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Geography Teacher Candidates' Approach to the Urban Transportation Problems in Istanbul

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Abstract: The aim of the study is to analyze the geography teacher candidates' approachtowards urban transportation problems in Istanbul. For the purpose, a semi-structured interview form was given to fill the 77 students studying at the Marmara University, Ataturk Education Faculty in Istanbul and some open-ended questions were asked. The answers to these questions were analyzed by the text content analysis method. According to the obtained findings, the prospective geography teachers stated that the main problem of Istanbul was urban transportationand the other problems associated with urban transportation. It was expressed that the among of these important problems faced by the participants in urban public transportation were pointed out traffic density, crowded in public transportation vehicle, the time lost in transportation, inadequate bus services and disregarding to the schedule of public transportation vehicles. Although the prospective geography teachers appreciate the efforts made to solve the urban transportation problems in general, they think that the applications are not enough. When participants were requested their proposals for the current problems, they suggested the notable recommendations about increasing of the projects on public transportation. Determination of the prospective geography teachers' thoughts about current spatial problems in general and the transportation problem of Istanbul in particular, it will particularly contribute to reveal of the related directions of geography education to gaining a critical perspective, asking questions, using information and perhaps the most important is problem-solving.

Key words: Prospective geography teachers · Istanbul · Urban transportation

INTRODUCTION

Modern geography education cannot be considered separately from the nearby environment's spatial problems. Sufficient definition, comprehension and interpretation of these problems are among the fundamental targets of geography education. The modern geography instructors have to have the academic sufficiency regarding these spatial issues. Yet, it is revealed via various research that the professional adequacy of today's geography teachers are not at the desired level [1, 2]. Especially in regards to the proximodistal principle of geography courses, primarily there are existing insufficiencies about the spatial issues in the proximity. In today's world where the population and urbanization is rapidly increasing and the man is shaping the space even further, having geographical education consider this changing spatial perception became an inevitable necessity. In this context, analyzing the geography teacher candidates' opinions and approaches to the nearby environment is of great importance with regards to the future of geography education and its ability to respond to the modern times' needs. Because geography teachers are the key players who can shape up the future of geography education.

It is also known that students learn about the region they live in better compared to other regions [3]. A more frequent daily-life usage of geography lesson topics can be ensured by allocating more time to the topics regarding their immediate surroundings [4].

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The leading fundamental spatial problem in Istanbul is the urban travel issue. It is possible to review this problem from a wide variety of angles. Morning and evening commutes to work, visits, shopping, recreational travels comprise various urban travel actions. The fundamental actors of urban transportation are the pedestrians, bike riders, personal vehicles, commercial taxi cabs and mass transportation vehicles such as minibuses, buses, trams, light rail systems, subways and metrobuses.

In cities that grow rapidly, such as Istanbul, the usage ratio for motor vehicles is increasing in line with the geographical spread of the city. In line with this spread, road surfaces become insufficient, traffic jams increase, air and noise pollutions exceed the acceptable levels and the new roads and junctions built to resolve the transportation issue in cities that are turning into asphalt further worsens the transportation problem and also disrupts the aesthetic aspect of the city [5]. On the other hand, the newly planned large-scale highway projects that are prepared to resolve the city's transportation problem may cause the unplanned expansion of the city in the project areas and further increase the air pollution [6].

People lose hours of valuable time due to traffic intensity, the production capacity decrease and the economic life is adversely affected. Parked vehicles that occupy the city centers in an unproductive manner, noise pollution resulting from the vehicles which frequently cause hidden health problems, the increased exhaust gas release from vehicles as a result of the decreased speeds due to traffic jams and traffic accidents decrease the quality of life in many cities.

For a long time in our country, urban transportation issues were not met with holistic and sustainable solution approaches. Current issues were perceived as traffic intensity in certain veins and the relieving of this intensity and with the predetermined conclusion that railed system suggestions will resolve all issues without even going into the roots of the problem resulted in the development of railed system solutions without even considering alternative transportation types or short and middle term traffic regulation and management suggestions. As a result of this, transportation investments that are considerably above their real value are being realized through external financing and technology transfers [7].Yet in developed countries, as a requirement of the sustainability principle in transportation, instead of capacity increasing solutions for urban transportation issues, the efficient usage of demand and traffic management applications and information technologies became of importance [8].

There is no doubt that primarily, investments into mass transportation systems have to be increased to lessen the current transportation problems. But mass transportation investments cannot stop the increase in vehicle traffic by themselves. Decreasing on the road parking lots in downtown areas, eliminating the transit vehicle passage through downtown areas, prohibiting vehicle entrance to certain downtown areas, increasing `*park-drive*` regulations, allocating separate lines in the roads to mass transportation vehicles that use regular vehicle roads, integrating attractive hubs and mass transportation, efficiently setting up the internal connections between inter-city and urban roads, improvement of passenger information services, complying with seat and standing passenger limits in mass transportation, economic sanctions to limit unnecessary usage of vehicles in the city and other various solution methods are of the question. But all these methods have to be integrated with the mass transportation investments.

Certain alternative transportation systems are being developed in the resolution of Istanbul's urban transportation problems [9]. With the 52 km Metrobus Project in Istanbul, a high volume and swift transportation system was established using buses, important railed system projects were executed, applications to increase the share of marine and usage of bikes was implemented and in certain downtown areas, pedestrianization projects were implemented [10]. In our day, Istanbul mass transportation comprise trains, subways, light rail and tram systems, metrobuses that were born as a hybrid between railed systems and bus centric mass transportation systems, low passenger capacity vehicles such as buses, minibuses and the ship lines. The abovementioned transportation systems have significant differences such as their carry capacity, speeds, infrastructure, repair and maintenance costs, their environmental footprints, their integration with other transportation systems and transportation safety. Especially the railed systems are being preferred due to their low operational costs, low accident risks, energy usage, traffic jams and personal requirement, despite their high investment costs. To decrease investment costs in railed systems, starting primarily with Metropolitan Municipalities, it was planned to procure

railed transportation system requirements from domestic sources and to develop technological capabilities and domestic production [10].

In addition to the aforementioned parameters, the spatial differences within the city and the economic specifications of the city determine alternatives in transportation. But even more importantly, it is necessary to deal with these projects in a sustainable manner that considers the city's growth specifications and its future needs as well as the city's land use plan [11]. Furthermore, planning mass transportation by considering the city's geological and topographic structure and its historic fabric is of great importance as well [12].

While it is attempted to meet a portion of the transportation demand in the city by large scale rail system projects, it is clear that buses will keep their effectiveness in transportation for a long time. Thus, buses, metrobuses and other similar systems are primarily preferred in mass transportation; in places when these are insufficient, then railed system alternatives are utilized. For rail systems to be operating, peak hour single direction transportation demand is planned to be 7.000 passengers/hour for tram systems, 10.000 passengers/hour for light rail systems and 15.000 passengers/hour for subway systems [10]. Furthermore, the current and planned rail system projects are generally planned to be integrated to railroad main lines, urban logistic centers, intercity bus terminals, airports and other transportation types. A similar situation applies in creating bus routes, determining the demand amount and stop points along the route, the specifications of the vehicles and in adjusting the service frequency and duration along the created routes.

With the Marmaray Project that may resolve an important part of Istanbul's transportation problem, it was envisioned to modernize the railroad from Gebze to Haydarpasa and on the European side from Sirkeci to Halkali and to connect the both sides of the Bosphorus by a sub-sea tunnel [13]. It is a known fact that the share of marine transportation is insufficient in Istanbul's mass transportation system. Within this frame, some work was carried out to renew the old ships used in the city lines, to rehabilitate the piers and to increase their numbers. But there is need for new work aiming at increasing the share of marine transportation which is also integrated with other transportation systems. Furthermore, marine transportation should be extended not only between the two sides, but also parallel to the shorelines as well.

MATERIALS AND METHODS

In this study phenomenology pattern was used as the study method, whereas "interview form method" was used to acquire data. The phenomenology pattern focuses on cases which we are aware of but do not have a detailed understanding [14]. Whereas the interview form method is a method that is used to acquire similar data from different individuals on similar topics[15].

Semi-structured interview form prepared by the researcher was used during data acquisition in this study.In this context, in 2012-2013 Calendar Year, interview form that was prepared to see the approach geography teacher candidates who are enrolled in Marmara University, Ataturk Faculty of Education, Department of Geography Teaching towards Istanbul's urban transportation problems was applied in a face-to-face manner to those individuals identified via random sampling technic who volunteered to partake in the research. 46 (59.74) of the 77 people who participated in the research were male and 31 (40.26) were female. Script content analysis was done in the analysis of the data obtained from the total 77 participants, later the obtained categories were quantified and expressed with frequency and percentage values.

Table 1 shows that approximately 60% of the participants are male and 40% are female. And all of the participants are either in the 2 grade or more senior. Having senior participants shows that the participants have been objected to the primary spatial problems that are experienced in the proximity. Furthermore, 70% of the participants answered 0-5 years when asked `How many years have you been in Istanbul?`, which shows that most of the participants migrated to Istanbul for educational purposes. Approximately 25% of the participants were born and raised in Istanbul. 80% of the participants reside 5 km or more distant from the campus, which shows that these students cannot commute by walking to the school premises. A large majority (87%) of the students use mass transportation vehicles. Percentage of those using private vehicles is almost negligible. While the available data shows important hints about the socio-economic status of the geography teacher candidates, this is the subject for another research. 88.3% of the participants spend 1 hour or more in daily commuting process. Approximately 40% spend 3 hours or more for this. The available data shows that a very significant amount of the students' time is spend in transportation and is important as it

Table 1: Information about the participants

Variables		Frequency (f)	%
Gender	Man	46	59.7
	Woman	31	40.3
Grade	2th grade	19	24.7
	3th grade	30	39.0
	5th grade	28	36.4
How many years have you been in Istanbul?	0-5 year	54	70.1
	6-10 year	3	3.9
	11-15 year	1	1.3
	16-20 year	6	7.8
	21+	13	16.9
	0-5 km.	15	19.5
Distancetocampusfromresidence	6-10 km.	27	35.1
	11-20 km.	11	14.3
	21-30 km.	16	20.8
The most common mode of transportation to campus	Private vehicle	1	1.3
	Public transport	67	87.0
	Pedestrian	9	11.7
Average daily commuting time	30 minute and less	9	11.7
	1 hour	15	19.5
	2 hour	23	29.9
	3 hour	19	24.7
	4 and above	11	14.3

Table 2: Istanbul's most important problem according to the participants

	f	%
Transportation	57	74.0
Population intensity	9	11.7
Environmental problems	6	7.8
Unguided urbanization	2	2.6
Education problems	1	1.3
Food safety insufficiencies	1	1.3
Cosmopolite structure	1	1.3

shows that the topic of the research has been picked strategically.

Findings: The data obtained via face to face interviews with the participants were evaluated using script content analysis and descriptive statistical technics. The findings identified as a result of the research are provided below.

Question 1: *What do you think is the most important problem of Istanbul?* The responses of the participants were categorized and analyzed and the table is created (Table 2).

Most of the geography teacher candidates think that transportation is the most important problem of Istanbul. Transportation problem was generally expressed as traffic intensity problem. Population intensity, unguided urbanization and environmental problems, which are the result of transport related issues in fast urbanization cases also create the primary problem perception of the participants. Furthermore, one participant each voted education problems, food safety insufficiencies and cosmopolite structure itself as primary problems. But some participants did not define the primary problem as one single problem. Besides the main problem, the most frequently stated problems are as follow: noise (f 9), intense population (f 9), environmental pollution (f 7), traffic intensity (f 6), unplanned urbanization (f 3), modern looking intense structuralization (f 2), financial difficulties (f 2), safety (f 2), education (f 1), unemployment (f 1), health (f 1), food (f 1), cosmopolite structure (f 1) and stray animals (f 1).

Question 2: *What sorts of problems do you encounter in Istanbul's urban transportation?* The responses of the participants were categorized and analyzed and the table below is created (Table 3).

The primary problem the participants encounter in Istanbul seems to be traffic intensity and the stampede within the mass transportation vehicles. These two

Table 3: The problems encountered by the Participants during Transportation

	f	%
Traffic intensity	40	26.3
The stampede within the mass transportation vehicles	39	25.7
The time lost in transportation	13	8.6
The insufficiency of rounds	13	8.6
The vehicles' lack of complying with the time schedule	9	5.9
Old vehicles	4	2.6
Minibuses	4	2.6
Not complying with traffic rules	4	2.6
Faulty parking at the side of the roads	3	2.0
Road construction works	3	2.0
Traffic noise	3	2.0
Insufficient roads	3	2.0
The irresponsible behavior of people in the traffic	3	2.0
Having to use connections to get from one place to another	2	1.3
High mass transportation prices	2	1.3
He/She do not encounters any problems	2	1.3
Having long bus routes	1	0.7
The reverse seats in the buses	1	0.7
Traffic due to games	1	0.7
Frequent traffic accidents	1	0.7
Traffic due to meetings	1	0.7

Table 4: Suggestions of Geography Teacher Candidates regarding Istanbul's Transportation Problem

	f	%
Increasing especially subway, tram and Metrobus lines	52	39.7
Increasing the number of busses	17	13.0
Concentrating on public transport projects	15	11.5
Limiting of the usage of private vehicles	13	9.9
Modernizing mass transportation	6	4.6
Eliminating the minibuses in public transport	5	3.8
Allocating private lines to buses	3	2.3
Completing mega projects such as Marmaray	3	2.3
Decreasing the migration to Istanbul	3	2.3
Development of urban transformation projects	2	1.5
Decreasing the fees in mass transportation	2	1.5
Making the usage of marine transportation more common	2	1.5
Enforcing the park prohibition rules	1	0.8
Implementing the card usage in minibuses	1	0.8
Making the usage of and bikes more common	1	0.8
Decreasing commercial taxi cabs	1	0.8
Increasing traffic ticket fees	1	0.8
Building sub passes	1	0.8
Increasing parking lots	1	0.8
Building of cable car linesoverBosphorus	1	0.8

problems comprise 52% of the transportation related problems. The time lost in transportation, the insufficiency of rounds, the vehicles' lack of complying with the time schedule are in fact problems relevant to the two stated above. Old vehicles, minibuses and other vehicles not complying with traffic rules were stated 4 times each as the problem. Faulty parking at the side of the roads, road construction works, traffic noise, insufficient roads and the irresponsible behavior of people in the traffic were stated 3 times each. Again, these problems are directly or indirectly related with the other problems. High mass transportation prices and having to use connections to get from one place to another were stated twice. Two participants stated that they do not encounter any problems in transportation. Having long bus routes, the reverse seats in the buses, frequent traffic accidents, traffic due to games and meetings were stated once each.

Question 3: *What do you think about the works done to resolve Istanbul's transportation problems?*` When the responses to this question were categorized and analyzed, it was observed that 54.5% (42 people) of the participants think that there are significant projects carried out regarding this, but these are not sufficient. Especially the subway, metrobus and Marmaray type large scale works were stressed as important. For example, `*important work is being done, but it is not enough!*`or `*I believe the currently undertaken work is positive, but it is not enough*` comments were made regarding this opinion. 6.5% (5 people) of the participants consider the works positively and believe they will suffice in resolving the transportation issue in Istanbul. `*I think it will get better in time*`, `*when the current mega projects are finalized, Istanbul's traffic load will decrease*` comments were made in this regard. 11.7% (9 people) of the participants believe that the work done is enough, but the migration to Istanbul will make resolving the transportation problems impossible. Comments such as `*required work is being dome, but I think these work will not be able to resolve Istanbul's transportation problem*` or `*the required work is being done, but having a large population and the increasing number of vehicles per person makes Istanbul's transportation problems impossible to resolve*` show this opinion. 14.3% of the geography teacher candidates (11 people) believe that the current work is insufficient and think negatively of their overall potential effect. Comments like `*The current works are towards clustering the population in Istanbul*`

`projects to be done, such as Channel Istanbul and 3rd Bridge aim at attracting even more population to Istanbul` show this opinion clearly. 10.4% (8 people) of the participants stated that they cannot evaluate the works either negatively nor positively. The people drew attention to both positive and negative aspects. 2 people stated that their knowledge regarding the work is not sufficient.

Question 4: *What is your suggestion in resolving Istanbul's transportation problem?* The responses of the participants were categorized and analyzed and the table is created (Table 4).

66.5% of the suggestions by geography teacher candidates to solve Istanbul's transportation problem are about increasing mass transportation. Within this frame, increasing especially subway, tram and metrobus lines were stressed heavily. Completing mega projects such as Marmaray as soon as possible can be considered within this scope as well. Furthermore, increasing the number of busses in mass transportation, on the other hand eliminating the minibuses and decreasing commercial taxi cabs were interesting suggestions. 10% of the suggestions were about limiting the usage of private vehicles. Decreasing the migration to Istanbul, making urban transformation projects more common and other similar suggestions are in fact about the belief that transportation problems can be resolved by dealing with other more fundamental problems. Modernizing mass transportation, allocating private lines to buses, decreasing the fees in mass transportation and implementing the card usage in minibuses are about incentivizing mass transportation and these comprise approximately 10% of the current suggestions. Suggestions like making the usage of marine transportation and bikes more common have the quality to make contributions to resolving the transportation problem by creating alternatives in urban transportation. Enforcing the park prohibition rules, increasing traffic ticket fees, building sub passes so vehicles do not stop at the lights and increasing parking lots are suggestion towards decreasing urban traffic.

Question 5: *What do you think about the national and local administration's policies regarding Istanbul's transportation?* When the participants' responses were categorized and analyzed, geography teacher candidates evaluated the administration's transportation policies within the framework of current applications and while they generally support these applications, they also stated that they do not find them to be sufficient. Comments such as *`The works have been increased. But they are not enough. Istanbul deserves more`*, *`I find the policies regarding Istanbul's transportation, but I believe they progress too slow`* reflect this opinion. Approximately 15% of the participants stress that they do not support the administrations' transportation related policies. For example, comments such as *`the currently applied policies are towards increasing the traffic even further`*, *`Temporary solutions are created, the applications are not forward looking`* are in this scope. Again approximately 29% of the participants stated that they support the administration's transportation related policies. Comments such as *`I believe the administration works in the best possible way. It will get even better`*, *`Metropolitan municipality is working well in the last couple of years. We congratulate them.`*are within this scope. And there is a rather small group that supports some of the policies and find some to be faulty, e.g. comments such as *`I find the Marmaray project to be very positive, but I find the 3rd Bridge project to be wrong`*. 5% responded as `I do not know`.

RESULTS AND DISCUSSION

In a detailed research about the quality of life in Istanbul, 2410 participants were asked to list Istanbul's most crucial 3 problems from the various given variables and consequently, the three most important problems in Istanbul were decided to be: traffic, population and security [16]. In our research, the geography teacher candidates' list turned out to be transportation, population and environmental issues. With respect to the date our research was carried on, it is seen that security is not listed among the top problems. Therefore, geography teacher candidates produced opinions that are generally in line with Istanbul residents' primary problem perceptions.

The primary transportation problems geography teacher candidates encounter are the traffic intensity and the stampede within mass transportation vehicles. Other problems are in general regarding mass transportation vehicles. Since the majority of the participants prefer mass transportation in their urban transportation needs, they stated their problems as problems in mass transportation. Of course there are important problems that pedestrians and private vehicle users encounter in the urban transportation as well.

Transportation issue is considered to be one of the leading components of the quality of life. The relationship between the quality of life and transportation were considered from the perspective of sustainability and social *integration* [17]. The sustainability of natural and human resources are the major determinants in creating transportation policies. But it was observed that geography teacher candidates cannot sufficiently evaluate Istanbul's transportation problems from a sustainability perspective. The evaluations made are not at the academic level.

The majority of the suggestions provided by geography teacher candidates in resolving Istanbul's transportation problem are about increasing the mass transportation's share in urban transportation. Therefore, a majority of the works carried out in Istanbul to resolve transportation problems are towards increasing the share of mass transportation. Participants' suggestions do not sufficiently include strengthening the integration and accord between the systems based on transportation plans in line with spatial planning and development targets in urban transportation, developing infrastructure in a pedestrian and mass transportation focused manner, effectively establishing urban and inter-city connections and spreading environmental sensitive, smart, efficient and cost effective implementations which are necessary for sustainability [10]. Furthermore, in the resolving of transportation problems, suggestions regarding the demand and traffic management applications and efficient usage of information technologies instead of capacity increasing solutions were not sufficiently produced by geography teacher candidates. The participants evaluated the government's and local administration's Istanbul transportation policies only within the scope of the current applications. But it was observed that the knowledge level of geography teacher candidates regarding projects presented within the scope of 2023 and 2071 targets is not at a sufficient level.

As a starting point to learn and to teach; the process of using the local society and environment is defined as location based learning approach [18]. In fact, location based education is a natural product of the learning process. Because the individual's process to recognize the world initially begins with the attempt to recognize his/her location of living [19]. Thus, it is required to develop geography education programs on a location based approach. In this context, developing the geography teacher candidates' cognitive levels regarding the living environment's problems is important regarding the success of the program. Furthermore, determining geography teacher candidates' approach to daily spatial problems in general and especially Istanbul's transportation problem will contribute to bringing in a critical view to geography education, to ask questions, to use information and perhaps most importantly to bring in the edge towards problem solving.

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