



*Gate2Math: Open multilingual smart library for
mathematical resources supporting efficient learning*
2022-1-EE01-KA220-HED-000089461



Gate2Math

Smart Library Developer Documentation



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1. The Gate2Math Smart Library

The Gate2Math Smart Library is an online platform that enables the creation, sharing, and evaluation of Open Educational Resources (OERs) in mathematics. The platform is built using WordPress and is hosted on IONOS. It leverages the Formidable Forms and Ultimate Member plugins to provide an interactive environment for users. This documentation provides step-by-step instructions on how to install, maintain, and troubleshoot the platform.



Gate2Math

Smart library for OERs in mathematics teaching

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User International Challenge (UIC)

OER Smart Library

[Home](#) / [OER Smart Library](#)

Welcome to the Mathematics OER Smart Library! Our library offers a diverse range of materials—including videos, infographics, games, presentations, animations, and more—covering topics such as algebra, calculus, geometry, statistics, and probability. These resources are available in six languages: Estonian, German, Portuguese, Romanian, Catalan, and Spanish. Additionally, our library includes materials accessible to visually impaired and color-blind individuals. These resources are designed to support educators, students, and researchers in secondary, vocational, and higher education institutions.

Total number of OERs published so far:

967

To explore and utilize these materials, navigate through our categorized sections or use the search function to find specific OERs of interest.

Search term

Author

Educational Level

Level

Language

Category

Type

Submit

Figure 1. Gate2math Smart Library Search Interface



2. System Overview

The Gate2Math Smart Library is designed with a user-friendly structure that allows educators to contribute and access high-quality OERs. The platform is structured as follows:

- **Platform**

WordPress (hosted on IONOS)

- **Key Plugins**

- Formidable Forms: - Used for search interface to create, manage, and customize OER submission forms.
- Ultimate Member: Manages user roles, authentication, and access control.

- **Main Functionalities:**

- Secure user registration and login.
- OER upload with detailed metadata (title, author, license, categories, description).
- Review and rating system for resources.
- Open search for non-members to browse and download OERs.
- Regular maintenance via plugin and WordPress core updates.

3. Gate2math Interface

Gate2Math Smart Library OER Creator online interface is designed for high school and university math teachers, as well as math enthusiasts, who wish to contribute to our comprehensive Gate2Math Smart OER Library. The interface provides users with the ability to upload, edit metadata, and publish their Math OER (Open Educational Resources) with ease. Following Subsections describe the parts of the platform.

3.1 Login

The Login page is the first step for users to access the OER Creator interface. Users can enter their credentials, which include a username and password. Once logged in successfully, a new menu entry called Creators Page becomes visible. This secure login ensures that only authorized contributors can access and manage their resources.



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Members Login

Figure 2: Login page with fields for username and password.

3.2 Creators Page

Upon entering the Creators Page, users are greeted with a simple and intuitive interface featuring three main links. These links direct users to different functionalities essential for managing their OER contributions. The page serves as the central hub for all OER creation and management activities.



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Smart library for OERs in mathematics teaching

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Protected: Creators Page

Home / Protected: Creators Page

Hello!

Upload Form

<https://gate2math.eu/oer-upload/>

Editing

<https://gate2math.eu/editing-oer-entries/>

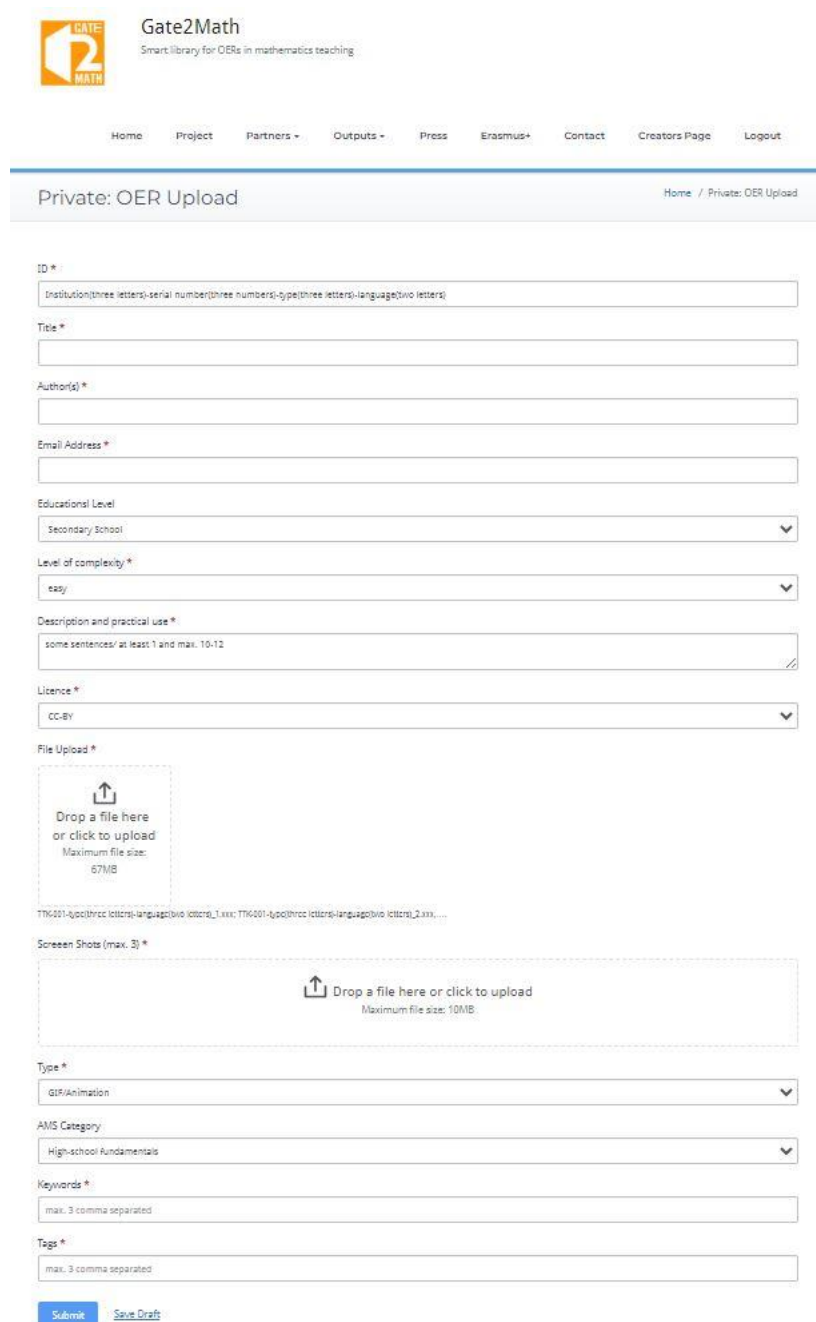
Smart OER

<https://gate2math.eu/oer-smart-library/>

Figure 3: Creators Page showing the three main links.

3.3 Upload OER

The first link on the Creators Page is the Upload OER section. Here, users can upload their OER resources along with additional screenshots that complement the main content. The upload form requires users to provide detailed metadata, including the license type, educational level, categories, description, title, author, and institution that created the resource. There is also an option to save the upload as a draft, allowing users to complete their submission at a later time.



The screenshot shows the 'Private: OER Upload' form on the Gate2Math website. The form includes the following fields and options:

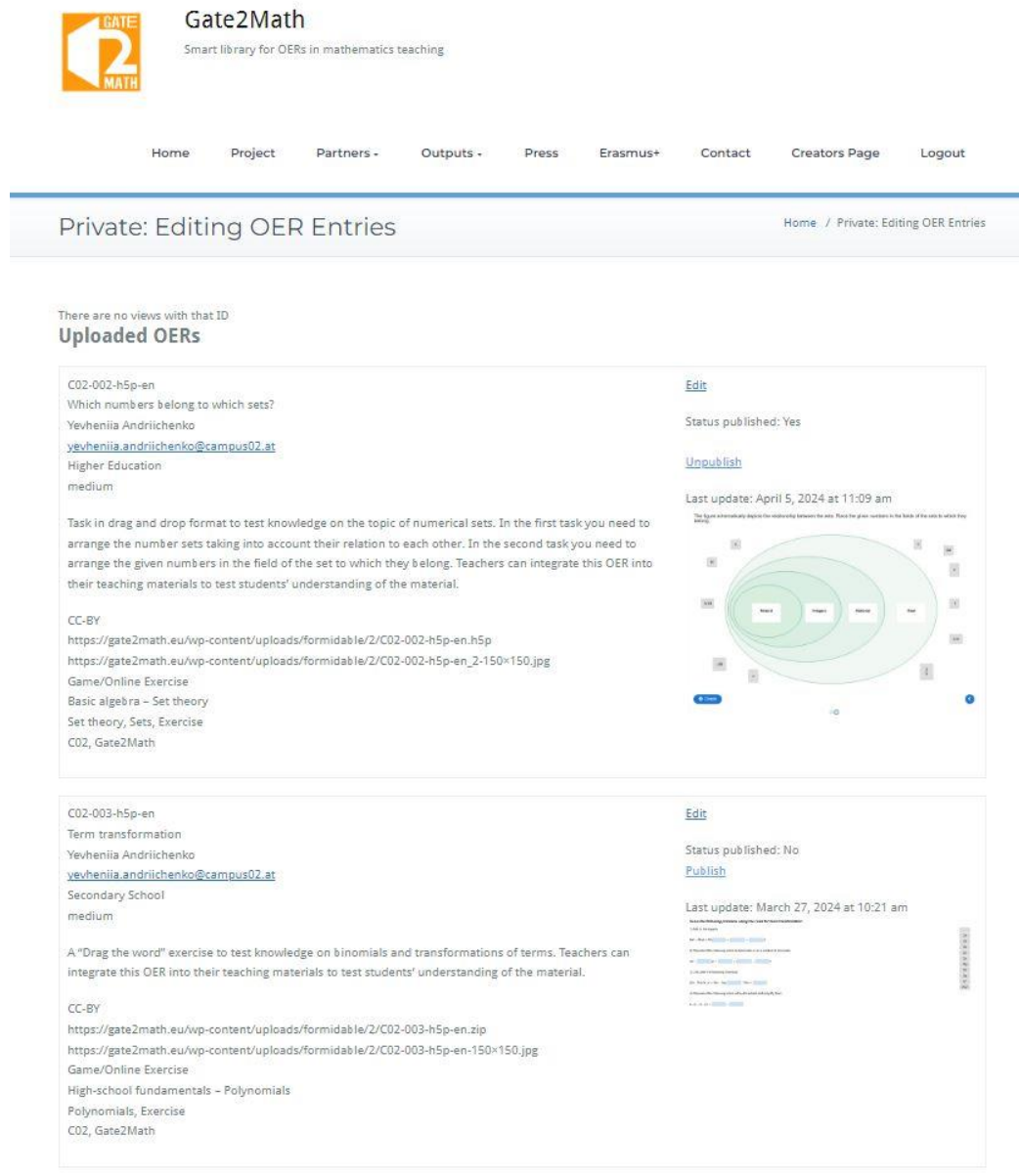
- ID ***: Text input field with placeholder: Institution(three letters)-serial number(three numbers)-type(three letters)-language(two letters)
- Title ***: Text input field
- Author(s) ***: Text input field
- Email Address ***: Text input field
- Educational Level**: Dropdown menu with 'Secondary School' selected
- Level of complexity ***: Dropdown menu with 'easy' selected
- Description and practical use ***: Text area with placeholder: some sentences/ at least 1 and max. 10-12
- Licence ***: Dropdown menu with 'CC-BY' selected
- File Upload ***: File upload area with a dashed border, an upload icon, and text: 'Drop a file here or click to upload', 'Maximum file size: 67MB'
- Screen Shots (max. 3) ***: File upload area with a dashed border, an upload icon, and text: 'Drop a file here or click to upload', 'Maximum file size: 10MB'
- Type ***: Dropdown menu with 'GIF/Animation' selected
- AMS Category**: Dropdown menu with 'High-school Fundamentals' selected
- Keywords ***: Text input field with placeholder: max. 3 comma separated
- Tags ***: Text input field with placeholder: max. 3 comma separated

At the bottom of the form, there are two buttons: 'Submit' and 'Save Draft'.

Figure 4: Upload OER form with fields for metadata and upload buttons.

3.5 Manage Uploaded Resources

The second link, Manage Uploaded Resources, offers users an overview of all the resources they have uploaded. This section allows users to re-edit the metadata of each resource, making it easy to update or correct information. Additionally, users can publish or unpublish resources, giving them control over which resources are visible in the Smart OER Library. This functionality ensures that only the most accurate and polished resources are shared with the community.



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Home Project Partners - Outputs - Press Erasmus+ Contact Creators Page Logout

Private: Editing OER Entries Home / Private: Editing OER Entries

There are no views with that ID

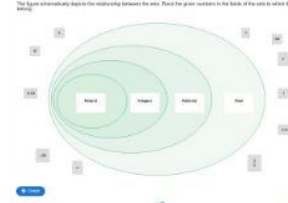
Uploaded OERs

C02-002-h5p-en
Which numbers belong to which sets?
Yevheniia Andriichenko
yevheniia.andriichenko@campus02.at
Higher Education
medium

Task in drag and drop format to test knowledge on the topic of numerical sets. In the first task you need to arrange the number sets taking into account their relation to each other. In the second task you need to arrange the given numbers in the field of the set to which they belong. Teachers can integrate this OER into their teaching materials to test students' understanding of the material.

CC-BY
<https://gate2math.eu/wp-content/uploads/formidable/2/C02-002-h5p-en.h5p>
https://gate2math.eu/wp-content/uploads/formidable/2/C02-002-h5p-en_2-150x150.jpg
Game/Online Exercise
Basic algebra - Set theory
Set theory, Sets, Exercise
C02, Gate2Math

[Edit](#)
Status published: Yes
[Unpublish](#)
Last update: April 5, 2024 at 11:09 am



C02-003-h5p-en
Term transformation
Yevheniia Andriichenko
yevheniia.andriichenko@campus02.at
Secondary School
medium

A "Drag the word" exercise to test knowledge on binomials and transformations of terms. Teachers can integrate this OER into their teaching materials to test students' understanding of the material.

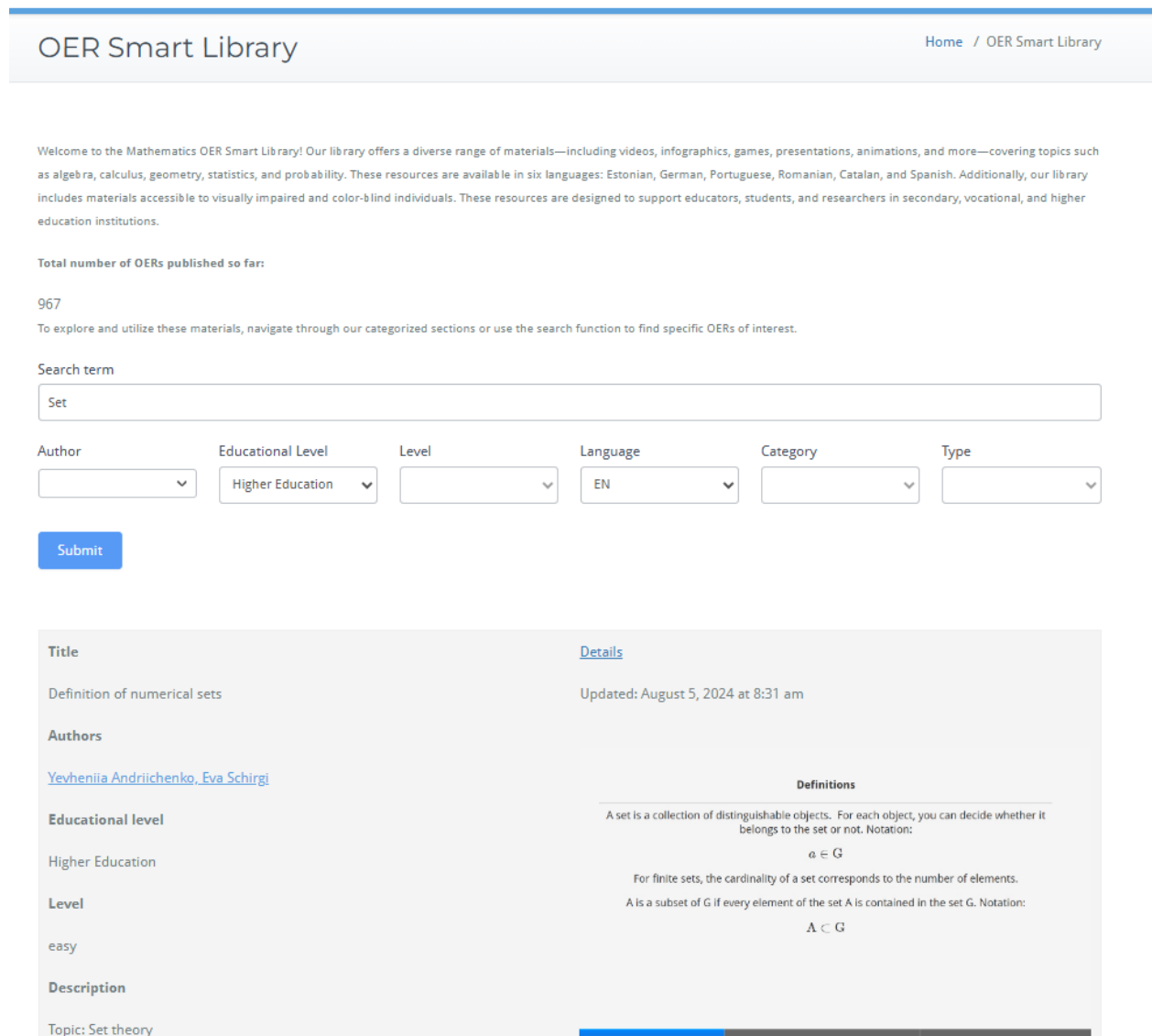
CC-BY
<https://gate2math.eu/wp-content/uploads/formidable/2/C02-003-h5p-en.zip>
<https://gate2math.eu/wp-content/uploads/formidable/2/C02-003-h5p-en-150x150.jpg>
Game/Online Exercise
High-school fundamentals - Polynomials
Polynomials, Exercise
C02, Gate2Math

[Edit](#)
Status published: No
[Publish](#)
Last update: March 27, 2024 at 10:21 am

Figure 5: Manage Uploaded Resources page with options to edit, publish, and unpublish.

3.6 Smart OER Library Repository

The third link leads to the Smart OER Library Repository page, where users can browse all published entries from various creators. The library is searchable by keywords that correspond to resource's detail view includes a star rating system, allowing users to rate the quality of the resource. The average rating is displayed on the front page of each resource, providing a quick reference for users looking for highly-rated materials.



The screenshot shows the OER Smart Library interface. At the top, there is a navigation bar with 'OER Smart Library' on the left and 'Home / OER Smart Library' on the right. Below the navigation bar is a welcome message: 'Welcome to the Mathematics OER Smart Library! Our library offers a diverse range of materials—including videos, infographics, games, presentations, animations, and more—covering topics such as algebra, calculus, geometry, statistics, and probability. These resources are available in six languages: Estonian, German, Portuguese, Romanian, Catalan, and Spanish. Additionally, our library includes materials accessible to visually impaired and color-blind individuals. These resources are designed to support educators, students, and researchers in secondary, vocational, and higher education institutions.'

Below the welcome message, it states 'Total number of OERs published so far: 967'. A search bar contains the text 'Set'. Below the search bar are several filters: Author, Educational Level (Higher Education), Level, Language (EN), Category, and Type. A blue 'Submit' button is located below the filters.

The main content area displays a resource entry for 'Definition of numerical sets'. The entry includes a 'Title' section with a 'Details' link, 'Authors' (Yevheniia Andriichenko, Eva Schirgi), 'Educational level' (Higher Education), 'Level' (easy), and 'Description' (Topic: Set theory). The 'Definitions' section contains the following text: 'A set is a collection of distinguishable objects. For each object, you can decide whether it belongs to the set or not. Notation: $a \in G$. For finite sets, the cardinality of a set corresponds to the number of elements. A is a subset of G if every element of the set A is contained in the set G. Notation: $A \subset G$ '.

Figure 6: Screenshot of the Smart Library page with a search bar and star ratings displayed on resource entries.

By providing these functionalities, the Gate2Math Smart Library OER Creator interface aims to foster a collaborative environment where high-quality math educational resources can be easily shared and accessed by the global math community.

4. Installation Guide

Step 1: Setting Up WordPress on IONOS

1. Log in to IONOS: Navigate to the hosting dashboard and select 'WordPress Hosting'.
2. Install WordPress: Click on 'Install WordPress' and follow the guided installation.
3. Database Configuration: Create a MySQL database through the IONOS control panel and link it to your WordPress installation.
4. Set Up an Admin Account: Choose a secure username and password for the administrator role.

Step 2: Installing Required Plugins

1. Access the WordPress Admin Panel: Log in to WordPress via `yoursite.com/wp-admin`.
2. Navigate to Plugins: Click on 'Plugins' > 'Add New'.
3. Install Formidable Forms: Search for 'Formidable Forms' and install it.
4. Install Ultimate Member: Search for 'Ultimate Member' and install it.
5. Activate the Plugins: After installation, activate both plugins to enable their features.

Step 3: Configuring User Roles and Access

1. Go to Ultimate Member > User Roles: Create a new user role 'OER Creator'.
2. Assign Permissions:
 - Allow users with this role to upload, edit, and publish OERs.
 - Ensure public users can search and download resources.
3. Customize the Registration Process: Modify the user registration form to include required profile fields such as 'Institution', 'Expertise', and 'Affiliation'.

Step 4: Creating OER Submission Forms

1. Navigate to Formidable Forms > Add New.
2. Design the Submission Form: Include fields for:
 - Title, author, license type, education level, categories, and description.
3. Configure File Uploads: Enable file attachment options with defined formats (PDF, DOCX, PPTX) and set a file size limit.
4. Add Approval Workflow: Set up notifications for admin approval before publishing resources.
5. Enable Draft Saving: Allow users to save drafts before final submission.

For creation of Search Interface, Social Rating Option through starts and belonging views use the same procedure

5. Maintenance Guide

To ensure optimal performance and security, regular maintenance is necessary:

1. Update WordPress Core & Plugins:

- Check updates regularly via Dashboard > Updates.
- Enable automatic updates for security patches.

2. Database Optimization:

- Use a plugin like 'WP-Optimize' to clean unused metadata and old revisions.
- Regularly back up the database using IONOS backup tools.

3. User Management & Moderation:

- Monitor and approve new users to prevent spam accounts.
- Moderate uploaded content to ensure compliance with content guidelines.

6. Debugging Guide

Common Issues & Solutions:

Login and Authentication Issues

- Users Cannot Log In: Check Ultimate Member settings and reset user roles.
- Password Reset Not Working: Ensure SMTP email configuration is set up properly.

Upload & File Management Issues

- File Upload Errors: Ensure that the WordPress upload size limit is configured correctly in ``php.ini``.
- Metadata Not Saving: Verify Formidable Forms settings and test form submissions.



7. Example: Integrating Gate2Math with Moodle

To integrate Gate2Math resources into Moodle:

1. Copy the OER Resource URL from the Gate2Math Library.
2. Log in to Moodle and navigate to the course page.
3. Click 'Add an Activity' > 'URL'.
4. Paste the copied link into the URL field.
5. Provide a description and save the activity.
6. Enable grading if required to track engagement.

8. Conclusion

This document provides a structured approach for installing, maintaining, and troubleshooting the Gate2Math Smart Library. Regular updates, user moderation, and proper system configuration are key to ensuring platform efficiency. For further assistance, refer to the official documentation of WordPress, Formidable Forms, and Ultimate Member.