



Students' Learning Difficulties in Geography in (K-12) Classrooms and Instructional Interventions According to Representational Systems of Personality

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Abstract: Learning difficulties are neurological disorders that can negatively affect the learning areas. Students with learning difficulties are not less intelligent than their ordinary peers and can even be smarter, but their academic achievement may not be as desired when it comes to basic skills for learning such as reading, writing, listening and speaking. Some of them have a difficulty learning the concepts of geography. This may be due to teaching them using traditional methods that may not suit their learning styles. Therefore, these students need early discovery as well as instructional intervention by the teachers to reach better results in their learning. This research paper aims to focus on the geographic concepts that students should be able to understand and promote their learning in (K-12) classrooms, identify students' learning difficulties for these concepts, and adopt an approach based on representational systems of personality as an attempt to overcome students' learning difficulties for the geographic concepts. Rich data was collected through the analytical descriptive methodology which informed the development of instructional interventions according to each representational system of personality. This research paper suggests a set of instructional interventions based on representational systems of personality: (visual, auditory, and kinesthetic) to overcome students' difficulties in learning geography, which could benefit those in charge of teaching geography, educational policy-makers, and researchers in the same field. This research paper is divided into four parts. The first part tackles the basic geographic concepts of geographic education that students should be able to understand in (K-12) classrooms. The second part focuses on students' learning difficulties in geography, while the third part sheds light on representational systems of personality. Finally, part four provides instructional interventions based on representational systems of personality as an approach to overcome students' learning difficulties in geography.

Keywords: Learning Difficulties, Geographic Concepts, K-12 Geography, Representational Systems of Personality, Instructional Intervention

1. Introduction

All students deserve the opportunity to learn to maximize their potential by providing a public education that is appropriate to their needs, but this may require efforts to facilitate it. This has been confirmed by most laws in most countries of the world, including American law “No child left behind (NCLB)” [6], passed in 2002, under which a particular focus was placed on enhancing the performance of certain groups of students such as students with special needs, English learners, poor children and minorities whose achievements do not exceed the average of

their peers, and then replaced by “The Every Student Succeeds Act” (ESSA) [1], which also focused on that goal in addition to providing equal opportunities for students who receive special education services.

The Egyptian State has given formal attention to the education of persons with special needs at all levels of public education by issuing a series of resolutions, laws, and legislation requiring their inclusion in regular classes, including:

- 1) Ministerial decree No. 94 of 28 March 2009 on the admission and integration of students with minor disabilities, starting with the primary cycle of basic

education and kindergartens, starting from the school year 2009/2010, as part of the implementation of the provisions and instructions of the Strategic Plan for the Development of Pre-university Education, which aims to implement the full integration of 10% of the Republic's schools by the end of the Plan and to improve the quality of education in 50% of special education schools.

- 2) The Constitution of 2014, which pays close attention to individuals with special needs through 15 articles, 7 of which relate directly to them, namely, articles 53, 55, 80, 81, 180, 214, and 244, as well as eight other articles which give them the same rights as all citizens in this constitution [20].
- 3) Ministerial Decree No. 42 of 2015 on the admission of persons with disabilities to school, which provides for the application of the integration system for pupils with minor disabilities in regular school classes [19].
- 4) Law No. 10 of 2018, which included eight sections of the right to education and includes seven subjects that are subject to the rights of subjects with disabilities in basic and higher education, where educational institutions are explicitly required by the rules and policies of educational integration of subjects with disabilities and provide equal educational opportunities to them [27].
- 5) The Sustainable Development Strategy — Egypt 2030 [11] — has also set some objectives, and mechanisms to achieve educational empowerment by providing an inclusive environment supportive of their integration into schools, pre-university education, and university education.

“Geographic education is an essential component of a full education, defined by Naglaa Magd El-Nahass [21]: “That education means providing individuals with expertise: knowledge, skills, and geographic perceptions, both inside and outside the school, of how the two worlds work: Natural and human at levels: local, regional and global; to prepare them for life in the modern world and enable them to make important decisions in their lives: Personal, professional and civic, making them geographically educated”. Despite the importance of geographic education, it faces many challenges, including, as Edelson, D. C. [10] pointed out how to weave geographic knowledge and thinking skills to make decisions for the geographically educated individual crucial to written and unwritten curricula at home and community life. This challenge leads students at all levels to face problems in formulating and understanding geographic concepts [7, 9].

The current research paper attempts to focus on the geographic concepts that students should be able to understand in (K-12) classrooms, students' learning difficulties for these geographic concepts, and adopting an approach based on representational systems of personality as an attempt to overcome students' learning difficulties for the geographic concepts. This is described in some detail below:

2. Geographic Concepts

The basic concepts of geographic education are called the principles of geographic education: location, the Place, the relationship between man and environment, movement, and region.

These concepts or principles are summarized below:

The Concept I: Location: Position Earth's Surface:

This concept answers the question: where things are located? And to help students learn the location, they must be taught: relative location, which tells them about the location of something for other things, and the absolute location, is the location of the place for longitude, latitude, and absolute location is called “world title”.

The Concept II: Place: Physical and Human Characteristics:

This concept answers the question: What features make the place special? Every place has its personality, places; like humans, they may be very similar, but there are not exactly two similar places; Places are special and unique; Because of their natural and human features, we form mental images of places; through these features or hallmarks.

Mental images of places can be developed by drawing students' attention to the natural and cultural features of the places they visit, in the books they have read, and helping them develop a sense of place, by feeling the scenery, sounds, smells, and sometimes texture, and samples.

The Concept III: Relationships within Places: Humans and Environments:

This concept answers the question: What are the relationships between people and places? This concept helps to understand how people adapt their environment to meet their needs or necessities or adapt their lives — sometimes-to meet needs and environmental realities.

The Concept IV: Movement: People interacting with the Earth:

This concept answers the question: How do people, goods, and ideas move from one place to another?

Concept V: Region: How they form and change:

This concept answers the question: How can the earth be divided into regions for study? And region: is an area that has one or more common factors in which it exists, and these factors may be human, or natural, maybe large, small, and can overlap, and it is an intermediate step between knowing local places, and knowing the entire universe [23].

3. Students' Learning Difficulties in Geography

Learning difficulties (LD) is a neurological disorder that affects the ability of the brain to receive, process, store, and respond to information, and a set of disorders that can affect many learning areas including reading, writing, spelling, mathematics, listening, and speech [25].

Learning difficulties can be classified into the following four categories:

Sub-category I: Reading difficulties (such as decoding,

voice knowledge, word recognition, and assimilation), is referred to as dyslexia.

Sub-category II: Written language difficulties (such as spelling, written expression), is referred to as dyslexia.

Sub-category III: Receptive dyslexia (such as speaking, listening, and understanding).

Sub-category IV: Math difficulties (such as computation, and problem-solving), referred to as dyscalculia [3].

Students' Learning Difficulties in Geography in this research paper are meant to be: "The problems that students face in formulating and understanding geographic concepts."

In December 2017, the Central Agency for Public Mobilization and Statistics [28] stated on the occasion of "World Day of Persons with Disabilities." Egypt's most important indicators for subjects with difficulties are:

- i. 10.67% (have difficulty from simple to absolute)
- ii. 2.61% (have difficulty from extreme to absolute)

It is shown in the following chart:

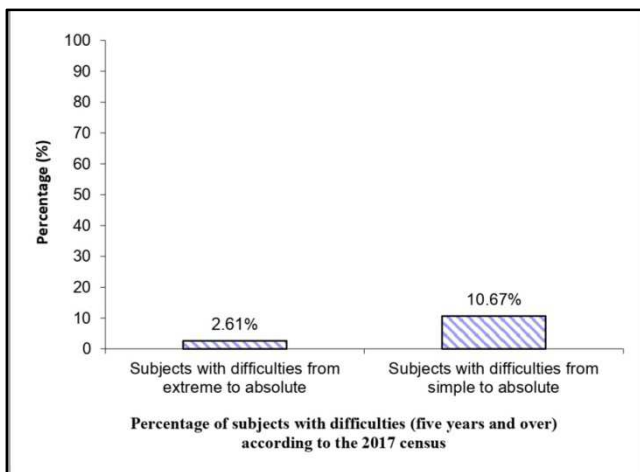


Figure 1. Percentage of subjects with difficulties (five years and over) according to the 2017 census.

- 1) The percentage of subjects with functional difficulties for 5 years and over was from the simple to the absolute, as shown in the following chart:

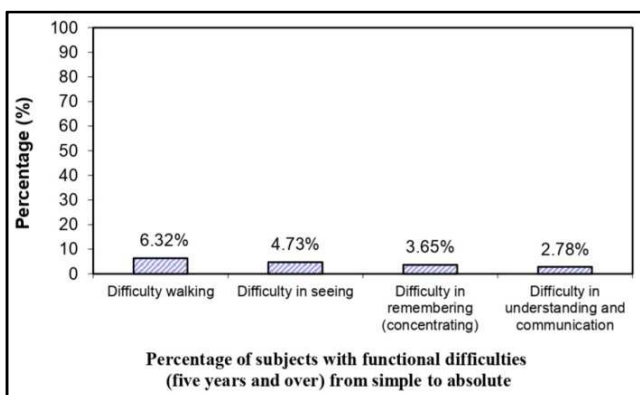


Figure 2. Percentage of subjects with functional difficulties (five years and over) from the simple to the absolute.

- 2) The percentage of the subjects with functional

difficulties of 5 years and over was from the extreme to the absolute, as shown in the following chart:

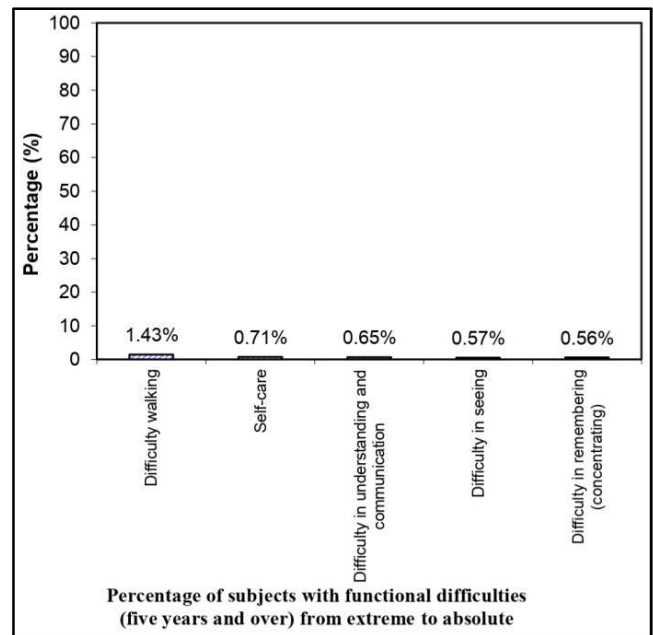


Figure 3. Percentage of subjects with functional difficulties (five years and over) from the extreme to the absolute.

- 3) The percentage of the subjects with functional difficulties from the extreme to the absolute according to the governorates of the Arab Republic of Egypt.

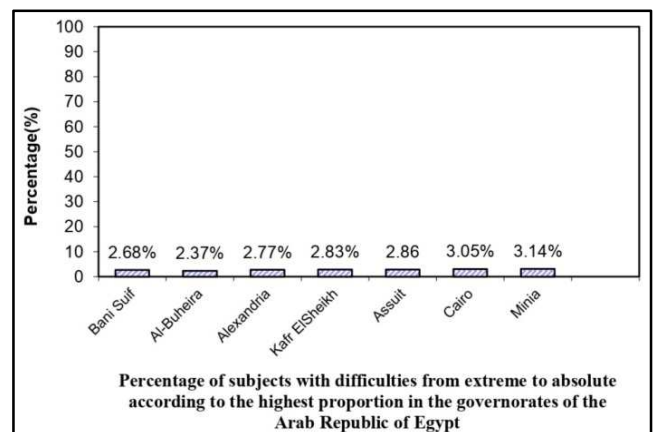


Figure 4. Percentage of subjects with functional difficulties from the extreme to the absolute according to the governorates of the Arab Republic of Egypt

Many studies have paid attention to learning difficulties in general and in learning geography in particular, including a study: Rickey, M. G., & Bein, F. L. [14], which aimed to identify the learning difficulties of students in geography by conducting a qualitative study to gather information on children's concepts arising from geography and successful teacher instructional interventions, to improve geographic education. The results indicated that practical training and reliance on working papers, multi-sensory experiences, and visual models improved students' understanding of geography.

A study: Fletcher, J. M., & Miciak, J. [12], aimed to demonstrate that comprehensive cognitive assessments are not necessary to identify and address learning difficulties by assessing five sources of evidence that are usually provided as support for knowledge assessment as part of the process of identifying learning difficulties, and the results of the study indicated that current evidence does not justify such assessments as an alternative but rather an educational perception: a hybrid model that directly informs intervention and relies on documentation of low educational achievement, inadequate response to intensive interventions, and consideration of exclusionary factors.

A study: Klonari, A., & Styliani Passadell, A. [16], which aimed to identify differences between students with learning difficulties (Dyslexia) and non-dyslexia in the performance of spatial and geographic thinking, by applying spatial thinking exercises such as mental orientation, folding of forms - The appearance and mental manipulation of forms,

and the results indicated that students without dyslexia performed better in spatial and geographic thinking assessments than students with dyslexia in all but one case, 2D- 3D exercise.

A study: Wei, Y., Spear-Swerling, L., & Mercurio, M. [29], which aimed to motivate students with learning difficulties to read and which was born from repeated negative experiences with learning to read, the results indicated that student's interest can be improved using appropriate academic interventions, including choosing interesting texts to read and stimulating interest based on knowledge and tasks.

Students' learning difficulties in the geographic concepts in (K- 12) classrooms which are defined in current research work are summarized in Table 1.

It is observed that the definitional difficulties are fit and includes more for all grades compared with the above-mentioned difficulties for learning geographic concepts.

Table 1. Students' learning difficulties with geographic concepts in (K- 12) classrooms.

No.	Geographic concept	Learning difficulty
1	Location	<p>The student's poor ability to:</p> <ol style="list-style-type: none"> 1. Determine the concept of relative location. 2. Determine the relative location of the place. 3. Determine the concept of absolute (universal) location. 4. Determine the absolute location of the place. 5. Determine the originals in nature. 6. Determine the originals and subroutines on the map. <p>The student's poor ability to:</p>
2	Place	<ol style="list-style-type: none"> 1. Determine the concept of the natural characteristics of the place. 2. Determine the natural characteristics of the place. 3. Determine the concept of the human characteristics of the place. 4. Determine the human characteristics of the place. 5. Connect the natural and human distributions of the place. 6. Use spatial concepts are to describe the surface of the Earth. <p>The student's poor ability to:</p>
3	Relationships within places	<ol style="list-style-type: none"> 1. Determine the mutual impact of the environment and man in bringing about changes in the natural place. 2. Determine the role of culture in protecting the natural environment 3. Determine the ways of adapting a human being to his or her environment. 4. Determine the most important natural hazards and their responses. 5. Distinguish between the concepts of renewable and non-renewable resources. 6. Determine some resource-use issues. <p>The student's poor ability to:</p>
4	Movement	<ol style="list-style-type: none"> 1. Determine the concept of movement. 2. Determine how people, goods, and ideas move from place to place. 3. Describe daily business traffic from transport, markets, and tourism. <p>The student's poor ability to:</p>
5	Region	<ol style="list-style-type: none"> 1. Determine the concept of region. 2. Determine the natural characteristics that distinguish the character of the region. 3. Describe the human characteristics that distinguish the character of the region. 4. Determine the human role in planning and developing the region and provide some solutions to its problems.

Source: Naglaa Magd El-Nahass [22].

4. Representational Systems of Personality

Representational systems are defined, according to Neuro-Linguistic Programming (NLP), to how the human mind receives information from the outside world, processes it, stores it, transmits it, and divides humans in terms of reception, processing, and storage, and transmission of

information [5].

Human beings are divided in terms of receiving, processing, storing, and sending information around them into three systems:

A) The visual representational system

A person with a visual representational system is defined as the person who most commonly understands the outside and the inside world through images: real or memorable or imagined.

He/she is described as:

1. He/she cares more about pictures and scenes than other representational systems (sounds and sensations).
2. Always moving.
3. Active and dynamic.
4. He/she talks loud and fast.
5. He/she breathes fast from the top of the lungs.
6. He/she gasps when talking.
7. He/she moves his/her hands during speech or expression above the horizontal level.
8. Leaning back when standing with the head and shoulders up.
9. He/she moves his/her eyes, upright to imagine left to remember.
10. He/she uses a linguistic vocabulary of a sense of sight, I like, I see, I imagine, etc.
11. Quick to decide.
12. Strategic vision. He/she's the planner, not the executor.
13. He/she can easily predict the consequences.
14. Observant.
15. Tidy and clean.
16. He/she deals with graphic information easily [18].

B) The auditory representational system

A person with an auditory representational system is defined as the person who most commonly understands the outside and the inside world through sounds: real or memorable or imagined.

He/she is described as:

- 1) He/she cares more about sounds than other representational systems (photos and sensations).
- 2) Diversifies the layers of voice during speaking according to the situation.
- 3) A good listener who does not interrupt his/her spokesperson.
- 4) Balanced in decision-making, where he builds his decisions on analysis and scrutiny.
- 5) Leaning forward when standing with head to one side.
- 6) He/she breathes from the mid-abdomen.
- 7) He/she moves his/her hands in speech or expression parallel to the horizon.
- 8) He/she moves his/her eyes horizontally to the right to imagine, and to the left to remember.
- 9) He/she uses a linguistic vocabulary of a sense of hearing, I like, I hear, I say, I listen... etc.
- 10) He/she's empowered to direct discussions, because he/she's not interrupting the speaker, and he/she's capable of analyzing, giving an opinion.
- 11) He/she'd rather talk than write.
- 12) Poor ability to act in crises.
- 13) Wordy and lack of work [17].

C) The kinesthetic (Sensory) Representational System

A person with a Kinesthetic (Sensory) representational system is defined as the person who most commonly understands the outside and the inside world through sounds: real or memorable or imagined.

He/she is described as:

- 1) He/she cares more about sensations and feelings than other representational systems (photos and sounds).

- 2) Quiet and does not like noise.
- 3) He/she speaks in a low tone and slow rhythm.
- 4) Leaning forward when standing with head and shoulders facing down.
- 5) He/she breathes slowly and deeply from the bottom of the abdomen.
- 6) He/she moves his/her hands while talking or expressing down.
- 7) He/she moves his/her eyes down to the right to imagine, and to the left to remember.
- 8) He/she uses a linguistic vocabulary associated with sense and emotion or feeling like I feel, I feel, I smell, etc.
- 9) He/she can put plans into practice and complete them in the best way.
- 10) He/she walks away from dreams and doesn't like theory and philosophy.
- 11) His/her motto is work first.
- 12) Slow decision-making where his/her decisions are influenced by emotion.
- 13) He/she depends not on strategic thinking, but on short-term plans [13].

By presenting these representational systems of personality, it is clear that:

- 1) There's no representational system better and smarter than the other.
- 2) All humans have all the representative systems and can handle them, but there is a so-called "commanding system" that is more preferred than others and used.
- 3) Any human being can develop his or her other less favorable systems.
- 4) To improve education, many instructional interventions can be made, according to representational systems of personality: Instructional interventions based on the description, imagining, strategic planning, expecting, observation, and decision-making can be undertaken. Instructional interventions based on analysis, listening, summing up, meeting management, and discussion can be conducted, while the kinesthetic representational system: Instructional interventions can be made based on implementation, short planning, modeling, and figurines, and dealing with concrete sensory objects.

5. Instructional Interventions According to Representational Systems of Personality

Cortiella, C. [8] defined instructional intervention as: "An academic intervention method used to provide early formal assistance to students with learning difficulties. Instructional interventions seek to prevent academic failure through early intervention, continuous measurement of progress, and more intensive research based on instructional interventions for students who still have difficulties. Some believe that students who do not respond to effective interventions are likely to have biological learning difficulties".

Smith, P. [26] defined instructional interventions as:

“A planned set of procedures specifically designed to teach specific academic skills to an individual or a small group of students”.

Andrew M. I. Lee, JD. [2] Defined instructional intervention as: “A specific program or set of steps to help students improve in some area”.

He noted that instructional interventions:

- 1) It's not behavioral, it's academic.
 - 2) It's not just a strategy. Instructional intervention is more than a strategy.
 - 3) It's not adoptions.
 - 4) It has specific and formal steps to meet the academic need.
 - 5) It's deliberately aimed at achieving certain objectives.
 - 6) It's specific and formal for a certain number of weeks or months, reviewed at specified intervals but also flexible.
- If the program does not help the student, it can be modified.

In this research paper, instructional interventions based on representational systems of personality are defined as:

“One of the instructional approaches based on the method of receiving, storing and transmitting information by the

student (his/her representational system), which includes a range of activities designed for use by the teacher; To improve students' learning difficulties with geographic concepts, these activities are (academic, not behavioral, systemic (formal), early, intentional, specific, flexible).”

It is important to focus on instructional interventions because they provide an opportunity for schools and teachers to discover ways to serve their most needy students with learning difficulties, as confirmed by many studies such as Rickey, M. G., & Bein, F. L. [14] which provided teaching cases from (K-12) classrooms on students' concepts arising from geography and teachers' attempts at instructional intervention.

A study by August, D., Branum-Martin, L., Cardenas-Hagan, E., & Francis, D. J. [4] provided an instructional intervention for English language learners in middle grades with the difficulties of learning science and language called Project QuEst consisting of two components: the first, professional development, and the second., Education (training) materials such as the teacher's guide and its educational charts, student guide and its educational diagrams.

Table 2. The Instructional interventions according to representational systems of personality; to overcome students' learning difficulties with geographic concepts.

No.	Geographic concept	Instructional interventions according representational systems of personality		
		Visual	Auditory	Kinesthetic
1	Location	<ol style="list-style-type: none"> 1. Color the location of a place on a deaf map. 2. Watch a live online lesson about somewhere, and then write down its site on an educational card. 	<ol style="list-style-type: none"> 1. Hear a song about somewhere. 2. Hear a taped lecture about a place, and focus the sound on borders from all directions. 	<ol style="list-style-type: none"> 1. A concrete, disjointed learning puzzle, with the piece in which the place to be known it has to be dragged into place. 2. Make a compass model from paper or a carton dish.
2	Place	<ol style="list-style-type: none"> 1. Field trip to the place. 2. Satellite image of the place. 	<ol style="list-style-type: none"> 1. Tell a story about the most important features of the place. 2. An audio recording brings together speakers from various regions of the world and has everyone talking about what makes his/her place so special as climate, soil, etc. 	<ol style="list-style-type: none"> 1. Create a book describing the place or places where students live through a feature, habit, or tradition of people in this place. 2. Make a postage stamp booklet with every stamp on it that features this place.
3	Relationships within places	<ol style="list-style-type: none"> 1. A statistical chart showing population growth over time and how that change has affected where they live. 2. Aerial photos of the place. 	<ol style="list-style-type: none"> 1. Create a documentary that shows the importance of every landmark in the place, how man modified it, and how it affects life in this place. 2. Hear sounds in a place like airplanes, footsteps, pond rains from websites that allow it and training. 	<ol style="list-style-type: none"> 1. Make a list of cartoons of things that students want from the environment, whether they can be looked for and found in them or what they should be making, and coloring everything in a particular color. 2. Compile images of the appearance of the city, or cities in which students live in the past, and compare them to its current appearance.
4	Movement	<ol style="list-style-type: none"> 1. A graph showing the distance between your school and your home. 2. A Video shows products moving from production to consumption areas. 	<ol style="list-style-type: none"> 1. Hear from older people of the place about transportation, food, clothes, how the place looks, and how it has changed in the current time. 2. Spell the first words of the names of the commodities and foods in your city in different tones. 	<ol style="list-style-type: none"> 1. Make a diagram showing the students' family roots and where and how they came to this place. 2. Collect labels about the foods, clothes, and products students use and how they get there.
5	Region	<ol style="list-style-type: none"> 1. World time zone map on the internet to know the time zones and how they affect their lives. 2. Take photographs of different areas at different times. 	<ol style="list-style-type: none"> 1. An audiobook about the different regions of your country. 2. Voice chat between a group of students from different regions about the features that distinguish their region from others. 	<ol style="list-style-type: none"> 1. Map the place in the schoolyard and make every student recognize the area where he lives with a pin. 2. Make postcard albums for different regions of the world and write distinctive items for each region.

Whereas the study: Khosa, D. K., Volet, S. E., & Bolton, J. R. [15] provided an instructional intervention a 20-minute presentation, and a student bulletin to promote deep and effective collaborative learning in university veterinary students.

While the study: Pesova, B., Sivevska, D., & Runceva, J. [24] emphasized the importance of early intervention and prevention for students with learning difficulties and appropriate for their specific needs; To make successful progress in their education and the outside world, it offered a model linking identification and intervention emphasizing student outcomes, starting with effective exercises designed for the entire class and then monitoring results, based on which students with specific learning difficulties were diagnosed and then supported through the practice skills model (process model) and the training skills model (task analysis model).

The proposed instructional interventions according to representational systems of personality to overcome students' learning difficulties for geographic concepts defined in the current work is summarized in Table 2.

It is observed that the defined concepts are fit more compared with the above-mentioned definitions for overcoming students' learning difficulties for geographic concepts.

6. Conclusion

Many students have a learning difficulties associated with studying school syllabuses, whether alphabetical or academy, which affect their understanding of the knowledge, concepts, and skills needed. There is a set of basic geographic concepts in geographic education that students should be able to understand in (K- 12) classrooms.

Instructional interventions based on representational systems of personality: (visual-auditory- kinesthetic) can help students overcome learning difficulties for these geographic concepts, Although the instructional interventions proposed by this current work are limited, they can catalyze for geography educators to reflect on their teaching practices and provide them with good models to overcome students' learning difficulties for geographic concepts, and through their experience, they can offer more instructional interventions as new models in overcoming students' learning difficulties in geography.

7. Recommendations

Given the limitations of this research paper, it recommends the following future research:

- 1) Instructional interventions to overcome students' learning difficulties for geographic skills.
- 2) Instructional interventions to overcome students' learning difficulties for geographic perceptions.
- 3) The impact of using instructional interventions based on representational systems of personality on overcoming

students' learning difficulties for geographic concepts.

- 4) The impact of using instructional interventions based on representational systems of personality on overcoming students' learning difficulties for geographic skills.
- 5) The impact of using of instructional interventions based on representational systems of personality on overcoming students' learning difficulties for geographic perceptions.

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