MaSCE³

Math trails in school, curriculum and educational environments of Europe

Teacher Training in XXX

Peer & Expert Review

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

Introduction

- **Exchange of Experiences**

Peer Review

- Organization
- Criteria
- Feedback and Improvements of Tasks

Expert Review

- Review Systems
- The MCM Review System
- Examples and Tasks

Reflection and Outlook

- Additional Features

Welcome Back!

Sharing Experiences!

- We hope you had a good time experiencing MathCityMap during the training‘s break.
- Let‘s share…
  - Your experiences in designing own tasks
  - Your experiences in using MCM with students
  - Your problems, concerns and questions on MCM

Today you will…

- Receive a feedback from the participants on your tasks
- Learn about the review system of MathCityMap
- Get the chance to become a MathCityMap Expert Reviewer

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Peer Review Organization

- **Goal:**
  - Improve the tasks that have been created in the meantime
- **Organization:**
  - Form groups of three and give feedback on each group member‘s tasks
  - Consider the following guidelines

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Peer Review Guidelines

- For each task:
  - Read all hints
  - Read sample solution
  - Read „About this object“
- Is the task description precise & complete?
- Is it possible to solve the task without being physically there?
- Are the hints useful? Could they be improved by other media type (image?)
- Is the sample solution complete (includes measured values and approach)?
- Is the language appropriate for related grade students?
- Other improvements

Criteria for a MCM task I

- **Clarity:**
  For each task, a **picture** must be created that allows the clear identification of the situation or the object the task is about.
- **Presence:**
  The task can only be solved **on site**, i.e. the task data must be collected on site. This also means that the picture or the task description must not be sufficient to successfully solve the task.
- **Activity:**
  The person who solves the task must be **active** and do something (e.g. measuring or counting).

Criteria for a MCM task II

- **Multiple solutions:**
  The task should be solvable in **different ways**.
- **Reality:**
  The task should be **application-oriented**, realistic and not too contrived.
- **Graduated hints:**
  At least one **hint** should be added to each task.
- **School mathematics and „tags“:**
  The task should have a clear relation to school mathematics: Use the prepared tags or add new **terms**. The task should also be assigned to a **class level.**

Criteria for a MCM task III

- **Solution formats:**
  The solution of the task should be presentable as a solution interval (good and medium interval), as an exact number, as multiple choice or as a GPS task.
- **Tools:**
  No special tools should be required to solve the task.
- **Sample solution:**
  One should offer a solution and hints (only visable in the portal) for teachers.

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Feedback and Improvements

Read 3 tasks of your group members

(15 minutes)

→

Feedback for each group member

(30 minutes)

→

Improve own tasks accoring to the feedback

(30 minutes)

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Review Systems

- MCM benefits from a growing community and a growing number of material
- These published tasks have to meet the standards of the idea behind MCM
- To guarantee this, all tasks have to go through a review process before they are published

Review Systems

- Reviewing processes are a common way to guarantee quality in science, literature or music (Connors, Mudambi, & Schuff, 2011)
- In academia, it “is the process by which experts in some discipline comment on the quality of the works of others in that discipline.” (Price & Flach, 2017, p. 70)
- Also in growing web communities, which allow users to produce and publish material, reviewing processes are necessary.

Review Systems - Wikipedia

- Wikipedia, an online encyclopedia, is an example for an online platform with over 40 million articles that anyone can create and modify (Brandes & Lerner, 2007).
- This amount of articles and authors does not allow a review of every edit and entry and asks for a complex review process.
- Exemplary review and protection elements used by Wikipedia are the storage of elder pages in case of edits, and the distribution of roles, e.g. reviewer or administrator, which allow particular actions on Wikipedia (Ferschke, 2014).

Review Systems – GeoGebra Tube

- GeoGebraTube, a platform with online material for the dynamic mathematics software GeoGebra, serves as an example for reviewing material in the context of mathematical education.
- The tool makes it possible to create and access material, e.g. worksheets, for the software.
- Currently, about one million files are available.
- In terms of quality, GeoGebraTube counts on editorial review, which rates excellent materials, and on user review (Gassner & Hohenwarter, 2012).

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The MCM Review Process

Step 1

- The registered author creates a task in the MCM portal

Step 2

- Direct Feedback via Task light on the completeness and fulfillment of technical criteria.

Step 3

- In case all criteria of the green level are fulfilled, it is possible to submit the task into the review process

Step 4

- In the review process, the task is checked in terms of the appropriateness for a published MCM task.

Task Light Example

Task lights

The task lights give information about the technical status of the currently selected task. Solely tasks that fulfill all technical requirements may be submitted to publication. These tasks are marked with a green light. Subsequently you will find all technical requirements.

Criteria - Green

- ✗ Clear image of the object
- ✓ Sample solution (text and / or image)
- ✗ At least 2 hints
- ✗ Tags (thematical keywords)
- ✓ Author
- ✓ Task title
- ✓ Definition of task
- ✓ Complete answer
- ✓ Clear position

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Example Review

- Have a look at the additional material
  - Task „Standing Stone“
  - Task „Cobbeled Stones“

  and formulate a Review for both tasks.

Example Review

- Have a look at the additional material „Review – Example“
  - Task „Standing Stone“
  - Task „Cobbeled Stones“

  and formulate a Review for both tasks.

Example Reviews

Waiting for review

The author of this content has requested publication. Please review the content and provide a feedback for the user.

HIDE REVIEW FORM

Your decision

- (●) Publish content (accept)
- ( ) Content must be revised (decline)

Your feedback

Message *

Dear Manuel,

thanks a lot for creating this interesting task.

Best regards from Frankfurt
Simon Barlovits

Your feedback

Message *

Dear Zoe & Anna,

thanks for creating this task. However, I have some comments and kindly ask you to revise your task with regard to the following points.

1. Image:
Please upload another picture which is more sharpen. In addition, choose a picture that clearly illustrates the tasks situation.

2. Keywords:
The tag "volume" should be replaced by the keyword "area". In my opinion "counting" would be a suitable tag for your task, too.

3. Tools:
In my view, a wire isn't an appropriate tool in this case. In the 2nd hint you suggest that the students should use the folding ruler to count the stones on one square meter. That seems to be a good hint – so please replace the "wire" by the tool "folding ruler"

4. Sample solution:
To comprehend your approach, it is necessary to know your measured data. How did you calculate the area of 56m²? Please present your way of solution more detailed.

5. Interval
Your interval too narrow. If the students calculate an area of 54 m², their solution wouldn't fit into your interval – even if their approach was similar to your sample solution.

6. About this object:
Lastly, I ask you to remove your personal statement under "About this object".

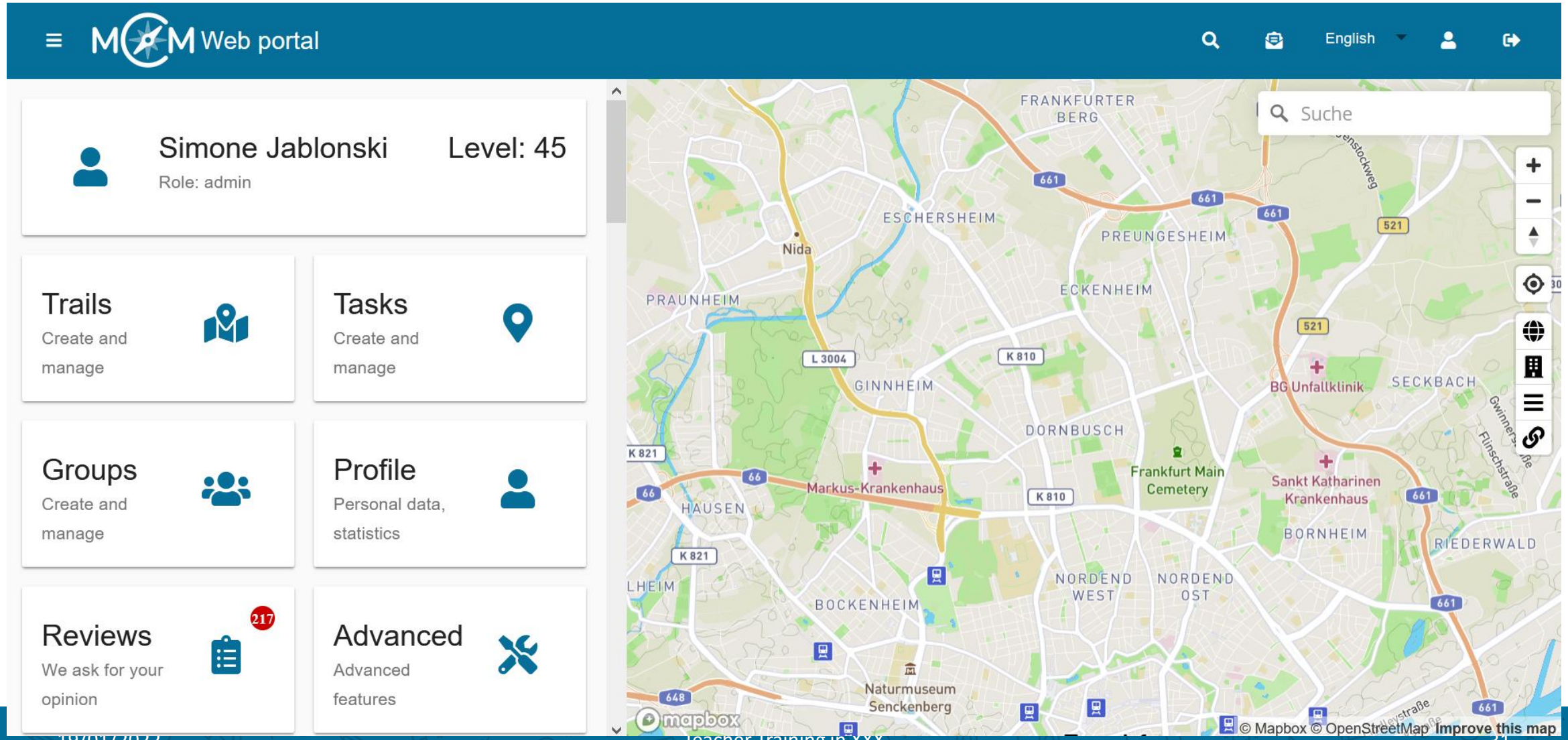
With all these remarks I do not want to discourage you, but rather help you to improve your task.

Best regards,
Simon Barlovits

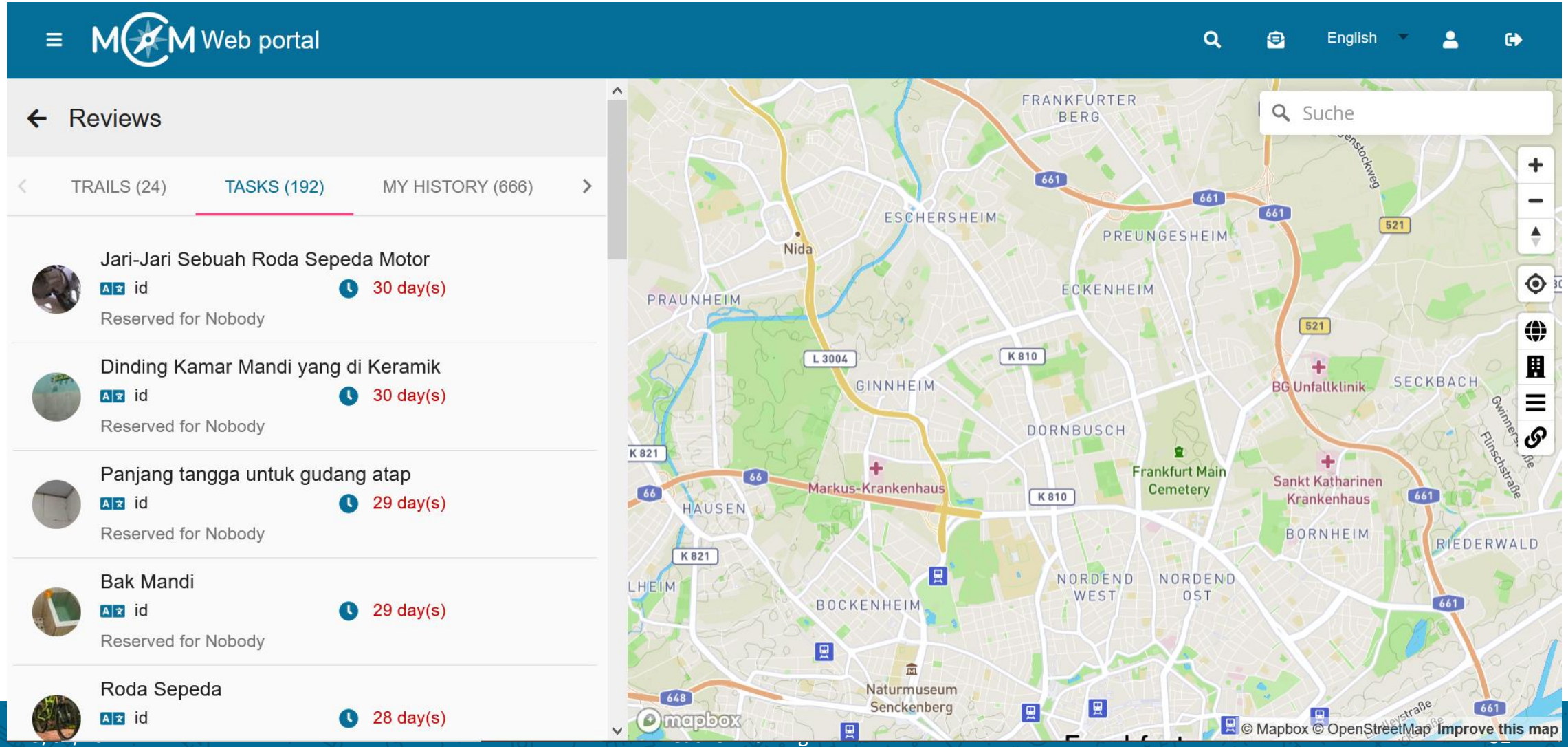
Not it‘s your turn!

- Please have a look at the tasks in the additional material “Review Tasks”.
- Choose three out of them and formulate a review based on the criteria.

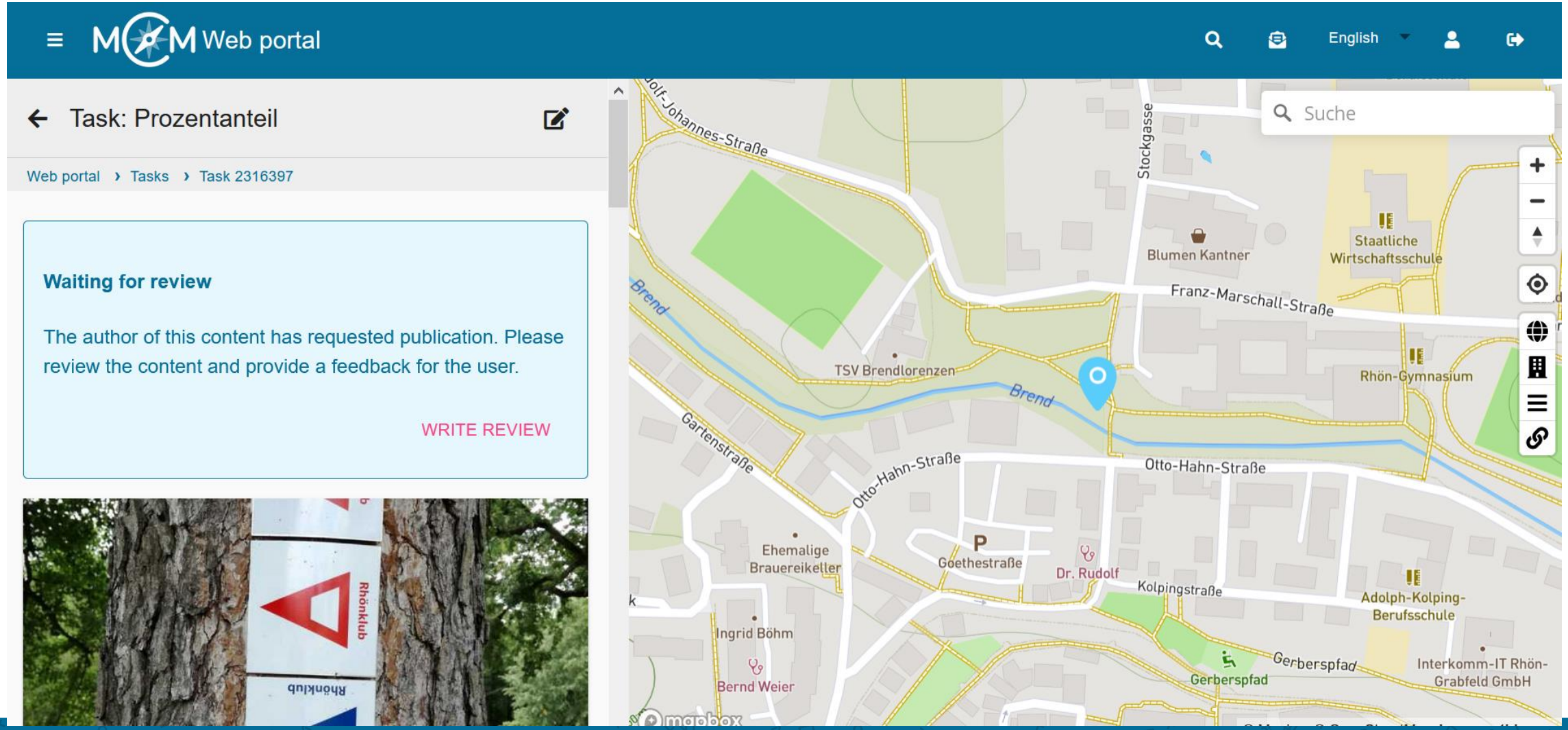
How to give Feedback in the MCM system



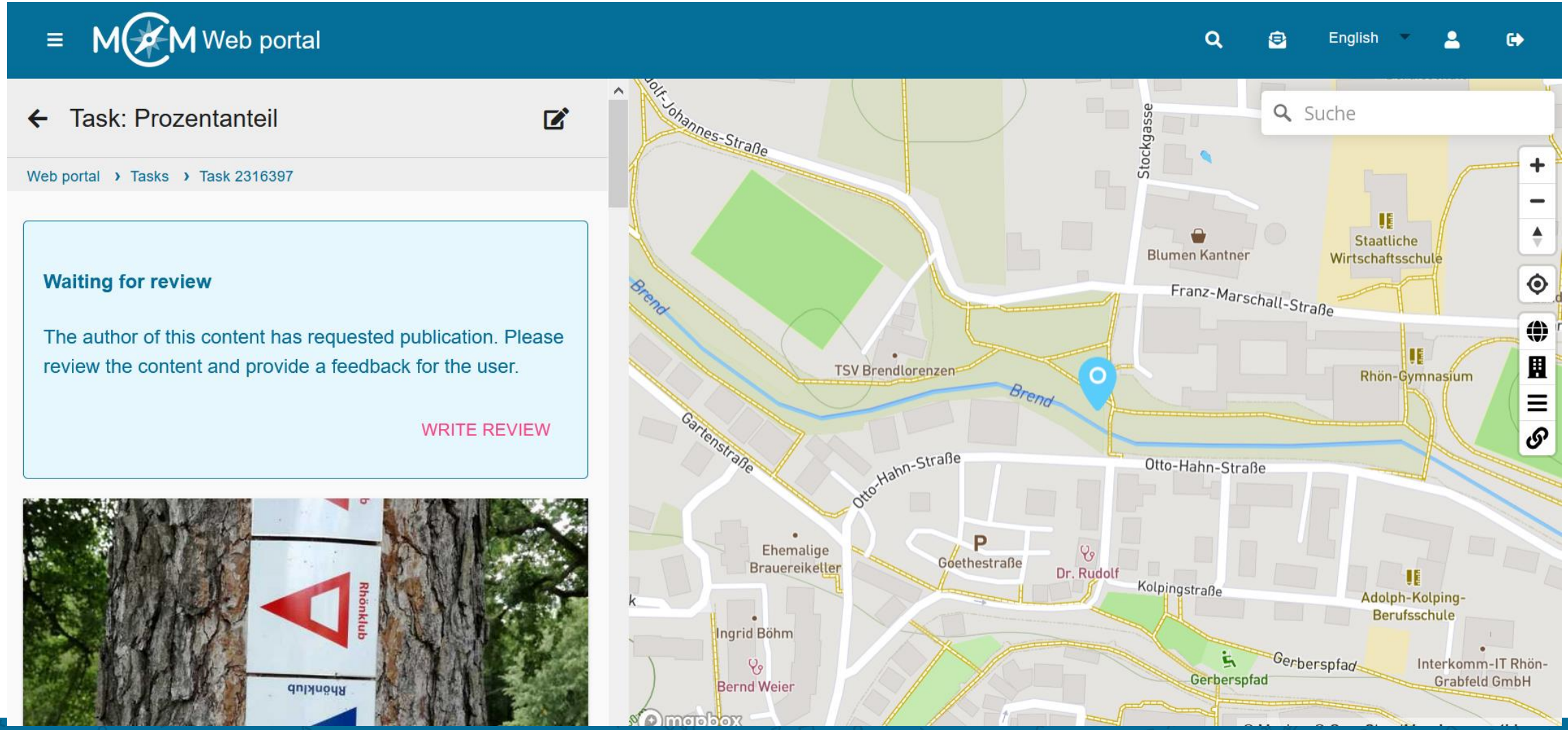
How to give Feedback in the MCM system



How to give Feedback in the MCM system



How to give Feedback in the MCM system



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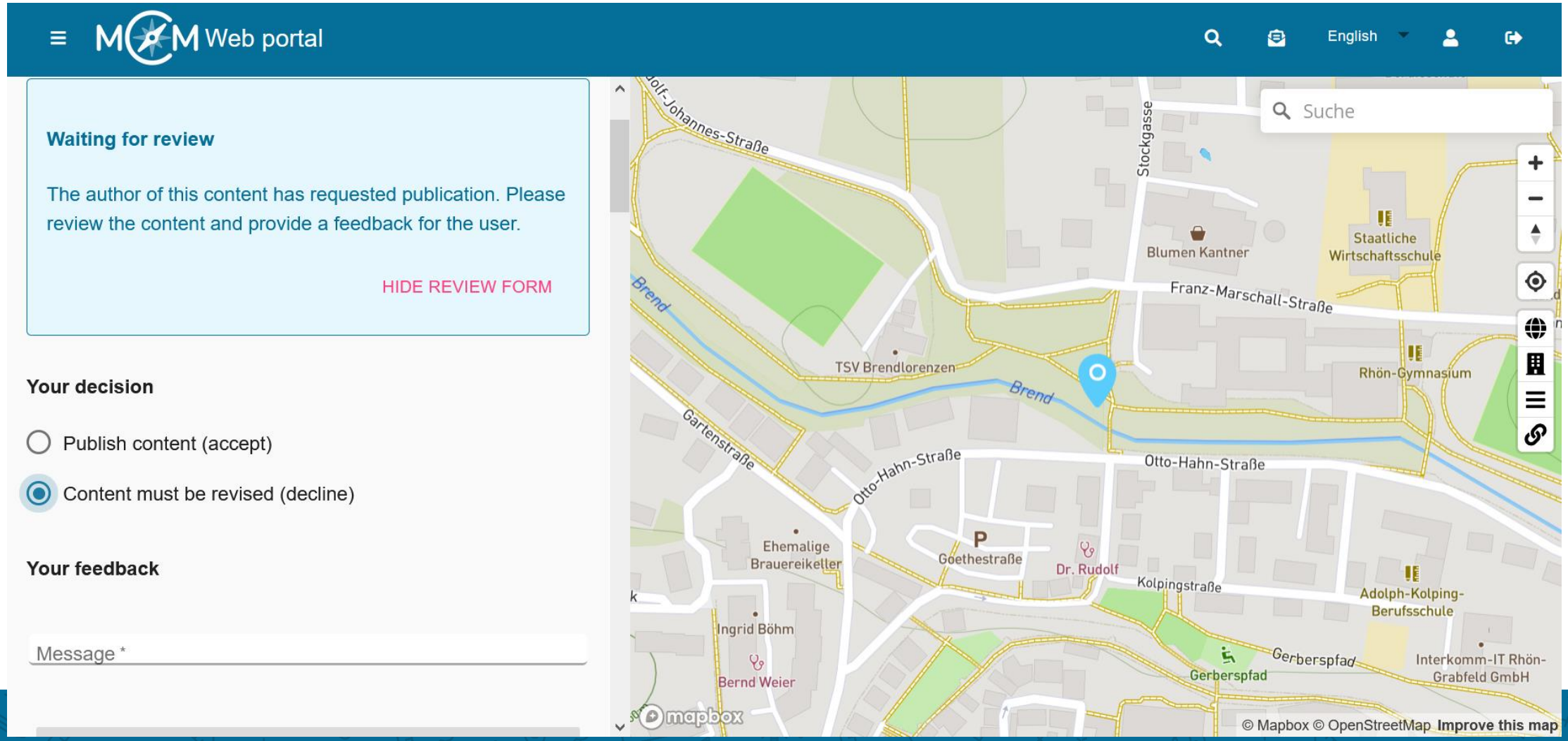

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Teacher trainings
Overview of the different modules

Module 1:

Theory of outdoor learning and the use of the MCM app

90 minutes

Module 2:

Presentation of the web portal

45 minutes

Module 3:

Creation of tasks in the web portal

45 minutes

Perspective of the students

Perspective of the teachers

Module 4:

Mutual assessment of the tasks and trails created
(Peer review)

90 minutes

Module 5:

Introduction to the evaluation procedure

90 minutes

Further (possible) modules:

Use of the digital classroom and data protection
Theme based trails
Augmented reality in MathCityMap

At least 2 weeks temporal distance
before creating your own tasks!

Interested in our trainings? Then get in touch with ludwig@math.uni-frankfurt.de!

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We look forward to have you on board!

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