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Assistive Guide for Learning Disabled

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Abstract: ***Learning disability affects 3-7% of total world population and up to 20% of the total population has symptoms related to Learning disability. Compared to normal people Learning disable students have problem in reading, learning and writing. This compromises their ability to read and write and understand mathematics .It also leads to low self confidence in children. While a lot of research has taken place in making them able to learn and write using gaming applications but only some are able to make them write and learn as normal students .We present an interactive android application that will make learning disable to be able to learn, read, write. We will be specifically focusing on language processing and visual processing. Our application can perform in a way that would inspire the disable students to be able to learn like normal students .It can be a valuable application for all the type of learning disable students.***

Keywords: Learning Disable (LD), Android application, Graphical user interface

1. Introduction

Due to enhancement in technology and world growing at fast pace the requirement of student to be able to learn and write is increasing day by day. In this atmosphere we require learning disable students to be able to compete with world without feeling neglected. Learning disability effects approximately 3-7% of world population. Learning disable students are of three types they are as follows

1.1 Dyscalculia

Severe difficulty in making arithmetical calculations, as a result of brain disorder. Is difficulty in learning or comprehending arithmetic, such as difficulty in understanding numbers, learning how to manipulate numbers, and learning facts in mathematics. It is generally seen as a specific developmental disorder.

1.2 Dysgraphia

Inability to write coherently, as a symptom of brain disease or damage. Dysgraphia is a deficiency in the ability to write, primarily handwriting, but also coherence. Dysgraphia is a transcription disability, meaning that it is a writing disorder associated with impaired handwriting, orthographic coding (orthography, the storing process of written words and processing the letters in those words), and finger sequencing (the movement of muscles required to write).

1.3Dyslexia

Difficulty with phonological processing (the manipulation of sounds), spelling, and/or rapid visual-verbal responding Learning disabilities are problems that affect the brain's ability to receive, process, analyse, or store information.

1.4 Our Approach

These problems can make it difficult for a student to learn as quickly as someone who isn't affected by learning disabilities. Learning disabilities can make it difficult for a student to read, write, spell, or solve math problems. Up to one-third of parents of kids with learning disabilities (LD) don't feel prepared to take on the challenge.

An application has to be made for the learning disabled children which targets the basic fundamentals of LD which are Dyslexia (difficulty reading), Dyscalculia (difficulty in maths) and Dysgraphia (difficulty in writing).The application must contain features that indulge child in a user friendly learning environment. The application should be designed keeping in mind the parents perspective of their children and as well as the mind of the children. The application must be maintainable and usable as well as portable. The application must be dependable. The GUI of the application must be designed keeping in mind the mentality of the children of a particular age groups. The application must support different age groups of children as well. The application must inculcate the interest of child towards itself and make an attempt to teach the child in a manner which the child does not recognize as stressful and draining. The parents must be able to assess their child's progress with the application and can make appropriate change based on them. The application must target the specific area of interest of child and attempt to enhance and teach using that interest as a base. The application must be completely harmless to child in terms of emotions and mental attitude and must send forth a feeling of confidence and competence to child.

2. Aim and Objectives

2.1 Aim

In order to overcome the LD we require an application which would be able to interact with the person and enable him to learn, read and write.

The aim of the project is to ameliorate the problem of learning disability by using android application in a form of interactive learning in order to make learning disable student to be able to compete with normal students.

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2.2 Objectives

Following are the objectives of this research:

1) To study how LD will affect people in their daily life
2) Identify and understand the Learning disability in individuals
3) To develop an android application for interactive learning of Learning disabled individuals.
4) To guide Learning Disable LD student to be able to write, read and learn.
5) To develop a system which is cost-effective.

3. Literature Survey

In order to get the idea of the existing system related to our research we studied existing research papers their summary is as follows:

- The idea proposed in paper [1] attempted to design stimulating and interactive experience for Children, which could encourage the learning process.
  Research in [1] with a group of students led to significant observation that all of the students showed their preference in practicing and completing the tests on a mobile device rather than on paper. The application helps children with dyslexia concentrate and keep them focused, avoiding distractions, by targeting their attention on the device's touch screen. A result which indicates the significance of technology in today's learning methods. The students with different levels of dyslexia indicated differences in the duration of each test, while the students with mild symptoms of dyslexia completed the tests much faster than the others. Also, the students with mild dyslexia demonstrated higher reading recognition and comprehension compared to the students who showed severe dyslexia symptoms. Those groups of students didn't differ significantly in spelling or listening. Regarding research, whether a mobile phone application, designed specifically for children, can foster learning and help children with learning difficulties improve some fundamental skills in language and mathematics, although the data was preliminary, we could identify a potential increase in overall scores over a short period of time.
- The idea proposed in paper [2] was to design a framework for assistive learning environment to enhance the learning abilities of learning disabled.
  Research in [2] shows that E-learning system is able to deal with problems of learning disable students accurately and helps in overcoming the difficulties they face in learning to read ,write and solve.
- The idea proposed in paper [3] presents an eLearning platform for personalized therapy and online monitoring of patients with learning disabilities.
  Research in [3] regarding Learning Disability has found a close connection between children with behavioural disabilities, communication or emotional difficulties, mental health problems and juvenile crime. Language disturbs is a communication barrier with others, and without specialized help can arrive to impressive personal, educational, economic, social costs. Statistical studies have shown that presentation of educational material in multimedia format has a positive effect on knowledge acquisition of patients with learning disabilities.

Taking into account various previous researches, it can be understood that there have been some studies regarding learning abilities of LD and enhancement of learning methods using technology. This enables us to develop a system which could be user friendly, easy to understand and could also make the learning disable person to be able to compete with normal people.

4. Proposed System

The proposed system will act in such a way that it would take details of the individual such as age, gender, subject of understanding, learning difficulty.

It would then select the features according to the given details and produce the best feature such as reading, solving mathematical problems and make the individual learn using images, action words, digital clocks and figures that the individual is feasible, after teaching them this things we will try to assess them using MCQs.

The result of this assessment will be then shown to the parent/guardian

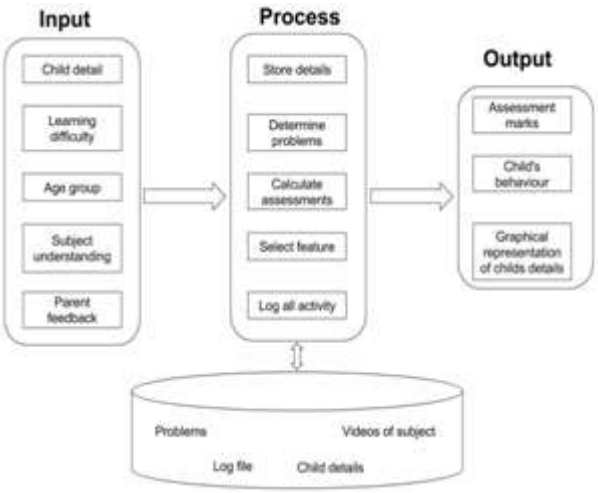


Figure 1: Block diagram of proposed system

5. System Features

The application will support a graphical interface which is best suited for reading and understanding and will be designed by keeping in mind the child's needs. Application will have different features which will inculcate better learning experience and an environment which will be different from that of school. The feature will be consisting of different games and other mind stimulating activities which will be indulging children to actively take part. For the parents satisfaction the application will provide an assessment feature which will keep track of their child's activity within the application and will display that in proper statistical format to parents. Only the parents will be able to access the assessment feature using a username and password. The parents will be able to get their child's progress on their phone as well if they have the app on their phone.

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The application will display inspiring and incite messages during child's activity within the application in order to boost their confidence and competence skills. The application will contain a text to speech feature that will make application speak what is written on the screen. The application will make an attempt to engage child in activity in which they are interested and have potential talents. The application will not be dependent on the internet and will work perfectly good even without the internet although certain features might not work in the absence of internet. The application will provide with a feedback feature which can be accessed by the parent using their login information, these feedbacks can be used to design better upgrades of the application. The application will provide with an option of age group. There will be different features in different age group category. The age group will be as follows

- Below 10
- Between 10-15
- Above 15

The application will provide three choice under each age group. These choices will be as follows

- Reading
- Writing
- Mathematics

Under each choice there will be at least three features that can help the child with the appropriate technique under that option.

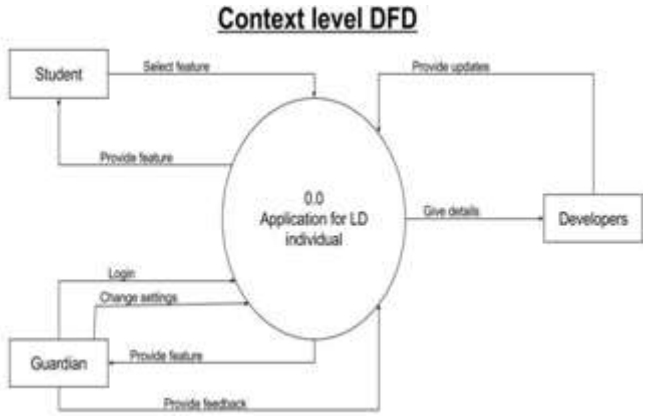


Figure 2: Context Level diagram of proposed system

6. Conclusion

In this paper we have described the problems faced by LD individual and how could they be solved using an android application. It also gives detailed idea about our android application and its features. The idea is mainly to make the LD individual to be completely able to use technology for learning. To use android smartphone in an easy learning manner to overcome the problem of LD.

7. Acknowledgement

This paper is a result of different ideas that could be used to solve the problem of LD. This could not be achieved without the guidance of our professor Er.Fatima Anees Ansari.

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