

## SOME GEOGRAPHY TEACHERS' PERCEPTIONS OF GRAPHIC ORGANIZERS

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### ABSTRACT

*This qualitative study presents the opinions of two geography teachers who use graphic organizers in their activity with secondary school students and geography students who train to become geography teachers. These were collected through a postmodern interview. The initiative searched the answers to several questions: the information sources about the graphic organizers and the learning methods for their implementation; the most used graphic organizers and the motivation for their use; the way students are trained to elaborate graphic organizers; the context of the graphic organizers (the type of interaction, the location), indications and rules given to the students, the achieving ways, their importance for the development of the geographic thinking. Both interviewed teachers formed the foundation of their competence to elaborate graphic organizers during training programs held by American and Romanian trainers, not by studying books. In relation to making of the graphic organizers by the pupils and students, certain similarities are observed.*

**Keywords:** sketches, charts, cognitive organizers, information structures, the didactics of geography, visual representation.

## INTRODUCTION

Pre-university education teachers got acquainted with various graphic organizers during the project *Reading and Writing for Critical Thinking*, organized by Centrul Educația 2000+ in Bucharest and supported by Soros Foundation and the Open Society Institute (Steele, Meredith & Temple, 1998a, 1998b). During the workshops organized by this project, in various cities or in the rural area (Bucharest, Cluj-Napoca, Brașov, Beliș, etc.), the teachers made a series of graphic organizers (cluster, Venn chart, double bubble, etc.) by applying a large variety of active models through which the pupils mainly develop their critical thinking (Temple, Steele & Meredith, 1998a, 1998b). The development of critical thinking was approached from a trans-curricular perspective (Temple, 2001a). Subsequently, the university teachers benefited from such programs (Temple, 2001b).

Romanian scientists and practitioners applied the methods which are part of the development of critical thinking category in various educational contexts, including various graphic organizers and promoting them within teaching resources. They associated the methods and the graphic organizers with the development of critical thinking (Dumitru, 2000; Flueraș, 2003), with efficient learning (Dumitru, 2000; Bernat, 2003), with learning through cooperation (Flueraș, 2005), with interactive methodology (Oprea, 2003), with cognitive-constructivist learning (Joița, 2007). Graphic organizers were used during the training activities (Ciascai, 2008) and intercultural education (Ciascai, 2009).

The didactics of geography in Romania includes several papers which present activating didactic strategies, various graphic organizers, the way they are made and examples (Dulamă, 2000), lesson structure examples during which such methods, focused on the pupil and on the graphic organizers, are used (Dulamă, 2002b, 2004b, 2008b). Dulamă (2009a) describes the ability to process and organize information, describe and systematize graphic organizers in several categories, offering examples from the field of geography. The trainer provides details in several studies regarding the preparation and use of some graphic organizers: the cluster (Dulamă, 2002a), SWOT analysis (Dulamă, 2004a), tables (Dulamă, 2008e) and other organizers (Dulamă, 2008d, 2009b). The graphic organizing mode of the content of a lesson (Dulamă, 2002c) and how graphic organizers can be used during the evaluation of geography students at the *Course of Intercultural Education through Geography* subject are presented (Dulamă & Ilovan, 2004).

Although the preparation and the role of processing and organizing information in various graphic organizers are presented in the previously mentioned papers of geography didactics, the geography teachers from Romanian pre-university and university education system pay little attention to those, and only very few of them help their students to use it in the learning process. Starting from this issue present during the class visits and while attending methodical activities, we intend to learn the opinions of two teachers who use such graphic organizers.

## SOME GEOGRAPHY TEACHERS' PERCEPTIONS OF GRAPHIC ORGANIZERS

During the conducted interviews, we searched the answers for several questions: How did they learn the first things about graphic organizers? How did they learn to make up graphic organizers? Which are the most used graphic organizers? What is the motivation of frequent use of certain graphic organizers? How does the skill of elaborating graphic organizers develop in the case of pupils? Which are the first graphic organizers made by pupils and students? What is the interaction method in making graphic organizers? What are the sources used by pupils to make up graphic organizers? What instructions should I give the pupils to make up graphic organizers? What are the rules followed by teachers and pupils in making graphic organizers? Where do the pupils organize graphic organizers? What methods are used to achieve graphic organizers? How do the graphic organizers contribute to the development of geographic thinking?

### **THEORETICAL FOUNDATIONS**

Studies of cognitive psychology claim that the deeper the processing of a stimulus is the better the information assimilated in the long-term memory is (Miclea, 1999). The processing of a stimulus is even deeper as the transition from its physical to conceptual or semantic characteristics is made ( Craik & Lockhart, 1972). Organizing data in tables and charts or graphic and cognitive organizers are considered to be deeper levels of information processing compared to the simple lecturing of the texts (Dulamă, 2009a). The thinking capacities, including the ones of critical and lateral thinking, are developed during the process of framing a cognitive organizer (Dulamă, 2009a, p. 318).

Graphic organizers are considered to be teaching-learning-evaluation tools (Gavrilă & Nicolae, 2015, p. 3), a visual way to build knowledge and information organization (p. 7), an intermediary visual representation between text and illustration (p. 7). Organizing the information can be learned during the first grades, starting from simple forms to complex ones. During the first stage the students can take notes about graphic organizers from their teacher, and later they can work on graphic organizers in groups, pairs or individually. In order to organize content graphically, the pupils analyse the information from the text, extract the essentials, and then order them as a whole, according to various logical criteria and characteristics of the content (Dulamă, 2009a, p. 319).

Gavrilă & Nicolae mention the fact that information organization can follow the principles of hierarchy, chronology and cause (2015, p. 8). Dulamă (2009a, pp. 319-320) presents a ranking of graphic organizers depending on their aspect: tables, matrixes, linear charts, tree charts, cluster charts, pyramid charts, systemic chart, circular or sequential chart (Table 1).

**Table 1.** Types of graphic organizers (Dulamă, 2009a, pp. 319-320)

Tables	Linear	<i>Vertical</i>	Table T
		<i>Horizontal</i>	Table with arguments and counterarguments Table of predictions Table of consequences Cause-condition-effect table
	The synoptic	Comparative synoptic table Synoptic table of concepts Symbolic table of characteristics The table for the analysis of the semantic features The number table	
Matrix	SWOT matrix Conceptual matrix Quadrants Tablecloth Hexagon Cube Thinking hats Nine perspectives		
Linear charts	Horizontal	Cause-effect type linear horizontal chart Chronological frieze Chronological axis	
	Vertical	Chronological Stepped	
Tree type charts	Horizontal	Cause-effects type Situation-problem-explanation type Concept type Classification type	
	Vertical	Tree of ideas Tree of concepts	
Cluster type charts	Graphic organizer of the characteristics The double bubble The cluster		
Spider type charts			
Pyramid chart			
The systemic chart			
The circular or sequential chart	The clock The spiral		
Charts	Ishikawa chart Venn chart V chart		

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The graphic organizers are work information techniques which help students to "think, visualize and organize their own knowledge" (Gavrilă & Nicolae, 2015, p. 8). When the teachers make up graphic organizers with the students they should take into consideration the students' characteristics (cognitive level, learning style, etc.), the objectives of the learning activity, the available means of education, the personal experience in the use of graphic organizers (p. 9). The authors recommend paying attention to the concordance between the graphic organizers and the targeted objective, the use of graphic organizers with simple forms, keeping the proportions for drawings and text, limiting the quantity of the text and others (p. 9). Dulamă (2009a) stresses the existence of a relation between the specificity of the content and the proper type of graphic organizers which can be achieved in order to represent it.

### **METHODS**

*Participants.* This research involved a geography teacher (first degree), who works at No. 7 Secondary School in Bucharest, and a university professor from the Department of Exact Sciences Didactics from the Faculty of Psychology and Sciences of Education, Babeş-Bolyai University, Cluj-Napoca. Teachers were selected based on their experience and expertise in the use of graphic organisers during their activities organized with students from primary and secondary school, as well as university students. The two teachers, co-authors of this research, accepted to participate in this survey. The first author was involved in this research both as a secondary school first degree teacher and as a researcher who worked for the interview guide.

*Procedure.* This study was accomplished during the exploratory stage of research, when we investigated the role of graphic organisers in the development of geographical thinking. In order to collect research data, we used postmodern opinion and documentary interview by talking to two representatives of the geography teachers' elite. We covered several stages (Petrescu et al., 2017): the preparation of the semi-structured interview, choosing the recording data method, conducting the interview, reflecting on the content, supplementing the information by asking additional questions, ending the interview. During the first stage, we talked on the phone with the two teachers selected for the interview and we presented to them the purpose of the research, the way the interview was going to be conducted and the way the data obtained was going to be valorised, their involvement in the processing of the data, in preparing and publishing the research report. During the second stage, a list of questions was sent by e-mail to the interviewed teachers, pointing that after the analysis of the answers, we were going to ask more questions in order to clarify and think out certain aspects. The data gathered through the survey was subjected to content and thematic analysis.

## RESULTS AND DISCUSSIONS

*The first data about graphic organisers.* Although the researches on Romanian geographical education underline the importance of processing the geographical data through board sketches and in students' notebooks, prior to 1989 there are no references about the use of graphic organisers in classes (Dulamă & Ilovan, 2015, 2017; Ilovan et. al., 2019). The gymnasium teacher we worked with had the privilege and the 'best chance' to learn about the graphic organisers and how to work with them during geography classes between 1997 and 1998, when she attended the lectures collectively called 'critical thinking', held by American trainers from Fundația Soros – O societate deschisa (Soros Foundation for an Open Society). The university professor received the first information about the "cluster" from a high school teacher, while attending the lessons held by geography students during the stage of teaching training organized in Cluj-Napoca in the 1998-1999 school year. She obtained more consistent information during a training course organized by the previously mentioned organization, a course attended by university professors, trainers from various fields of activity, i.e. pre-university education teachers.

*How the teachers learn to make up graphic organizers.* During the training courses organized in Sibiu, Brașov, Cluj-Napoca, Beliș (Cluj county), the American and Romanian trainers organized structured workshops in accordance with Evocation-Realization of meaning-Reflection (E.R.R.), during which the participants were asked to make certain graphic organizers. Most frequently, the teachers used clusters, revised clusters, Venn charts, the double bubble. The interviewed teachers stressed the importance of the fact that, during these workshops, the participants fulfilled a double role: the role of the pupil/student who solves the task, learns something new and makes a graphic organizer, and also the role of the teacher who, in the moment of debriefing, reflects on the way of working during the workshop and the obtained result.

In order to understand the realization of these graphic organizers and their importance in acquiring and organizing the knowledge, organizing the activity by the trainer is essential, also his/her ethos and the perception of the teacher regarding the graphic organizers. In the specific literature, teachers learn how to realize graphic organizers through practice, by actually doing, not by listening and watching other work (Dulamă, 2001a, 2001b, 2006), and the outlines made by the participants represent models for other activities. They learn how to apply with others – their gymnasium students – what they experienced first.

There are teachers who attended an 80 hour training course where they experienced various methods of development of critical thinking and made certain graphic organizers, but they did not apply them during classes, motivating that the parents would say that "students play instead of learn". This example proves the fact that the teacher is not aware of the important use of these graphic organizers in the development of the

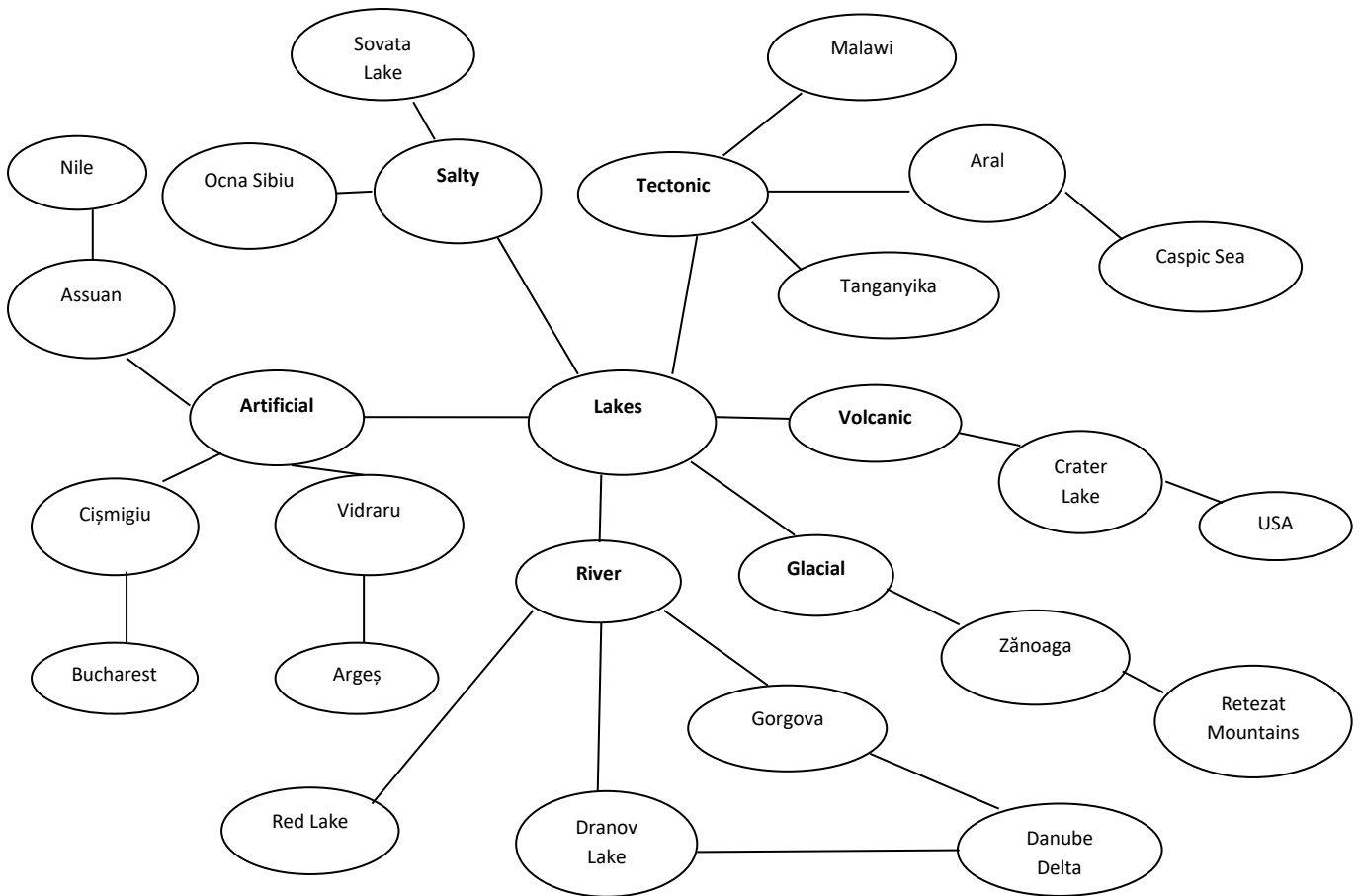
cognitive capacities of their students and in their skills training, an aspect underlined in the specific literature (Dulamă, 2000, 2008a, 2008b).

*The mostly used graphic organizers.* The study of geography in the pre-university education used mostly simple and revised clusters, which were easy to understand and made by pupils thus having a great impact on them. The SWOT analysis is highly appreciated at this level, as is the Venn chart. In universities, geography students who study to become teachers make use of it every year, during the Didactics of Geography seminar and at home, several graphic organizers starting from the support course texts: cluster, tree chart, pyramid chart, linear chart, Venn chart, SWOT analysis and others (Dulamă, 2010a, 2012). At this level, no graphic organizer was used more often than others because their purpose is to learn students how to make them, depending on the specificities of the synthesised and systematised content in these charts.

*The motivation for frequent use of certain graphic organizers.* At the level of secondary education, the teachers state that their students consider the SWOT analysis to be an exciting way to think about a lesson, which determines them to talk and generate hypotheses. The students come up with new, often controversial ideas, they listen to them, they negotiate, they agree, or disagree with other classmates. This analysis is a full exercise of developing critical thinking, to learn how to listen and accept other opinions. It seems more exciting for the pupils to identify the required aspects than receiving the readily processed information from the teacher. The SWOT analysis has a great impact on them; it induces a great joy of work and real benefits for their thinking capabilities.

At the university level, students make the SWOT analysis during various university courses. During the Geography didactics seminar, they individually make the SWOT analysis of their own hometowns. Although they had previously conducted such analyses, several have difficulties in identifying the opportunities and risks or dangers coming from outside their hometowns and, more often than ever, they confuse them with the strengths and the weaknesses. The purpose of conducting this analysis, under their professor's guidance, is precisely to support them in becoming aware of their mistakes and in developing skills to elaborate a SWOT analysis (Dulamă, 2010b).

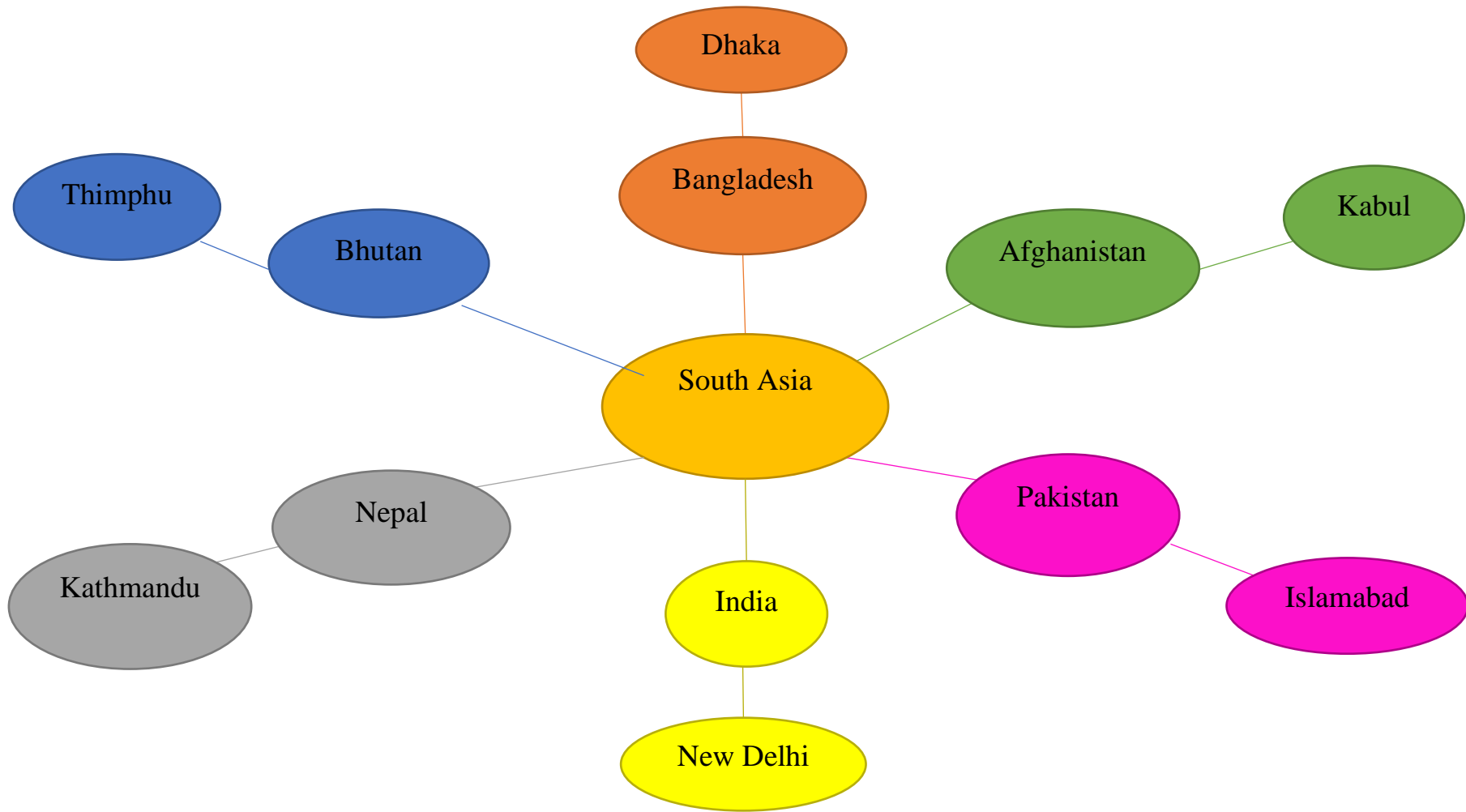
The cluster is a simple graphic organiser where the secondary pupils organize freely all their previous knowledge regarding a certain topic, without any concern of being evaluated and corrected during this process. The revised cluster helps them to order their 'thoughts' and clarify them, to revise their knowledge, to establish the importance of information, to systematize and to rank this information, thus making their new knowledge clearer and more concise (Figures 1 to 5).



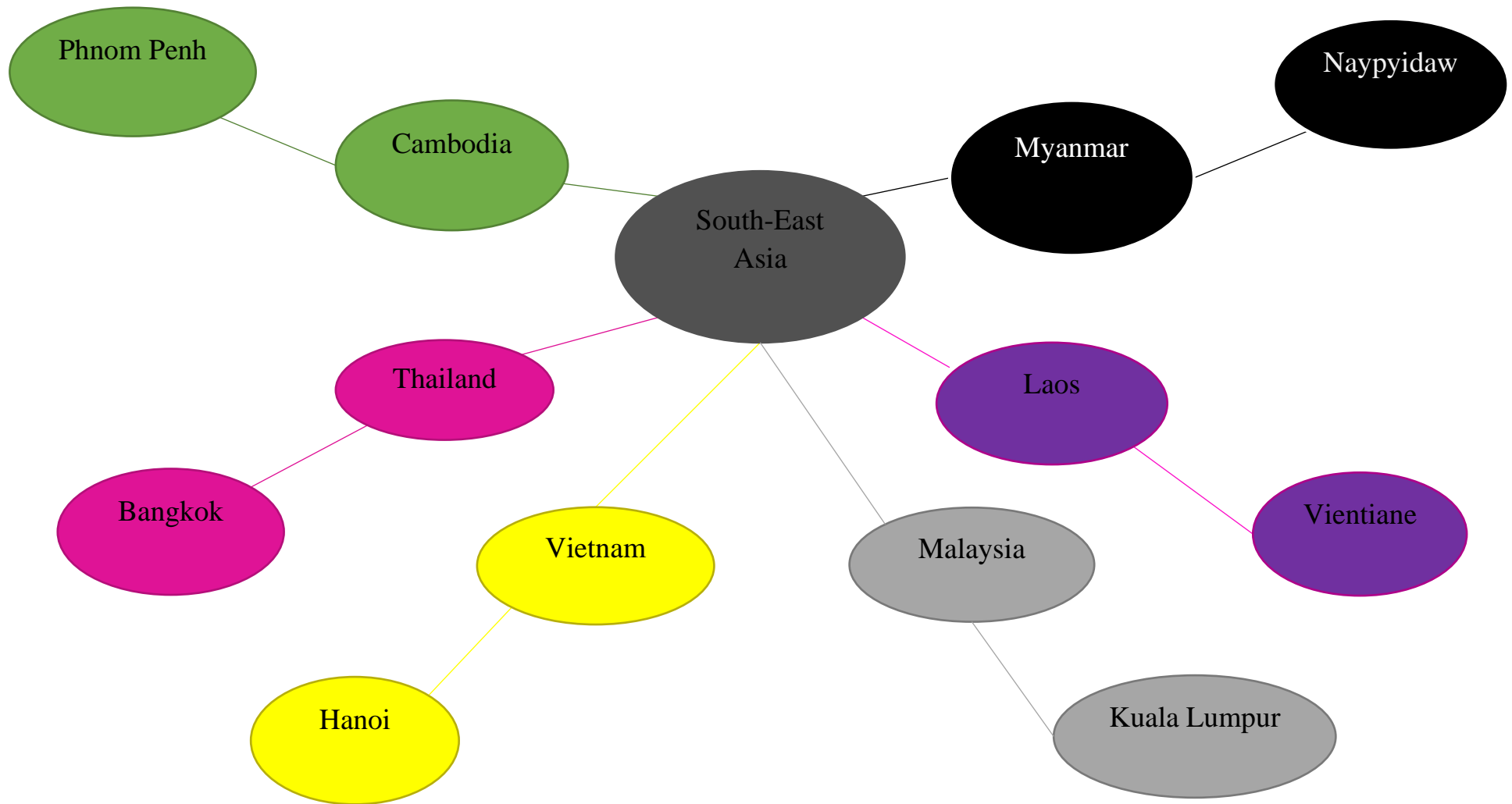
**Fig. 1.** Cluster type chart for the topic "Lakes", realized by Student 1

At university level, students realize directly a structured cluster on the topic of *Ranking the states* (Fig. 6), based on the text from the course teaching resources (Dulamă, 2010a, 2011), where the information is grouped into categories. In order to establish which graphic organizer is more appropriate for making learning more efficient, they realised for this topic a tree-type scheme. They have certain difficulties in systematizing and expanding the cluster on the topic of *Humid tropical forest*, because in the support teaching materials (Dulamă, 2010a, 2011) there were no criteria mentioned for ordering information, which is a reason why the teacher indicates them the categories to use in order to systematize the information. For comparison, for this topic, students systemised information in a table. To establish which graphic organiser is more useful in the learning process, students also make a tree structure on the topic of *Ranking the states* (Fig. 7).

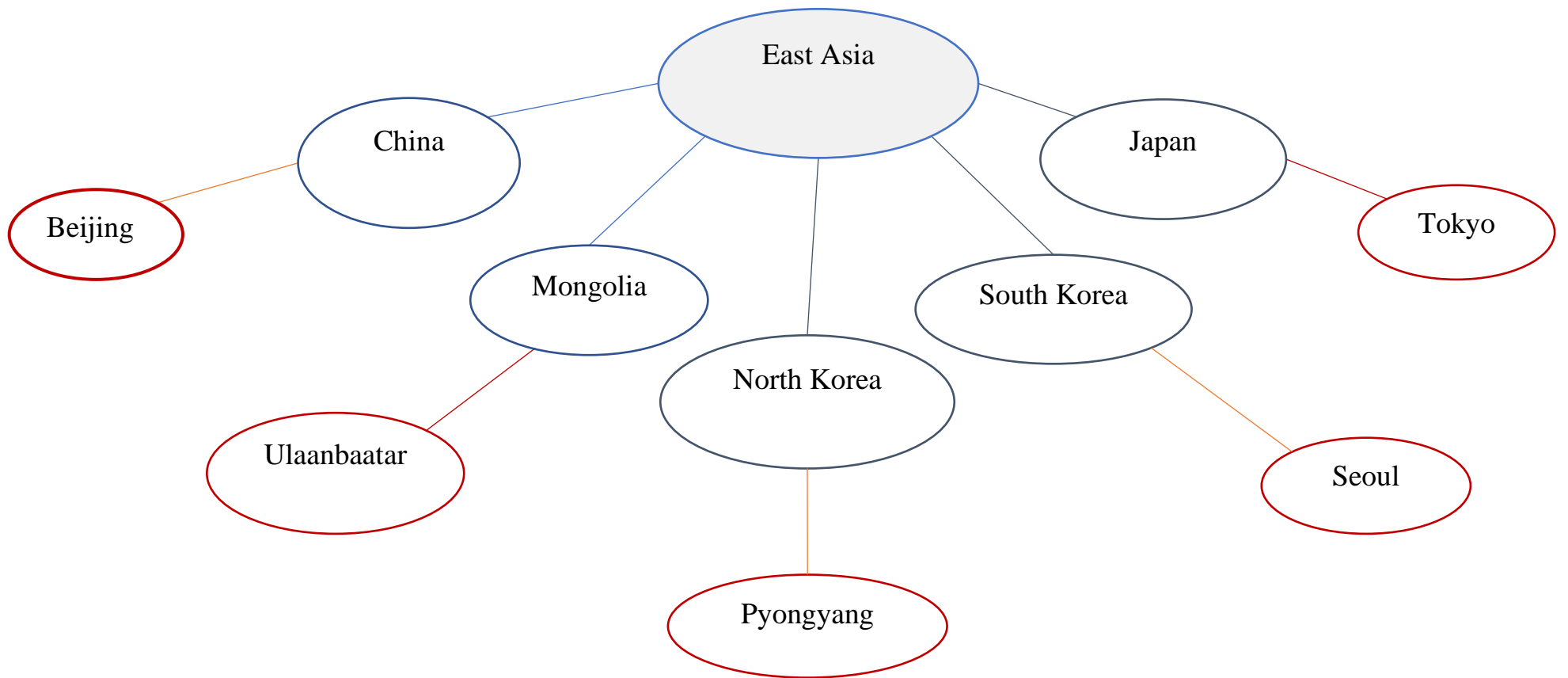




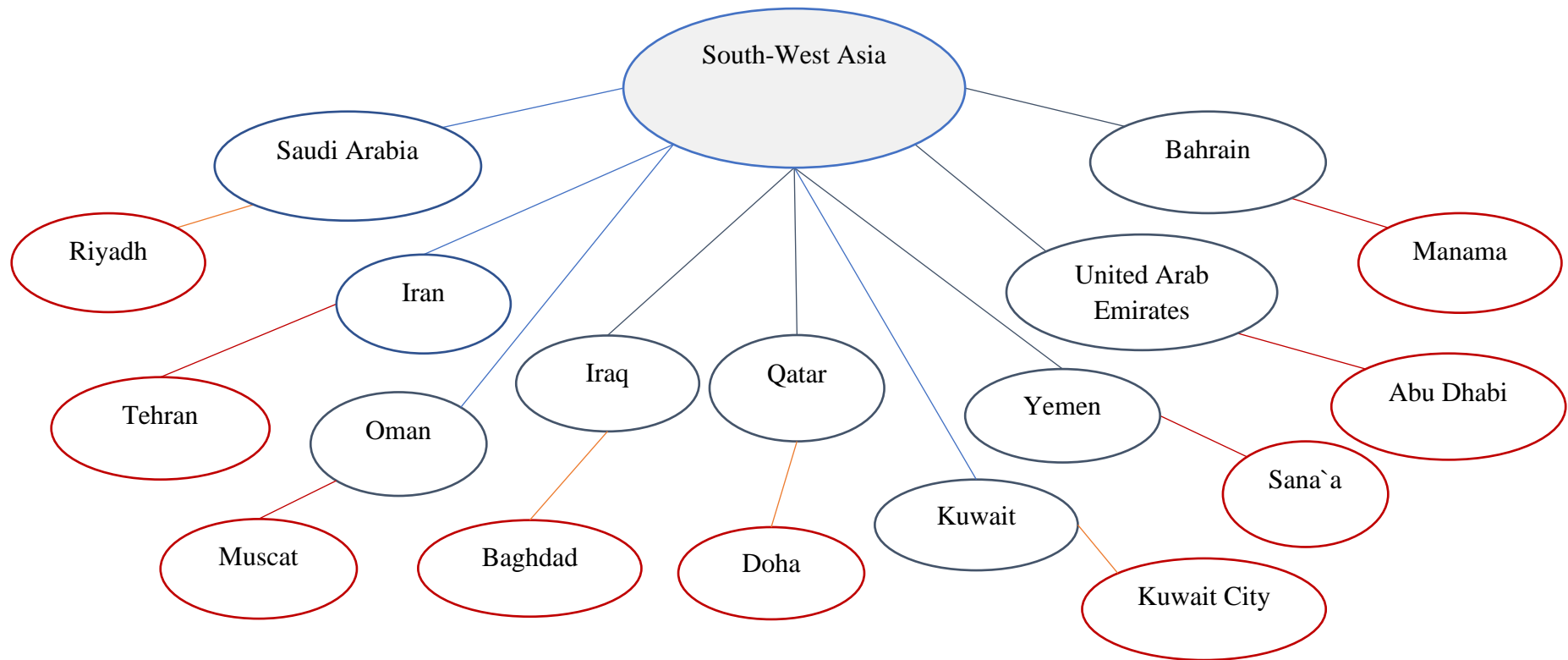
**Fig. 2.** Cluster type chart for the topic "The Countries of South Asia", realised by Student 2



**Fig. 3.** Cluster type chart for the topic "The Countries of South-East Asia", realised by Student 2



**Fig. 4.** Cluster type chart for the topic "The Countries of East Asia", realised by Student 2



**Fig. 5.** Cluster type chart for the topic “The Countries of South-West Asia”, realised by Student 2

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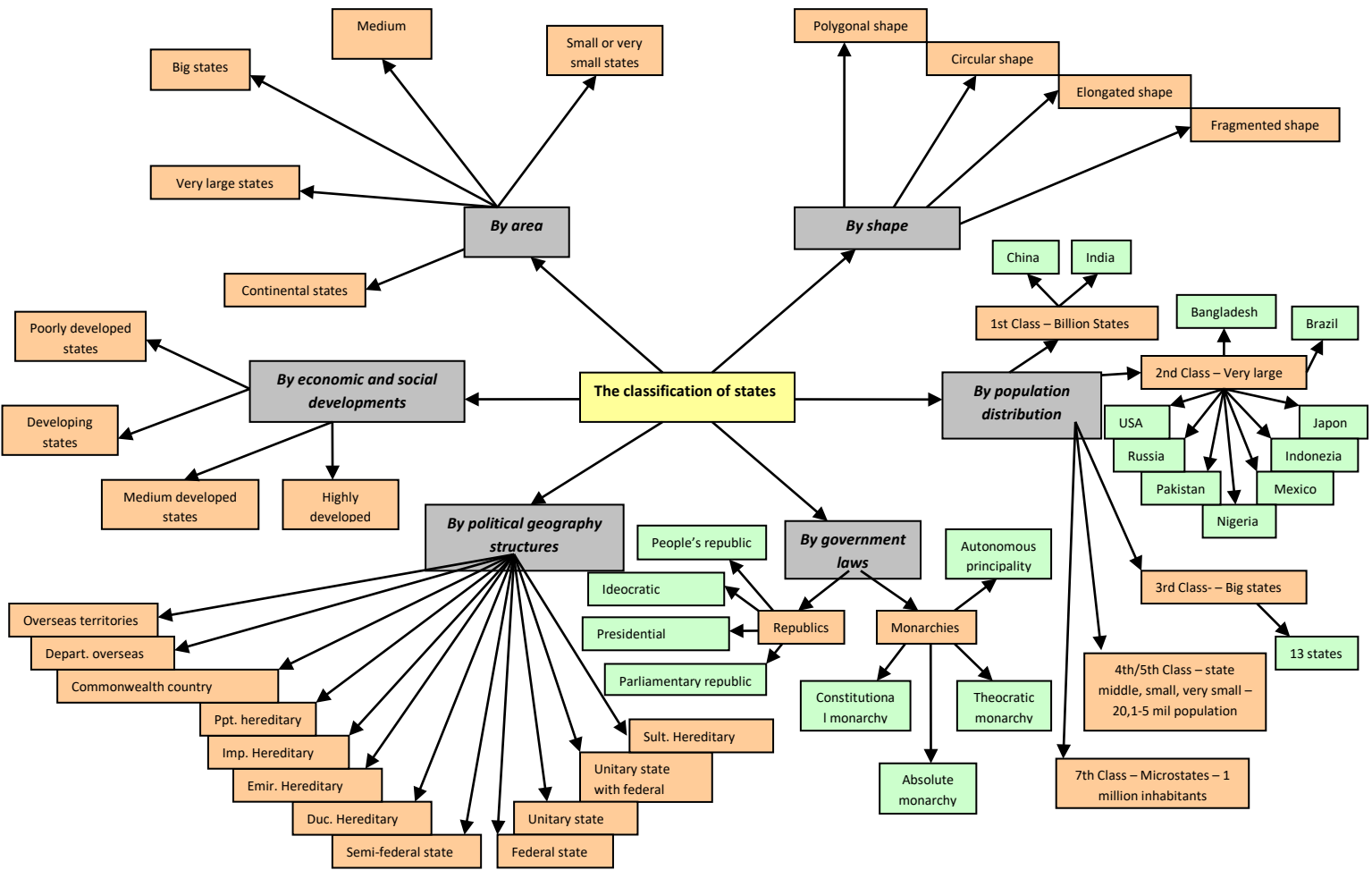
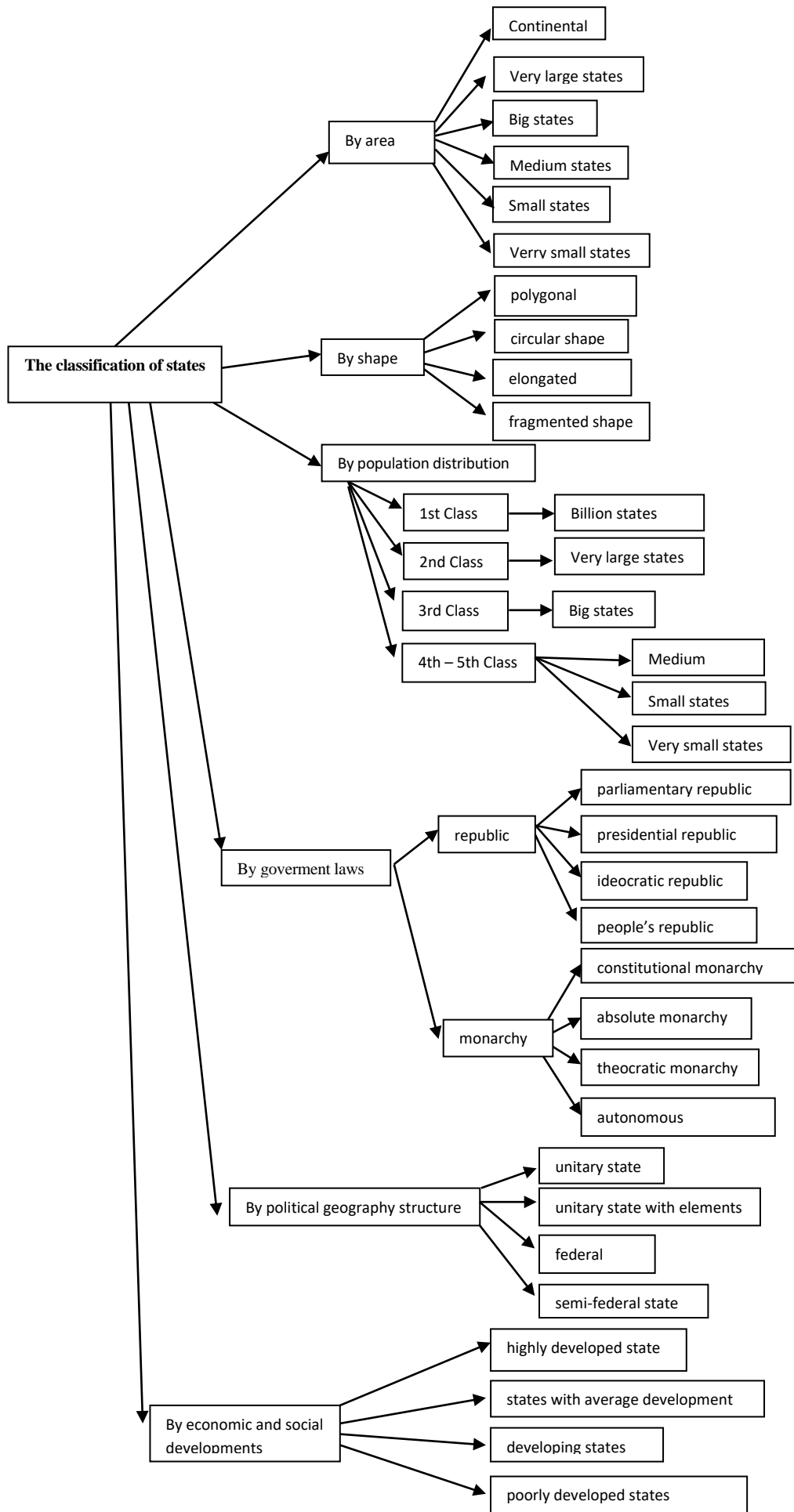


Fig. 6. Cluster type schemes on the *Classification of states* topic, made by Student 1

Knowing that it is hard for the fifth grade pupils to understand the difference between weather and climate, the teacher asks them to elaborate a Venn chart when they talk about these terms. By solving these tasks, the pupils learn how to select information based on certain criteria, thus establishing the similarities and the differences between the analysed geographic notions. By doing so, the pupils can remember easier the information they have been taught, and during the subsequent grades, when the aforementioned notions would be repeated, they would be able to remember the previously made Venn chart immediately.



**Fig. 7.** Tree-type schemes on the *Classification of states* ("States of the world") topic, made by Student 2

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At the university level, every student realised during a seminar or at home a Venn chart, on an optional topic, as item in a test of geography knowledge. They made up several comparisons: village-town, mountain-hill, Rhine-Danube, deciduous forest-coniferous forest, monsoon-western winds, temperate-continental-Mediterranean climate, etc. Every student also realized a double bubble, with the purpose of comparing geographic elements or systems. The students specified the targeted objective in the evaluation, the requests and the standards for every item.

*The skill to elaborate graphic organizers.* The two teachers were asked to specify the indications or the prescriptions that they give to the pupils/students and to introduce the stages in order to direct/support them in making of graphic organizers. At the fifth grade, in order to help the pupils to make the Venn chart, the teacher updates their previous knowledge regarding sets, acquired during the Maths class, and then he or she conducts the process of extraction from the text of common and different elements in the case of topics such as: Weather and climate, Sub-Carpathians of Curvature and Sub-Carpathians of Moldova, the Czech Republic and Slovakia, etc. (Table 2).

In the case of the cluster, the teacher sets out with the pupils the key word from the text, like, for example, the lakes. The first row of "beans" or satellites (Dulamă, 2000) of the cluster will mention the types of lakes, by the origin of the lake basin, the second row will have examples of lakes from every category, and certain important features can be mentioned on the third row. In order to stimulate the curiosity of the students and to understand the importance of the SWOT analysis, the teacher explains to them that it is a method used by adults to evaluate certain complex aspects from reality (e.g. sustainable development, cf. Cocean & Ilovan, 2008), such as a project. The teacher explains them the meaning of the four terms and offers them examples from the environment. Usually, the first SWOT analysis was conducted in the sixth grade, during the lesson called *Switzerland* (Table 3). The pupils conducted the analysis in pairs, and then individually, at home. The SWOT analysis was conducted with the purpose of evaluating the knowledge, the abilities and the competence of the pupils.

At the university level, in the case of every activity of making graphic organizers, the students were asked to work individually, on a text from the course support. In order to properly represent the information in the chart, the teacher drew simple charts on the board, and as the students worked, she followed their products and offered immediate constructive feedback (Dulamă & Ilovan, 2016), asking them to alter the charts according to the requirements. We notice that the work method was adapted depending on pupils' and students' level of competence to process and organize information (Dulamă, 2009; Dulamă et al., 2015; Ilovan, 2019a; 2019b; Osaci-Costache, Dulamă & Ilovan, 2013). In the case of secondary school students, they worked the graphic organizers with their teacher at first, who had been assigned the role of guide or trainer, while university students worked individually, having mostly the role of the teacher i.e. control and evaluation.

**Table 2.** Comparison between the Czech Republic and Slovakia, realised by Student 2

<p><b>The Czech Republic</b></p> 	<p><b>The Czech Republic and Slovakia</b></p>	<p><b>Slovakia</b></p> 
<p><b>Landforms:</b> The Czech Republic is a hilly plateau mostly consisting of a Hercynian structure-Bohemian Massif.</p> <p><b>Hydrography:</b> The Czech Republic has a rich network of water resources (North Sea, Black Sea, Baltic Sea).</p> <p><b>Example of rivers:</b> Odra and Elba.</p> <p><b>Vegetation:</b> deciduous forest.</p> <p><b>Demography:</b> consist of Czechs 80% followed by Moravians 15%.</p> <p><b>Cities:</b> Prague, Brno, Ostrava, Pízen, Olomouc, Liberec.</p> <p><b>Natural resources:</b> forests, natural gases, coal and salt.</p> <p><b>Industry:</b> The Czech Republic has one of the largest car automobile manufacturers in Central Europe Škoda Auto.</p> <p><b>Other industries</b> are: food industry and chemical industry. Production of Czech electricity exceeds consumption by about 10 TWh per year, which are exported.</p>	<p>Both countries are landlocked countries.</p> <p>Climate: temperate continental, with warm summers and cold, cloudy and snowy winters. Most rain falls during the summer.</p> <p><b>Vegetation:</b> grassland.</p> <p><b>Population:</b> high diversity.</p> <p><b>Industry:</b> food industry and chemical industry.</p> <p><b>Agriculture:</b> potatoes, sugar beet, rice.</p> <p><b>Transportation infrastructure:</b> the road network is diversified.</p>	<p><b>Landforms:</b> Carpathians Mountains (Tatra Mountains 2,663 m). Slovakia host the <b>highest stalagmite in the world 32 m.</b></p> <p><b>Hydrography:</b> Many of the rivers are tributaries to the Danube.</p> <p><b>Vegetation:</b> coniferous trees.</p> <p>The <b>population</b> consists mostly of Slovaks 85% and Hungarians 10%.</p> <p><b>Cities:</b> Bratislava, Kosice, Presov, and Nitra.</p> <p><b>Natural resources:</b> Slovakia has a wide variety of natural resources.</p> <p><b>Industry:</b> The main industry sectors are car manufacturing and electrical engineering.</p> <p><b>Agriculture:</b> More than one-third of Slovakia's territory is cultivated, and the primary agricultural products are sugar beet, potatoes and wheat.</p> <p><b>Transportation:</b> a wide range of ways of transport, influenced by the elevation. Transport in Slovakia is possible by rail, road, air or rivers due to the Danube river.</p> <p><b>Tourism:</b> Slovakia features natural landscapes, mountains, caves, medieval castles and towns, folk architecture, spas and ski resorts.</p>



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**Table 3.** Switzerland SWOT Analysis (realised by Student 1)

Strengths	Weaknesses
<ul style="list-style-type: none"> <li>- Localization – on the continent, surrounded by powerful states</li> <li>- Natural vegetation – rich, with many conifers</li> <li>- Main cities: Zürich, Basel, Geneva, Berna</li> <li>- Natural resources: it has rich forests, grasslands and hydro-power potential</li> <li>- Industry: - physical products-watches, scales                             <ul style="list-style-type: none"> <li>- the small raw material consumption</li> </ul> </li> <li>- Is distinguished by: cars productions, devices, low-metal consumer items, pharmaceutical and textile products, cheese, sugar products. increase the number of nuclear power plants</li> <li>- Agriculture: one of the most advanced in the world                             <ul style="list-style-type: none"> <li>- it is specialized in rearing of large animals for meat and milk -» the famous Swiss cows</li> </ul> </li> <li>- Transport is well developed -» the transport network is developed and upgraded, the railway - almost entirely electrified</li> <li>- Developed tourism: the main tourist attractions are mountain and winter sports resorts and balneal town resorts on the shore of lakes (Geneva), but also some cities such as Berna, Zürich and Basel</li> <li>- The natural population growth rate is positive</li> <li>- Banking system</li> </ul>	<ul style="list-style-type: none"> <li>- Localization: landlocked</li> <li>- The mountain relief has scattered villages: low population density</li> <li>- Climate: temperate-continental – big difference between summer and winter</li> <li>- Natural resources: natural resources poor country</li> <li>- The people of Switzerland are perfectionists</li> </ul>
Opportunities	Threats
<ul style="list-style-type: none"> <li>- Climate: long and severe winters -» promote winter sports</li> <li>- Hydrography: well-developed network of rivers -» rivers flowing out to the sea ("Castle of the waters")</li> <li>- The Swiss population speak German, French, Italian, Rhaeto-Romance</li> </ul>	<ul style="list-style-type: none"> <li>- Population: three quarters of the total residents live in Mittelland (less than one third of the extent of the country)</li> <li>- Mountains: low population, industry and agricultural industry</li> </ul>

*The first graphic organizers made by pupils and students. Specialised literature mentions the fact that "the organization of information can be learned during the first grades, starting with simple forms and moving towards complex ones (Dulamă, 2009, p. 318). The first graphic organizer realized by fifth grade pupils was the cluster during the lesson about the*

Solar System, and then during the lesson about the Earth layers. The selection was not made by level of difficulty, but depending on the studied content. At university level, the first graphic organizer was also the cluster type, and its selection was also made depending on the approached content and its degree of difficulty. Although this graphic organizer seems easy to realize, studies revealed a series of problems regarding the degree of coverage of the entire topic with essential information and details, the systematization of information based on criteria, correctness, originality and relevance of information, highlighting the relations between the information (Koszinski et al., 2019).

*The sources based on which the pupils make graphic organizers.* In secondary school education, there are various sources, but most of them are textbooks and texts offered by the teacher. At an academic level, students make graphic organizers with the help of texts from the course support, but which can be completed with additional information. They made pyramid charts based on maps which they had studied in printed format or online, with the help of a smartphone. In certain contexts, they made charts based on the knowledge from their own basis, such as the SWOT analysis of their hometowns, but they also had the possibility to use sources from the internet.

*The organization form of the graphic organizers activity.* Given that every pupil must acquire the competence to process and organize information, graphic organizers were made individually and in pairs, and rarely in group, both in secondary schools and universities. When the pupils have acquainted themselves with the work method/procedure, for the sake of increased safety, they worked one graphic organizers in pairs, and subsequently, at home, individually. For the realization of posters with graphic organizers, at the end of a chapter, the pupils worked in groups. If the students were asked to realize graphic organizers in teams, even if every pupil had his or her own graphic organizer in their notebooks, there is, however, a trend or not cooperating for its making, but rather just to take it in the form made by another classmate.

*Instructions provided by the teacher for making of the graphic organizers.* First of all, the secondary school teacher makes sure that the pupils have understood the task, the purpose of the use of these graphic organizers, which are the expected results, therefore offering them all the necessary instructions regarding what they must accomplish, how to do it and how the chart should be at completion. In the case of university students, the teacher presents the task at the beginning of the activity, specifying the form of organization of the activity (individually, in pairs, in group), the available time, the material they would use to work on (printed text or web sources, map, memorized information, etc.), then he or she would provide precise instructions regarding the page layout, the position of the page and of the key word, the aspect of ramifications, the way words must be written in the circles / ovals or rectangles, the criteria used for the systematization of the information, the degree of words load for the graphic organizer, the page from the course teaching resource where they can find models.

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Although the students receive many instructions, in certain situations they do not comply with all of them, and that is why the monitoring of the activity of every student by the professor must be conducted. Failure to comply with the aforementioned instructions happens for various reasons: they were not attentive when the teacher presented them, they did not memorize them, or they do not consider them to be important. The explicative intervention of the professor is required in such situations.

*The rules followed by the teacher and pupils while realizing the graphic organizers.* In secondary schools, when pupils make graphic organizers in team or group, it is important for them to respect each other, to listen to what other say, to not speak simultaneously, to not disregard the opinions or others/classmates. Geography students are required to comply with several rules: to work on paper sheets which have a certain surface; to use the paper sheet in landscape or portrait position; to place the keyword in the centre of the page; to write by hand with lower case letters, not with uppercase letters to increase legibility; to write as few words as possible in a circle; between courses there should be enough free space for the information to be easily observed.

*The place of making of the graphic organizers.* In the learning activities, graphic organizers are elaborated by the pupils in the classroom at first and completed at home, while some are made for evaluation, the graphic organizers are made at home or during the tests solved in the classroom. The pupils frequently make graphic organizers in their notebooks, but also on paper sheets in A3, A2, A1 format when they make up posters, at the end of chapters (such as is the case of the states and capitals of Western Asia). Geography students usually elaborate graphic organizers on A4 pages, at seminars and at home, because their products are included in a personal portfolio.

*The realization method of graphic organizers.* Secondary school pupils work exclusively on graphic organizers where they use handwriting. University students use handwriting on graphic organizers during seminars, and at home most of them prefer to work on computers, using various applications, available free of charge on the internet. However, they do not use specific applications for making certain graphic organizers. The representation mode of information on the same topic, starting from the same content, varies a lot from one student to another if certain requirements regarding colour or the form of the 'beans' are not imposed, and those beans can sometimes be rectangles.

*Contribution of graphic organizers to the development of geographic thinking.* Working on graphic organizers helps the secondary students to "learn how to think, to analyse, to compare, to extract the essentials, to formulate pros and cons", "to understand and accept the world the way it is, without making judgements".

At university level, the students must become aware at first of the role of graphic organizers by increasing the efficiency and firmness of their own learning, because later, when they work as teachers, they would be

able to help their pupils in learning how to use graphic organizers as tools and learning procedures. The students should understand the importance of every graphic organizer made during seminars and they should be able to associate them with the content of certain texts. For instance, the cluster type and tree type charts are important for ranking of information about geographic systems, the Venn chart and the double bubble to compare certain geographic components or systems, the pyramid chart to represent hierarchies of relief units or rivers, circular and linear charts in order to represent the stages of certain geographic processes.

## CONCLUSIONS

At the end of this qualitative study conducted through the method of postmodern interview we have reached several conclusions. Both interviewed teachers formed the foundation of their competence to elaborate graphic organizers during training programs held by American and Romanian trainers, not by studying books. During the workshops, they applied methods to develop the critical thinking and they made graphic organizers from the position/role of the student, and only after analysing the learning process and its results.

In relation to making of the graphic organizers by the pupils and students, certain similarities are observed: they all learn gradually how to use various types of graphic organizers, in various contexts; the selection of the type of graphic organizer is made depending on the studied content, and the making process is monitored by the teacher who offers immediate constructive feedback. Some differences are visible: students receive fewer instructions than pupils, while texts and graphic organizers have a higher degree of complexity and information volume; certain criteria used for selecting and deepening information are imposed; the typology of graphic organizers is more extensive; the evaluation criteria of the graphic organizers are on the increase and they are associated with the ability to process and organize information.

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