

## **THEMPE: THEmatic Mapping Practice and Explanation, an open educational resource for teaching thematic mapping**

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# THEMPE: THEmatic Mapping Practice and Explanation, an Open Educational Resource for Teaching Thematic Mapping

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## Abstract:

Cartography is making maps and maps are a part of cartography. As defined by the ICA:

*“Cartography is the discipline dealing with the art, science and technology of making and using maps”*

From another explanation, if we look at it from a scientific perspective, it has been said that nowadays most scientific cartography is closely related to the spread of spatial knowledge. As for cartography as an art, it can be said that the purpose of art is more difficult to express. This will relate to how we create a map by paying attention to the aesthetics of the map to show the reader. (Robinson, 2011) also explained cartography as a visual technique that has three components of visual elements, namely lettering, structure and colour. In this study, we will focus more on cartography as a technique.

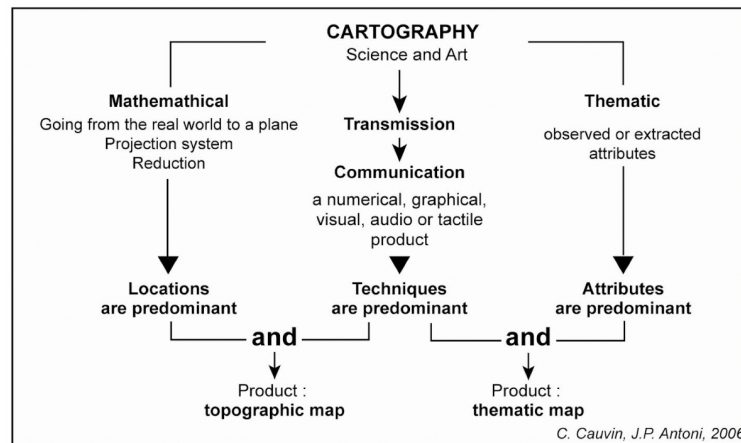


Figure 1. Cartography and its domain

Furthermore, in (Cauvin et al., 2013) it is explained how cartography is defined and classified according to its domain. As noted in 1, we'll look further into thematic cartography. Thematic cartography is closely related to the observed and extracted attributes. After that, techniques and attributes are dominant and will eventually produce a thematic map as the product. As is well known, the thematic cartography will focus more on how one can produce maps with certain techniques as hard skills. The hard skill itself is an ability that is obtained through repetition, practice, and education.

To provide the abilities described above, education is very necessary and plays an important role. First, we would like to mention the ICA Commission on Education and Training as a forum with the mission of "to maintain an overview of cartographic and geospatial education worldwide; to deliver presentations, papers, workshops and contributions to other programmes, which focus on educational material in the subject of cartography and geospatial information science and technology; and to investigate and report on technologies, concepts and methods of educational and training courses". On the page owned by this forum (<https://education.icaci.org/education-material/>), there are several educational materials in the form of literature or textbooks, useful online resources for Cartography and GIS theory and tutorials, and other

forms to provide knowledge to others who want to learn cartography. This shows us that learning about cartography can be done through various methods.

In this study, we will focus on the thematic cartography teaching given to university students. This learning is usually carried out using traditional methods, namely through textbooks, or also delivering material in class in thematic cartography courses. As one of the hard skills that must be possessed by students, this is where students have to do a lot of exercises to gain and strengthen their abilities in thematic mapping.

Open Educational Resources or hereinafter referred to as OER can be defined as teaching, learning, and research resources that are in the public domain or have been released under an intellectual property license that permits their free use or reuse by others ((The Higher Education Authority, 2009) in (Marcus-Quinn and Diggins, 2013)). Based on this definition, it can be seen that OER can be a potential tool that can be used in teaching thematic cartography. This OER can be shared with students more easily and can also be accessed easily. Students need to have easy access to learning materials and need to practice as much as possible to master thematic mapping. However, so far, there is no OER that we are aware of does implement the syllabus for teaching thematic cartography. So in this research, we want to make web-based OER prototype called ""THEMPE: THEmatic Mapping Practice and Explanation"" that can be used by students who are our target groups. Our target groups will be the bachelor's and master's students. The implementation of OER to teach thematic cartography will be adjusted to the learning goals. Furthermore, the implementation of the teaching syllabus will help us to create a learning path which is easier to be followed by the students. Our web-based OER prototype is expected to be used by the students to learn by themselves and deepen their knowledge of thematic mapping.

For building our web-based OER prototype, we will be using Vega-lite as a potential tool for displaying and visualizing a data into a thematic map. The prototype contents are including visual variables, thematic map types and how to map the data. These contents will be adopted from several sources along with the teaching thematic mapping materials. After finishing the OER prototype, it is also necessary to evaluate the prototype. This evaluation aims to see how high the potential of OER as a new tool in teaching thematic cartography is. The evaluation will use a quantitative method. The potential mentioned here means how OER can be one of the methods for teaching thematic cartography to achieve learning goals. In addition, we will learn how the syllabus and curricula have been implemented in the universities where our target groups study thematic cartography. After that, we will look at the relevance of our OER content to what these students are learning. From this, we expect that we can determine the potential and the relevance of OER in teaching thematic cartography curricula.

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