Best practices for Microsoft Learn LTI LMS integration with University of Oxford

http://github.com/microsoft/learn-lti

Ajit Jaokar Course Director Artificial Intelligence: Cloud and Edge Implementations
Lee Stott Principal Program Manager, Microsoft

What is LTI?

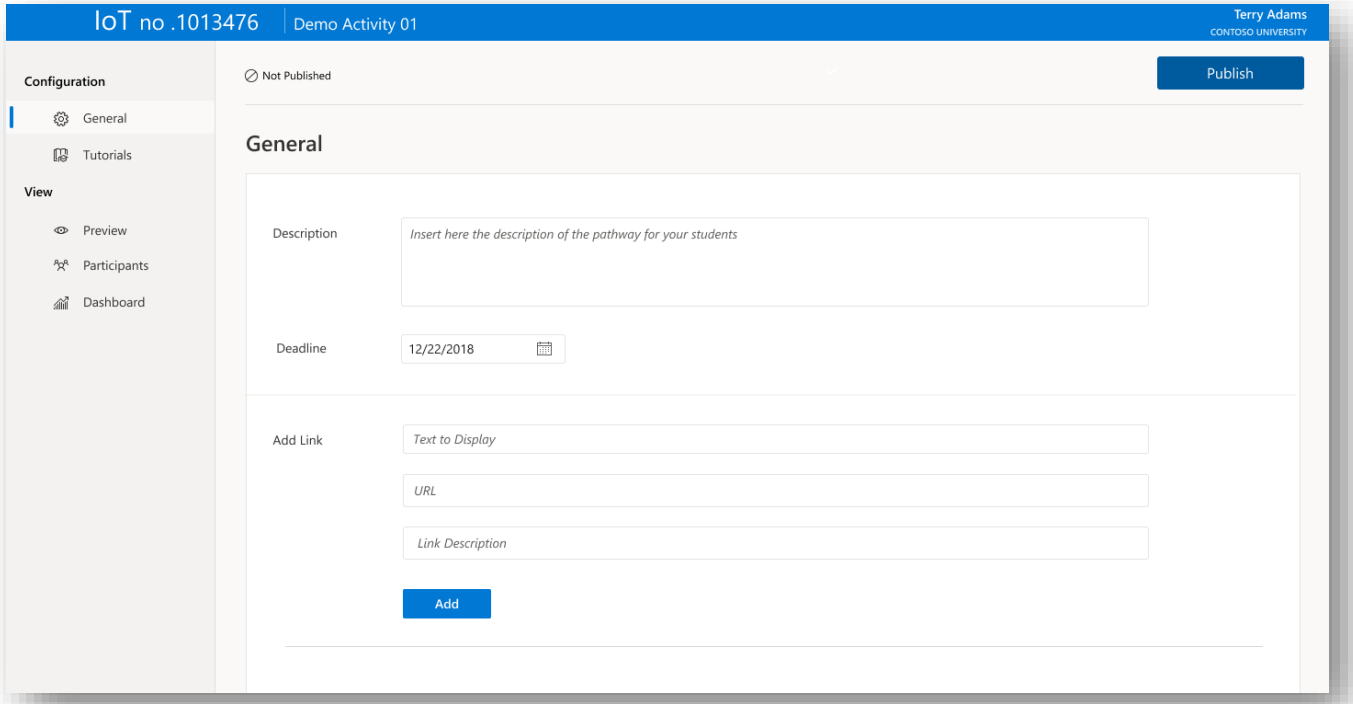
Learning Tools Interoperability, or LTI, is a standard published by the IMS Global Learning Consortium that makes it possible to integrate platforms such as Learning Management Systems (LMS) like Blackboard or Canvas with third party tools and vendors.

This standard makes it possible for third party tools to integrate quickly and easily, without having to create different integration solutions for each LMS. LTI enables third party tools to integrate seamlessly into the LMS, without the student even realizing that they're using another tool.

Microsoft Learn LTI Application

What does the LTI do?

The Microsoft Learn LTI is an application that integrates MS Learn Modules and Learning Paths directly inside any LTI 1.1 or 1.3 compliant Learning Management System.



What is it?

The LTI will be released as an open sourced LTI code sample showcasing how the MS Learn Catalog is used as a LTI application. The GitHub repo will contain all relevant deployment instructions.

Prerequisites

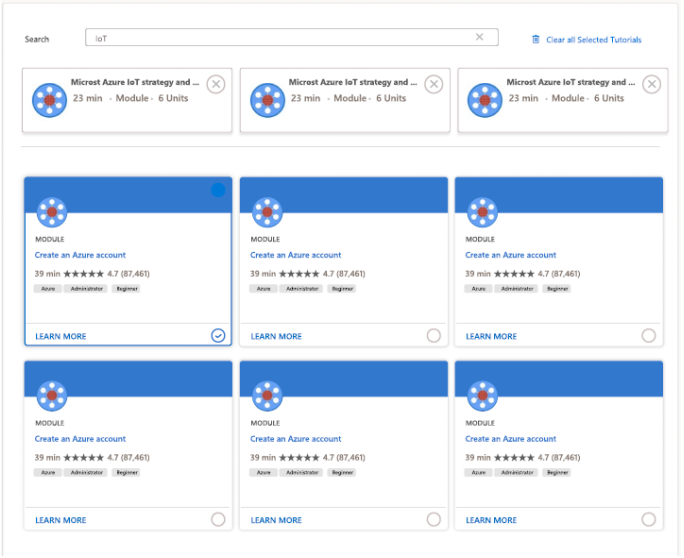
- LMS system that supports LTI 1.1 or 1.3
- Azure subscription
- IT administrator to create Azure resource
- Enabled Azure Active Directory

Installation process

moodle

canvas

Blackboard



Step 1 (IT)
Deploy
Deploy to Azure from GitHub)

Step 2 (LMS Administrator)
Install
Install LTI application in an LMS

Step 3 (Educator)
Assign
Assigning courses within LMS

Step 1

IT Administrator (Azure Subscription Owner)

Adding an external tool

1

Clone the GitHub Repo

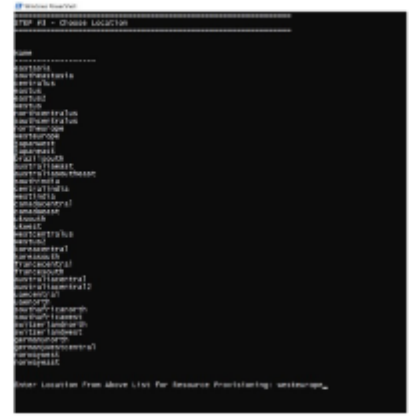
```
git clone https://github.com/microsoft/Learn-LTI.git
```

2

Install run.bat

3

Choose Location



4

Install Deploy.ps1

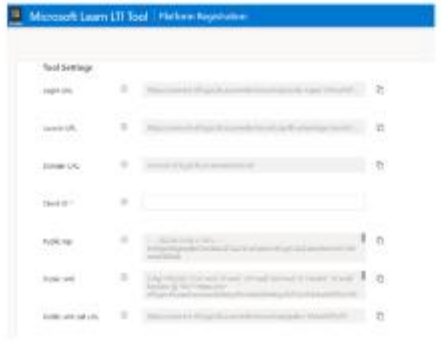
```
==========================================================
TOOL REGISTRATION URL (Please Copy, Required for Next Steps) -> https://learnclient3uyayok61.z6.web.core.windows.net/platform
==========================================================


==========================================================
======== Successfully Deployed Resources to Azure ========
==========================================================

Transcript stopped, output file is C:\Users\vibhojwa\source\repos\Learn-LTI\deployment\Log\Transcript-28-07-2020-17-20-49.log
Press any key to Exit:
```

5

Configure the Learn LTI Application Tool



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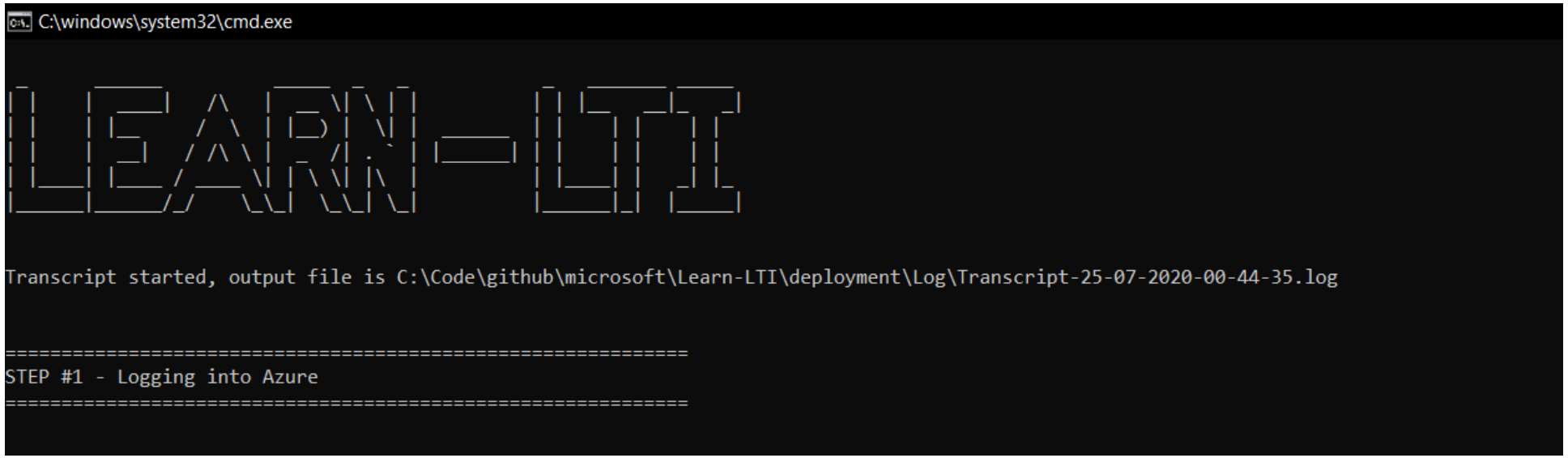

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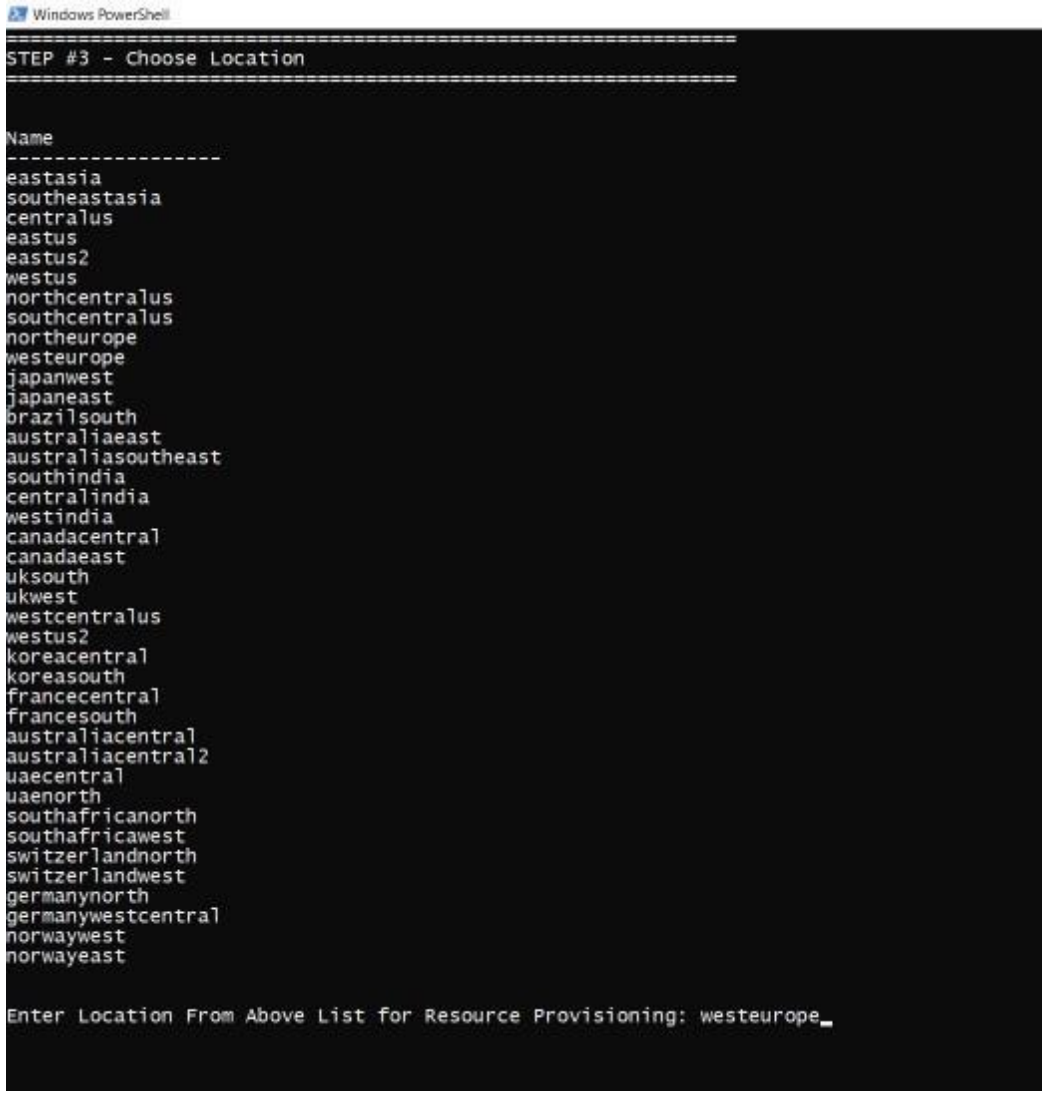

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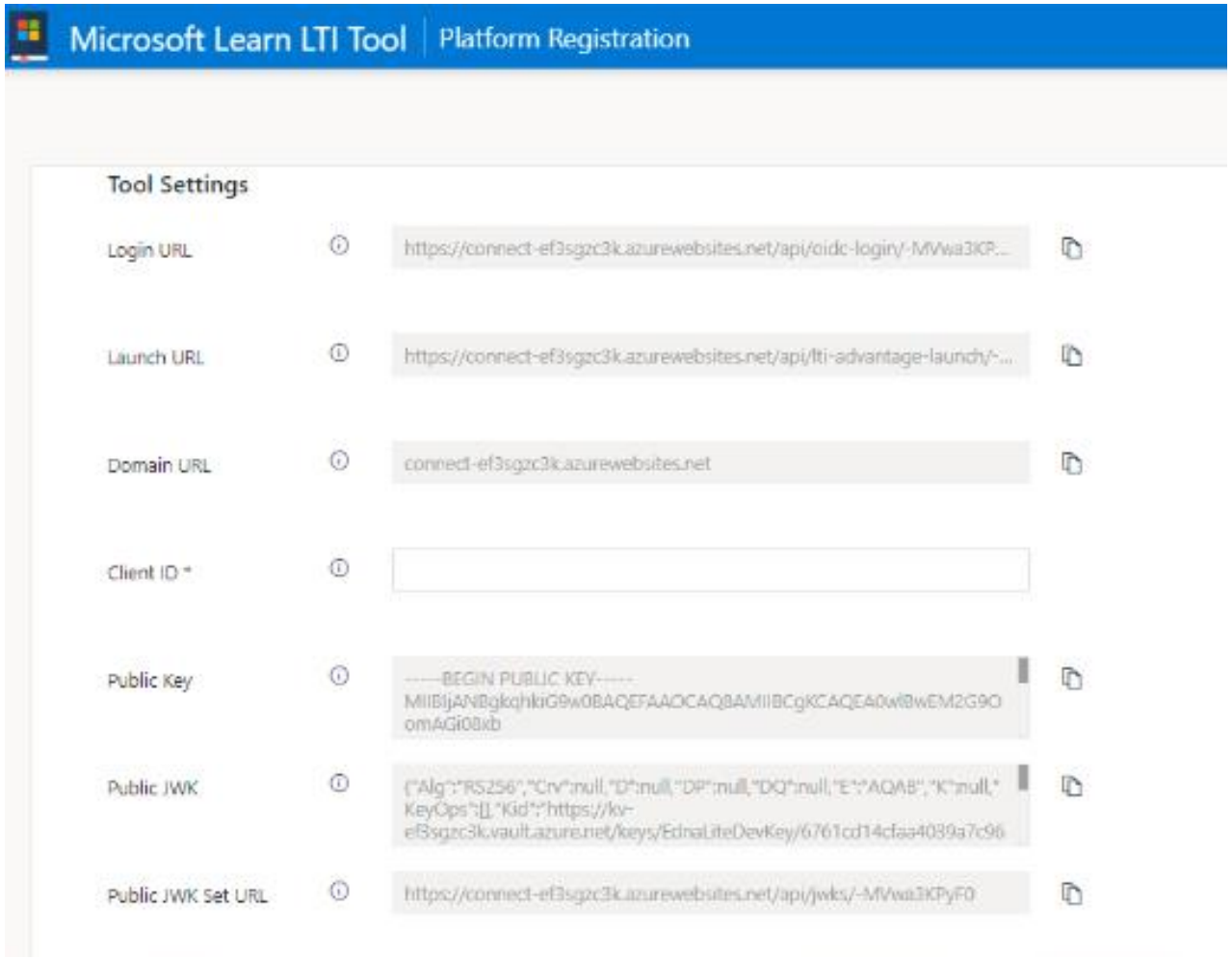


Step 2

LMS Administrator (Learning Management System Admin)

Adding an external tool

1

Enable editing

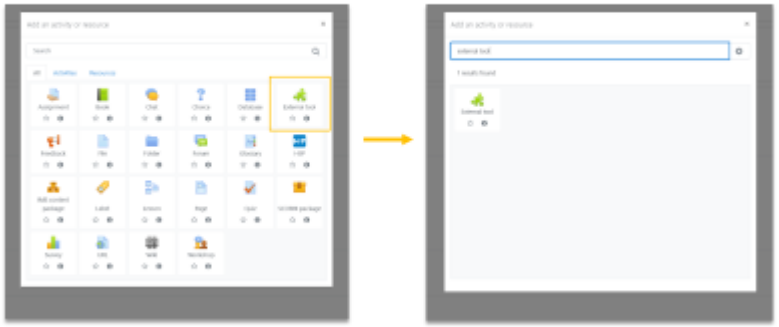
In Moodle, turn editing on

2

Add an activity or resource

3

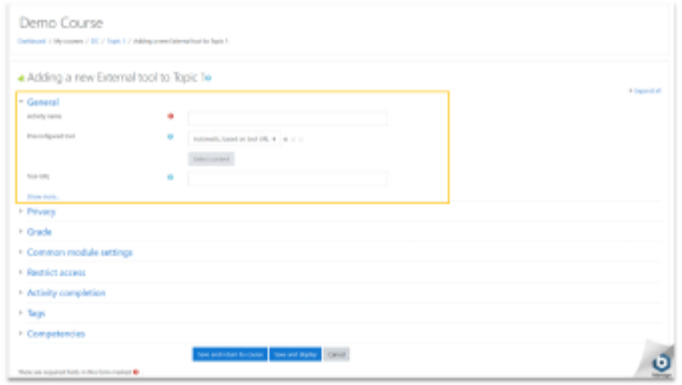
Select 'External tool'



4

Configure tool details

Add in high-level assignment details here.



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Select the LTI in Preconfigured tool

Once you have deployed the Microsoft Learn LTI Tool and turned editing on, select 'add a new activity or resource' and select the name of the tool you configured during initial deployment

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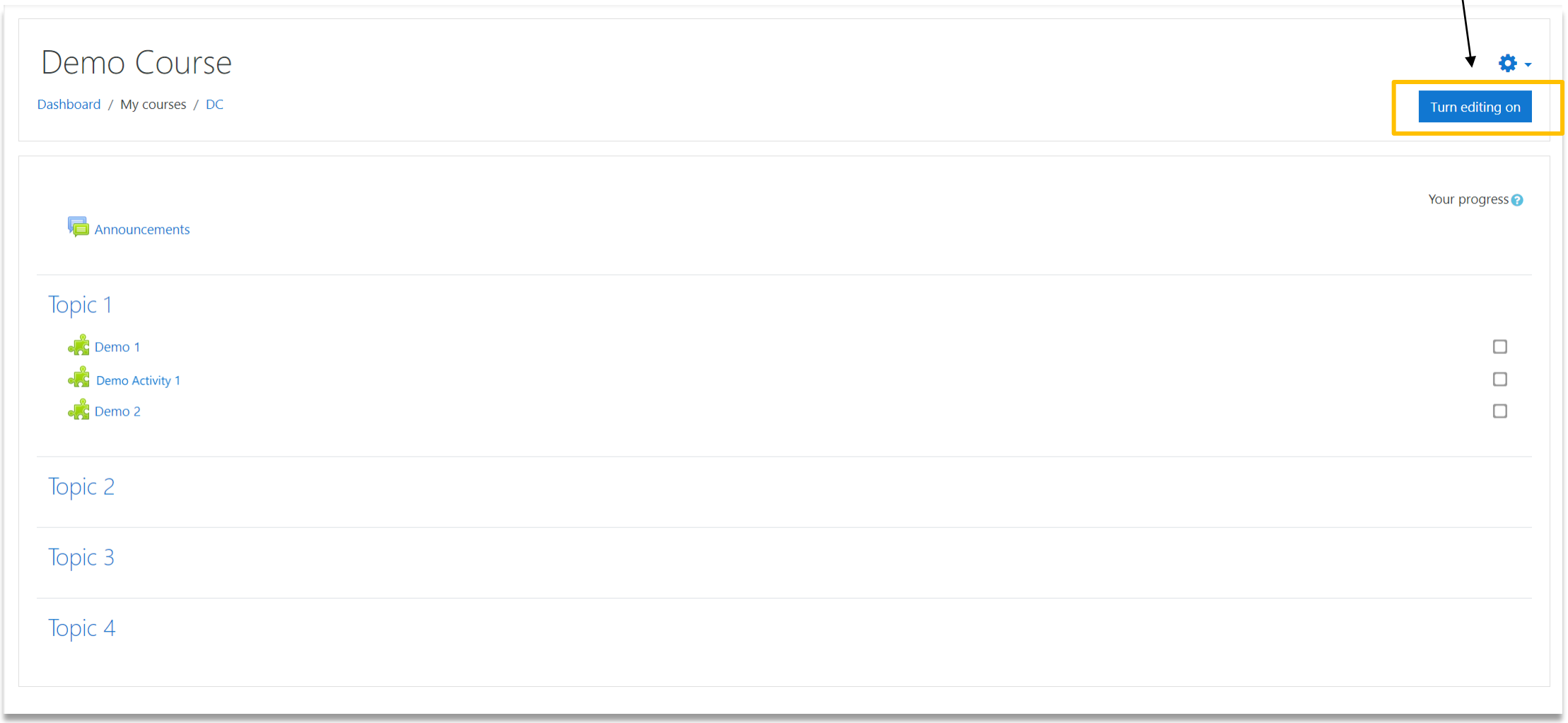

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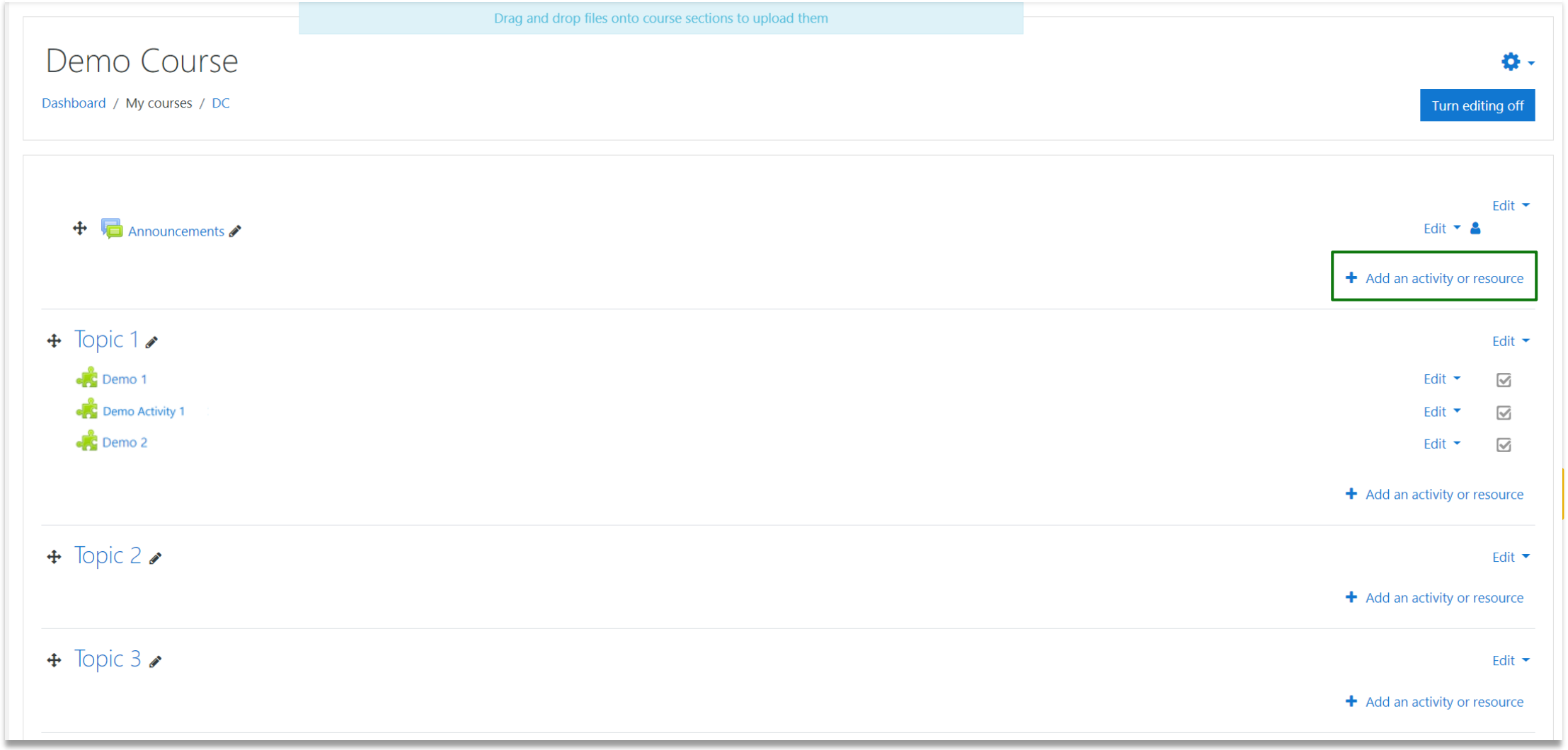

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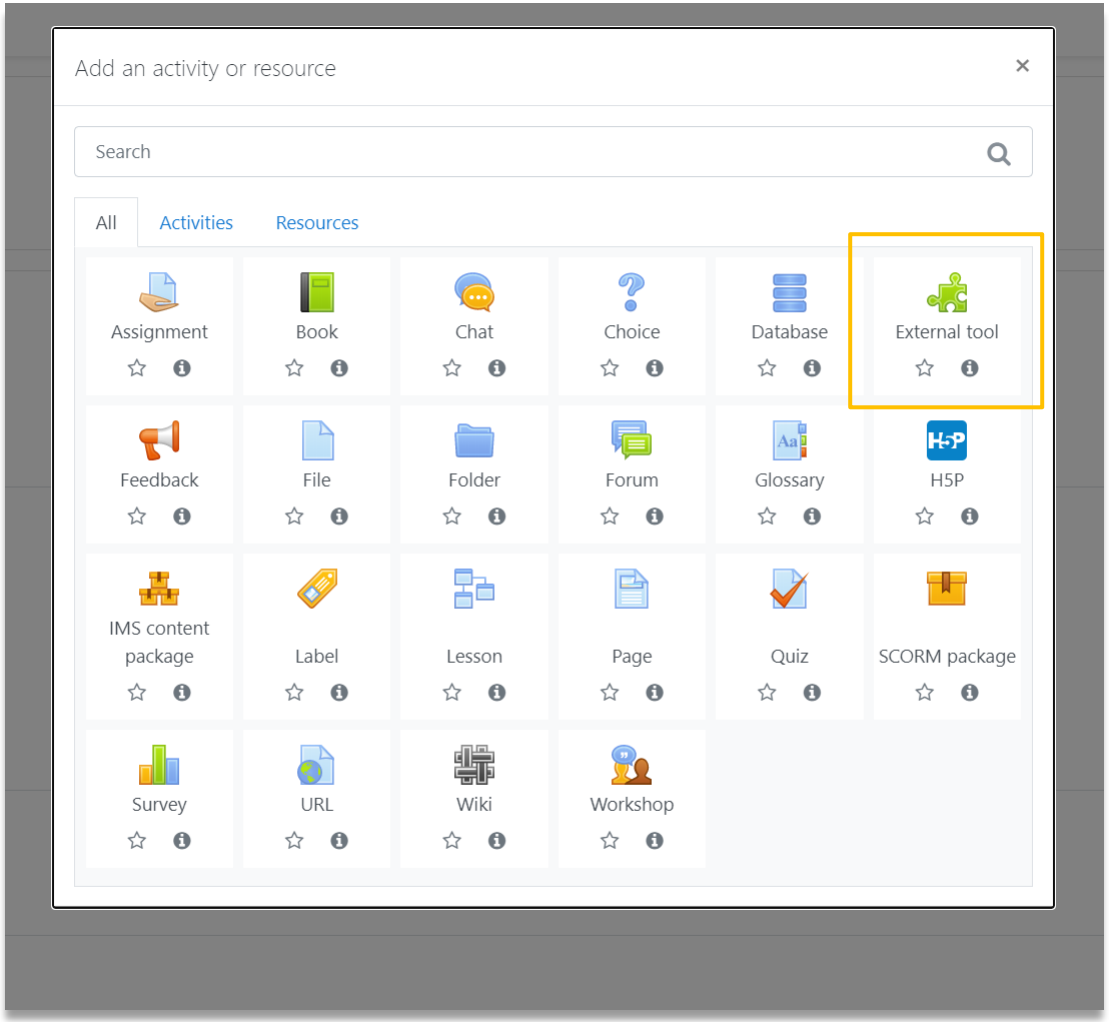

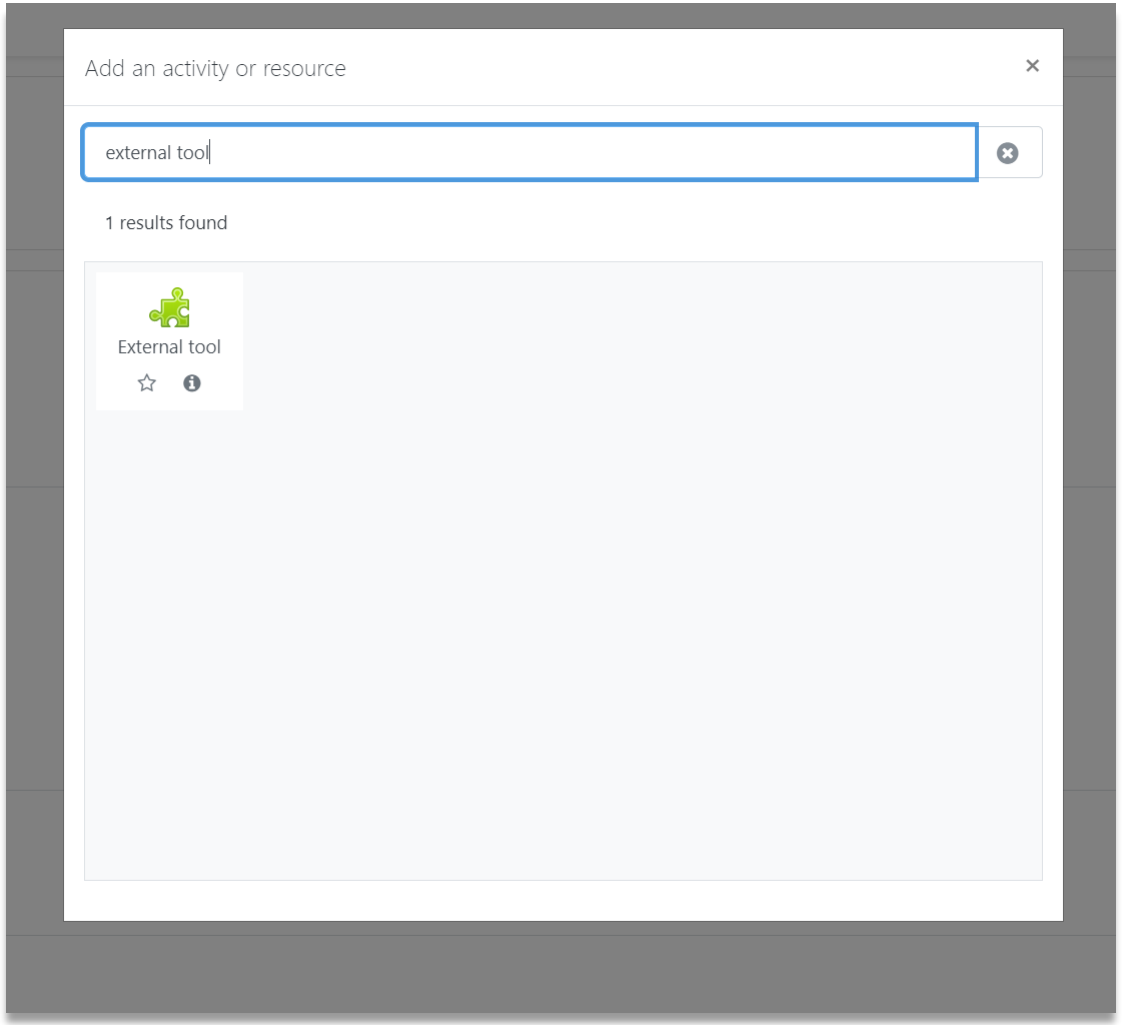

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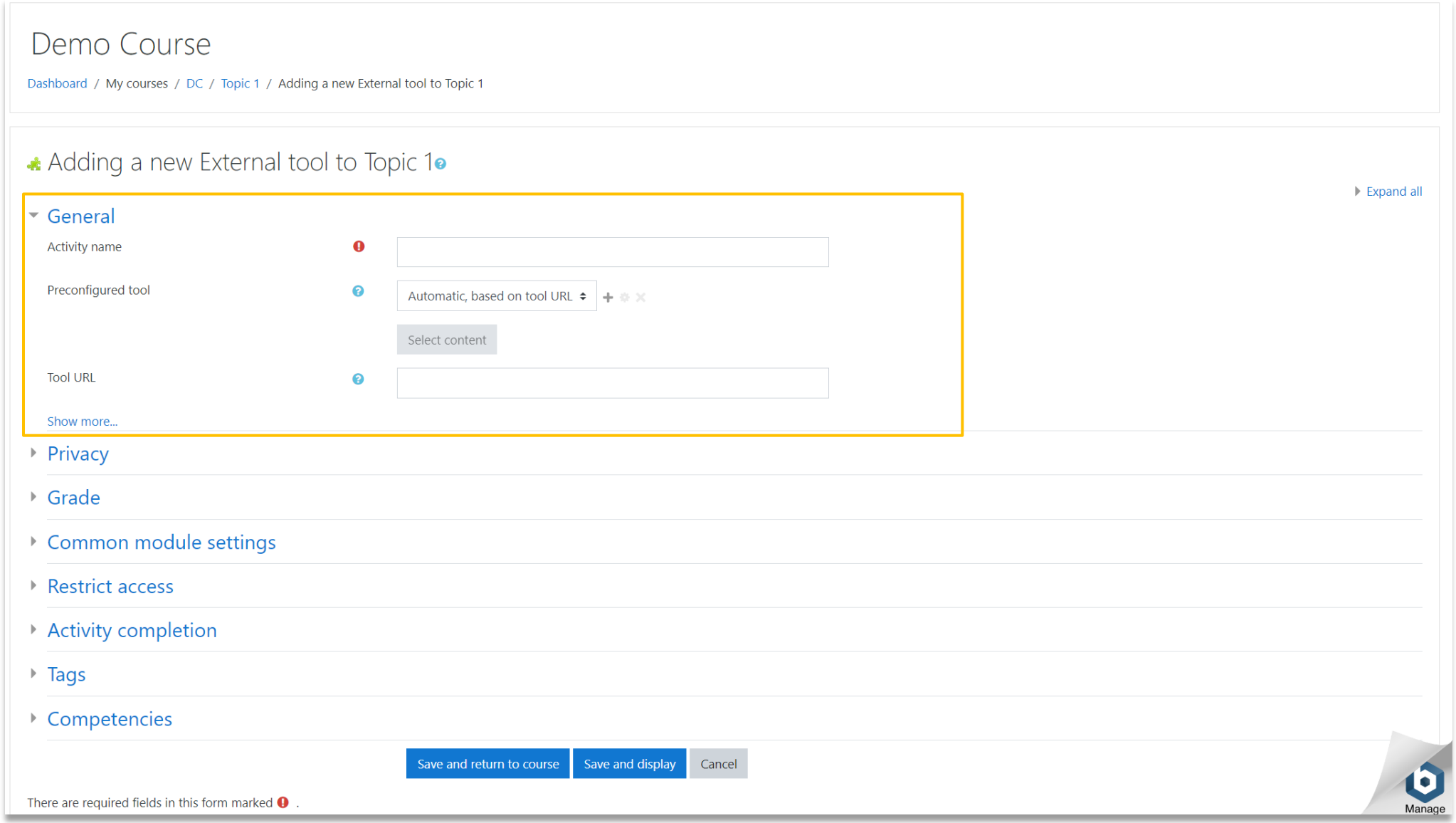

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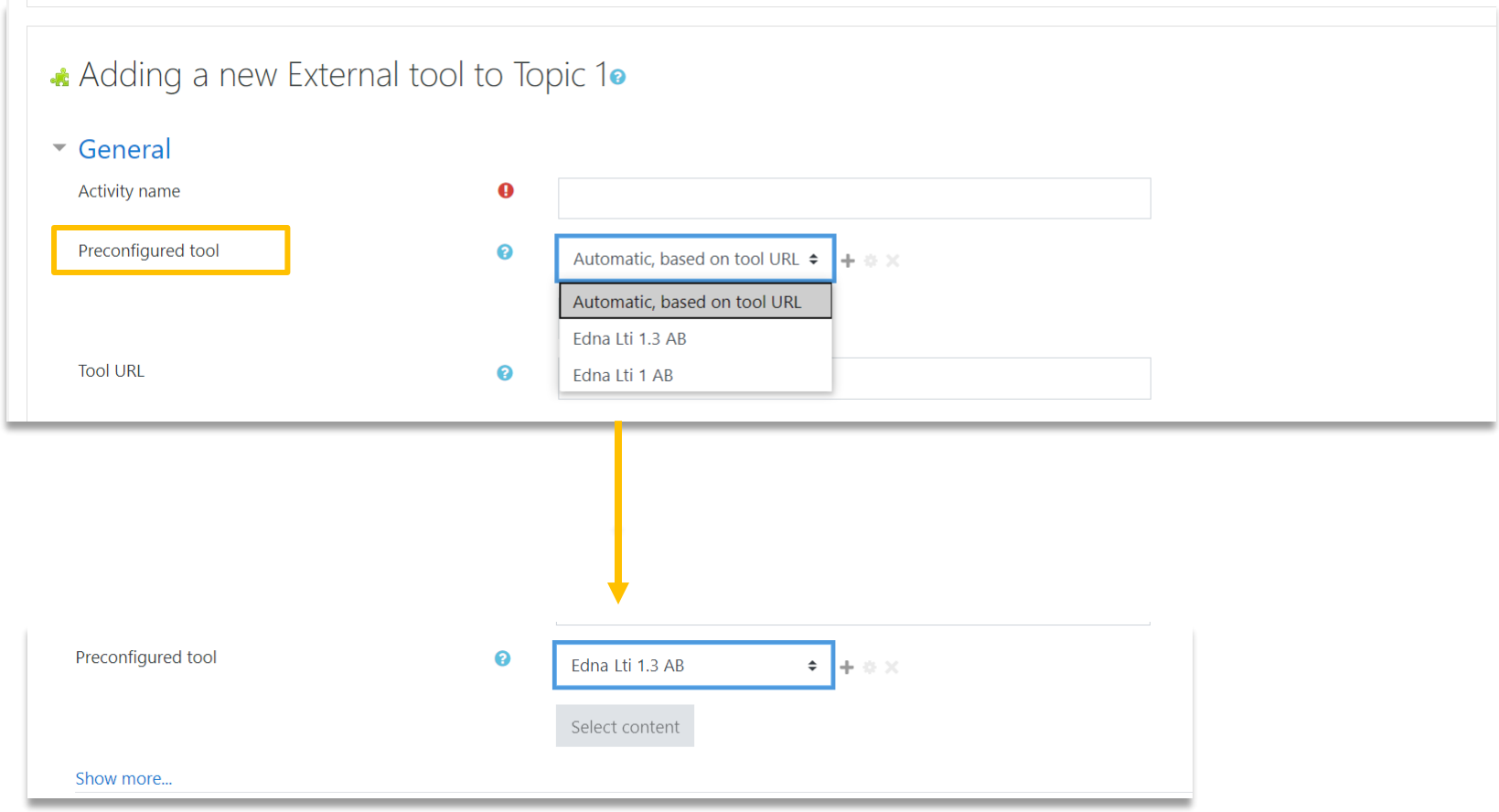

Step 3

Educator guidelines (demo slides using Moodle)

1

Add an activity or resource

2

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3

Create a Microsoft Learn Activity

From the Configuration panel in the menu, navigate to the 'General' tab

- **Description:** Include a brief overview of the activity and key learning objectives for your students
- **Deadline:** Use the calendar to set a deadline for the activity
- **Add Link:** Include links to external sites and additional resources to guide students

4

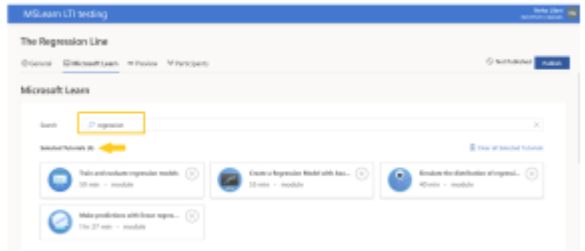
Customize Microsoft Learn Activity

From the Configuration panel in the menu, navigate to the 'Tutorials' tab

- **Search:** From the Tutorial screen, you can search for modules to add to your activity.
- **Learn More:** Select Learn More to navigate to MS Learn and get more information about the specific module or learning path
- **Assign:** Select the bubble in the bottom right of the module to add it to your activity.

5

Customize Microsoft Learn Activity



- The modules you've chosen will be added to your activity

6

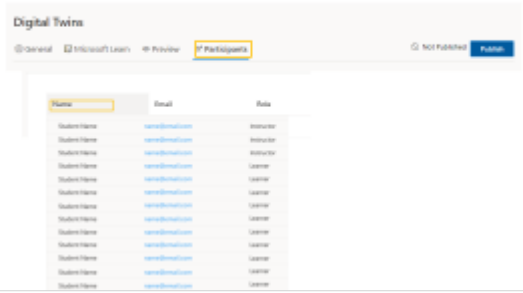
Publish your Activity

Click Preview

- Review your activity and the assigned modules
- When ready, select 'Publish'. Students will then be able to see the activity assignment in the LMS

7

Viewing Class Participants



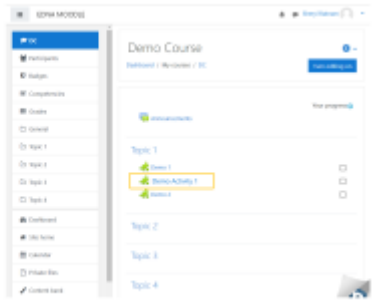
8

Student View of Activity

9

LMS View

- Navigate back to the LMS to view published activities amongst their respective topics/courses



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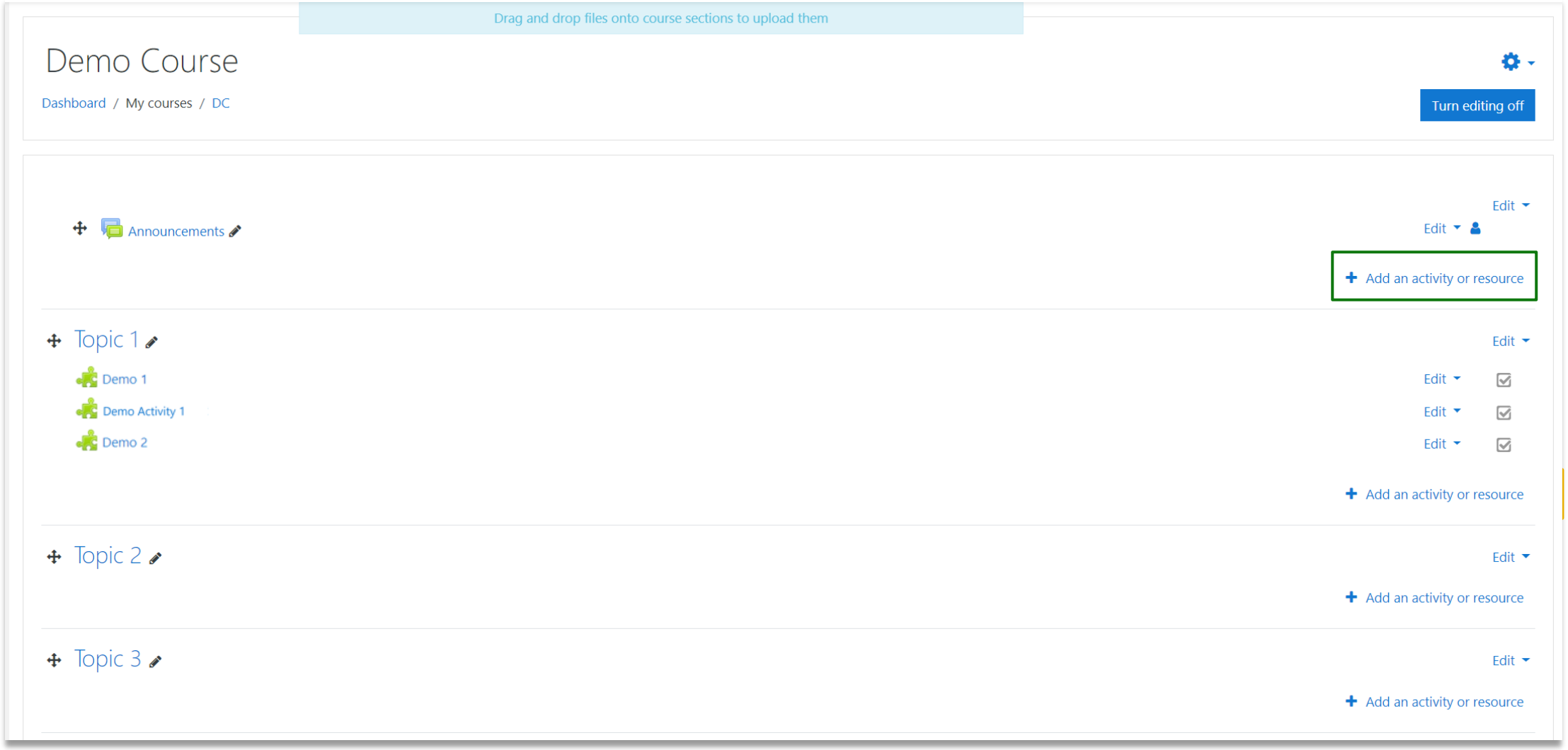

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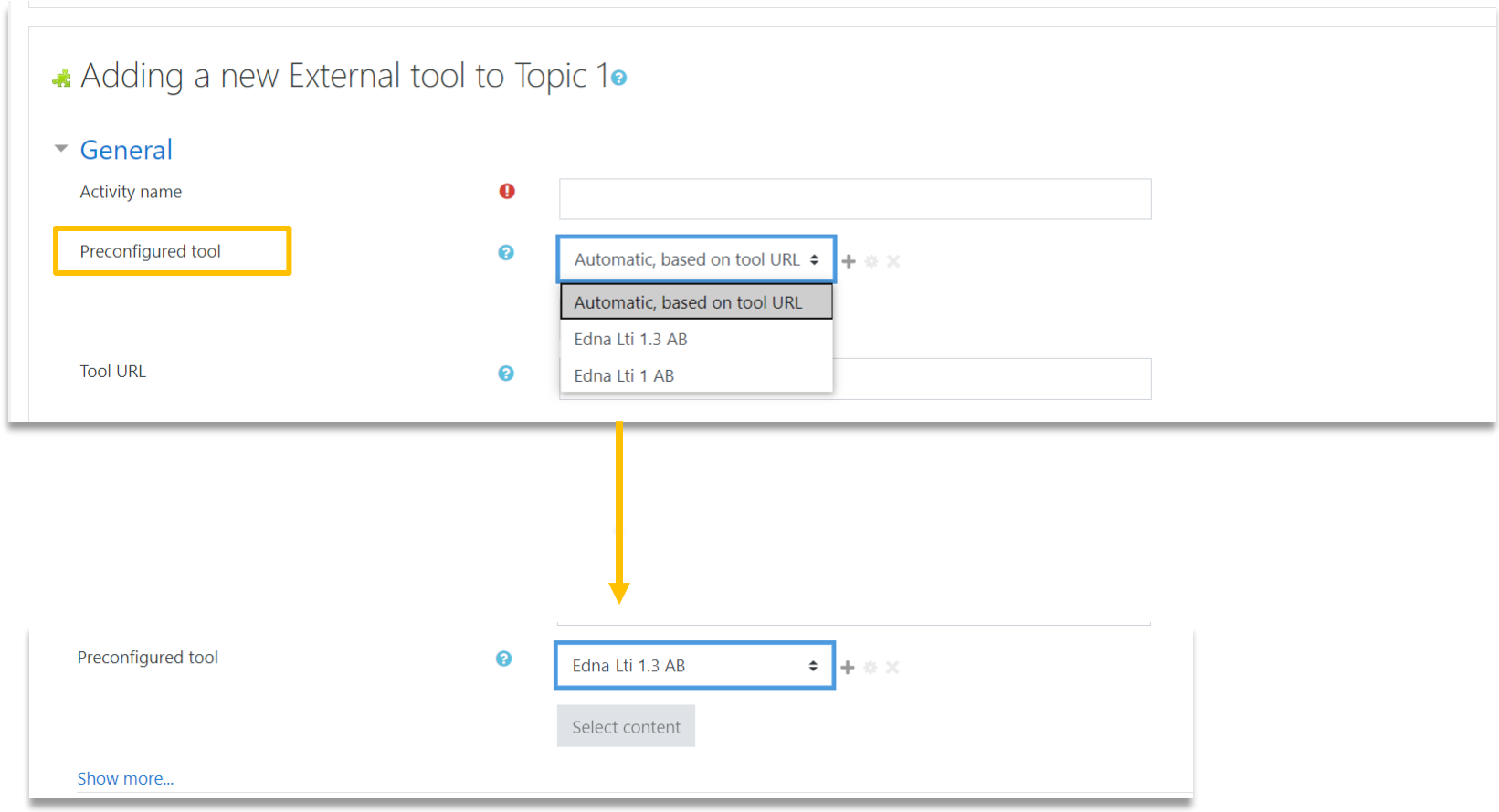

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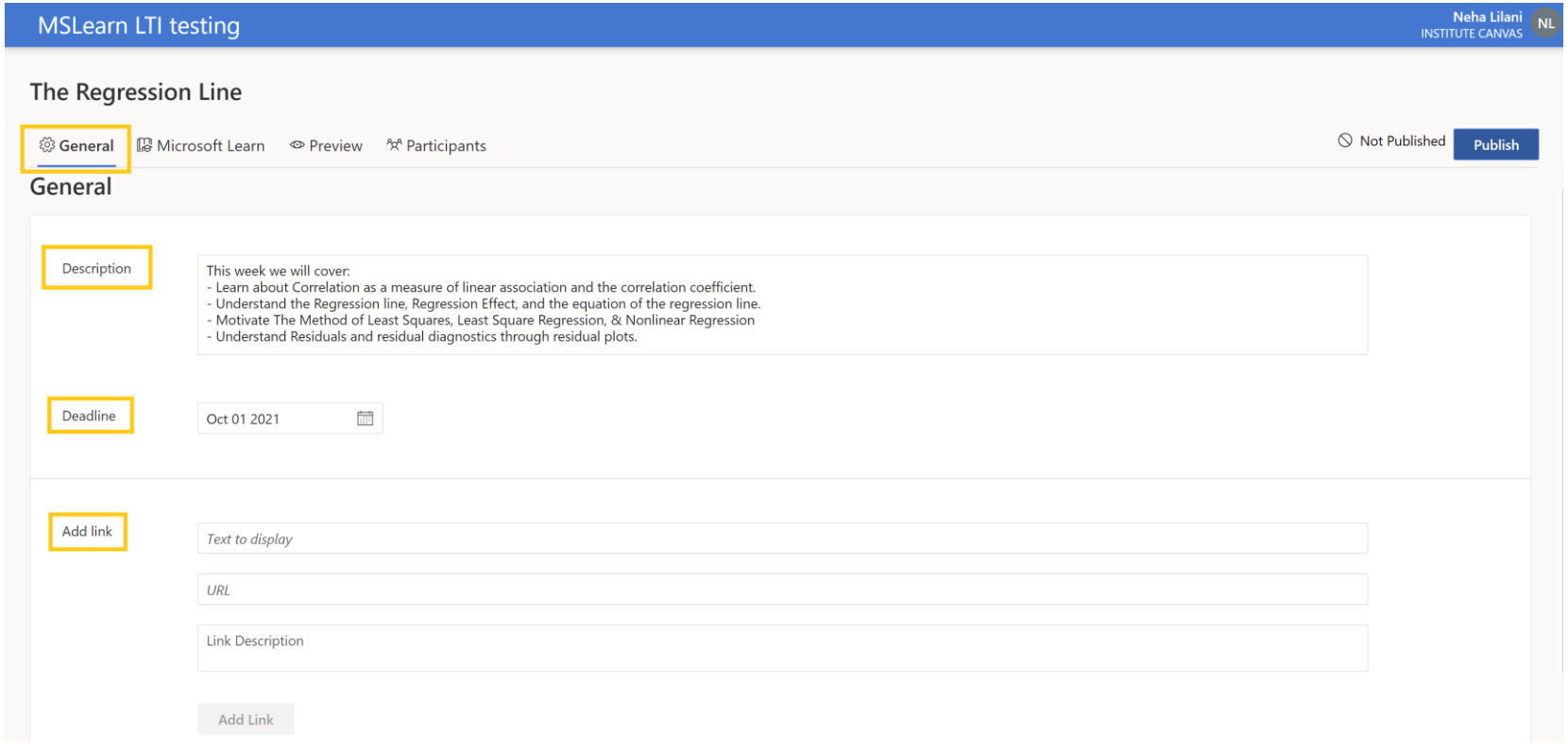

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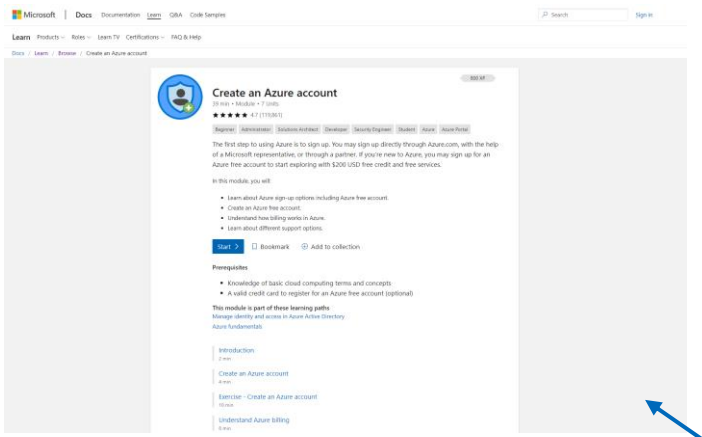

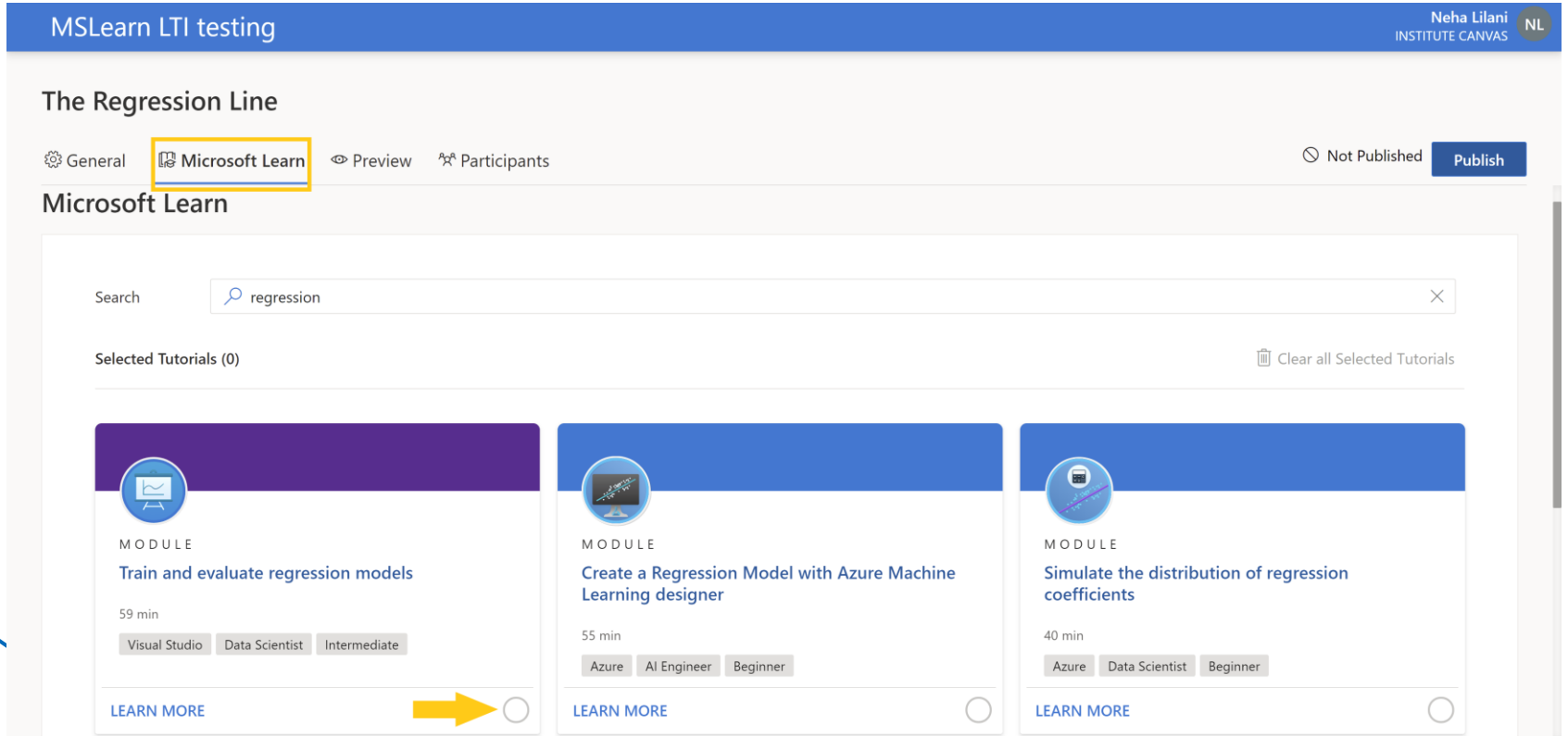

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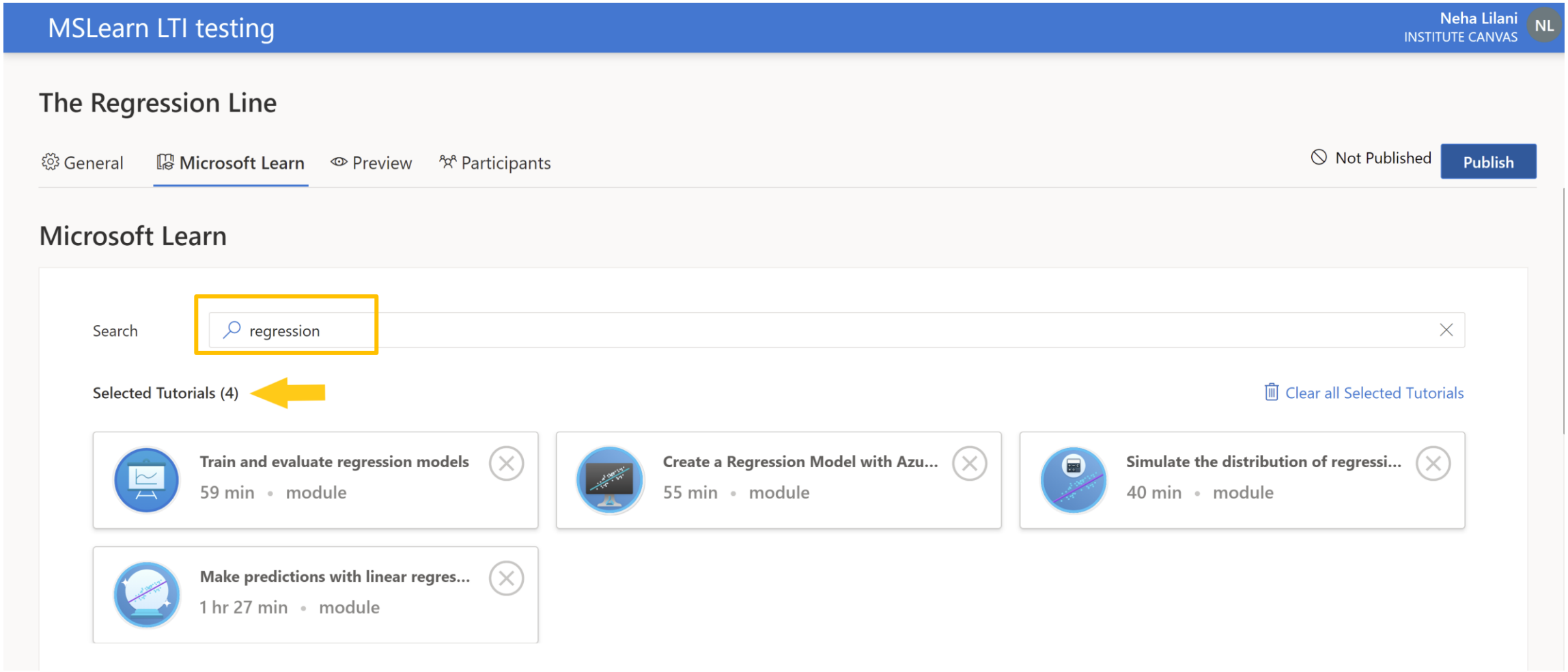

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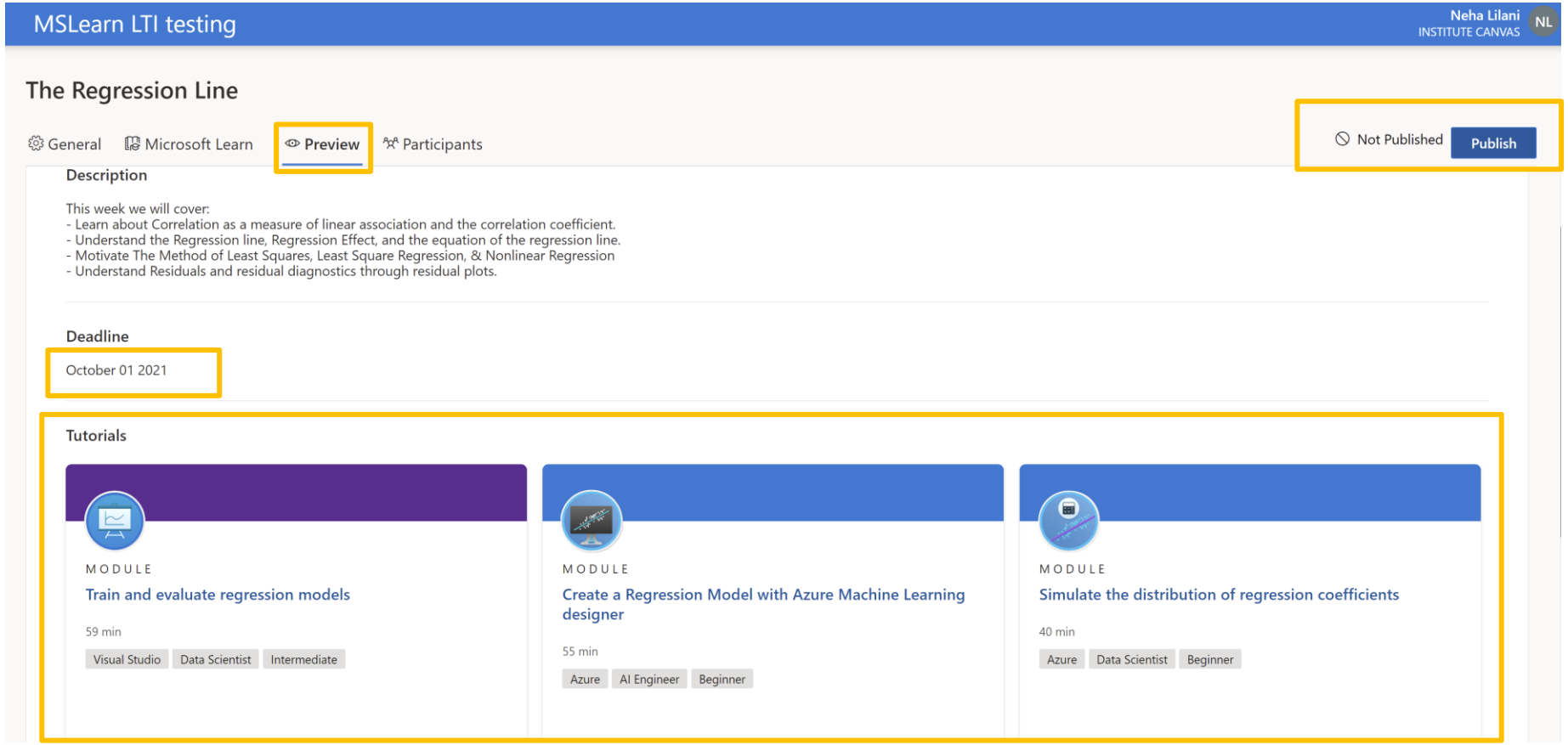

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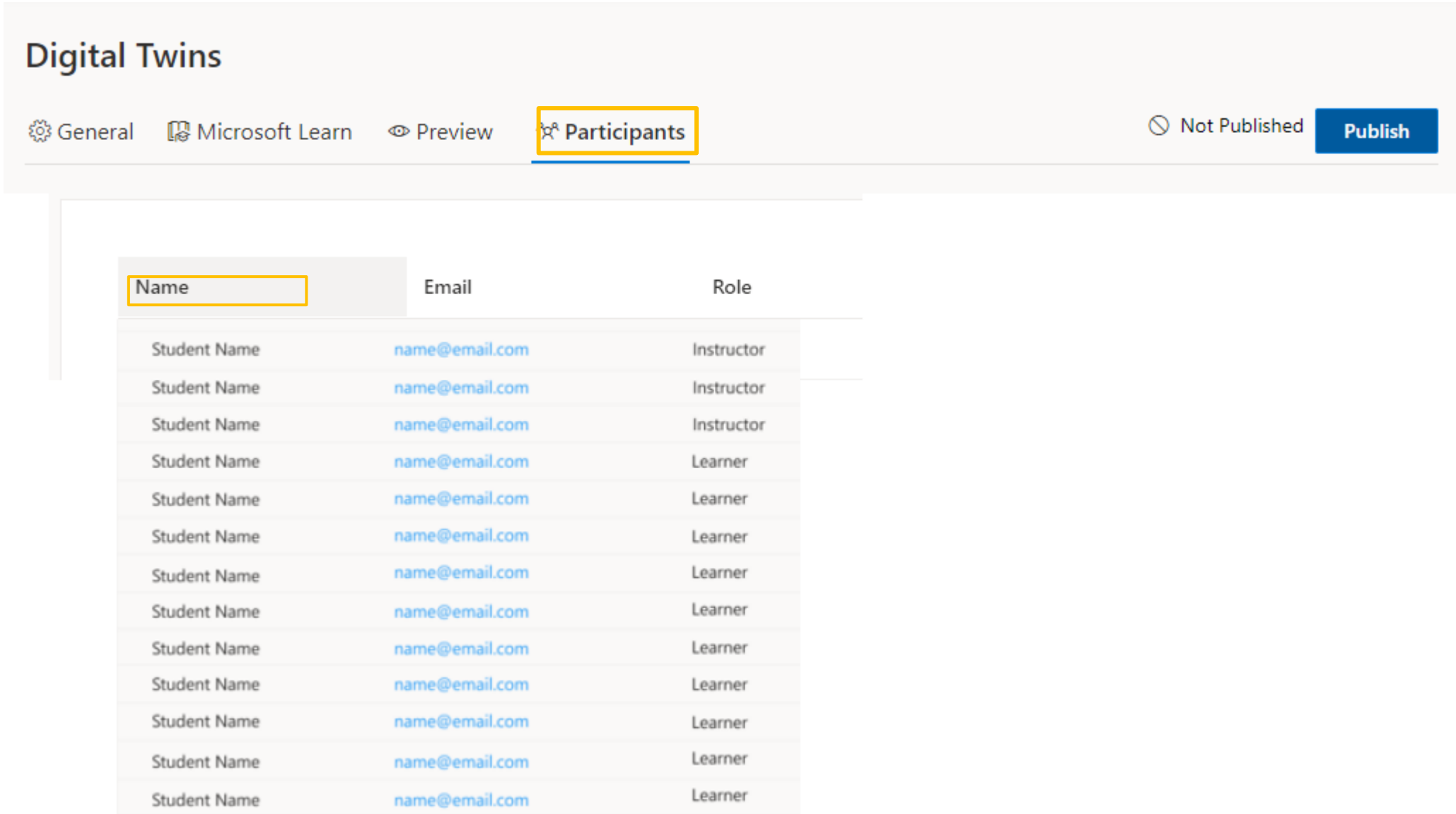

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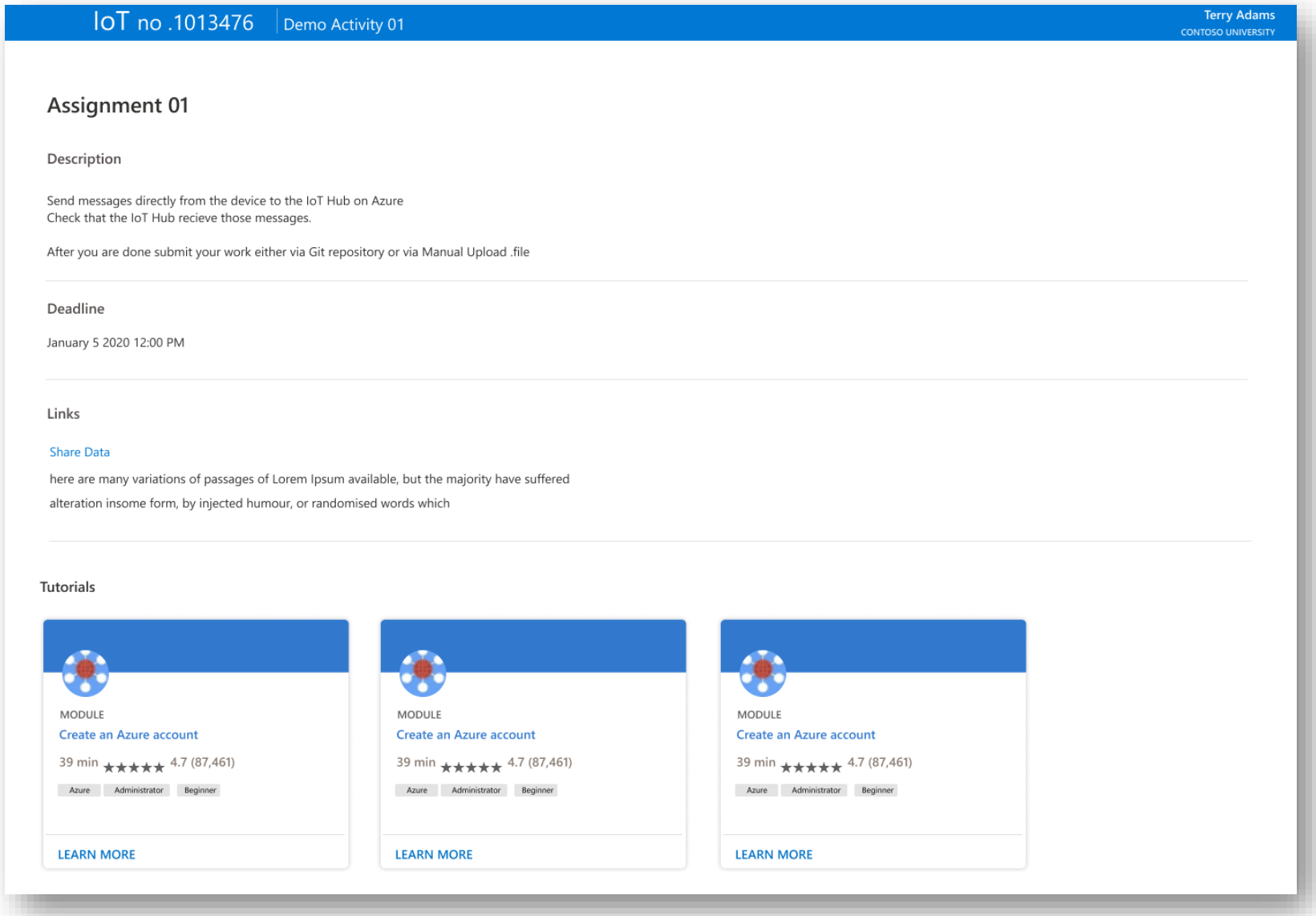

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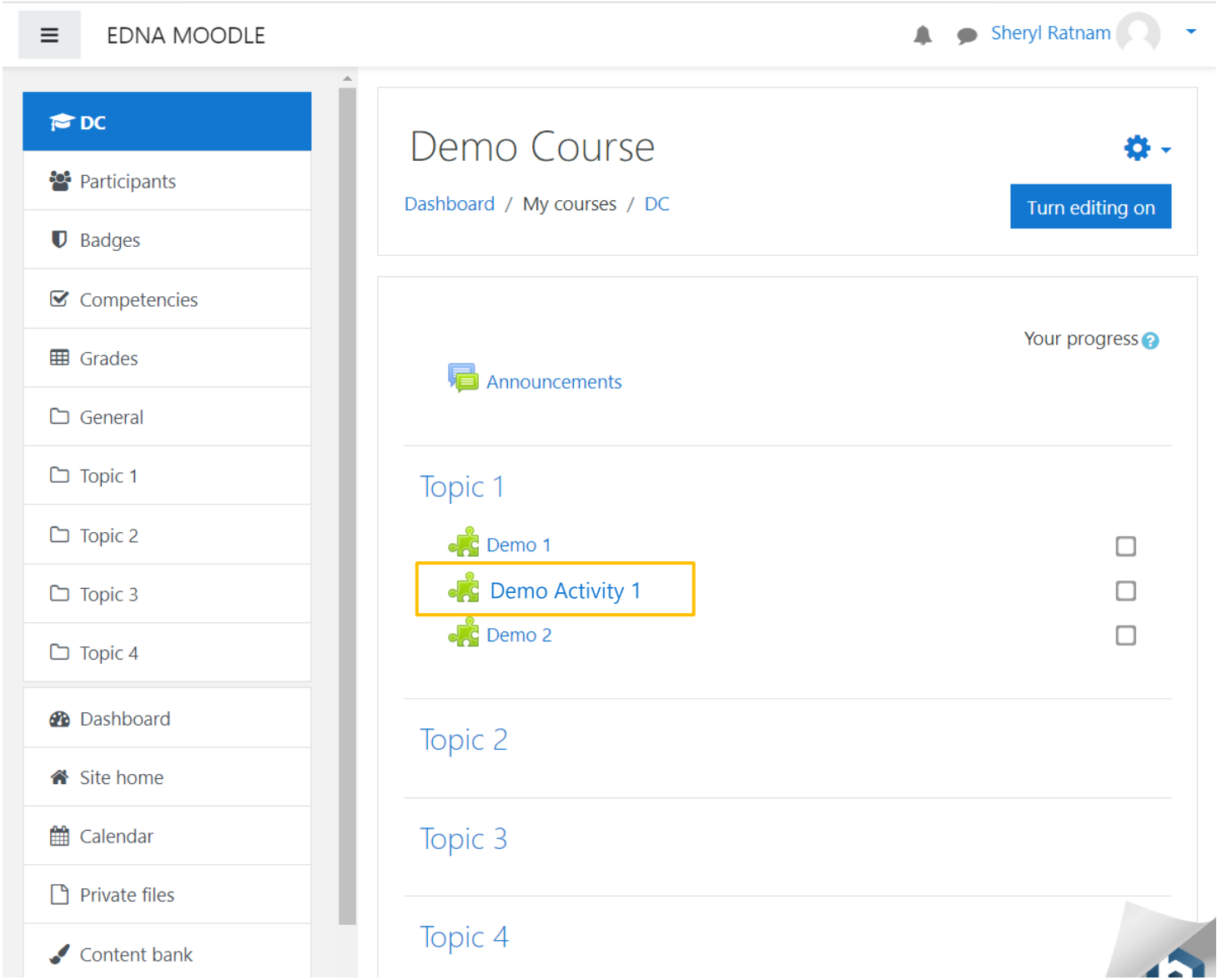
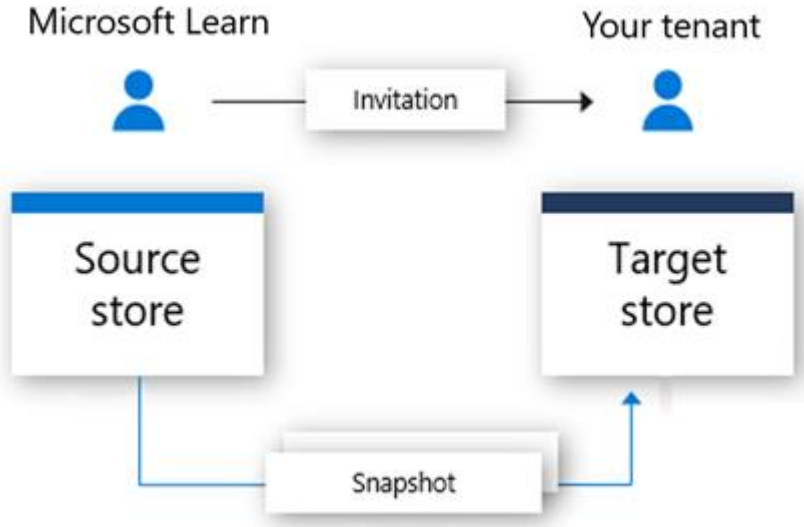


Step 4

Organizational Reporting

Microsoft Learn Reporting



Organizational Reporting

This is a service available to organizations to view Microsoft Learn training progress and achievements of the individuals within their tenant. This service is available to both enterprise customers and educational organizations.

Azure Data Share

The system uses a service called Azure Data Share to extract, transform, and load (ETL) user progress data into data sets, which can then be processed further or displayed in visualization tools such as Power BI. Data sets can be stored to either Azure Data Lake, Azure Blob storage, Azure SQL database, or Azure Synapse SQL Pool.

Reports and Dashboards

Organizations can create and manage their data share using Azure Data Share's and PowerBI reporting.

https://docs.microsoft.com/en-us/learn/support/org-reporting

Step 5

Best Practice Implementation Plan

How Institutions are using the tool

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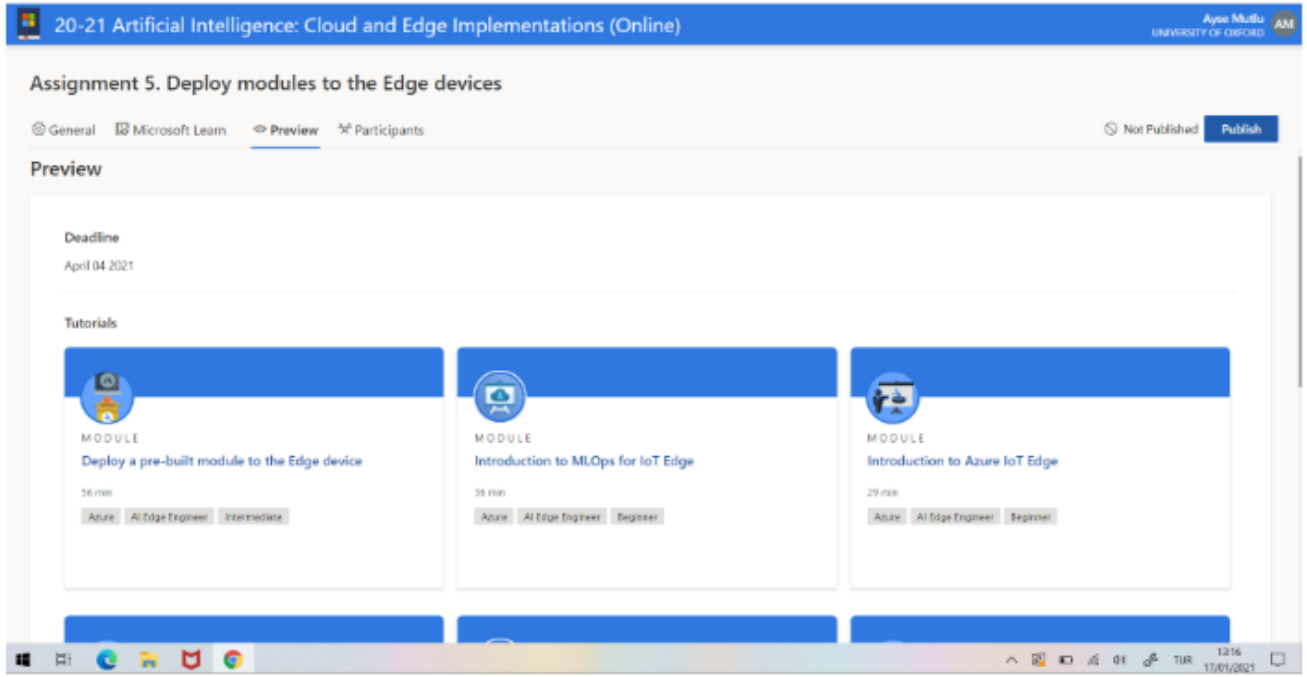
Institutions using Microsoft Learn LTI + MS Learn Modules within their course.

Learn from the University of Oxford This session looks at how the University of Oxford Artificial Intelligence: Cloud and Edge Implementation course is utilizing the Microsoft Learn LTI Application and Microsoft Learn Modules and Units within their curriculum to support students in developing digital skills to succeed in the workplace.



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Course Overview

Artificial Intelligence: Cloud and Edge Implementations is a pioneering online course covering AI, MLOps (Machine Learning and DevOps), cloud computing, and edge computing.

For 2021 was made available for 100% online.

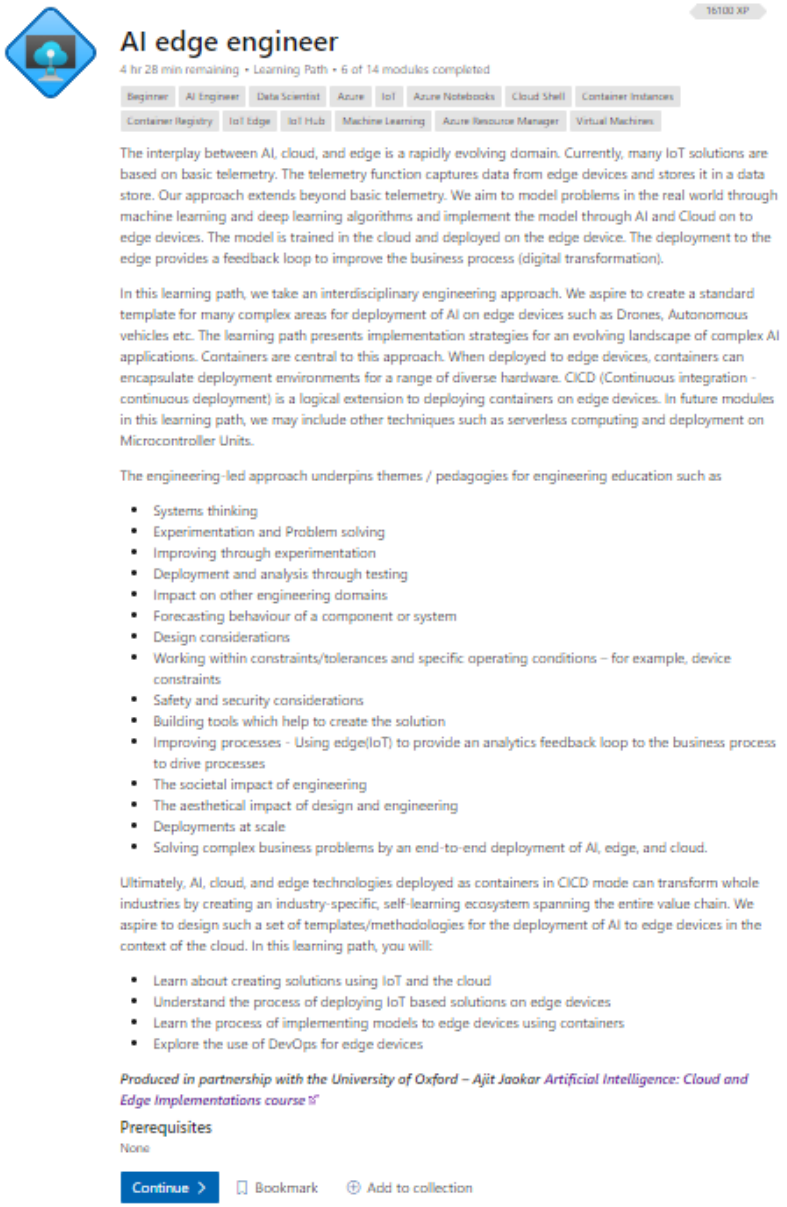
Designed for industry practitioners with some background in coding, the course is ideal if you have development, design, or software architecture experience and want to transition your career toward AI.

This course is designed to create a new breed of engineer through a solid grounding in artificial intelligence (AI), edge computing (Internet of Things), MLOps, and Cloud technologies to develop production systems within a full-stack environment.

Microsoft Learning Path AI Edge Engineer

https://docs.microsoft.com/en-us/learn/paths/ai-edge-engineer/

Learn more about the course at https://aka.ms/SharpenAIEdge



16100 XP

AI edge engineer

4 hr 28 min remaining • Learning Path • 6 of 14 modules completed

Beginner | AI Engineer | Data Scientist | Azure | IoT | Azure Notebooks | Cloud Shell | Container Instances | Container Registry | IoT Edge | IoT Hub | Machine Learning | Azure Resource Manager | Virtual Machines

The interplay between AI, cloud, and edge is a rapidly evolving domain. Currently, many IoT solutions are based on basic telemetry. The telemetry function captures data from edge devices and stores it in a data store. Our approach extends beyond basic telemetry. We aim to model problems in the real world through machine learning and deep learning algorithms and implement the model through AI and Cloud on to edge devices. The model is trained in the cloud and deployed on the edge device. The deployment to the edge provides a feedback loop to improve the business process (digital transformation).

In this learning path, we take an interdisciplinary engineering approach. We aspire to create a standard template for many complex areas for deployment of AI on edge devices such as Drones, Autonomous vehicles etc. The learning path presents implementation strategies for an evolving landscape of complex AI applications. Containers are central to this approach. When deployed to edge devices, containers can encapsulate deployment environments for a range of diverse hardware. CICD (Continuous integration - continuous deployment) is a logical extension to deploying containers on edge devices. In future modules in this learning path, we may include other techniques such as serverless computing and deployment on Microcontroller Units.

The engineering-led approach underpins themes / pedagogies for engineering education such as

- Systems thinking
- Experimentation and Problem solving
- Improving through experimentation
- Deployment and analysis through testing
- Impact on other engineering domains
- Forecasting behaviour of a component or system
- Design considerations
- Working within constraints/tolerances and specific operating conditions – for example, device constraints
- Safety and security considerations
- Building tools which help to create the solution
- Improving processes - Using edge(IoT) to provide an analytics feedback loop to the business process to drive processes
- The societal impact of engineering
- The aesthetical impact of design and engineering
- Deployments at scale
- Solving complex business problems by an end-to-end deployment of AI, edge, and cloud.

Ultimately, AI, cloud, and edge technologies deployed as containers in CICD mode can transform whole industries by creating an industry-specific, self-learning ecosystem spanning the entire value chain. We aspire to design such a set of templates/methodologies for the deployment of AI to edge devices in the context of the cloud. In this learning path, you will:

- Learn about creating solutions using IoT and the cloud
- Understand the process of deploying IoT based solutions on edge devices
- Learn the process of implementing models to edge devices using containers
- Explore the use of DevOps for edge devices

Produced in partnership with the University of Oxford – Ajit Jaokar Artificial Intelligence: Cloud and Edge Implementations course

Prerequisites

None

Continue > | Bookmark | Add to collection

Microsoft Learn LTI Application + Azure Education Hub

Students log into Canvas and see all the resources for the course
Microsoft Learn Modules embedded within the course + Azure Education Subscriptions for hands on labs via the Microsoft Learn LTI

School to provide canvas team list of email address for students

CANVAS

Microsoft Learn LTI Application

Microsoft LEARN

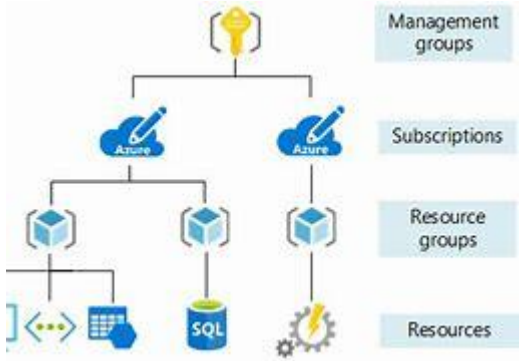
Students Provisioned to a Microsoft team for the course by Dept

Active Directory

Students provided access to Oxford Active Directory for authentication

Microsoft Azure

Student Azure Subscription provisioned by for hands on labs + learning via Azure



GitHub

Student undertake Microsoft learn Modules from Azure Subscriptions

Students undertake CI/CD for projects and develop personal portfolios
Github classroom Auto grading can be implemented to autograde project submissions

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Microsoft

Questions

http://github.com/microsoft/learn-lti