Case Study

Developing Functional Assessment Scale for Assistive Technology Skills of Blind Students in Yemen

Abdulraqeb Rageh[1], Dr. J. Sujathamalini[2], G. Ravichandran[3], R Adaikalam[4], P Prabhu[5]

[1,3,4,5]Ph.D. Research Scholar, Department of Special Education and Rehabilitation Science, Alagappa University, Tamil Nadu, India
[2]Dean Faculty of Education, Professor and Head, Department of Special Education and Rehabilitation Science, Alagappa University, Tamil Nadu, India

Corresponding Author: Abdulraqeb Rageh

ABSTRACT

The use of assistive technology (AT) reduces each of these limitations. Blind people no longer have to wait for someone else to translate braille from conventional printed language for them. Those who are blind can access the Internet, read online publications, check their emails, use their chosen tablet computer programs, etc. They can directly access material that is available to their sighted peers by downloading the papers. Blind students can utilize talking maps, screen-reading software, and specially designed GPS gadgets thanks to assistive technology (AT). This study presents research on how special educators of students with visual disabilities teach functional skills in the classroom through the construction of a stand-raised functional assessment scale for assistive technology skills for educational programming for blind students as part of the expanded core curriculum available to blind students in Yemen. Therefore, the results of the present research can assist the parents, educators, and special and inclusive school's management by providing a guideline for improving their existing educational policies that functional skills for the students with visual disability and also by developing new ones which will result in enhancing the quality of their programs and skills of the students. On the other hand, this provides teachers with an understanding of the preferred methods of learning for a blind student. As a result, teachers' investigations and identifying learning, training needs in this paper explores the need to incorporate and use assistive technology domain under the functional skill assessment scale in the educational programming of blind students.

Keywords: assistive technology, functional skills, assessment, visual disabilities.

INTRODUCTION

A person's ability to see is a gift from God and a very vital blessing, and losing that ability makes it challenging to gather the data needed to lead a regular life. A person with a visual disability finds it difficult to carry out daily tasks. The inability to travel from one location to another effortlessly and independently is a handicap. This is the primary issue that a blind person faces, especially in modern environments. Today, assistive technology (AT) helps people with special needs as well as visual disabilities in all aspects of life, including education, mobility, effective communication, and social networking. (AT) is any item, equipment, tool, device, or piece of equipment used to enhance or preserve a person's functional abilities. It is essential for many disabilities. Blind students need ICT-based aids to help with reading, language, mobility, organizational skills, and information processing.

Assistive Technology for Blind Students

Learner-centered learning is the basis for education for all, and humanistic educators foster active interaction, communication, respect, positive attitudes, and flexibility of rules. Blind students benefit from advanced teaching performance, functional skills, and assistive technology. Teachers in low-resource settings are enthusiastically integrating accessible functional skills into the school curriculum and schedule to promote learning, improve soft skills, and increase engagement the blind students with assistive technology.

The Functional Assistive Technology Skills

Most children who are blind live in low-resource settings and attend schools that have poor technical infrastructure, overburdened teachers, and an outdated curriculum. Teachers prefer games that align well with curriculum objectives, promote learning, improve soft skills, and increase engagement with computers. Despite being overburdened and lacking technological support, teachers expressed strong enthusiasm to integrate these games into the school curriculum and schedule. We conclude by discussing the design implications for designers of accessible games in low-resource settings.

Tactile Maker

The Swell-Form Graphics Machine is a simple, fast method of creating tactile maps and graphics, and it will be printed onto specialty paper as normally as a standard printer or copy machine. In the next step, one has to run the paper through the Swell-Form graphics machine. The heat reacts to the black ink and swells it, creating a tactile image. Through the adaptation process, assistive technology refers to special versions of already existing technologies or tools that provide enhancement or different ways of interacting that would help a disabled student accomplish a special task. According to Duff, Boyle, Dunleavy & Ferguson (2003) "deep approach to learning in students involves themselves in the study process to grasp a deeper understanding of the content. To make students better graduates, they should be encouraged to develop deeper research strategies (Hasnoor, Ahmad, & Nordin, 2013).

Picture in a Flash (Piaf)

It is a simple and fast way to prepare tactile graphics. The PIAF machine makes raised line drawings on special paper called capsule or swell paper. Users can draw, print, or photocopy pictures onto the swell paper and pass them through the PIAF. The heat causes the lines to swell as they react to the carbon in the ink, and then the drawing can be read with the fingers.

Braille Speak, Versa-Braille

It is the process of substitution, which means replacing existing educational aids and tools with more accessible ones that can be easily accessed by a blind student. Example: Talking Calculator, Screen readers are software programs that allow blind or blind students users to read the text that is displayed on the computer screen with a speech synthesizer or Braille display. A screen reader is the interface between the computer's operating system, its applications, and the user. The user sends commands by pressing different combinations of keys on the computer keyboard or Braille display to instruct the speech synthesizer what to say and to speak automatically when changes occur on the computer screen.

Raised Relief Plastic Map, Relief Globes

The process of duplication refers to making a copy of an educational device that can be accessed by a student with a visual impairment.

Problem Statement

Constructing and standardizing functional assessment scales educational programs for blind students in the teaching-learning process promotes the development of need-based educational programming for blind

students; however, in Yemen, such a tool does not yet exist due to the special educators' face difficulty in preparing educational programs that consider the functional needs of blind students. Therefore, the study is undertaken with the concern of constructing a functional assessment scale that can be used by special educators for the purpose of determining developmental levels and preparing educational programs for blind students in Yemen.

Significance of the Study

-Technology's unanticipated development in the digital age today has implications for blind students' education. Technologies has a big influence on how blind students' skills, knowledge, attitudes, and assessments are assessed, which is how functional assessment scale methods to assess assistive technology for blind students have been investigated at in this research work.

-The Rights of Persons with Disabilities Act of 2016 places emphasis on making suitable modifications to the curriculum. Thus, current investigations in the area of functional assessment scale methodologies have led to a deeper understanding of which method is the best practice used by blind students in assistive technology skills.

-On the other hand, this provides teachers with an understanding of the preferred methods of learning for a blind student. As a result, a brief list of new methodologies for the assessment of assistive technology skills and investigations and identifying learning, training needs in individual educational programs for blind students has been suggested to achieve holistic learning. The functional assessment scale for assistive technology skills is important because it enable the instructor to effectively communicate the general curriculum's material to blind students.

-The employment of screen readers can be used in place of traditional teaching and learning techniques for blind students, such as braille writing and reading or exams. With the help of a screen readers or Braille

display, screen readers are software tools that blind students' individuals to read, write, and interpret assessment or examination content that is presented on a computer screen. The researcher and his assistant have tried to create a construction and functional standard assessment scale for assistive technology skills approaches for instructing blind students and evaluate its efficacy through an experimental design.

Objectives of the Study

This study aims to determine the Assistive Technology Functional Skill Assessment for Blind Students to evaluate the special needs of blind students using assistive technology. The findings will be used to design a new individual education plan for blind students, focusing on the benefits of modern teaching aids and making the scale's use more accessible.

Hypotheses of the Study
The Hypothesis of the Study

There is no significant difference in the functional skills of blind students before and after implementing the Assistive Technology. In the present study, the null hypotheses will be tested.

METHODOLOGY

Pre-test Post -Test Equivalent Group Design adopted, the current research has adopted survey method (questionnaire).

Research design:

A research design is the overall strategy of study effort that encompasses the strategies and processes used to collect and analyses data (Hair et al, 2003). It explains how research is conducted, outlines the methods and processes for gathering and analyzing the data and information required, and aids the researcher in developing a suitable study hypothesis and resolving the research problem (Kumar et al, 2018). Any study, especially one that is empirical in nature, must first develop/ adopt an adequate research design. The choice of a design is determined by the study's purpose and the

type of variable. Accordingly, the current study used a pre-test and post-test Experimental research design.

Population and Sample:

Blind students being studying in special and inclusive schools in Yemen, the special educators, and parents are included in the current research as the population of this study. A multi-stage (random sampling and Purposive sampling techniques was used in this research. Among the population, in the first stage 60 blind students, 10 parents and 20 special educators from the selected cities were participated in this research. In the second stage a sample Size 322 blind students aged at groups of 6-17 age in special and inclusive schools of the four selected Yemen cities. The researcher selected four teachers (Special Educator-Visual Impairment Field Specialist) in Al-Nor for blind School, Al-Aman for blind women's schools and Educational Integration complex School. This three are special schools in Yemen for blind students.

RESULT AND DISCUSSION (INTERVIEWS)

Case Study 1:

(Discussion with Sadiq al-Rajawi, B.Ed. Totally Blind Teacher and Inclusion Supervisor)

Sadiq al-Rajawi, B.Ed. Totally Blind Teacher and Inclusion Supervisor, shares his views on the availability and use of assistive technology for teaching the blind. He argues that modern devices such as iPhone & Android are more appropriate than traditional methods. He concludes the interview by emphasizing that the paragraphs of the functional skills scale regarding educational aids for blind students of the age group (6-17) are appropriate, clear, and gradual, and actually measure the assistive technological functional skills required to be acquired by blind students. It is required to be acquired by the blind student. Accordingly, the planning team can be assembled and an individual educational

plan can be created in light of the scale's outputs.

CASE STUDY 2:

(Discussion with Ali Mansour, B.Ed. Braille Method Teacher)

He said that the integration complex is a school of integration, in which assistive technology and devices are some available to teach blind students, most of which are low vision, and he explains, focusing on the importance of these devices, by explaining two factors that made them reach this acceptable level of performance in the educational programming of blind students and aspire in the future to provide most of the assistive technology for visual disability to achieve more advanced levels to bring out generations of visually disabled students how are able to control, use and benefit from ICT in education or all lifelong aspects like other sighted peoples .

Finally, he concludes his point of view by saying that he prefers technological teaching aids to assist in teaching the blind modern techniques when compared to traditional techniques, and although the cost is high to purchase these tools and devices, they are necessary to keep up with what the world is like today and in order for blind students to be able to reach levels of performance and academic achievement. Even at a minimal level compared to the educational technology and its devices for their sighted colleagues in the classrooms of our time.

CASE STUDY 3:

(Discussion with Al-Hamdani, Bachelor of Education and the Complex's Director)

He says that the index printer and the screen recorder were very useful when he was watching students preparing and studying lessons via the PC and Internet, despite the lack of availability required all of them and he hopes to provide them, and adds that it was very useful for blind students because it allows them to listen again and again whenever they need this process by listening to the concepts and for regarding the implementation of the functional skills

assessment scale, the focus of this study, it validates the gradation of the paragraphs for the age groups and taking into consideration the levels of experience utilizing the available methods from simple to sophisticated in skills. He quite far supports his point of view by pointing out that ICT will continue to be used and development for a long time in place of traditional methodological study materials for purposes of education or personal use and that it is possible to search for new versions of them. This indicates the need to move in the direction of equipping students with disabilities with the necessary technological literacy skills. According to him, the scale of functional evaluation of skills for assistive technology for the blind serves as a starting point for the diagnosis, planning, execution, and creation of educational programs for persons with special needs.

CASE STUDY 4:

(Nada's discussion. She holds a bachelor's degree in library management)

She has attended several courses about how to teach blind students. Ten years of experience. It is one of the most well-known volunteers in the educational integration complex's field of care and rehabilitation for the blind. She explained that the clarity of the steps of applying the means (the device) in each items of the functional assessment scale or the tool of study and the combination of pleasure and the benefit in the use of the technological skills tech educational or personal compensation skills available and the graduation of training in its use and the levels of awareness of the disabled student or who helps him and enabling the family and the teacher to help only at the time of need makes the ease of use and acceptance and enjoyment. Specialist Nada highlights the significance of this study's findings, pointing out that the presence of assistive technology plays a role in all stages of learning, education, and training to transmit knowledge by concentrating on individual educational plans (IEP) for students who focus on real

functional skills identified in expanded curriculum (ECC) for students with visual disabilities in education and training more, prior training and educational requirements can be met and guidance in qualifying for the functional assessment scale for blind students of schools actual practical expertise in the use of assistive technology and support from others are needed in order to focus on the outcomes of the students' problems solutions with the technical aspect of using these tools and educational devices in educational skills or life skills

Data Interpretation Interviews

All teachers of students with blind students show a deep inclination towards using functional assessment for assistive technology skills in learning process or daily living skills.

This shows the positive attitude of teachers towards assistive technology in teaching blind students when compared to traditional tools.

More studies are needed in this field to search for other parameters such as the possibility of providing OrCam Glasses (visual disability Devices) learning outcomes and cognitive functions.

CONCLUSION OF THE STUDY

The study was conducted in Yemen to develop and standardize a functional assessment scale for blind students. It identified the gap in the lack of an existing functional assessment scale to develop educational programs for blind students, the final draft of the blind students Functional Assessment Scale was finalized with eight domains, 17 sub-domains, and 334 items. The scale was found to be reliable and valid for helping special educators develop and implement educational programs for blind students., and four focus groups Modifications were made to the drafts of the scale to meet special needs ofblindstudents. This paper explores the need to incorporate and use assistive technology domain under the functional skill assessment scale in the educational programming of blind students.

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