



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



Evaluation of OERs using 5x4 rubrics

MANUAL 1.0

This manual has been designed to walk a user through the process of evaluating Open Educational Resources (OERs) using 5x4 rubrics.

Authors: Elena SAFIULINA, Carles SERRAT



Contents

Introduction to OER Evaluation.....	3
Rubric I: Content	4
1.1 Relevance.....	4
1.2 Clarity and Accessibility	4
1.3 Engagement.....	5
1.4 Flexibility and Adaptability	5
Rubric II: Didactics.....	6
2.1 Clarity of Objectives and Alignment	6
2.2 Active Learning	7
2.3 Assessment and Feedback.....	7
2.4 Support and Practical Application	8
Rubric III: Technical characteristics	9
3.1 Reliability and Adaptability.....	9
3.2 Accessibility and Compatibility.....	9
3.3 Customization and Flexibility.....	10
3.4 Performance and Speed	11
Rubric IV: Accessibility.....	11
4.1 Readability and Adjustability.....	12
4.2 Visual Clarity and Contrast	12
4.3 Inclusive Design and Alternative Descriptions	13
4.4 Keyboard Accessibility and Interactivity.....	14
Rubric V: Inclusive communication	15
5.1 Gender Perspective	15
5.2 Inclusive Iconic and Written Language.....	15
5.3 Representation of Diversity.....	16
5.4 Overall Inclusivity.....	17
Calculation of OER Quality Score	18
References.....	18
Annex. Gate2Math Checklist for Evaluating Open Educational Resources	19



Introduction to OER Evaluation

The necessity for an OER evaluation model is fundamental not only for users of open educational resources (OER) but also for their creators, as such a model offers a structured framework for the development of quality OER.

Within the framework of the Gate2Math project, a set of rubrics based on a literature review is developed and each OER can be assessed to determine the quality of various aspects. The proposed rubrics provide a structure for the systematic evaluation of an online resource. The names of the five rubrics indicate the aspects of teaching-learning they measure: content, didactics, technical performance, accessibility, and inclusive communication. Within each of these approaches, various features need consideration, which will be discussed below.

By providing guidelines and evaluation criteria, this model empowers stakeholders to make informed decisions regarding selecting, adapting, and integrating resources into educational practice.

The five-point scoring Likert scale system approximates predicted levels of quality. In addition, users can rate an object “N/A” when a particular rubric does not apply to the object being rated. “N/A” is not a pejorative score; it simply indicates that it would be inappropriate to apply this rubric to a particular object. Also, an “N/A” rating is *not included in an item’s average score* for a particular rubric. For example, a rubric may not be applicable to a raw data set.

Rubric I: Content

The Open Educational Resources (OER) content assessment rubric is focused on providing quality, visually appealing information, with detailed descriptions relevant to the topic at hand.

1.1 Relevance

Does the content align with the educational objectives and the needs of the target audience?

When answering this question, it is assumed that the user sees a correspondence between the object being viewed, the **Educational Level**, **Level of Complexity** and **Description and practical use** (Fig. 1).

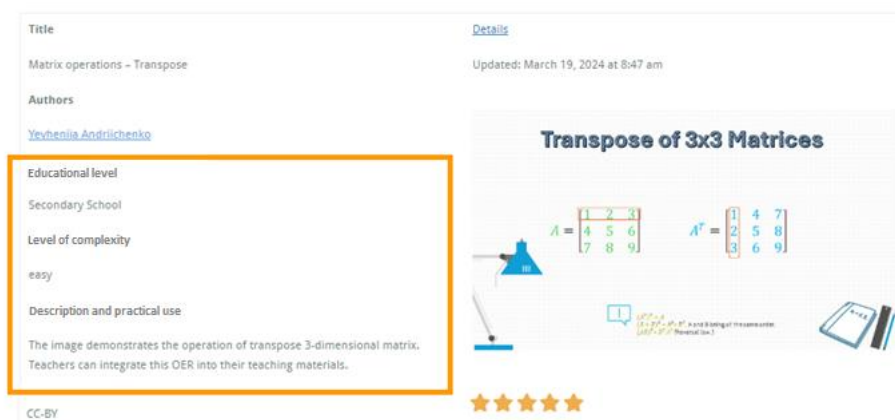


Figure 1.

A detailed description of the ratings for the sub-rubric **1.1 Relevance** is presented below:

- 1: The content *does not align* with the educational objectives and the needs of the target audience.
- 2: The content *aligns slightly* with the educational objectives and the needs of the target audience.
- 3: The content *moderately aligns* with the educational objectives and the needs of the target audience.
- 4: The content *aligns very well* with the educational objectives and the needs of the target audience.
- 5: The content *aligns extremely well* with the educational objectives and the needs of the target audience.

1.2 Clarity and Accessibility

Is the content presented in a clear, understandable manner, with instructions and key ideas highlighted?

Here, it should be checked that the content does not contain excessive jargon and that mathematical formulas and calculations are readable and correct. Content is self-contained and there is no need to rely on links to other content/materials.

A detailed description of the ratings for the sub-rubric **1.2 Clarity and Accessibility** is presented below:

- 1: The content is *very unclear and inaccessible*, with instructions and key ideas *poorly* presented.
- 2: The content is *somewhat unclear and inaccessible*, with some instructions and key ideas *difficult* to understand.
- 3: The content is *moderately clear and accessible*, with most instructions and key ideas presented *adequately*.
- 4: The content is *clear and accessible*, with instructions and key ideas *clearly* presented.
- 5: The content is very clear and accessible, with instructions and key ideas *prominently* highlighted and *easily* understandable.

1.3 Engagement

Does the resource employ attractive and innovative presentation methods to capture student interest?

This means that the resource/material uses appealing and creative ways to present information in order to engage students and spark their interest. It could involve using colorful visuals, interactive elements or any other method that makes the content more interesting and captivating for the students. Some of the main content is presented in non-text format (images, pictures, videos).

A detailed description of the ratings for the sub-rubric **1.3 Engagement** is presented below:

- 1: The language used is *confusing* and *not suitable* for the recipients, and the presentation lacks organization.
- 2: The content is *somewhat* engaging, but some recipients may find it challenging to fully engage with.
- 3: The content is *moderately* engaging, requiring reasonable effort to fully engage with.
- 4: The content is *very* engaging, capturing the interest of most recipients effectively.
- 5: The language used is understandable and appropriate for the recipients, key ideas are easily localized, and the content is very well organized, making it extremely engaging.

1.4 Flexibility and Adaptability

Can the content be utilized regardless of teaching methods and adapted to accommodate varying levels of prior knowledge?

To ensure that content can be used regardless of teaching methods and adapted to distinct levels of prior knowledge, one must ensure that the content is discrete. A discrete learning object refers to a self-contained unit of learning material or content that

addresses a specific topic or learning objective. These objects are typically designed to be modular and independent, meaning they can be used on their own or integrated into larger educational contexts, and they are adaptable to different teaching methods, including individual study, group work, or project-based learning.

A detailed description of the ratings for the sub-rubric **1.4 Flexibility and Adaptability** is presented below:

- 1: The content is *not* flexible or adaptable at all, making it challenging to utilize across different teaching methods or adapt to varying levels of prior knowledge.
- 2: The content is *slightly* flexible or adaptable, but significant adjustments are required to accommodate different teaching methods or prior knowledge levels.
- 3: The content is *moderately* flexible or adaptable, with some adjustments needed to accommodate different teaching methods or prior knowledge levels.
- 4: The content is *very* flexible and adaptable, requiring minimal adjustments to accommodate different teaching methods or prior knowledge levels.
- 5: The content is *extremely* flexible and adaptable, easily utilized across various teaching methods and adapted seamlessly to accommodate varying levels of prior knowledge.

Rubric II: Didactics

This dimension evaluates whether the didactic objectives (what the digital educational material aims to teach), the target audience (to whom it is addressed), and the skills to be developed (what abilities or competencies) are clearly defined and coherent. Additionally, it assesses whether there are suggestions for didactical exploitation, including use instructions regarding the most appropriate teaching methodology, mode of use, and educational context, for both teachers and students (UNE 71362, 2020).

2.1 Clarity of Objectives and Alignment

Are the teaching objectives clearly defined, achievable, and aligned with the intended audience?

The clarity of objectives and their alignment with the intended audience are crucial elements in evaluating the effectiveness of open educational resources in mathematics. Well-defined and achievable teaching objectives ensure that learners can easily understand the goals of the instructional material. This alignment with the intended audience guarantees that the content meets the specific needs and abilities of the learners, fostering a more effective learning experience. In this rubric, the clarity of objectives and their alignment will be assessed on a Likert's five-point scale, ranging from unclear and unachievable objectives to extremely clear and highly achievable ones, perfectly aligned with the learners' requirements:

- 1: The teaching objectives are unclear, unachievable, and not aligned with the intended audience.

- 2:** The teaching objectives are somewhat defined, achievable to some extent, but not fully aligned with the intended audience.
- 3:** The teaching objectives are moderately defined, achievable, and somewhat aligned with the intended audience.
- 4:** The teaching objectives are clearly defined, achievable, and well-aligned with the intended audience.
- 5:** The teaching objectives are extremely clear, highly achievable, and perfectly aligned with the intended audience.

2.2 Active Learning

Does the resource prioritize active student involvement, utilize active methodologies, and promote experiential learning?

Active learning is a critical component of effective mathematics education, emphasizing student engagement and hands-on experiences. Evaluating open educational resources on their ability to promote active learning involves assessing the extent to which they encourage student involvement, utilize active teaching methodologies. This item in the "Didactics" rubric addresses whether the resource successfully engages students in the learning process through interactive activities. Using a five-point Likert scale, this evaluation will range from resources that do not prioritize active learning to those that exceptionally prioritize and implement active learning methodologies, ensuring a dynamic and immersive educational experience for students:

- 1:** The resource does not prioritize active student involvement, lacks active methodologies, and does not promote experiential learning.
- 2:** The resource somewhat prioritizes active student involvement, utilizes some active methodologies, but does not strongly promote experiential learning.
- 3:** The resource moderately prioritizes active student involvement, utilizes several active methodologies, and somewhat promotes experiential learning.
- 4:** The resource strongly prioritizes active student involvement, utilizes various active methodologies, and promotes experiential learning effectively.
- 5:** The resource highly prioritizes active student involvement, utilizes a wide range of active methodologies, and promotes experiential learning exceptionally well.

2.3 Assessment and Feedback

Are evaluable tasks clearly defined with specified evaluation criteria and tools? Does the resource provide mechanisms for feedback and reflection on learning?

This item evaluates whether considered OER in mathematics defines evaluable tasks with specified evaluation criteria and tools and whether they include mechanisms for feedback and reflection on learning. This evaluation will use a five-point Likert scale, from resources that lack

clear definitions and feedback mechanisms to those that provide well-defined tasks, precise evaluation criteria, and effective feedback and reflection opportunities, thus enhancing the overall learning experience.

- 1:** Evaluable tasks are not clearly defined, evaluation criteria and tools are unspecified, and there are no mechanisms for feedback and reflection on learning.
- 2:** Evaluable tasks are somewhat defined, evaluation criteria and tools are partially specified, and there are limited mechanisms for feedback and reflection on learning.
- 3:** Evaluable tasks are moderately defined, evaluation criteria and tools are specified to some extent, and there are mechanisms for feedback and reflection on learning to a reasonable degree.
- 4:** Evaluable tasks are clearly defined, evaluation criteria and tools are well-specified, and there are effective mechanisms for feedback and reflection on learning.
- 5:** Evaluable tasks are extremely clearly defined, evaluation criteria and tools are meticulously specified, and there are highly effective mechanisms for feedback and reflection on learning.

2.4 Support and Practical Application

Does the material support learners by providing practical examples, resources for help, and promoting teamwork? Is there coherence between theory and practice?

Support and practical application are needed to improve the relevance and effectiveness of mathematics education. This section of the Didactics rubric examines whether the material contains practical examples, offers sufficient resources to support students, and encourages teamwork. Effective educational resources should help students bridge the gap between theory and practice, promoting a deeper understanding of the subject. Using a five-point Likert scale, this rating would range from materials that offer little hands-on support and do not promote teamwork to materials that excel in providing practical examples, abundant support resources, and actively encourage collaborative learning, ensuring smooth integration of theory and practice.

- 1:** The material does not support learners with practical examples, resources for help are lacking, and teamwork is not promoted. There is a lack of coherence between theory and practice.
- 2:** The material somewhat supports learners with practical examples, provides limited resources for help, and promotes teamwork to some extent. There is partial coherence between theory and practice.
- 3:** The material moderately supports learners with practical examples, provides some resources for help, and promotes teamwork reasonably well. There is moderate coherence between theory and practice.

4: The material strongly supports learners with practical examples, provides adequate resources for help, and promotes teamwork effectively. There is good coherence between theory and practice.

5: The material extremely supports learners with practical examples, provides abundant resources for help, and promotes teamwork exceptionally well. There is perfect coherence between theory and practice.

Rubric III: Technical characteristics

The "Technical Characteristics" rubric evaluates the robustness, usability, and adaptability of open educational resources (OER) in mathematics. It ensures that the resources are reliable, accessible, customizable, and perform efficiently across various platforms and devices.

3.1 Reliability and Adaptability

Is the resource technically robust and capable of operation without failure? Can it be easily modified by other users?

This criterion assesses the technical robustness of the resource and its ease of modification by other users. A reliable resource operates without frequent technical failures and can be easily adapted to meet diverse user needs.

1: The resource is highly unreliable and prone to technical failures. It cannot be easily modified by other users.

2: The resource is somewhat reliable but experiences occasional technical failures. It can be modified by other users with difficulty.

3: The resource is moderately reliable and capable of operation with minimal failures. It can be modified by other users with some effort.

4: The resource is very reliable and rarely experiences technical failures. It can be easily modified by other users.

5: The resource is extremely reliable and operates without any failures. It can be effortlessly modified by other users.

3.2 Accessibility and Compatibility

Is the resource easily navigable and intuitive? Does it adhere to standard formats and metadata descriptions? Is it compatible with common operating systems and accessible without additional software?

This criterion evaluates whether the resource is easily navigable and intuitive for users, adheres to standard formats and metadata descriptions, and is compatible with common operating systems without additional software. Ensuring high accessibility and compatibility helps provide a seamless learning experience, making it easier for users to engage with the material across

various digital platforms. The evaluation uses a five-point Likert scale, ranging from highly inaccessible and non-intuitive resources to extremely accessible, intuitive, and compatible with all common operating systems.

- 1:** The resource is highly inaccessible and non-intuitive. It does not adhere to standard formats and metadata descriptions and is not compatible with common operating systems.
- 2:** The resource is somewhat accessible but requires significant effort to navigate. It partially adheres to standard formats and metadata descriptions and is compatible with some operating systems.
- 3:** The resource is moderately accessible and intuitive. It mostly adheres to standard formats and metadata descriptions and is compatible with common operating systems.
- 4:** The resource is very accessible and intuitive. It fully adheres to standard formats and metadata descriptions and is compatible with most operating systems.
- 5:** The resource is extremely accessible and intuitive. It adheres perfectly to standard formats and metadata descriptions and is compatible with all common operating systems without requiring additional software.

3.3 Customization and Flexibility

Can the content be customized in design without losing structure or information? Does it allow for interruption of learning sequences and continuation from the same point? Does it support customization through interactive elements?

This criterion assesses whether the content can be customized in design without losing its structure or information, whether it allows for the interruption of learning sequences and their continuation from the same point, and if it supports customization through interactive elements. High levels of customization and flexibility enable educators to tailor the material to specific teaching scenarios and learner requirements, enhancing the overall educational experience. The evaluation uses a five-point Likert scale, from resources that cannot be customized without losing essential elements to those that offer seamless customization and abundant interactive features.

- 1:** The content cannot be customized without losing structure or information. Learning sequences cannot be interrupted, and there are no interactive elements for customization.

2: The content can be customized with difficulty, but structure or information may be lost. Learning sequences cannot be interrupted, and there are limited interactive elements for customization.

3: The content can be moderately customized without significant loss of structure or information. Learning sequences can be interrupted to some extent, and there are some interactive elements for customization.

4: The content can be easily customized with minimal loss of structure or information. Learning sequences can be interrupted, and there are several interactive elements for customization.

5: The content can be highly customized without any loss of structure or information. Learning sequences can be interrupted seamlessly, and there are abundant interactive elements for customization.

3.4 Performance and Speed

Does the resource offer fast navigation and efficient performance?

This criterion evaluates whether the resource provides fast navigation and efficient performance, ensuring that users can access and interact with the content smoothly and without delays. High-performance resources enhance the learning experience by reducing frustration and allowing learners to focus on the material itself. This evaluation uses a five-point Likert scale, ranging from resources with extremely slow navigation and inefficient performance to those offering extremely fast and efficient performance.

1: The resource offers extremely slow navigation and inefficient performance.

2: The resource offers slow navigation and inefficient performance.

3: The resource offers moderate navigation speed and performance.

4: The resource offers fast navigation and efficient performance.

5: The resource offers extremely fast navigation and efficient performance.

Rubric IV: Accessibility

Accessibility refers to the ability of a digital resource to be used by individuals with visual or auditory disabilities, ensuring that open educational resources (OER) are inclusive and usable by everyone. OER must comply with international accessibility guidelines as set out by the Web Accessibility Initiative. Adhering to these guidelines not only meets mandatory requirements but also enhances the didactic and technological effectiveness of the OER. Accessible OERs reduce the effort needed to receive, understand, and assimilate content, thereby broadening their usability. The UNE-71362:2020 integrates accessibility guidelines from the Spanish National Organisation of the Blind and standards such as UNE 139802:2009 and UNE 1389803:2012, which outline accessibility requirements for software and web content. Overall, accessibility measures

whether text content is perceptible, operable, understandable, and robust, ensuring that educational resources are effective for all users.

4.1 Readability and Adjustability

Is the text readable and adjustable in size to accommodate varying needs?

This item evaluates whether the text within the resource is readable and whether it can be adjusted in size to meet the varying needs of users, including those with visual impairments. Ensuring that text is clear and can be resized enhances the usability and inclusivity of the resource, allowing a broader audience to engage with the content effectively. To effectively evaluate the readability and adjustability of open educational resources (OER) text and formulas, evaluate the text on different devices and screen sizes to ensure clarity and readability (e.g., desktop computers, tablets, smartphones). Evaluate the resource using your browser's zoom features to ensure that the text remains readable and well-formatted when resized. Make sure the font styles used are legible and accessible (e.g., no overly decorative fonts). The evaluation uses a five-point Likert scale, ranging from text that is highly unreadable and unadjustable to text that is extremely readable and easily adjustable, catering effectively to all users' needs.

- 1:** The text is highly unreadable and cannot be adjusted in size to accommodate varying needs.
- 2:** The text is somewhat readable, but adjustments in size are limited, making it difficult for some users.
- 3:** The text is moderately readable, and adjustments in size are available to some extent, accommodating most users' needs.
- 4:** The text is very readable, and adjustments in size are readily available, accommodating the majority of users' needs.
- 5:** The text is extremely readable, and adjustments in size are easily accessible, catering to all users' needs effectively.

4.2 Visual Clarity and Contrast

Is there sufficient contrast between text and background colors for effortless reading? Are color-dependent images tailored for visually impaired individuals?

This item assesses whether the contrast between text and background colors is adequate for easy reading and if color-dependent images are designed to be accessible for visually impaired users. High contrast ensures that text is legible for users with visual impairments, while accessible images ensure that all users can interpret visual information effectively. Using a five-point Likert scale, this criterion evaluates resources from those with poor contrast and inaccessible images to those with excellent contrast and fully tailored images for visually impaired individuals. For

evaluation, it is recommended to use tools such as a color contrast analyzer (e.g. Coblis¹, Vischeck²) or online contrast checkers to evaluate the contrast ratio between text and background colors with international accessibility standards guidelines (such as WCAG 2.2³ and its checklist⁴).

- 1:** There is insufficient contrast between text and background colors, making reading difficult. Color-dependent images are not tailored for visually impaired individuals.
- 2:** There is some contrast between text and background colors, but reading may still be challenging for some users. Color-dependent images are partially tailored for visually impaired individuals.
- 3:** There is moderate contrast between text and background colors, facilitating reading for most users. Color-dependent images are somewhat tailored for visually impaired individuals.
- 4:** There is sufficient contrast between text and background colors, ensuring effortless reading for the majority of users. Color-dependent images are adequately tailored for visually impaired individuals.
- 5:** There is excellent contrast between text and background colors, making reading effortless for all users. Color-dependent images are perfectly tailored for visually impaired individuals.

4.3 Inclusive Design and Alternative Descriptions

Are written texts designed for easy reading? Is there an alternative text description for all audiovisual content, including images, videos, and graphics?

This item evaluates whether the written texts are designed for easy reading and if there are alternative text descriptions for all audiovisual content, including images, videos, and graphics. Ensuring that texts are easy to read and that audiovisual content is accompanied by descriptive text enhances accessibility for users with visual or auditory impairments:

Images and Graphics: Check that all images and graphics include descriptive alt text that clearly conveys the content and purpose of the visual elements.

Videos: Ensure videos are accompanied by transcripts or captions. If the video content includes significant visual information that is not conveyed through audio, provide descriptive audio tracks or detailed descriptions within the captions.

¹ <https://www.color-blindness.com/coblis-color-blindness-simulator/>

² <https://www.vischeck.com/>

³ <https://www.w3.org/TR/WCAG22/>

⁴ <https://webaim.org/standards/wcag/checklist>

Interactive Elements: For interactive elements like simulations or quizzes, provide text descriptions that explain the purpose and functionality of these elements.

The resource can be checked using screen readers (e.g., NVDA⁵) to ensure that the text is interpreted correctly and is navigable. Also check the resource for compatibility with other assistive technologies, such as text-to-speech software.

The evaluation uses a five-point Likert scale, ranging from texts that are not designed for easy reading and lack alternative descriptions, to texts that are perfectly designed for easy reading and include comprehensive alternative descriptions for all audiovisual content.

- 1:** Written texts are not designed for easy reading, and alternative text descriptions for audiovisual content are not provided.
- 2:** Written texts are somewhat designed for easy reading, and alternative text descriptions for some audiovisual content are provided.
- 3:** Written texts are moderately designed for easy reading, and alternative text descriptions for most audiovisual content are provided.
- 4:** Written texts are well-designed for easy reading, and alternative text descriptions for all audiovisual content are provided to a large extent.
- 5:** Written texts are perfectly designed for easy reading, and alternative text descriptions for all audiovisual content are provided comprehensively.

4.4 Keyboard Accessibility and Interactivity

Can all functions be accessed through the keyboard or alternative operations? Does the material contain interactive elements and multiple presentations for enhanced accessibility?

Keyboard accessibility and interactivity are vital for making open educational resources (OER) accessible to all users, including those with motor disabilities. This item evaluates whether all functions can be accessed through the keyboard without a mouse:

Navigate: Move through the resource using the Tab key to jump between interactive elements and using Arrow keys for navigation within text or menus.

Activate: Use the Enter or Space keys to activate buttons, links, and other interactive elements.

Interact: Fill out forms, use dropdown menus, and interact with any other dynamic content using only keyboard inputs.

The evaluation uses a five-point Likert scale, ranging from resources where not all functions are keyboard accessible, to those where all functions are fully accessible via the keyboard.

- 1:** Not all functions can be accessed through the keyboard.

⁵ <https://www.nvaccess.org/>

- 2: Some functions can be accessed through the keyboard, but accessibility is limited.
- 3: Most functions can be accessed through the keyboard enhancing accessibility.
- 4: All functions can be accessed through the keyboard, ensuring excellent accessibility.
- 5: All functions can be accessed through the keyboard, ensuring superb accessibility.

Rubric V: Inclusive communication

Inclusive communication is essential for creating educational resources that reflect and promote gender equality, non-discrimination, and diversity. This involves carefully selecting and drafting content to avoid the use of generic masculine terms, eliminating stereotypes, and employing inclusive words and images that depict gender parity. Both iconic and written language should strive to be inclusive, representing people with various physical traits and ensuring that the content mirrors the diverse reality of students. This rubric assesses how well the resource adheres to these principles, fostering an inclusive and equitable learning environment.

5.1 Gender Perspective

Is the content inclusive of gender perspectives and considerations?

This criterion evaluates the extent to which an educational resource includes gender aspects and considerations. An inclusive resource must thoughtfully integrate gender-related content, ensuring representation and avoiding stereotyping. The goal is to create a learning environment that recognizes and values different gender identities, promoting equality and respect. In this case, you should ensure that you use gender-neutral language and avoid generic masculine terms (pronouns and descriptors are inclusive and respectful of all gender identities).

The evaluation uses a five-point Likert scale, ranging from resources where content is not inclusive of gender perspectives and considerations, to those where content extensively includes gender perspectives and considerations.

- 1: The content is not inclusive of gender perspectives and considerations.
- 2: The content somewhat includes gender perspectives and considerations.
- 3: The content moderately includes gender perspectives and considerations.
- 4: The content largely includes gender perspectives and considerations.
- 5: The content extensively includes gender perspectives and considerations.

5.2 Inclusive Iconic and Written Language

Is the iconic language inclusive, and does the written language tend to be inclusive as well?

This criterion evaluates the inclusiveness of both signed (visual) and written language within an educational resource. An inclusive resource should use images, icons and text that represent and respect different groups, avoiding stereotypes and promoting gender equality. The goal is to

create a resource that reflects and respects the diversity of its users, allowing all students to feel represented and included.

The evaluation uses a five-point Likert scale, ranging from resources where the iconic and written languages are not inclusive, to those where they are extensively inclusive.

- 1: The iconic language and written language are not inclusive.
- 2: The iconic language or written language is somewhat inclusive, but not both.
- 3: The iconic language and written language are moderately inclusive.
- 4: The iconic language and written language are largely inclusive.
- 5: The iconic language and written language are extensively inclusive.

5.3 Representation of Diversity

Are people with different physical traits and characteristics represented in a manner that resembles the reality of the students?

This criterion evaluates the extent to which an educational resource represents people with different physical traits and characteristics in a way that reflects the reality of students. An inclusive resource should reflect a wide range of people, ensuring that all students see themselves represented in the content. Review pictures, illustrations, and other visuals to ensure they depict people with varying physical traits and characteristics, including race, gender, ability, age, and body type. Make sure they are shown in a positive and realistic manner, avoiding stereotypes. The goal is to promote a sense of belonging and respect for diversity among all students.

The evaluation uses a five-point Likert scale, ranging from resources where people with different physical traits and characteristics are not represented realistically, to those where they are represented extensively and realistically.

- 1: People with different physical traits and characteristics are not represented realistically.
- 2: People with different physical traits and characteristics are somewhat represented realistically.
- 3: People with different physical traits and characteristics are moderately represented realistically.
- 4: People with different physical traits and characteristics are largely represented realistically.
- 5: People with different physical traits and characteristics are extensively represented realistically.

5.4 Overall Inclusivity

Does the content overall promote inclusivity and representation of diverse identities and experiences?

This criterion assesses the extent to which the educational resource promotes inclusivity and represents diverse identities and experiences. Examine the themes and topics covered to ensure they address and celebrate diversity. Look for the inclusion of diverse perspectives, cultures, and experiences. An inclusive resource ensures that all students feel represented and respected, fostering an environment of equality and understanding.

The evaluation uses a five-point Likert scale, ranging from resources that do not promote inclusivity or representation of diverse identities and experiences, to those that extensively promote inclusivity and representation.

- 1:** The content does not promote inclusivity or representation of diverse identities and experiences.
- 2:** The content somewhat promotes inclusivity or representation of diverse identities and experiences.
- 3:** The content moderately promotes inclusivity and representation of diverse identities and experiences.
- 4:** The content largely promotes inclusivity and representation of diverse identities and experiences.
- 5:** The content extensively promotes inclusivity and representation of diverse identities and experiences.

Calculation of OER Quality Score

The weights of each rubric are 30%, 25%, 20%, 15%, and 10%, respectively. For the final summary of the scores average could be used, remembering that an “N/A” rating is not included in an item’s average score

$$OER\ value = m_1 * 0.3 + m_2 * 0.25 + m_3 * 0.2 + m_4 * 0.15 + m_5 * 0.10.$$

References

- Gate2Math Consortium. A comprehensive review on OER in the framework of the ERASMUS+ project Gate2Math, Accessed 29 November, 2024. Retrieved from <https://gate2math.eu/outputs/>.
- Min Yuan, and Mimi Recker. (2015) Not All Rubrics Are Equal: A Review of Rubrics for Evaluating the Quality of Open Educational Resources. *International Review of Research in Open and Distributed Learning*. Volume 16, Number 5.

Annex. Gate2Math Checklist for Evaluating Open Educational Resources

Rubric I: Content	
1.1 Relevance	
<i>Does the content align with the educational objectives and the needs of the target audience?</i>	
NA	<input type="checkbox"/>
1: The content does not align with the educational objectives and the needs of the target audience.	<input type="checkbox"/>
2: The content aligns slightly with the educational objectives and the needs of the target audience.	<input type="checkbox"/>
3: The content moderately aligns with the educational objectives and the needs of the target audience.	<input type="checkbox"/>
4: The content aligns very well with the educational objectives and the needs of the target audience.	<input type="checkbox"/>
5: The content aligns extremely well with the educational objectives and the needs of the target audience.	<input type="checkbox"/>
1.2 Clarity and Accessibility	
<i>Is the content presented in a clear, understandable manner, with instructions and key ideas highlighted?</i>	
NA	<input type="checkbox"/>
1: The content is very unclear and inaccessible, with instructions and key ideas poorly presented.	<input type="checkbox"/>
2: The content is somewhat unclear and inaccessible, with some instructions and key ideas difficult to understand.	<input type="checkbox"/>
3: The content is moderately clear and accessible, with most instructions and key ideas presented adequately.	<input type="checkbox"/>
4: The content is clear and accessible, with instructions and key ideas clearly presented.	<input type="checkbox"/>
5: The content is very clear and accessible, with instructions and key ideas prominently highlighted and easily understandable.	<input type="checkbox"/>
1.3 Engagement	
<i>Does the resource employ attractive and innovative presentation methods to capture student interest?</i>	
NA	<input type="checkbox"/>
1: The language used is confusing and not suitable for the recipients, and the presentation lacks organization.	<input type="checkbox"/>
2: The content is somewhat engaging, but some recipients may find it challenging to fully engage with.	<input type="checkbox"/>
3: The content is moderately engaging, requiring reasonable effort to fully engage with.	<input type="checkbox"/>
4: The content is very engaging, capturing the interest of most recipients effectively.	<input type="checkbox"/>
5: The language used is understandable and appropriate for the recipients, key ideas are easily localized, and the content is very well organized, making it extremely engaging.	<input type="checkbox"/>
1.4 Flexibility and Adaptability	
<i>Can the content be utilized regardless of teaching methods and adapted to accommodate varying levels of prior knowledge?</i>	
NA	<input type="checkbox"/>
1: The content is not flexible or adaptable at all, making it challenging to utilize across different teaching methods or adapt to varying levels of prior knowledge.	<input type="checkbox"/>
2: The content is slightly flexible or adaptable, but significant adjustments are required to accommodate different teaching methods or prior knowledge levels.	<input type="checkbox"/>
3: The content is moderately flexible or adaptable, with some adjustments needed to accommodate different teaching methods or prior knowledge levels.	<input type="checkbox"/>
4: The content is very flexible and adaptable, requiring minimal adjustments to accommodate different teaching methods or prior knowledge levels.	<input type="checkbox"/>
5: The content is extremely flexible and adaptable, easily utilized across various teaching methods and adapted seamlessly to accommodate varying levels of prior knowledge.	<input type="checkbox"/>
Rubric II: Didactics	
2.1 Clarity of Objectives and Alignment	
<i>Are the teaching objectives clearly defined, achievable, and aligned with the intended audience?</i>	
NA	<input type="checkbox"/>
1: The teaching objectives are unclear, unachievable, and not aligned with the intended audience.	<input type="checkbox"/>
2: The teaching objectives are somewhat defined, achievable to some extent, but not fully aligned with the intended audience.	<input type="checkbox"/>
3: The teaching objectives are moderately defined, achievable, and somewhat aligned with the intended audience.	<input type="checkbox"/>
4: The teaching objectives are clearly defined, achievable, and well-aligned with the intended audience.	<input type="checkbox"/>
5: The teaching objectives are extremely clear, highly achievable, and perfectly aligned with the intended audience.	<input type="checkbox"/>
2.2 Active Learning	
<i>Does the resource prioritize active student involvement, utilize active methodologies, and promote experiential learning?</i>	
1: The resource does not prioritize active student involvement, lacks active methodologies, and does not promote experiential learning.	<input type="checkbox"/>

2: The resource somewhat prioritizes active student involvement, utilizes some active methodologies, but does not strongly promote experiential learning.	<input type="checkbox"/>
3: The resource moderately prioritizes active student involvement, utilizes several active methodologies, and somewhat promotes experiential learning.	<input type="checkbox"/>
4: The resource strongly prioritizes active student involvement, utilizes various active methodologies, and promotes experiential learning effectively.	<input type="checkbox"/>
5: The resource highly prioritizes active student involvement, utilizes a wide range of active methodologies, and promotes experiential learning exceptionally well.	<input type="checkbox"/>
2.3 Assessment and Feedback <i>Are evaluable tasks clearly defined with specified evaluation criteria and tools? Does the resource provide mechanisms for feedback and reflection on learning?</i>	
NA	<input type="checkbox"/>
1: Evaluable tasks are not clearly defined, evaluation criteria and tools are unspecified, and there are no mechanisms for feedback and reflection on learning.	<input type="checkbox"/>
2: Evaluable tasks are somewhat defined, evaluation criteria and tools are partially specified, and there are limited mechanisms for feedback and reflection on learning.	<input type="checkbox"/>
3: Evaluable tasks are moderately defined, evaluation criteria and tools are specified to some extent, and there are mechanisms for feedback and reflection on learning to a reasonable degree.	<input type="checkbox"/>
4: Evaluable tasks are clearly defined, evaluation criteria and tools are well-specified, and there are effective mechanisms for feedback and reflection on learning.	<input type="checkbox"/>
5: Evaluable tasks are extremely clearly defined, evaluation criteria and tools are meticulously specified, and there are highly effective mechanisms for feedback and reflection on learning.	<input type="checkbox"/>
2.4 Support and Practical Application <i>Does the material support learners by providing practical examples, resources for help, and promoting teamwork? Is there coherence between theory and practice?</i>	
NA	<input type="checkbox"/>
1: The material does not support learners with practical examples, resources for help are lacking, and teamwork is not promoted. There is a lack of coherence between theory and practice.	<input type="checkbox"/>
2: The material somewhat supports learners with practical examples, provides limited resources for help, and promotes teamwork to some extent. There is partial coherence between theory and practice.	<input type="checkbox"/>
3: The material moderately supports learners with practical examples, provides some resources for help, and promotes teamwork reasonably well. There is moderate coherence between theory and practice.	<input type="checkbox"/>
4: The material strongly supports learners with practical examples, provides adequate resources for help, and promotes teamwork effectively. There is good coherence between theory and practice.	<input type="checkbox"/>
5: The material extremely supports learners with practical examples, provides abundant resources for help, and promotes teamwork exceptionally well. There is perfect coherence between theory and practice.	<input type="checkbox"/>
Rubric III: Technical characteristics	
3.1 Reliability and Adaptability <i>Is the resource technically robust and capable of operation without failure? Can it be easily modified by other users?</i>	
NA	<input type="checkbox"/>
1: The resource is highly unreliable and prone to technical failures. It cannot be easily modified by other users.	<input type="checkbox"/>
2: The resource is somewhat reliable but experiences occasional technical failures. It can be modified by other users with difficulty.	<input type="checkbox"/>
3: The resource is moderately reliable and capable of operation with minimal failures. It can be modified by other users with some effort.	<input type="checkbox"/>
4: The resource is very reliable and rarely experiences technical failures. It can be easily modified by other users.	<input type="checkbox"/>
5: The resource is extremely reliable and operates without any failures. It can be effortlessly modified by other users.	<input type="checkbox"/>
3.2 Accessibility and Compatibility <i>Is the resource easily navigable and intuitive? Does it adhere to standard formats and metadata descriptions? Is it compatible with common operating systems and accessible without additional software?</i>	
NA	<input type="checkbox"/>
1: The resource is highly inaccessible and non-intuitive. It does not adhere to standard formats and metadata descriptions and is not compatible with common operating systems.	<input type="checkbox"/>
2: The resource is somewhat accessible but requires significant effort to navigate. It partially adheres to standard formats and metadata descriptions and is compatible with some operating systems.	<input type="checkbox"/>
3: The resource is moderately accessible and intuitive. It mostly adheres to standard formats and metadata descriptions and is compatible with common operating systems.	<input type="checkbox"/>
4: The resource is very accessible and intuitive. It fully adheres to standard formats and metadata descriptions and is compatible with most operating systems.	<input type="checkbox"/>
5: The resource is extremely accessible and intuitive. It adheres perfectly to standard formats and metadata descriptions and is compatible with all common operating systems without requiring additional software.	<input type="checkbox"/>

3.3 Customization and Flexibility	
<i>Can the content be customized in design without losing structure or information? Does it allow for interruption of learning sequences and continuation from the same point? Does it support customization through interactive elements?</i>	
NA	<input type="checkbox"/>
1: The content cannot be customized without losing structure or information. Learning sequences cannot be interrupted, and there are no interactive elements for customization.	<input type="checkbox"/>
2: The content can be customized with difficulty, but structure or information may be lost. Learning sequences cannot be interrupted, and there are limited interactive elements for customization.	<input type="checkbox"/>
3: The content can be moderately customized without significant loss of structure or information. Learning sequences can be interrupted to some extent, and there are some interactive elements for customization.	<input type="checkbox"/>
4: The content can be easily customized with minimal loss of structure or information. Learning sequences can be interrupted, and there are several interactive elements for customization.	<input type="checkbox"/>
5: The content can be highly customized without any loss of structure or information. Learning sequences can be interrupted seamlessly, and there are abundant interactive elements for customization.	<input type="checkbox"/>
3.4 Performance and Speed	
<i>Does the resource offer fast navigation and efficient performance?</i>	
NA	<input type="checkbox"/>
1: The resource offers extremely slow navigation and inefficient performance.	<input type="checkbox"/>
2: The resource offers slow navigation and inefficient performance.	<input type="checkbox"/>
3: The resource offers moderate navigation speed and performance.	<input type="checkbox"/>
4: The resource offers fast navigation and efficient performance.	<input type="checkbox"/>
5: The resource offers extremely fast navigation and efficient performance.	<input type="checkbox"/>
Rubric IV: Accessibility	
4.1 Readability and Adjustability	
<i>Is the text readable and adjustable in size to accommodate varying needs?</i>	
NA	<input type="checkbox"/>
1: The text is highly unreadable and cannot be adjusted in size to accommodate varying needs.	<input type="checkbox"/>
2: The text is somewhat readable, but adjustments in size are limited, making it difficult for some users.	<input type="checkbox"/>
3: The text is moderately readable, and adjustments in size are available to some extent, accommodating most users' needs.	<input type="checkbox"/>
4: The text is very readable, and adjustments in size are readily available, accommodating the majority of users' needs.	<input type="checkbox"/>
5: The text is extremely readable, and adjustments in size are easily accessible, catering to all users' needs effectively.	<input type="checkbox"/>
4.2 Visual Clarity and Contrast	
<i>Is there sufficient contrast between text and background colors for effortless reading? Are color-dependent images tailored for visually impaired individuals?</i>	
NA	<input type="checkbox"/>
1: There is insufficient contrast between text and background colors, making reading difficult. Color-dependent images are not tailored for visually impaired individuals.	<input type="checkbox"/>
2: There is some contrast between text and background colors, but reading may still be challenging for some users. Color-dependent images are partially tailored for visually impaired individuals.	<input type="checkbox"/>
3: There is moderate contrast between text and background colors, facilitating reading for most users. Color-dependent images are somewhat tailored for visually impaired individuals.	<input type="checkbox"/>
4: There is sufficient contrast between text and background colors, ensuring effortless reading for the majority of users. Color-dependent images are adequately tailored for visually impaired individuals.	<input type="checkbox"/>
5: There is excellent contrast between text and background colors, making reading effortless for all users. Color-dependent images are perfectly tailored for visually impaired individuals.	<input type="checkbox"/>
4.3 Inclusive Design and Alternative Descriptions	
<i>Are written texts designed for easy reading? Is there an alternative text description for all audiovisual content, including images, videos, and graphics?</i>	
NA	<input type="checkbox"/>
1: Written texts are not designed for easy reading, and alternative text descriptions for audiovisual content are not provided.	<input type="checkbox"/>
2: Written texts are somewhat designed for easy reading, and alternative text descriptions for some audiovisual content are provided.	<input type="checkbox"/>
3: Written texts are moderately designed for easy reading, and alternative text descriptions for most audiovisual content are provided.	<input type="checkbox"/>
4: Written texts are well-designed for easy reading, and alternative text descriptions for all audiovisual content are provided to a large extent.	<input type="checkbox"/>
5: Written texts are perfectly designed for easy reading, and alternative text descriptions for all audiovisual content are provided comprehensively.	<input type="checkbox"/>

4.4 Keyboard Accessibility and Interactivity	
<i>Can all functions be accessed through the keyboard or alternative operations? Does the material contain Interactive elements and multiple presentations for enhanced accessibility?</i>	
NA	<input type="checkbox"/>
1: Not all functions can be accessed through the keyboard.	<input type="checkbox"/>
2: Some functions can be accessed through the keyboard, but accessibility is limited.	<input type="checkbox"/>
3: Most functions can be accessed through the keyboard enhancing accessibility.	<input type="checkbox"/>
4: All functions can be accessed through the keyboard, ensuring excellent accessibility.	<input type="checkbox"/>
5: All functions can be accessed through the keyboard, ensuring superb accessibility.	<input type="checkbox"/>
Rubric V: Inclusive communication	
5.1 Gender Perspective	
<i>Is the content inclusive of gender perspectives and considerations?</i>	
NA	<input type="checkbox"/>
1: The content is not inclusive of gender perspectives and considerations.	<input type="checkbox"/>
2: The content somewhat includes gender perspectives and considerations.	<input type="checkbox"/>
3: The content moderately includes gender perspectives and considerations.	<input type="checkbox"/>
4: The content largely includes gender perspectives and considerations.	<input type="checkbox"/>
5: The content extensively includes gender perspectives and considerations.	<input type="checkbox"/>
5.2 Inclusive Iconic and Written Language	
<i>Is the iconic language inclusive, and does the written language also tend to be inclusive?</i>	
NA	<input type="checkbox"/>
1: The iconic language and written language are not inclusive.	<input type="checkbox"/>
2: The iconic language or written language is somewhat inclusive, but not both.	<input type="checkbox"/>
3: The iconic language and written language are moderately inclusive.	<input type="checkbox"/>
4: The iconic language and written language are largely inclusive.	<input type="checkbox"/>
5: The iconic language and written language are extensively inclusive.	<input type="checkbox"/>
5.3 Representation of Diversity	
<i>Are people with different physical traits and characteristics represented in a manner that resembles the reality of the students?</i>	
NA	<input type="checkbox"/>
1: People with different physical traits and characteristics are not represented realistically.	<input type="checkbox"/>
2: People with different physical traits and characteristics are somewhat represented realistically.	<input type="checkbox"/>
3: People with different physical traits and characteristics are moderately represented realistically.	<input type="checkbox"/>
4: People with different physical traits and characteristics are largely represented realistically.	<input type="checkbox"/>
5: People with different physical traits and characteristics are extensively represented realistically.	<input type="checkbox"/>
5.4 Overall Inclusivity	
<i>Does the content overall promote inclusivity and representation of diverse identities and experiences?</i>	
NA	<input type="checkbox"/>
1: The content does not promote inclusivity or representation of diverse identities and experiences.	<input type="checkbox"/>
2: The content somewhat promotes inclusivity or representation of diverse identities and experiences.	<input type="checkbox"/>
3: The content moderately promotes inclusivity and representation of diverse identities and experiences.	<input type="checkbox"/>
4: The content largely promotes inclusivity and representation of diverse identities and experiences.	<input type="checkbox"/>
5: The content extensively promotes inclusivity and representation of diverse identities and experiences.	<input type="checkbox"/>