JOURNAL OF APPLIED SCIENCES RESEARCH

ISSN:1819-544X

JOURNAL home page: http://www.aensiweb.com/JASR 2014 September; 10(10): pages 34-38.

Published Online 20 September 2014 Research Article

Investigating Spatial Distribution of Exceptional Students' Access to Human Force and Instructional Setting in Iran within 2002-11 Using GIS

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Received: 15 June 2014; **Revised:** 8 July 2014; **Accepted:** 4 September 2014, **Available online:** 20 September 2014

ABSTRACT

The present research was conducted with the aim of investigating the spatial distribution of exceptional students' access to human force and instructional setting in Iran during the years 2002 to 2011 using Geographic Information System (GIS). It is considered as a descriptive-survey research. Its population was comprised of all educational and official staff as well as exceptional students who studied in Iranian schools from 2002 to 2011. Considering the nature of the present study and access to research data in target years concerning exceptional students, all those students as well as the educational staff who worked with them during that time span comprised the sample. In order to gather the required data, the Ministry of Education, and Management and Planning Organization were visited. The collected data were analyzed by SPSS and GIS. The variation trend of exceptional students and the degree of their access were determined. High- and low-risk provinces were identified. Results revealed that Chahar-Mahal-o-Bakhtiari and Southern Khorasan provinces possessed the highest population of exceptional students. Sistan-o-Baluchestan province was found to have the highest proportion of students to human force, while Yazd province had the lowest proportion. Ardabil possessed the highest proportion of exceptional students to class, while Guilan had the lowest proportion.

Keywords: Exceptional students, human force, instructional setting

INTRODUCTION

A short look at human creation reveals that no two people are alike. Such divergences as in physical, mental and behavioral aspects are quite visible. In the majority of normal classes, there are a number of students who are unable to compete with other classmates and, therefore, fail at the end of the school year. These students are called exceptional students. Due to insufficient mental growth, they are not able to comprehend school subjects and solve problems as efficiently as normal peers. Among mentally retarded groups, they stand at the top in terms of mental growth. They comprise the most populated group of retards. Their IQ is considered by the majority of researchers and clinical experts as normal. In learning, these children are very slow and tend to forget things easily. Moreover, due to high IQ, high contextual adaption power and generalization skill, they cannot be considered as teachable students. All throughout the world, there are many students deprived of proper education. Some of them suffer from a sort of disability. In doing ordinary activities easily done by normal peers, these children face difficulty or limitation. Statistics from developed countries reveal that at least 12% of children have special needs [6].

Exceptional children are those who need special education so that they can make use of their utmost human potential. Here, an exceptional child is defined as one who differs from average normal children in terms of mental characteristics, physical abilities, communicative skills, social behavior or physical characteristics [8].

The first plan for educating exceptional children in Iran began with the establishment of a school for the blind in Tabriz and a school for the deaf in Tehran in the first decade of the fourteenth century (solar calendar). In 1968, the bureau of educating exceptional students was founded in the Ministry of Education. Schools for exceptional students began their work whose activity was limited to running special classes in normal schools. They were responsible for identifying and educating all children

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who were unable to use normal educational programs due to their mental, physical and emotional idiosyncrasies. It was followed by the establishment of several schools and centers in different parts of the country to educate exceptional children [3].

In 1940, proceeding the Islamic congress decree, the exceptional student education organization affiliated with the ministry of education was established. The aim was to provide services for a wider range of children and students suffering from disabilities [2]. The following goals were set:

1. Designing the educational system so as to compensate for mental and physical disabilities of exceptional students. It needs to be so qualified that their social and economic status after graduation is safe and appropriate.
2. Constant correction and reformation of exceptional education considering novel educational methods for instructing exceptional students worldwide and one that is appropriate to these children's needs as well as the special social conditions.
3. Covering all groups of exceptional children and students and instructing each as is appropriate to their needs at pre-school, elementary school, junior high school and high school educational levels.
4. Helping to prevent the emergence of physical and mental disabilities prior to birth, at the time of birth and after that through raising public awareness.

The education system has categorized exceptional students based on their particular physiological conditions in 7 groups:

1. Low mental ability group
2. Hearing disorder group
3. Eyesight disorder group
4. Physical/kinetic disorder group
5. Learning disorder group
6. Emotional/behavioral disorder group
7. Multi-disability group [1]

Disability is defined as an individual's deprivation and inconvenient state caused by a defect or lack of ability that impedes performing one's normal role considering one's age, sex, social, cultural and natural state [2]. In order to enhance ability, skill acquisition and participation of these individuals, special schools have been created in which a number of disabled students study. An exceptional student is an individual who is significantly different from peers in terms of cognitive, intelligence, physical, emotional or social features, and whose education requires shifts in normal programs, content, methods, materials and instructional setting so that it becomes appropriate to the particular characteristics of these students [5]. Statistics of developed countries indicate that at least 12% of children have special needs [6]. According to the statistics of Iran National Statistics Center, in 1986, the disabled population was 453,090 and comprised 91% of the whole population. During the past 35 years, there has been an increasing trend in population growth. In the disabled population, this growth has been even faster and in 2001, it reached 1,017,659. The ratio of the disabled population to total population rose from .91 to 1.35%. In 2002, the total population of students was equal to 17,196,588. 42% of it belonged to the disabled: 72,305 (42469 male and 29836 female). During the past 10 years, there was a decreasing trend in normal student population which reached 12,803,208 people. However, the number of exceptional students was on the rise and reached 82,326 (50,457 male and 31,869 female). They comprised 64% of the whole student population. The number of exceptional students studying at pre-school, elementary school, pre-professional junior high school, junior high school, high school, pre-university and professional high school are respectively 10,643, 45,338, 12,266, 2,663, 2,410 and 9,006 [1]. This rise of population is accompanied by a rise of needs for services and sources. On the other hand, besides the population size, other variables influence the severity of society needs and distribution of sources. Among them are: individual factors (age, sex and health state,…), social factors (population growth, culture, immigration,…) and environmental (region size, population distribution, communication ways,…) [3]. A rise in the number of students is accompanied by higher needs of instructional sources such as class, institute, human force, instructional aiding equipment and budget. Because of certain conditions of exceptional children and the need for special care and support, sources would be needed more than ever before [7].

Bougar [4] concluded that socio-economic status and region of residence could significantly discriminate students with learning disorders from others. A full regression model revealed that 9.96% of cases were categorized correctly. Low socio-economic level and residence in rural areas affect the emergence of the overall category of learning disorders, and highly predict one's affliction with learning disorders. Moreover, in a study entitled as 'Demography and analysis of population-based essays', Tehrani [1] states that an awareness of population structure and its national distribution plays a determining role in that country's overall growth and development. In another study on elementary school students of Ardabil, Narimani & Rajabi [9] pinpointed the significance of inappropriate demographic and cultural conditions and factors in the emergence of learning disorders.

Mabbott & Bisanz [12] indicated that learning disabilities are affected by such contextual factors as cultural/demographic differences, inadequate or inappropriate instructions and mentally-oriented factors. In their research on elementary school students, Kronbichler *et al*. [11] reported of a higher prevalence of learning disorders among students of improper socio-economic status along with other demographic risk factors. Still in another study,

Zigler & Hodapp [13] concluded that some reports of student residence in institutes especially their capacity of adapting to normal life conditions have not been promising. Furthermore, Jones [10] in an investigation proclaims that one factor directly influencing the demographic trends of exceptional education, and one which is considered a non-demographic factor, is registration coverage. When only a small proportion of a country's children go to school, population growth issue becomes of a secondary importance.

Evidently a serious obsession of national high-stakes policy makers is making sound and proper decisions based on precise and timely information. This way, limited sources can be fairly and optimally distributed corresponding to actual social needs; then, the society's access to services can be also increased. The priority would go to areas with the highest prevalence so that the sources can be used in the best way and society gets the most satisfied. Now the question rises: What has been the extent of changes in exceptional students during the past 10 years in different provinces of Iran? Which provinces are those with the highest prevalence and which are those with the lowest? What is students' access to human force and physical setting in different provinces like? Therefore, the present study was designed aiming to determine the spatial distribution of exceptional students' access to human force and instructional setting in Iran from 2002 to 2011 using GIS.

Methodology:

The present study is of a descriptive-survey research type. Its population is comprised of all instructional/official staff as well as all exceptional students who either worked or studied in Iran during 2002 to 2011. Considering the nature of this research and access to research data in the time span (2002-11) about all exceptional students and school staff in those years, they all comprised the research sample.

In this study, in order to collect data we paid a visit to the Ministry of Education and Iran Planning and Management Organization. Initially, the researcher developed tables to gather the data which were later filled out during the visits to the two aforementioned organizations. Having been collected, the data were analyzed by SPSS. The variation trend of exceptional students and their access were determined and the high- and low-risk provinces were identified.

Findings:

Question 1: What was the spatial distribution of exceptional students in Iran during 2002-11 like?

Research findings revealed that the highest frequency of exceptional students belonged to Chahar-mahal-o-Bakhtiari, Yazd and Semnan provinces in 2002-3. In 2003-4, Chahar-Mahal-o-Bakhtiari had the highest number of exceptional students among all provinces. In 2004-5, Qazvin, Chahar-Mahal-o-Bakhtiari, Yazd and Ilam had the biggest population of exceptional students among all provinces of Iran. One year later, Sothern Khorasan stood first in terms of the number of exceptional students in Iran.

In 2007-8, Southern Khorasan and Chahar-Mahal-o-Bakhtiari had the largest population of exceptional students among all other provinces. Southern Khorasan had the highest number of such students in 2008-9. In the next year, Southern Khorasan, Chahar-Mahal-o-Bakhtiari, Isfahan and Khorasan Razavi had the highest frequency (53%). In 2009-10, the top rank belonged to Fars, Khrasan Razavi and Isfahan. The following year, Southern Khorasan, Fars and Chahar-Mahal-o-Bakhtiary provinces had the highest number among all. Finally, in 2011-12, Southern Khorasan, Chahar-Mahal-o-Bakhtiary and Nrthern Khorasan stood first in terms of the population of exceptional students in Iran.

Question 2: What was the spatial distribution of exceptional students' access to human force like in Iran during 2002-11?

Findings of this study revealed that Ardabil province had the highest ratio of student to instructional force (8.94) while Western Azerbayijan had the lowest ratio (5.02) in 2001-2. In 2002-3, Sistan-o-Baluchestan had the highest proportion of student to instructional force (11.04) in contrast to Yazd which stood the last (ratio:4.96). In 2003-4, Sistan-o-Baluchestan had the highest ratio of student to instructional force (11.95) contrary to Yazd with the lowest ratio (4.56). In the following year, still Sistan-o-Baluchestan was on the top of the list with a ratio of 12.63, while Yazd was yet at the end with a ratio of 4.75. In 2005-6, the highest ratio belonged to Northern Khorasan (11.08) and the lowest belonged to Yazd (4.06).

One year later (2006-7), Sistan-o-Baluchestan had the highest ratio of student to instructional force (10.86) yet in contrast to Yazd province whose ratio was the lowest (3.58). In 2007-8, the highest proportion was that of Sistan-o-Baluchestan (9.54) whereas the lowest ratio belonged to Yazd (3.64). In 2008-9, Golestan province stood first as for the ratio of student to instructional force (8.38) in contrast to Yazd with a proportion of 3.84. In 2009-10, the highest and lowest ratios respectively belonged to Guilan (15.22) and Chahar-Mahal-o-Bakhtiari (7.56). In this year the ratio of the country's student to instructional force was 6.72. Finally, in 2011-12, Sistan-o-Baluchestan had the highest ratio of student to instructional force (12.37) while Ilam had the lowest (4.48).

Question 3: What was the spatial distribution of exceptional students' access to instructional setting like in Iran during 2001-2011?

Research findings revealed that in 2001-2, Sistan-o-Baluchestan had the highest proportion of student to class (8.66) while in Azerbayijan this ratio was the lowest (6.98). In 2002-3, Tehran was found to have the highest ratio (36.53) in contrast to Ilam with its ratio of .90 as the lowest. In the following year, Ilam managed to have the highest ratio of student to class (17.61) contrary to Khouzestan which stood last with the ratio of 5.61. In 2004-5, the highest ratio was 7.96 attributed to Sistan-o-Baluchestan province whereas Guilan showed to have the lowest ratio (5.08). One year later (2005-6), Ardabil was found to have the highest ratio of student to class (7.93) while Semnan province had the lowest ratio of 4.94. In the next year (2006-7), still Ardabil stood first with the ratio of 7.99 contrary to Mazandaran which stood last with the ratio of 5.04.

In 2007-8, Ardabil province was indicated to have the highest proportion of student to class (8.14) and Guilan had the lowest ratio (5.14). In 2008-9, still the highest ratio was Ardabil's (8.04) and the lowest was Boushehr's (4.89). One year later, in 2009-10, Semnan ranked first as for the ratio of student to class (19.67) in contrast to Hamedan which had the lowest ratio (7.04). Within a year in 2010-11, Sistan-o-Baluchestan was found to have the highest proportion among provinces (7.15) whereas in Semnan this value was 4.17 as the lowest of all. In the following year, Alborz province with a ratio of 7.08 showed to have the highest ratio in contrast to Kohgelouye-o-Boyer-Ahmad which had the lowest ratio (4.34).

Discussion and Conclusion:

Investigating question 1:

As revealed by the results of this research, some of the provinces had higher numbers of exceptional students during 2001-2011. One of these provinces is Chahar-Mahal-o-Bakhtiari which was constantly among those having the highest number of exceptional students. Another similar province was Southern Khorasan which had the largest population of exceptional students for consecutive years. Besides these two provinces, Yazd and Semnan are also among provinces with large populations of exceptional students. Among others mention can be made of Qazvin, Isfahan, Khorasan Razavi, Fars and Northern Khorasan.

Investigating question 2:

As indicated in the findings of this study, Sistan-o-Baluchestan is among provinces having the highest ratio of student to human force. That is to say that considering the high population of exceptional students living in this province, this province has less instructional force to educate them. During the target year span, it had generally the lowest number of instructional force relative to the population of students. Among others suffering from a lack of instructional force, we can mention Ardabil, Northern Khorasan, Golestan and Guilan.

Moreover, the findings of this research indicated that the lowest ratio of students to human force in the year span belonged to Yazd province. It is consistently among provinces where the ratio of students to human force is the lowest. This indicates the fact that despite the population of exceptional students in this province, it makes a higher use of the instructional force than other provinces. Sistan-o-Baluchestan was found to make the most use of instructional force to educate its exceptional student population. Other provinces that benefited from a larger instructional force relative to the size of their exceptional student population were Westren Azerbajijan, Chahar-Mahal-o-Bakhtiari and Ilam.

Investigating question 3:

As revealed by the findings of this study, Ardabil is a province that has a high ratio of exceptional students to class. That is to say that Ardabil is among provinces that have the lowest number of classes relative to the population of exceptional students. Sistan-o-Baluchestan is another province which has a high ratio of exceptional students to class. It implies that this province has the highest number of exceptional students relative to every class existing in this province. This province has in fact the most populated classes for exceptional students. Among other provinces which have a high ratio of exceptional students to class are Tehran, Ilam, Semnan and Alborz.

On the other hand, the results revealed that Guilan is a province with the lowest proportion of exceptional students to class. That is to say that this province is among those having the highest number of classes to the population of exceptional students. Exceptional students in this province have the most access to instructional setting as compared to those of other provinces. Among other provinces that have a low ratio of exceptional students to class are Western Azerbayijan, Khouzestan, Mazandaran, Boushehr, Hamedan and Kohgelouye-o-Boyer-Ahmad.

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