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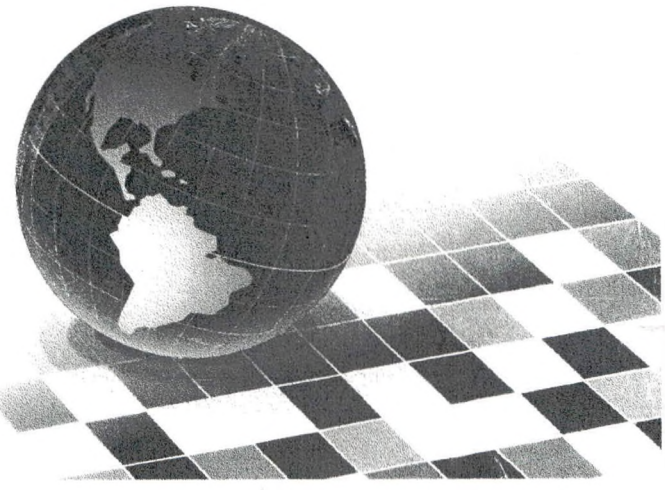

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Research Paper

Education

Application Of Technology By Visually Impaired Teachers For Teaching Competency

Mrs. M.Revathi

Research Assistant Department of Special Education, Avinashilingam Institute for Home Science and Higher Education for Women Coimbatore - 641043

Prof. G.Victoria Naomi

Professor in Special Education, Avinashilingam Institute for Home Science and Higher Education for Women Coimbatore - 641043

ABSTRACT

After the decade of seventies will see an increasing number of visually impaired teachers functioning in classrooms at levels and in all subjects. Today's classroom is very challenging to any teacher due to diversity of student population. Many technological developments have contributed to some visually impaired teachers to do their job effectively. The present study was aimed to find out the Application of Technology by Visually Impaired Teachers for Teaching Competency. A sample of 60 teachers with 30 each from Schools and Higher Education Programme was selected and a rating scale was administered to explore the various technologies used for their teaching competency and application of technology for teaching competency skills. The results revealed that the Visually impaired teachers' application of technology for teaching competency at moderate level and there is positive correlation between Application of Technology and Teaching Competency skills such as Teaching Method, Evaluation, Classroom Orientation and Independency.

KEYWORDS : Visually Impaired Teachers, Technology, Teaching, Competency

Introduction

After the decade of seventies will see an increasing number of visually impaired teachers functioning in classrooms at levels and in all subjects. The emergence of reading machines, personal computers with speech or Braille output, on-screen magnification, closed circuit televisions, improved magnifiers of various sizes for various purposes, and many other technological developments have contributed to some visually impaired teachers to do their job effectively that they previously could not do without sighted assistance.

Today's classroom is very challenging to any teacher due to diversity of student population. This study aims to find out the use of technology among visually impaired teachers for Teaching Competency.

Review of Literature

Gertrude Berger (1970) stated that, visually impaired teacher also need to do the responsibilities for performing all the duties of a regular classroom teacher. The visually impaired teacher's ability to perform independently augmented by his recognition and that shared responsibilities support strong socialization process. He concluded that by studying the teaching methods of blind teachers is that they are establishing a socialized atmosphere which contributes to discipline and dimensions the need for confrontation. In teaching method, the blind persons well lead the sighted.

The blind college teacher is capable of performing as effectively in the classroom as the sighted teacher. He or she can engage in the same activities and achieve the same educational goals. However, in order to function effectively, the blind teacher must develop creative, innovative, and sometimes unusual methods and techniques for performing those same classroom activities and achieving typical educational goals (Alonso 1987, McCauley 1961, Shalinsky 1983).

A study on The instruments for a Blind Teacher of English: The challenge of the board was conducted by Merri, Maryvonne; Monties-Cabot, Regine (2005). This study reports on the training of a blind foreign language teacher of sighted students and the designing of a substitute of the board. A composition of computer devices available today was provided to the blind teacher in order to get pieces of writing projected on a screen. This basic instrument was transformed through instrumental geneses (Rabardel. 1995) i.e., transformations of the blind teacher's activity and/or of the properties of the artifacts in order to get writings readable for sighted students as well as adapted to didactic purposes. The study deals with knowledge construction, which implies four categories of actions on pieces of writing: adding, erasing, organizing and pointing to.

The Impact of Braille Reading Skills on Employment,. Income, Education, and Reading Habits is investigated by Ryles, R.(1996). This study compared outcomes for 74 congenitally legally blind adults who learned to read Braille or print as their original reading medium. Those who learned to read using Braille had higher employment rates and educational levels, were more financially self-sufficient, and spent more time reading than did those who learned to read using print.

Assistive computer technology and empowerment: the vocational experiences of blind and visually impaired New Zealanders, Williams, Wendy Elizabeth reported that the technology revolution which has occurred in New Zealand over the past 30 years has introduced an array of assistive mainstream and specialized computer technologies (ACT) such as the internet, voice and Braille output systems. These technologies compensate for the information access limitations of the blind and visually impaired and promise eventual empowerment. The study discovers that Assistive Computer Technology has indeed spawned a range of benefits for participants in their personal and social contexts. It has improved users' information management abilities. Improvement in information management has led to spin-off benefits such as communication, which facilitates social involvement and participation. Participation and improved management of information have improved Assistive Computer Technology users' response capability, or their ability to respond to changes in their external vocational environments.

A collective case study approach was used to examine factors that influence the job retention of persons with vision loss in Employment after Vision Loss: Results of a Collective Case Study by Crudden (2002), Adele. Computer technology was found to be a major positive influence and print access and technology were a source of stress for most participants. Keeping in view of the importance of technology usage among Visually Impaired Teaches, a study was planned to explore the Visually Impaired teacher's usage of technology for their successful teaching career.

Method

The area selected for the study included Coimbatore and Chennai districts of Tamil Nadu. The study adopted purposive sampling technique to select the sample. The sample comprised of visually impaired teachers from Schools and College/University. Gender issues were considered and both male and female teachers were equally selected. There were 60 teachers, 30 from Schools and the other 30 from higher education institutions. Descriptive survey design was adopted, which included selection, surveys and fact-finding enquiries of different kinds. The present state of affairs was discussed.

Variables
The Variables selected for the study are as follows:
Table 1: Variables

Variables	Levels
i) Independent Variable	
a) Gender	Male Female
b)Type of Educational Programme	School Higher Education Programme
ii) Dependent Variable	Application of Technology for Teaching

Tools
Personnel Data Sheet to collect the demographic details of the visually impaired teachers was used in this study. The investigator developed her own Rating Scale to identify the various technology used and for measuring Technology used among Visually Impaired Teachers for Teacher Competency.

Data Collection Procedure
The study was conducted in three phases.
In the first phase the investigator made a survey to identify visually impaired teachers working in various schools and Colleges/University in Coimbatore and Chennai districts of Tamil Nadu. In phase two the investigator administered the Rating Scale to 30 selected visually impaired teachers working in Schools In third phase the investigator administered the rating scale to 30 visually impaired teachers working in College /University to assess their Technology usage. The investigator carried out the assessment as direct interview with the sample selected.

Data Analysis
Qualitative Analysis was used to assess the Level of Application of Technology by the Visually Impaired Teachers

Correlation analysis was used to analyse the Application of technology with the following teaching competency skills: Teaching method, Evaluation, Classroom Orientation and Independency.

Results
Table 1: Level of Application of Technology

Level	No.	Percent
Low(<=8)	21	35.0
Moderate(9-12)	29	48.3
High(>12)	10	16.7
Total	60	100.0

Table 1 is about here.

A qualitative analysis was done to find out the level of Application of Technology for Discipline in terms of low, moderate and high considering the total score of 20. The results revealed that 35% were at low level in Application of Technology, whereas 48 % were at moderate level and nearly 17% at high level in Application of Technology.

Table 2: Correlation between Application of Technology and Teaching Method

Item	Value
Application of Technology Teaching Method	0.36 **

** Significant at the 0.01 level.

Table 2 is about here.
To analyze the relationship between Application of Technology and Teaching Method correlation coefficient was used. The coefficient correlation is 0.36 which is significant 0.01 level. This indicates Application of Technology and Teaching Method have positive correlation.

Table 3: Correlation between Application of Technology and Evaluation

Item	Value
Application of Technology Evaluation	0.32 *

* Significant at the 0.05 level.

Table 3 is about here.
To analyze the relationship between Application of Technology and Evaluation correlation coefficient was used. The coefficient correlation is 0.32 which is significant 0.05 level. This indicates Application of Technology and Evaluation have positive correlation.

Table 4: Correlation between Application of Technology and Classroom Orientation

Item	Value
Application of Technology Classroom Orientation	0.38 **

* Significant at the 0.01 level.

Table 1 is about here.
To analyze the relationship between Application of Technology and Evaluation correlation coefficient was used. The coefficient correlation is 0.38 which is significant 0.01 level. This indicates Application of Technology and Evaluation have positive correlation.

Table 5: Correlation between Application of T ology and Independency

Item	Value
Application of Technology Independency	0.6 **

** Significant at the 0.01 level.

Table 1 is about here.
To analyze the relationship between Application of Technology and Independency correlation coefficient was used. The coefficient correlation is 0.557 which is significant 0.01 level. This indicates Application of Technology and Independency have positive correlation.

Discussion
As many studies indicated that application of technology enhances the work performance of the visually impaired persons, the present study revealed that Application of Technology teachers are at moderate level and Application of Technology has positive correlation between the Teaching Competency Skills such as Teaching Method, Evaluation, Classroom Orientation and Independency. These findings are in line with the results of Williams, Wendy and Elizabeth (2003), who reported that Application of Technologies compensate for the information access limitations of the blind and visually i d and promise eventual empowerment.

Assistive Technology for Competent Visually Impaired Teacher
Following are some of the technological aids used by the visually impaired teachers for competent teaching revealed through interviewed the visually impaired teachers in this study

The important point of being a successful blind teacher is to master basic technical competencies and skills which enable us to work independently in the class. Very often, due to economic reasons, blind teachers in India work without sighted assistant. Therefore, it is important for them to develop certain practical skills, for example, blind teachers must be able to use a computer and the appropriate adaptive technologies. Here are some technology used by the visually impaired teachers for Teacher competencies.

A. Braille: Most of the blind teachers relay on Braille. Theya have their class notes on the Braille sheets which could help in competent teaching. 70% of teachers working in schools use Braille as their low tech device to prepare their lesson plans.

B. Computer skills: Visually impaired Teachers working in High education Institutions preferably use computers to prepare note

maintaining class attendance, to store necessary materials, to communicate via E-mail or Skype with my students or colleagues from all over the world, to get resources on the net, to print the materials, booklets and handouts.

C.Adaptive Technologies: Scanner, Screen Readers and Screen magnifiers: For reading print materials visually impaired teachers use computer and scanner. A flatbed scanner connected to a computer, scans books or text pages, recognizes letters and numbers and converts them either into Braille or into text.

Then they can listen to this information with the help of the talking screen-reading program "Jaws for windows", which is installed on computer. The program can read information, which appears on the screen. It is possible to use another screen-reading program "NVDA". Magic is one of the widely used screen magnifier by the low vision teachers for effective use of computers.

Digital Recorder: Wide variety of digital recorders is used by the visually impaired teachers to record the text to be taken in class.

Tape Recorder: Low cost and efficient aid that was use by most of the visually impaired teachers.

Mobile Phone: In the context of today's scenario mobile phones are used as voice recorder, attendance marker, communication through mail & skype. Screen reading and text enlarging configurations in mobile phones enable the visually impaired teachers to aid them in day today affairs to competent teaching

Large Print : Low vision teachers prepare their lessons on large print materials to enhance their teaching method.

Competence is a crucial component that has significant implications while the instructional process is organized. There are challenges for the Visually Impaired teachers in order to execute the role effectively, but they can be overcome with the innovative and creative teaching techniques. For most of the problems, technology is the solution. Technological revolution for the print and mobility accessibility for Visually Impaired persons would pave avenues for the Teaching Profession, which is a promising job. Many studies state that visually impaired teachers are as competent as sighted teachers. This study stands evidence to that.

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ASSEMBLING SKILL AMONG VISUALLY IMPAIRED STUDENTS

Selvi .A [1] | Victoria Naomi .G [2]

[1] Ph.D. Scholar, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore – 43.

[2] Professor, Department of Special Education, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore – 43.

Introduction

Spatial ability is a collection of cognitive skills which are responsible for the performance of the individual in different walks of life. In spatial ability, assembling skill is important for the Visually Impaired Persons. Assembling means putting together of the parts to make a completed product. It is the act of constructing something. Assembly skills are probed using interlocking block constructions. The act of connecting together the parts of something, the act of assembling something.

Need and Importance of Spatial Ability for the Visually Impaired Students

The spatial thinking is exhibited as essential element of playing, educational, labour activity of the child that is in activities, where it is necessary to use skills to be oriented in space. Therefore the spatial thinking development has very important correctional value for visually impaired school children: having seized receptions both modes of creation and operation by spatial images, the children gains skills permitting to them to perfect practice Orientation & Mobility in space, to improve the quality studies of school subjects firstly Mathematics, Arts, Geography, Drawing etc. All this will promote the many-sided development of the school children and their successful social adaptation.

Spatial abilities are pivotal constructs of all models of human abilities, for example, Guliford (1967) devoted one slice of his structure of the Intellect model to them. According Shepard (1978) high levels of spatial ability have frequently been linked to creativity, not only in the Arts, but in Science and Mathematics as well.

Smith (1964) and Ghiselli (1973) summarized studies in which spatial tests have been used to predict job performances. Spatial tests add little to the prediction of success in traditional school subjects; even Geometry after the general ability has been entered into the regression.

There are several possible reasons for the gulf between the theoretical importance of spatial abilities and their practical utility in predictive studies. First it may be that, beyond some minimum level of competence, spatial abilities are simply not that important for success in school or work. Second, the strength of spatial ability relative to other abilities, particularly verbal and phonemic fluency abilities, may be more important for predicting how problems are represented and solved rather than whether they can be solved. Third, the criterion measures used in most studies may be biased in favour of other abilities, such as verbal or reasoning skills. Fourth, existing tests may not be very good measures of spatial abilities.

The main objective of the study was to find out the impact of intervention on developing Assembling skill among visually impaired students.

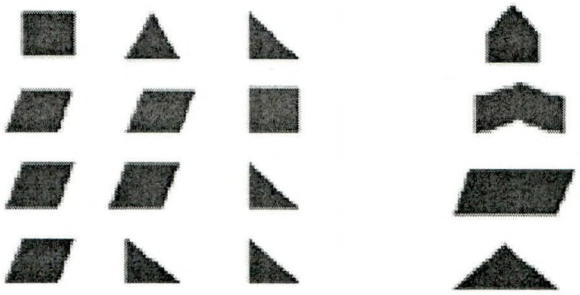
Sample

The sample selected for the study consisted of 30 students, 15 visually impaired and 15 blindfolded sighted students. The visually impaired students were in the Experimental group and the blindfolded sighted in Control group.

Assessment of Assembling Skill

The investigator developed the test based on the test items given by Klatzky et al. (1995). This was to identify the Assembling ability of the samples. The stimuli were Triangular, Diamond Shaped and Square Tiles of 5cm on the shortest side. On each trial the student was given three tiles to inspect as long as he or she desired and then was given a completed shape that could be constructed from two of them.

The task was to build the completed shape using only two of the tile. The four shapes and corresponding tiles are shown in Fig. Timing for the trial started when the subject was handed the tiles and stopped either when the subject indicated completion or at the end of 2 minutes. The time taken by the student for each trial for completing the shape was noted with help of a stop watch.



Intervention Strategies

1. Developed to train assembling skills to visually impaired students
2. Exposure to different types of shapes
3. Activities to arrange blocks
4. Activities to assemble pen
5. Activities to fit lid to different boxes as per shapes
6. Forming shapes with the help of ice stick and straw (e.g.) square, circle, and rectangle.
7. Puzzle activities (e.g.) birds and animals
8. Arranging shapes with the help of paper outers

Result 1
Assembling of Experimental Group

Group	Test	Mean	S.D	't'-value
Experimental	Pre	1.3	1.6	11.1**
	Post	6.0	0	

Significant at 0.01 level

It is evident from the above table, that the t value for the Experimental Group for Assembling is 11.1 which is significant at 0.01 level. It indicates that there is a difference between pre and post scores. Hence it is concluded that the intervention was found to be effective for developing Assembling skill of visually impaired students.

Result 2
Assembling of Experimental and Control Group

Test	Mean		S.D		't'-value
	Group		Group		
	Experimental	Control	Experimental	Control	
Pre	1.3	4.5	1.6	1.13	7.29**
Post	1.3	6.0	1.63	0	11.1**

**Significant at 0.01 level

It is evident that the t value for the pre score of Experimental and Control Group pre score for Assembly is 7.29 which is significant at 0.01 level. It indicates that the Control Group (Blindfolded Sighted) secured higher score (M=4.5) than the Experimental Group (Visually Impaired) (M=1.3). Hence it is concluded that the Control group was found to be acquired Assembly skill higher than Experimental group in pretest.

While considering the post score of the Control and Experimental group, the Experimental Group secured higher score with the t value 11.1 which is significant at 0.01 level. It indicates that the Experimental Group secured score (M=1.3) than the Control Group (M=6.0). Hence it is concluded that the intervention was found to be effective developing Assembly skill of visually impaired students.

Thus the intervention adopted in the study was found to be effective to the most important spatial skill i.e. assembling skill which is paramount for the visually impaired persons for developing orientation in the environment and for their safe and independent mobility. It helps their learning subjects particularly mathematics and science.

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