proctoring system. In this case, you can either specify a list of proctor logins on the Participants tab, or define rules for assigning proctors to sessions from a list on the Invitations tab.

PLEASE NOTE!

1. The keys are "url", "template" and "members" and the values are "https://your-moodle-domain/mod/quiz/view.php?id=ID", "demo_template_moodle" and "@". All user parameters are optional, the proctoring session will be able to run regardless if they are specified or not.

2. If the preconfigured tool is not applied or works incorrectly, it is recommended to delete this external tool and set it up again (see section 1.5).

3. To test an external tool through a student account, you need to select: "switch role to" → student. Switch back to the admin account: "return to my normal role".
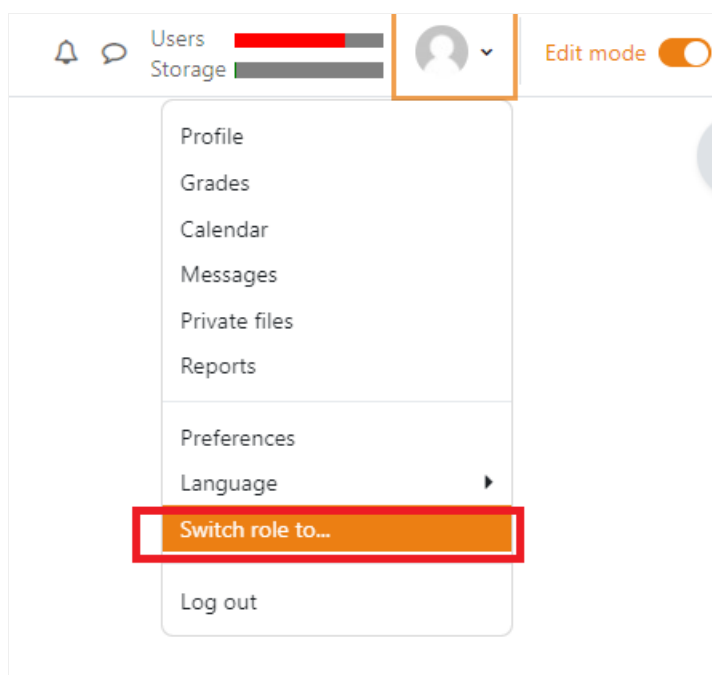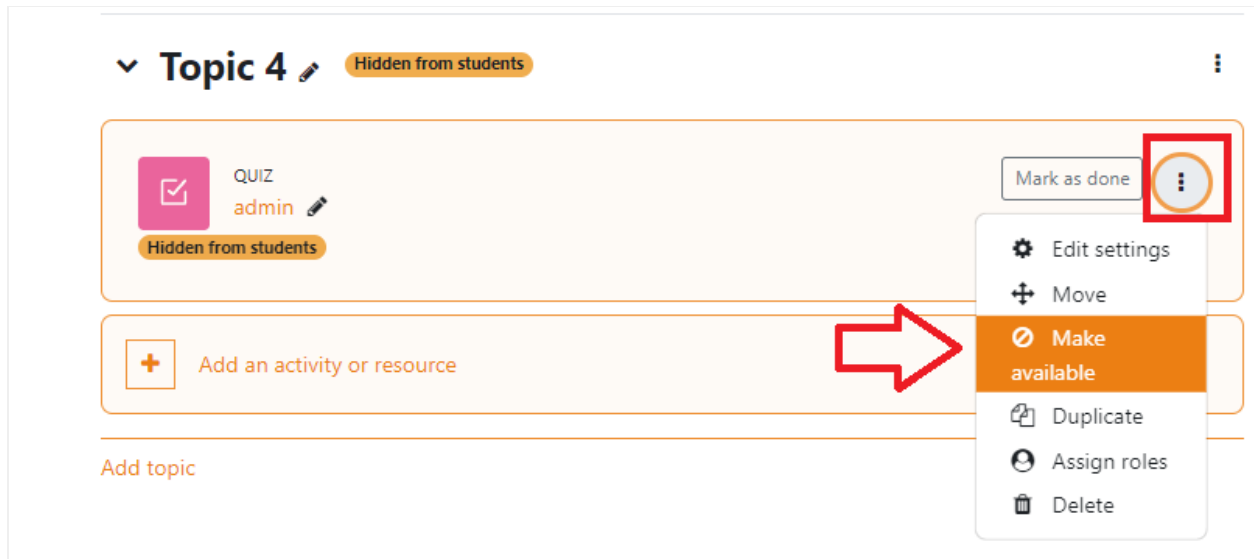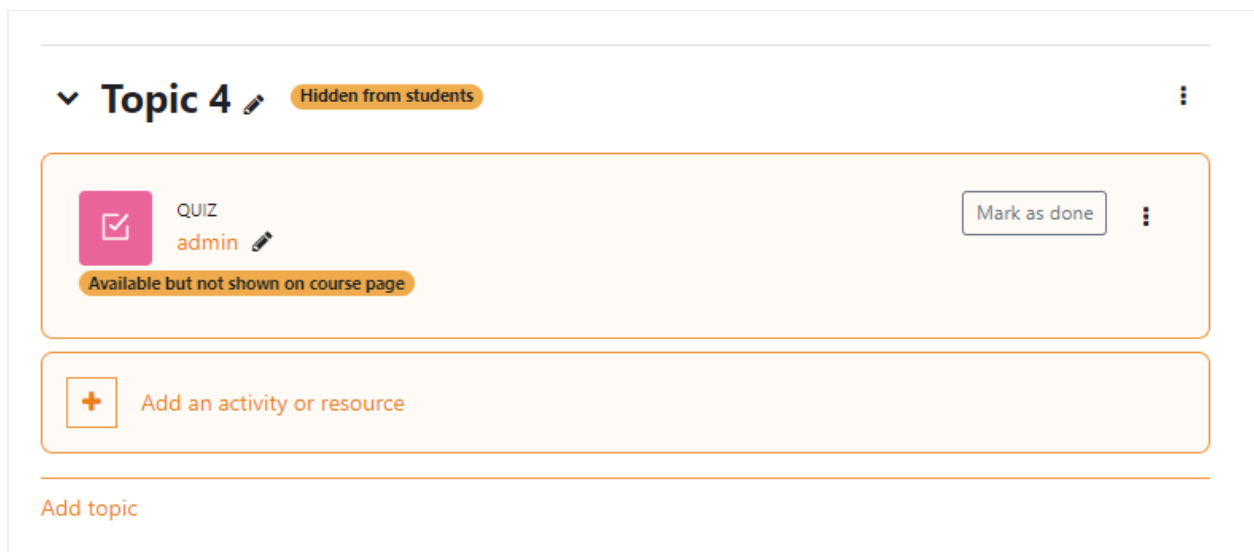
2.5 Hiding test element

To prevent the participant from starting the test before the proctoring starts, you need to hide the test element from the course page, while leaving access to it. To do this, you can hide the topic:
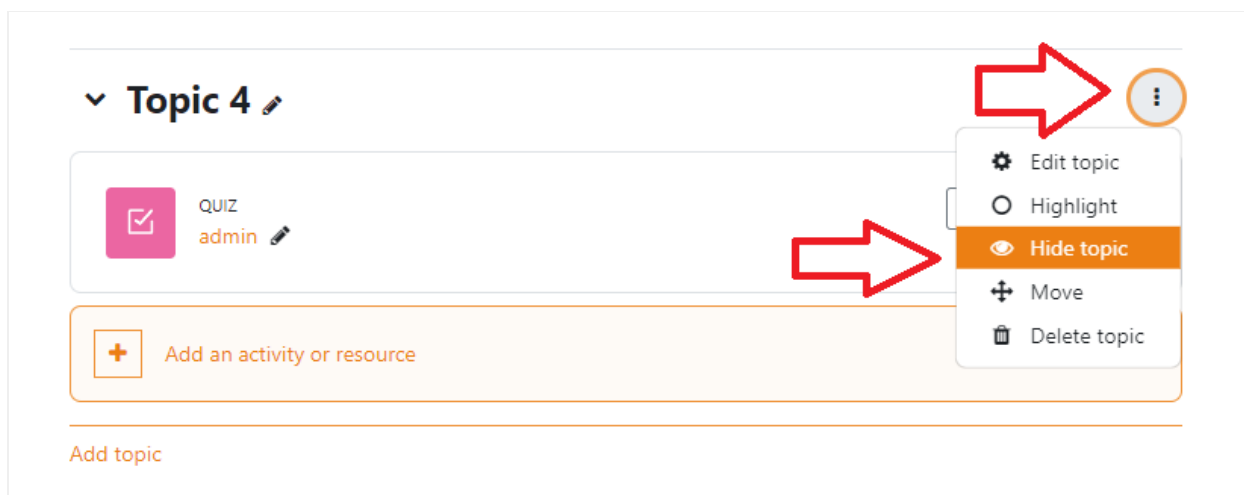
And then make the test element available:

After these steps, the topic with the test element should look like this:

Besides, select the following to hide your Topic completely: Edit Topic → Course settings → Course format → Hidden sections → "Hidden sections are completely invisible"

Select the following availability option in the Quiz settings to make your test available but hidden before the equipment check is finished: Quiz name → Settings tab → Comon module settings → "Make it available but don't show up on course page".

2.6 Limiting access to the test item

Immediately after the beginning of the proctoring session for the proctoring element, the score is set at 0, and after completion, it is always greater than 0 (from 0.1 to 100 with a hundred-point scale). This can be used in the conditions of access restriction of the associated course element. This setting is performed not for the proctoring element, but for an associated course element.
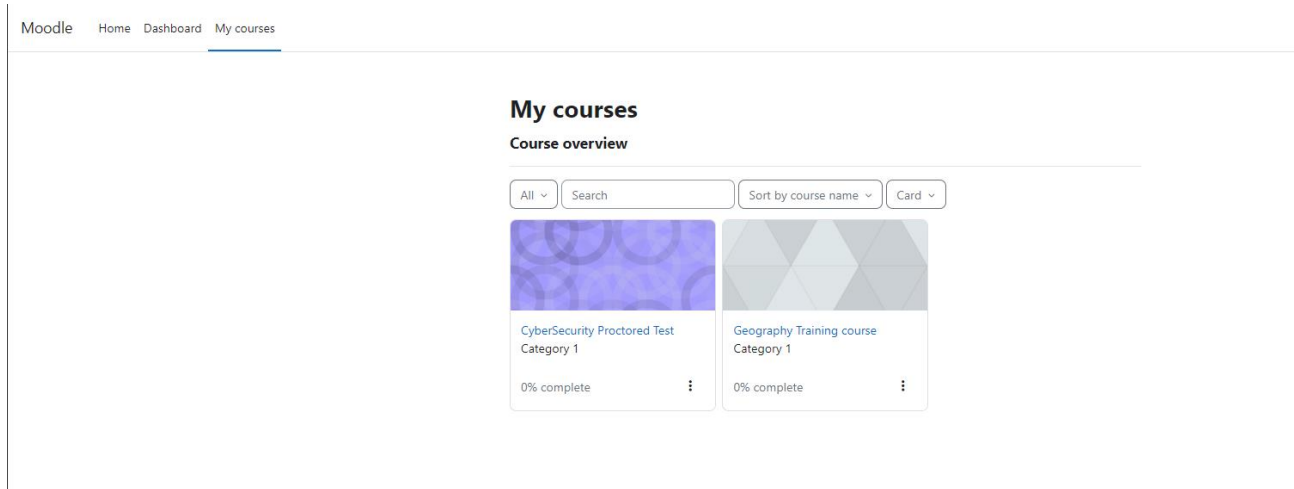
If you skip this setting, the student will be able to find the link to the test in their Moodle schedule and take the test through the direct link without proctoring.
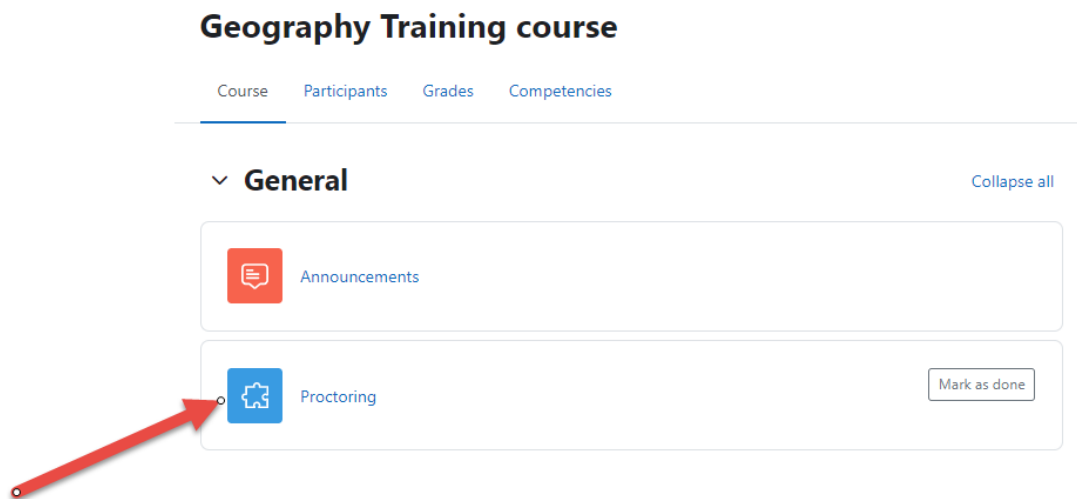
3 Testing the integration

3.1 Student's perspective

After logging in, the student should navigate to the "My Courses" page and select the desired training course.


The option they need to click is "Proctoring" to initiate the Equipment Check.

Once the Equipment Check is successfully completed, the student will be able to start the test.

3.2 Instructor's perspective

Now, when navigating through the proctoring element, the student will begin to perform the associated test element according to the proctoring procedure. When you click on a proctoring element,
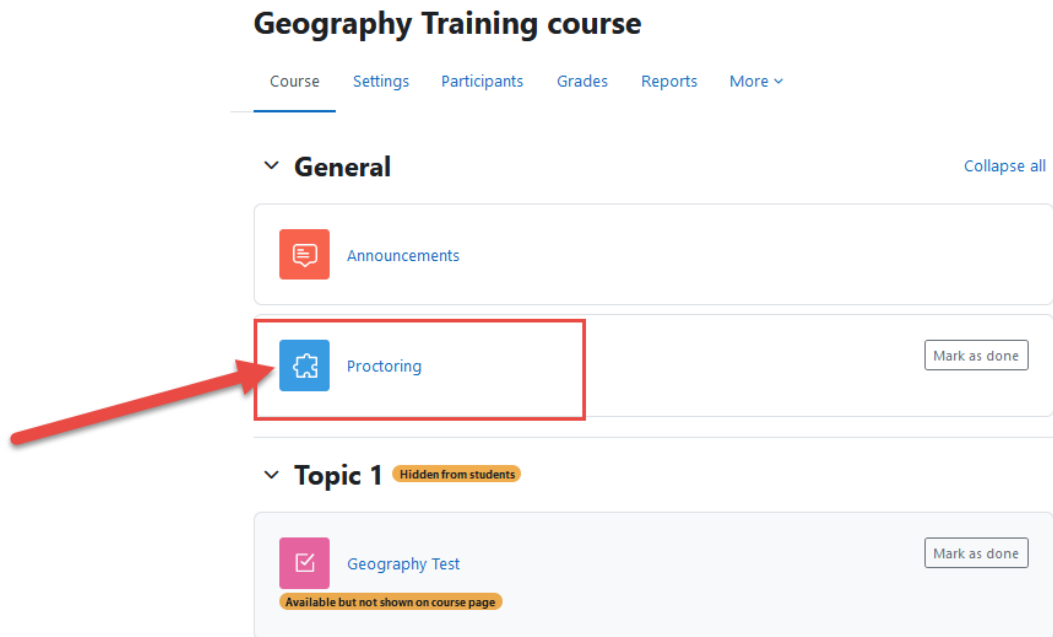
the teacher or administrator will be taken to the proctor interface, where they will gain access to all sessions that were created when you clicked on this element.
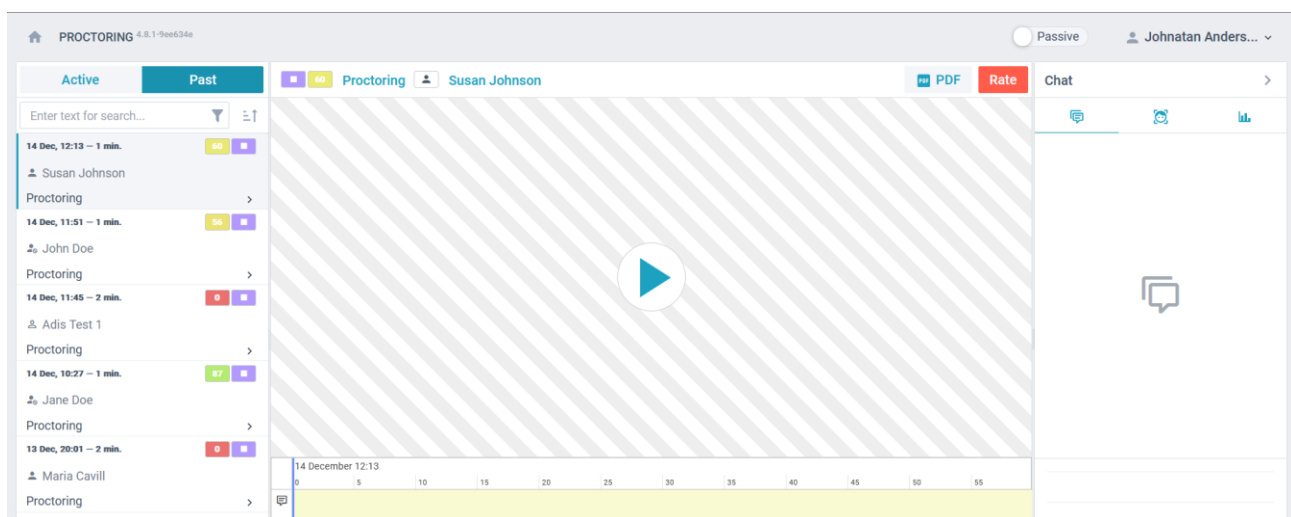
After the proctoring session in Moodle, the evaluation of the degree of confidence in the results of the exam from 0 to 1 is sent. The proctoring results for each student are returned to the Moodle gradebook (Grades section). The "API" field in the proctoring session template settings is not used when integrating with Moodle.