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DEVELOPING GEOGRAPHICAL THINKING THROUGH THE SWOT ANALYSIS OF HUMAN SETTLEMENTS

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Abstract

SWOT analysis is used to develop the critical thinking of those who learn. Our research started from the observation that some Geography university students had difficulties in analysing urban and rural areas, especially when identifying opportunities and threats. Even though students received the information that opportunities and threats come from outside settlements, some of them included certain strengths and weaknesses in the category of such elements. The aim of this research is to analyse the strengths, weaknesses, opportunities, and threats that students mentioned in their SWOT analyses for their hometowns or villages. They developed the SWOT analyses on their own, individually, in a table structure, as tasks during the seminar learning activities and as part of the homework didactic portfolio, meant both for learning and for the final assessment. In addition, correctly solving the task was part of their final written exam, where students had to prove that they knew how to plan a task and solve it. We devised this study from an educational perspective first and a geographical one second but maintaining the focus on developing students' critical thinking. We grouped the identified aspects in categories based on contents. We identified students' difficulties and mistakes and we identified their causes.

Keywords: Critical thinking, heuristic thinking, productive competence, geography university education, system, COVID-19.

1. Introduction

SWOT analysis is frequently used in geography to study "the internal characteristics of a certain space concurrently", the strengths and weaknesses and external factors and influences – opportunities, dangers, or threats (Dulamă, 2008, p. 298). The strengths and opportunities are positive in nature, while weaknesses and threats are negative factors or conditions (Dulamă, 2005; Vincze, 2000). SWOT analysis is recommended to be employed in regional geography classes in order to study regions, countries and continents, including comparative courses (Dulamă, 2002; Dulamă & Ilovan, 2004; Pandia & Fischer, 2006). These studies may focus on all aspects of a territory or solely on certain ones, for instance tourism (Voitovici, 2000). Creating these analyses improves the development of geographic thinking in students since they learn to scientifically tackle a space from four different perspectives, identify relations between the space components, as well as phenomena and processes, compare and synthesize information, as well as provide arguments for their opinion (Dulamă, 2008).

SWOT is frequently used in assessing human settlements. To ensure the authenticity and correctness of the analysis of the local environment, to enforce scientific rigorousness and avoid data corruption, it is recommended to involve different types of specialists and the local populace (Voitovici, 2000). In the study on the city of Cluj-Napoca, after identifying the strengths and opportunities, several ways to capitalize the said elements had been proposed. On the other hand, mitigation and counter measures were introduced for weaknesses and threats (Voitovici, 2000). The author also used the term "possibilities" and not opportunities, referring to external as well as internal ones. The threat sources are located both externally and internally, unlike other authors who solely included outside dangers in their SWOT analyses (Dulamă, 2008).

Geographic literature emphasizes the importance of understanding the students' geographic thinking process by teachers and professors or finding if this thinking is missing altogether (Chang & Pascua, 2017). To recognise it and support students in developing their geographic thinking, teachers should have a firm grasp on the subject and use it periodically. From the multitude of descriptions of geographic thinking, we would like to describe just a handful. Thusly, it is crucial to understand that geographic thinking, necessary for analysing and explaining the world we live in, is based on perspectives, abilities, and concepts (Palacios et al., 2017, p. 104). Matthews and Herbert (2008) emphasize the need for an integrated approach to the study of the world. Morgan (2012, p. 275) states that to think geographically is to have the ability to build a mental map, which is crucial in identifying patterns, recognising relations, and observing dynamics.

In Romania, geographic thinking and its way of creating and developing it is poorly depicted in geography papers and books. There are brief mentions – it involves the understanding and explanation of the correlation between natural factors and human factors found in the environment, it implies geosphere integration and building a unified representation of reality based on an interdisciplinary approach (Dulamă, 1996, p. 12). During this process, it is recommended to encourage students' active involvement in educational activities for their emotional, intellectual, and social development (Albulescu & Albulescu, 2015; Fetti & Albulescu, 2020). This paper focuses on the role of SWOT analysis in developing geographic thinking, thus attempting to fill a scientific void in geographic literature.

2. Problem Statement

Geography students develop SWOT analyses for several courses from their education plan, regardless of their specialisation. At the *Didactics of Geography* seminar, we encourage our students to create SWOT analyses of their hometowns based on their prior knowledge, in order to ensure that they do not mistake strengths with opportunities or weaknesses with threats, an issue which has been already brought to attention (Dulamă, 2004), but also observed in all student and teacher activities. The second reason for this task is for them to comprehend that a certain internal aspect may be viewed as an opportunity as well as a threat, depending on the perspective, and that categorising it may and must be backed by arguments. All these analytic problems originate from the pre-university geographic education system, where teachers use this tool in a very different manner and do not focus on the geographic thinking of students who use this method.

3. Research Questions

To understand how the SWOT analysis influences the students' geographic thinking, we find answers for the following questions: What geographic aspects did the students mention in the four categories? What essential thought processes are employed during the development of a SWOT analysis for one's hometown? What attributes and components of geographic thinking are developed? What types of thinking are exercised in this information processing? What language do students use in the analysis presentation? What components are developed when using the SWOT analysis in the study of geographic systems?

4. Purpose of the Study

This study aims to depict how the SWOT analysis of one's hometown influences the geographic thinking of geography university students from all specialisations, the influences being apparent in the text devised by them, in which they mentioned strengths, weaknesses, opportunities and threats.

5. Research Methods

Participants. 50 students from the Faculty of Geography of Cluj-Napoca Babeș-Bolyai University were involved in this study. They regularly attend the psychological-pedagogical training programme that will certify their teaching abilities. 30 students attended the courses and seminars of the *Didactics of Geography*, organised by the second author in 2018, while 20 students attended the same classes in 2020. The second author is seen by students as a professor, not as a researcher.

Procedure. In 2018, students received the task to create the SWOT analysis of their hometown. The minimum requirements were to fill out two aspects in each category. After completing the analysis, the teacher asked the students to present their work, assessed it on the spot, asked to argument their choices and discussed their mistakes. Some students filled out or completed their task at home. In 2020, students were given the same task, but this time university classes took place online, because of the COVID-19 pandemic. They sent their work by email.

Research material. It is represented by the 50 SWOT analyses devised by the students from the two groups. A third of the analyses are about rural settlements (33% in 2018; 30% in 2020). Most towns, cities or villages under scrutiny are in north-western Romania, except for one town and four villages.

Data collection. We ran a content thematic analysis on the SWOT plots devised by students. In 2018, we collected some data using the interview method – for instance, why a certain aspect is a strength or a weakness.

6. Findings

6.1. General observations

Firstly, to assess the students' SWOT analyses of human settlements, evaluators had to have certain abilities and knowledge in the field of *Human Settlement Geography*, exact knowledge about the *Geography of Romania* and expertise in using this assessment instrument. If we compare students with teachers/researchers, the former analyse or scan a picture or a mental representation using specific language, while the latter employ more representations, based on successive readings or sporadic observations based on visual aid. Evaluators had a difficult task because they had to see the human settlements through a magnifying glass: the eyes of the students who had seen them.

The analyses performed by the students have a variable extension, some extremely brief, with very few aspects, some thoroughly structured and developed. The students with short analyses followed the instructions from the seminar and filled out the table based on their prior knowledge. Those who worked at home had the possibility to do some research from various sources and had a copious amount of time, which was why they found more useful information. As the activity was part of a didactics course, the aim was for students to learn to correctly use this analysis tool, based on a well-known concept, not to create a full analysis of a human settlement. The focus was on learning how to properly apply the method ("knowing how to do"), not on the geographic content ("knowing"), despite the fact that the correct usage of geographic information and scientific language was crucial.

6.2. Categories of geographic aspects mentioned by students

The study started with 16 SWOT analyses on 15 rural settlements from several counties in Romania: Alba (Bistra – 2 studies), Cluj (Poieni, Iara), Bistrița-Năsăud (Ciceu-Mihaiești, Maieru), Galați (Ghidigeni), Gorj (Bustuchin), Maramureș (Șieu, Șurdești, Băița de sub Codru), Neamț (Țibucani), Satu Mare (Călinești-Oaș, Halmeu), Sălaj (Iaz), and Vâlcea (Șirineasa). These studies came from students with different backgrounds: Geography of Tourism (9), Geography (3), Cartography (1), Territorial Planning (2).

We will therefore analyse the four categories of aspects mentioned by students. The geographic location of villages was considered a strength compared to the other spatial components nearby (forest, city, town, medieval fortress, Roman castrum), indicating that they knew the importance of spatial as well as cause and effect relations ("secluded and quiet place"; "favourable for tourism"). The list of strengths also contained natural components (hills, mineral water, reservoir) or the decision was motivated through their quantitative and qualitative assessment ("plant diversity", "rich flora/fauna", "diverse relief", "plateau climate with no excessive temperatures"). In terms of rural population strengths, there were several relevant

aspects ("multimillennial continuity of habitation", "available workforce"), but also elements which differed from one village to the next ("relatively homogenous ethnic structure"; "diverse ethnic structure, with a strong multicultural scene"). The rural road infrastructure was perceived as a strength in only three cases. In some cases, constructions associated with some services were mentioned as strengths (pharmacies, library, police, hairdresser, shops, medical facility, cultural office, mayor's office, school, church), as well as some utilities ("water and sewage network", "public lighting in all villages", "drinking water", "electricity"; "postal services"). Several man-made touristic sites (Ciceu Fortress, "Dormition of the Virgin Mary" Wooden Church in Șieu, an ethnographic museum, a village museum, Chrissoveloni mansion, Chrissoveloni family crypt in Ghidigeni, Galați County, wooden churches), "Mlaștina de la Iaz" nature reserve, „Floare mândră de pe Iza" folk festival, customs and traditions (carolling, "the Goat") were all mentioned as strengths for the villages they inhabited.

Agricultural strengths were those represented by the potential of agriculture ("fertile farmland", "rich pastures", "fishing domains"). One case mentioned the existence of agricultural activity, while another presented land use for growing strawberries (Halmeu – "Strawberry Land") and for producing wine – "among the most famous in Northern Transylvania" –, on relatively small areas in the Halmeu Hills. The industry, poorly represented in Romanian villages, was mentioned only three times (sand and rock quarries, properly managed oil, and gas deposits). Other aspects were considered strengths as well: "presence of multiple villages", "a good connection with neighbouring settlements", "good community involvement", "good water, soil and air quality". Table 1 contains the (categorised) strengths identified by students.

Most weaknesses (29) of rural areas referred to their population: lack of jobs (6 villages), old population (3 cases), increased mortality rates, decreased birth rates, young people migration abroad, low education level, decrease in population (Table 1). Natural conditions have the least identified weaknesses: "bad drinking water", "shortage of wood as fuel or very high prices", "danger of landslides, fewer rain and risk of drought". In terms of man-made components, students identified infrastructure weaknesses (poorly developed, in disrepair, unpaved roads), environmental weaknesses (poor waste management systems, pollution, no proper landfills, excessive deforestation), as well as weaknesses in tourism (lack of touristic advertisement and capitalization, disregard for the true touristic potential, no investments in tourism).

Opportunity is defined as a "favourable situation, occasion", and the term opportune means "which happens or takes place at the right time and place; suitable to the situation; suitable, convenient, favourable" (Academia Română, 2009). Based on these definitions, we will view opportunities as external situations, conditions, factors or influences favourable for the rural settlement (Dulamă, 2008, p. 298). Opportunity assessment presented by students was difficult as their presentation had been partial. From the list of 59 statements (Table 1), we have chosen only eight opportunities which were certain: "Rodnei Mountains provide opportunities for tourism development"; "Western winds"; "European funds"; "existence of non-governmental organisations (NGOs)"; "tourists"; "natural potential (forests)"; "young family support social policies"; "Valea Mare river provides water for people".

Some aspects were in fact strengths: "touristic potential"; "man-made touristic potential (traditional houses)"; "climate favourable for rest and relaxation". The other aspects were more like objectives or goals ("attracting investors", "initiate ecotourism", "extending orchard farming", "job creation", "rehabilitation of Ciceu fortress", "promoting customs and traditions", "accessing European funds", "developing touristic

paths", "road modernisation", "organisation of folk shows", "festival organisation", "fair organisation", "professional formation centres", "creating agricultural product processing plants", "developing wine and fruit products", "agricultural development", "creating social events in the community"; "updating the Zonal Urban Plan (ZUP)"; "updating the General Urban Plan (GUP) with the inclusion of new strategic directives"; "job creation and quality of life improvement"; "capitalizing the cultural heritage through sustainable tourism". To be classified as opportunities, these situations should be presented in such a way that the reader is able to understand that they are real and can act as positive factors in village development. Formulating opportunities must be done alongside data about the moment, duration and place of the activity or action, to be perceived as inputs or information, energy, and matter flows that enter a system and lead to positive effects. Since opportunities may be temporary (seasonal, periodical, annual), it is crucial for students to recognize them in order to capitalize upon them.

The list of 51 risks (Table 1), which threaten rural communities, contains aspects which have already been mentioned in the weaknesses list ("decrease in number of inhabitants", "the young migration towards urban areas or abroad", "declining birth rates", "unpaved roads", "old population", "loss of traditions and customs", etc.). Within SWOT analysis, threats are external factors which act or may act in a negative manner upon the rural system, through disruptive energy, information or matter inputs, either large or small. Students classified as threats some "foreign investments", "deforestation" and "forest disappearance" from many locations, "flooding during spring and autumn" caused by a river flowing through a village, air pollution, as well as water pollution from external sources.

Table 1.   Aspects identified by students in rural areas

Categories	Strengths	Weaknesses	Opportunities	Threats
Geographic location	9	-		
Natural conditions	15	4	4	4
Population	6	28	1	
Agriculture	13			
Transport infrastructure	6	9		
Industry	3	-		
Trade	1	1		
Services	14	9		
Tourism	16	7		
Environment	2	9		
General aspects	6	2		
Financial resources	-	-	1	1
Organizations	-	-	1	
Public policies	-	-	1	
Total correct aspects	**89**	**69**	**8**	**5**
Total aspects	**89**	**69**	**57**	**45**

SWOT analyses for cities have been undertaken by students from various fields of study: Geography (12), Geography of Tourism (10), Cartography (3), Territorial Planning (2), Hydrology-Meteorology (2). They developed 30 SWOT analyses on 18 urban settlements: Cluj-Napoca (7), Baia Mare (5), Brad (2), Zalău (2), Arad, Bistriţa, Covasna, Deva, Hunedoara, Miercurea Ciuc, Piatra-Neamţ, Petrila, Sibiu, Satu Mare, Sighişoara, Slatina, Turda, and Uricani. Similarly to countries, city elements and aspects are more

numerous and more diversified, therefore 176 strengths were identified. These were less nature-focused, and more man-made centric. As in the case of villages, strengths were listed (theatres, malls, museums, universities, concerts and festivals, hospitals, famous houses, sports areas, viewpoints, sport events, cultural events such as festivals, concerts, etc., medieval castles, airport, parks), had an attribute (multiple communication routes; low unemployment; extended pedestrian area) or even a wider presentation ("a diverse topography which ensures landscape diversity"; "diversity of economic firms and domains").

The presentation of weaknesses (137) was similar to that of strengths. Students put forward visible components of the urban spectrum ("dilapidated building facades", "lack of green areas", "old blocks of flats", "defacing historical monuments", "beggars, stray dogs") and characteristics of urban space ("urban agglomeration", "heavy traffic", "urban pollution", "insufficient parking spaces"). They realized that the city and its citizens directly faced considerable problems: high rents, lack of job opportunities, high unemployment rates.

From the 100 opportunities listed by students, we selected only 11 that corresponded with the previously mentioned criteria: foreign investment, the Ukrainian and Hungarian border nearby, students from Romania and abroad, the Arieș river, the glacial landforms of the Parâng Mountains and the karstic landforms of the Șureanu Mountains, the return of people who left for work abroad, partnerships with prestigious European and US universities, the Nădlac-Arad-Timișoara-Sibiu highway, closeness to railway lines. The other aspects mentioned as opportunities were actually strengths. From the 101 threats mentioned by students, only nine were external negative factors ("tailing pond accidents"; "mining pollution"; "Cluj growth pole"; "touristic offer of cities larger than Oradea, alongside better accessibility"; "students from rural areas", "excessive deforestations"; "collapse of old mine tunnels"; "mine closure"; "pollution sources near Deva: Mintia Power Plant and S.C. Carpatcement S.A. Chișcădaga"), the rest being weaknesses.

6.3. General and specific aspects mentioned by students

SWOT analyses of certain countries contain many exact data, mostly geographic names which allow the individualization of the respective country and its distinction from other states (Dulamă, 2008). The analyses developed by students on their hometowns had a predominance of general aspects, not particular elements. Students who worked during the seminar provided few exact information (Brad Gold Museum, which is unique in the world), in contrast to those who worked from home and sent their solved tasks by email. The latter provided more particular data (Șieu "Dormition of the Virgin Mary" Wooden Church; the mountain train from the Vaser Valley, close to the town of Vișeul de Sus; "Floare mândră de pe Iza" Festival; Chrissoveloni family crypt and mansion from the village of Ghidigeni, Galați County; Tailors' Tower, Village Museum, Art Museum, Cluj-Napoca National History Museum; Citadela Festival and Deva Fortress; the Olt River, the Meseș, Parâng and Șureanu Mountains). These names were important as they were associated with a particular spot / place (village or city), often highly illustrative and symbolic of it.

6.4. Operations essential to thinking exercised by students during SWOT analysis

Psychology papers mention six fundamental operations of thinking: analysis and synthesis, abstractization and generalization, comparison, and logical concretization (Zlate, 1999). Firstly, to establish which were strengths, weaknesses, opportunities and threats, students analysed the components of their

hometowns, compared them, and devised the abstractization operation, as they had only extracted certain elements from an ensemble of components. Thus, the students assessed and classified them.

6.5. Types of thinking exercised in SWOT analyses

Despite the fact that, within this method, information must be classified into four categories, which may lead to the impression of an algorithmic thinking, within the actual category, each student had the possibility to organise information using a heuristic technique. In general, SWOT analysis requires heuristic strategies to solve tasks. Creating an in-depth and comprehensive analysis involves productive thinking, as it "leads to the combination of disjointed facts, elements and events in a new structure" (Zlate, 1999, p. 278), in our case, a human settlement. Developing the SWOT analysis contributes to critical thinking development, which aims "to test and evaluate possible solutions and explorations" (Moore et al., 1985, p. 5). Furthermore, it helps develop divergent thinking as the search for strengths, weaknesses, opportunities, and threats represents a long list of solutions, but all this must be filtered through critical thinking. As they develop their SWOT analysis, students use inductive thinking, but also deductive thinking, as they go from concrete, specific to general, and to abstract, but also from abstract to concrete. If we disregard the names of human settlements and the other geographic markers used by students, we observe that they operate with general aspects that they attribute to the analysed settlements. For example, when analysing cities, under strengths, many mention museums, factories, theatres, festivals, sport, and cultural events, while under weaknesses, overcrowding, pollution.

6.6. Language used in the presentation of SWOT analyses

A geographic ability that geography students must acquire and develop is using scientific language, which entails the correct usage of geographic terms. We observed that students made use of concepts specific to geography (economic pole, polarisation area, national growth pole, infrastructure) and numerous informational structures ("polarisation of a cross-county rural area", "existence of a mono-industrial area", "lack of cohesion and coordination in sectorial strategies", "low efficiency of road transit", "low urbanisation index") that they had probably not picked up in high school. Likewise, scientific geographic language is used in combination with colloquialisms ("rich pastures", "beautiful landscapes", "rich flora", "rock pit"), and English words (the opportunity of developing a transit "*hub*").

Even though students refer to a single locality, we believe that they should offer more information about the place they are investigating. For instance, if one mentions "tourism development" as an opportunity, the reader may believe that it implies the development of tourism in that particular town or village and therefore it is a strength, not an opportunity. If it means the development of tourism at national level due to certain policies, strategies, or programmes, then it is an opportunity. Another incomplete statement – "road rehabilitation" – creates problems for readers as they do not know if it is the streets in a particular city, county roads, national or European roads. In general, students correctly use scientific language and rarely employ wrong expressions (e.g. "accumulation dam").

6.7. Abilities developed by using SWOT analyses in studying rural and urban geographic systems

Creating a SWOT analysis requires an ensemble of information and knowledge as well as navigating a cognitive and data processing path for which most students do not have a rigorous plan, which is why such an ability is productive in nature. Since they assess and classify geographic elements and processes based on certain criteria, they develop their own ability to rationalize, to think critically. The analysis uses written language, so students develop their competence for writing. Listing competences specific to geography developed through such a tool is more difficult as there is no consensus on the matter in the scientific world. However, we believe that students develop many such competences: to decipher space organisational forms, analyse the geographic surface, identify the components of a territory or the elements of a problem, classify geographic aspects, solve a geographic problem and many more. Creating and developing such abilities requires using/training geographic thinking.

7. Conclusion

We came to several conclusions at the end of this study on students' SWOT analyses of their home rural and urban settlements. It is crucial for evaluators to have the necessary expertise in the usage of this analytic tool as well as in-depth knowledge of *Human Settlements Geography* and *Geography of Romania*. Students seem to have difficulties in identifying opportunities and threats since they look for such aspects within the system at hand (home village, town or city), not outside of it, in same rank systems or higher systems from which flows of energy, information and matter, that can influence settlements, originate.

SWOT analysis is paramount in the formation of geographic thinking and it is a highly efficient method in analysing and assessing the world we live in, at a component level as well as at a relational level. It helps build a mental map of a human settlement focusing on its organisation and management as a system, in relation to higher or lower-tier systems, from a spatial as well as a temporal perspective. The SWOT analysis represents one of the most valuable methods for geographic thinking development.

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