# EDTECH LITHUANIA: TOWARDS A NATIONAL CATALOGUE OF CURATED AND QUALITY-CHECKED DIGITAL RESOURCES FOR CLASSROOMS

Professor Natalia I. Kucirkova, on behalf of WiKIT AS.

# 1. RATIONALE FOR THE PROJECT AND A SHORT SUMMARY

EdTech Lithuania is in the process of updating the national platform for teachers and students Education portal (emokykla.lt). In September 2023, EdTech Lithuania commissioned Professor Natalia I. Kucirkova to provide expert advice on the process. A project was set up to review the Education portal and accompanying national guidelines to provide recommendations for categorising diverse digital tools on the national education portal. A specific ask by EdTech Lithuania was to provide the organization with recommendations for research-based categories for quality evaluation and curation of diverse digital resources, and to align these with the education system in Lithuania.
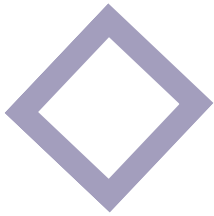
2. Definitions of Key Terms

To simplify the communication between various stakeholders and teams in the project, the report uses three key simple terms: platform, users and resources.

Term	Definition
Platform	The term "platform" refers to the www.emokykla.lt, which in various national documents, is also referred to as "platform", "website", "education portal" and "The Learning Object Repository".
Users	"Users" is used to refer to the platform's visitors and users, who engage with its features and services, and include teachers, librarians, policy-makers but also parents and older students.
Resources	"Resources" are digital tools, web-based materials, textbooks, apps, digital services, educational materials that are currently listed on the platform.
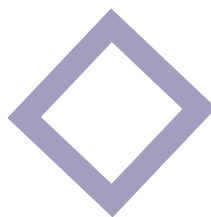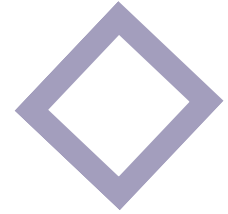
3. Context of the project: development of the platform

The National Agency for Education is in the process of implementing the Project "Digital Transformation of Education (EdTech)", which will update the current platform (www.emokykla.lt) with an external provider. The provider will be tasked with developing and deploying the Learning Object Repository (the backend of the platform), which will lead to new functionalities such as:

- **users' management of their own content and data;**

- **interoperability between the platform's interface and other information systems;**

- **data sharing between educational establishments, professionals and learners;**

- **advanced data analytics in terms of task completion or student outcomes;**

- **single sign on authentication for accessing all resources in one ecosystem.**

4. The aims and objectives of this report

This report feeds into the larger platform-related changes by providing specific recommendations for the front-end of the platform. The platform's front-end includes the visual aspects of the website, which the users will see and interact with.

The aesthetics of the frontend and best practices in website design such as simplicity, navigability, responsivity or accessibility, while minimizing frontend loading time are expected to be adhered to by the platform developer. The aesthetic recommendations are not the scope of this project. This report centers on researching and recommending key features in the platform's development, ensuring it follows a logical approach based on the latest research in fundamental learning principles and pedagogy. The overall recommendation takes into account the key quality criteria recommended by the Guidelines for Updating the General Curriculum Framework, Ministry of Education, Science and Sport, National Agency for Education, Vilnius, 2019. These criteria encompass the promotion of values, academic rigor, contextual relevance, adaptability to dynamic changes, a broad yet focused scope, logical consistency, interrelatedness of subjects, and alignment of educational goals, tasks, content, activities, and assessment across different areas of education and school years. These principles ensure that the Lithuanian updated curriculum is value-driven, academically challenging, contextually motivating, responsive to change, comprehensive, logically structured, coherent, and aligned for effective learning outcomes.

5. Current platform (description)

The current platform has seven main Tabs: Home, Framework programmes, Digital training tools, Tutorials, Methodological Material, Recommendations and Events. On the main homepage, users see three main boxes highlighted: framework programmes, digital training tools and tutorials.

This is followed by News, which are a mixture of articles-blog posts that list recommended events (e.g. workshops for teachers with a Calendar of Events) and specific resources (eg a recommendation for the integrated science textbook "Exploring Nature" for grade 5).

Figure 1: Screenshot of the current platform

The new, recommended front-end structure follows a similar logic in terms of tabbed navigation of the platform, filtering of digital tools accessible from the Home screen, Log-in option for users and additional features on the side bar.

6. Recommendations

6.1 Research-based learning principles

The initial recommendation is to categorize resources according to established, well-founded learning principles. These principles have been refined by learning scientists over years of empirical research and are presently applied in numerous countries to inform pedagogical practices and teacher training. A selection of key principles, that are aligned with the Lithuanian national curriculum and the competency standards anticipated of Lithuanian students, are those of the socio-cultural learning theory.

Socio-cultural learning and deep learning are essential learning principles that can be further segmented into fundamental "tenets" or categories, which are based on research-backed principles of effective learning. These categories can be viewed as the capabilities educators should aim to cultivate in students. They offer a framework for what should be taught in the classroom, focusing on the "what" and "how" of teaching.

## Socio-cultural learning

Description:

Sociocultural theory posits that comprehending human learning necessitates consideration of the social, cultural, and historical environments that shape individuals' thoughts and actions. This approach draws from sociocultural and dialogic theories, notably Bakhtin and Vygotsky.

Lev Vygotsky's foundational work has undergone further development through neo-Vygotskian models and extensive classroom-based research, which directly aimed to harness the potential of educational technologies. A prominent result of this research has been the pedagogical method known as "Thinking Together," developed by a group of academics at the University of Cambridge (Neil Mercer, Lyn Dawes, Karen Littleton, Rupert Wegerif, Sara Hennessy, Ruth Kershner, Paul Warwick, Robin Alexander, Chrstine Howe).

Key tenets:

The central concept in socio-cultural learning is dialogue, viewed as a pedagogical tool and an end itself. Dialogic instruction is considered a stable tenet in a moving and constantly evolving landscape of "future education." It is through dialogue that change can happen. Furthermore, classroom dialogue between teachers and students feeds into productive learning as students feel ownership and agency in their learning. With educational technologies (EdTech) in particular, dialogue happens in a three-way negotiation of meanings between the student, teacher and the EdTech tool. It is this three-way interaction that supports students' critical and higher-level thinking and creative problem solving. In addition, dialogue plays a crucial role in teachers' agency and community wellbeing: dialogue improves relationships between countries, religions, and diverse approaches to environmental stewardship. It is therefore vital for promoting good citizenship, democracy, and ethical behaviour.

The Lithuanian Law on Education Article 4 (2) stipulates that educated people are those who have developed
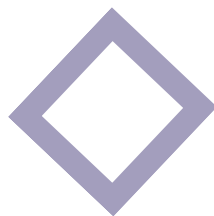
"an educated, mature personality, which can be characterized by: focus on values based on national awareness and openness to the world's humanistic culture; modern competences and a commitment to lifelong learning; readiness and motivation to contribute to the country's sustainable development and development of a democratic society."

Based on these values and the socio-cultural learning tenets, it is recommended to focus on four key skills to complement the ways in which teachers evaluate the platform's resources. Categorisation of resources into these four categories should happen based on a community rating provided by the teachers (see section 4) with the framework (rating criteria) listed on the platform.

Recommended key categories:

It is recommended that the platform enables categorization, selection and tabbed navigation of the resources based on the following criteria:

- critical and higher-level thinking (abbreviated as critical thinking)

- creative problem solving (abbreviated as problem-solving)

- democratic citizenship (abbreviated as democracy)

- caring for sustainability of the planet and nation (abbreviated as caring)

6.2 Selection criteria based on national curricular and competence framework

To align with the national curriculum and teaching tradition, it is important to categore EdTech tools according to the national curriculum and competency framework. These categories pertain to the desired learning outcomes and impact we aim to achieve in our children's education with the guidance of teachers.

Subject areas:

- moral education
- language education
- mathematics education
- science education
- social education
- art education
- informatics education
- technology education
- health and physical education

The nine areas vary in importance depending on students' age/grade level. The curriculum distinguishes three levels, which should be followed for the categorisation as students progress through three levels:

- **Primary/elementary education (1-4 grades)**

- **Lower secondary education (5-10 Grades)**

- **Higher Secondary education (11-12 grades)**

The nine areas are based on subject content and they feed into competences achieved gradually at the three levels.

Competences

The focus on competences guarantees consistency in students' advancement across various areas as they depend on a student's personal development and emphasize their abilities and strong points. The core competences are also referred to as learning outcomes and are inspired by OECD's competences that advocate Lifelong Learning through everyone's personal development, employability, social inclusion, sustainable lifestyle and active citizenship. The competences identified by the national curriculum are based on five fundamental values - democracy, empathy, dignity, responsibility, trust – and they are:

- **social and emotional**
- **cognitive**
- **creativity**
- **civic**
- **cultural**
- **communication**

Recommended key categories:

It is recommended that the platform enables Filtering based on the nine areas (subjects) and three levels (grades and ages are subsumed into three levels). In addition, a community rating from the users should be used to curate the tools according to their match to the core Competences.

6.3 Selection criteria based on teachers' input

For quality assurance and regular updates, it is crucial to involve teachers in the quality rating process. Teachers can contribute regular updates of various resources, lesson plans and rate resources based on their experiences, teaching methods and objectives. Teachers' involvement fosters a sense of ownership among teachers, as they trust their peers the most in matters related to technology.

The platform should therefore incorporate teachers' reviews and recommendations for each resource. Over time, these reviews will accumulate as more teachers utilize the platform. Additionally, consider implementing generative AI tools for the automatic generation of lesson plans, with the provision for teachers to review and customize them.

Recommended key categories:

The platform should enable filtering based on:

- teachers' reviews (e.g users can select most positively reviewed resources)

- teachers' ratings of individual resources (e.g. users can select most "liked" or most "bookmarked" resources)

- teachers' lesson plans (e.g. users can select most used resources)

6.4 Additional features

A tab that lists "Top Picks and Top Reviews" provides users with immediate access to the most popular and most reviewed resources, encouraging users' engagement with the platform and exploration of materials used by their colleagues or selected by the platform's administrators as most favourite ones.

Recommendation

Consider incorporating a dynamic banner on the homepage, featuring a curated list of top resources presented in a blog post format with direct links to these selected resources.

7. Examples of other platforms with screenshots

EdTech Impact is a teacher-facing platform featuring rated and reviewed EdTech resources. EdTech Impact could potentially serve as a model for the upcoming Lithuanian platform, illustrating one way to present teachers' ratings and reviews of diverse resources. It also includes expert quality ratings and the option for resource comparisons, offering a potential template for the future platform.

Figure 2: Courtesy of EdTech Impact: https://edtechimpact.com/

Freeed is a platform designed to connect educators worldwide, allowing them to share teaching ideas, resources and expertise within a curated teacher community. Freeed's way of organizing and categorizing teachers' reviews and contributions to the platform could inspire Lithuanian teachers. The screenshot illustrates resources popular among Finnish teachers.
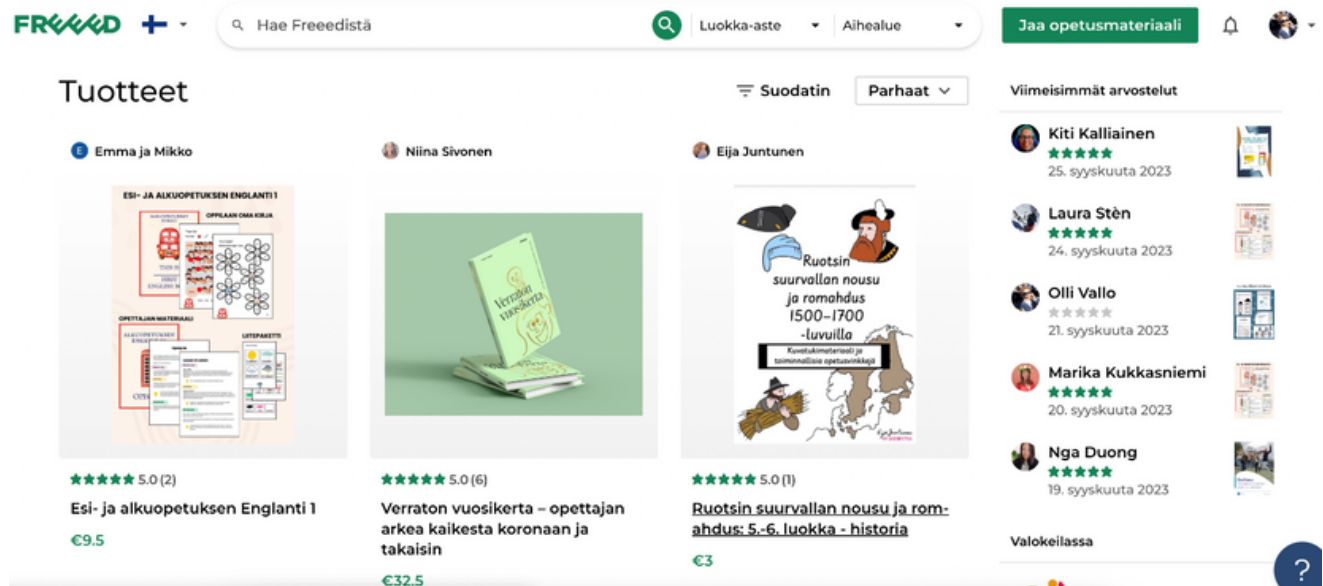

Figure 3: Courtesy of Freeed: https://www.freeed.com/

8. Summary of recommendations

SORTING

The primary recommendation is to incorporate three key access points (three main sorting categories) into the new platform: Competences, Learning Principles, and Quality Score*. This approach aims to encourage users to prioritize high-quality resources, maintain a pedagogical selection process,

and differentiate the platform from other repositories, thereby making it distinctive for Lithuanian teachers. It is recommended that the key three categories and their subcategories are used by a group of experts to sort out individual (existing and new) resources on the platform. In addition, to facilitate dialogic instruction, users should have the option to comment on, or rate, a resource's alignment with a specific category. To enable this process, the platform should provide a clear and easy-to-use framework for each of the three categories, in a separate section of the platform called "Quality Frameworks".

*Quality Score

The quality score, although not detailed in this report, is an upcoming project that will be included in the development of national criteria for the Lithuanian EdTech marketplace for schools. This score will encompass privacy compliance, evidence-based learning outcomes, and pedagogical certifications. To ensure accurate analytics, it will be linked to the learning record enabled by the new platform backend. Subsequently, these criteria will align with a straightforward accreditation and certification system for EdTech companies operating in Lithuania.

FILTERS

Users' search of resources should happen through filtering by:
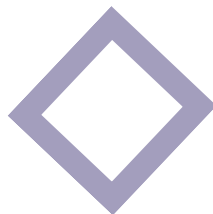
Platform

1. **Operating System Platform**
   - o **Example: Android**

2. **Educational Platform**
   - o **Example: Google Classroom**

3. **Mobile Platform**
   - o **Example: iOS (Apple's mobile platform)**

4. **Tablet Platform**
   - o **Example: Amazon Fire Tablet**

5. **Device Platform**
   - o **Example: Windows 10 (for PCs and laptops)**

6. **Computing Platform**
   - o **Example: macOS (for Apple computers)**

7. **Hardware Platform**
   - o **Example: Xbox (for gaming)**

8. **Software Platform**
   - o **Example: Microsoft Office Suite**

9. **Digital Learning Platform**
   - o **Example: Schoology**

10. **Classroom Technology Platform**
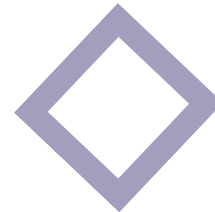   - o **Example: SMART Board technology platform**

Subject

Filter detailed as per the general curriculum framework, i.e.

- moral education
- language education
- mathematics education
- science education
- social education

- art education
- informatics education
- technology education
- health and physical education

Grade level

- primary
- basic
- secondary

DISPLAY

Once a resource is sorted out or filtered on the platform and displayed to the user, it should show a short description, including price (whether it is for free or on subscription), an evaluation/review by teachers (and option to add teachers' own review) and instructional ideas for using the resource (lesson plan or option for teachers to add their own).

Common Sense Media is a US-based organization that supports families and teachers with informed decision-making around children's media and technology with reviews and resources. Its sister website "Graphite" specifically targets teachers and provides a platform architecture of sorting, filtering and user engagement that could inspire the layout of the Lithuanian platform.
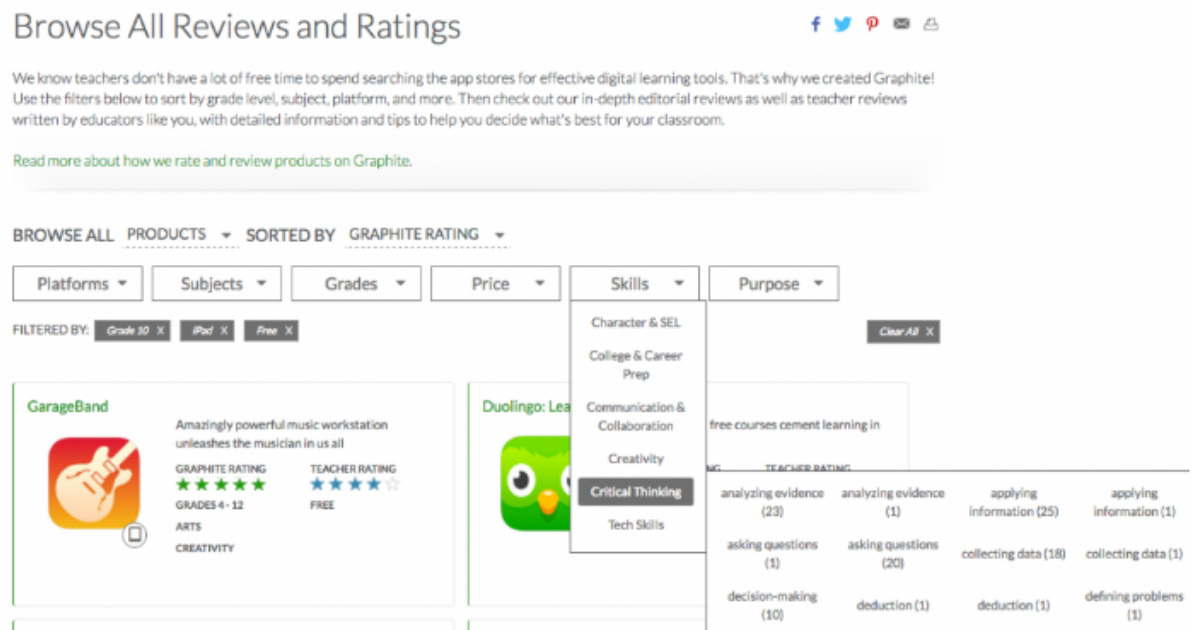

Figure 4: Screenshot courtesy of Graphite, Another Excellent Educational Resource for Teachers (eduspire.org)

9. Users' own area (Log-in Screens)

The categorization, resource filtering, ratings, and resource information should be accessible to all users without the need for login, ensuring transparency on the website. Additionally, users with log-ins should have the option to personalize their platform, where they can curate a collection of preferred resources, provide reviews, and share their own resources.
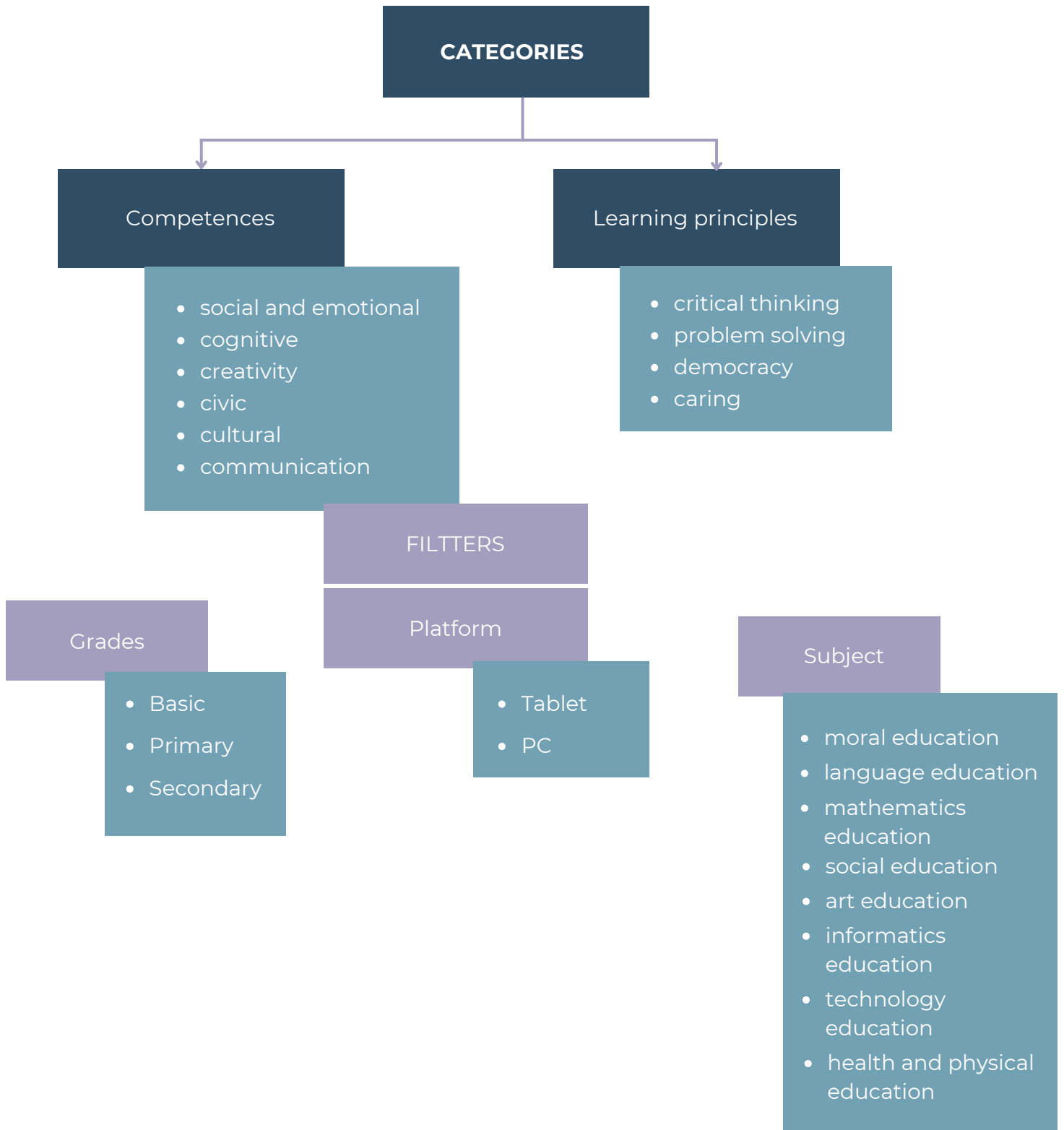
In creating the User area, it is recommended to follow best practices for log-in screens, which allow sign-in from external accounts, two-way authentication and use website branding.

Sign-in should enable users to create a profile with a specification of their role, key subject expertise and level of teaching. This information can be used to customize recommendations sent to the users.

Signed-in users should be able to rate, recommend and Like individual resources. These ratings will then feed into the "most liked" or "most reviewed" resources shared on the Trending Tools tab.

A mock-up screenshot of the suggested platform layout

CATEGORIES

Competences

- social and emotional
- cognitive
- creativity
- civic
- cultural
- communication

Learning principles

- critical thinking
- problem solving
- democracy
- caring

FILTTERS

Grades

- Basic
- Primary
- Secondary

Platform

- Tablet
- PC

Subject

- moral education
- language education
- mathematics education
- social education
- art education
- informatics education
- technology education
- health and physical education

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