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VISUAL DEFECT: ITS PREVALENCE AND EFFECT ON STUDENTS' PERFORMANCES IN FASILO JUNIOR SECONDARY SCHOOL, BAHIR DAR, ETHIOPIA

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ABSTRACT: *The Prevalence of visually defective students was investigated in Fasilo Junior Secondary School using the Snellen Letter Chart. Four hundred and seventy six pupils were visually defective. This defect had a significant effect on their school performance. This was inferred to the country's educational problems and discussed.*

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DEFINITION OF TERMS

Vision	-	Act or faculty of seeing, sight.
Visual defect	-	Reduced visual acuity.
Normal vision	-	Visual acuity between 20/20 and 2/30.
Slightly defective	-	Visual acuity between 20/30 and 20/60.
Severely defective	-	Visual acuity of less than 20/60.
Educational blind	-	a person who can not use his eyes for education.

VISUAL ACUITY TRANSCRIPTION

20 feet equivalent	6 meter equivalent	percent vision loss
20/20	6/6	0
20/25	6/7.5	4
20/30	6/9	9
20/40	6/12	16
20/50	6/15	23
20/60	6/18	30
20/200	6/60	80

Source: Paulos Quana'a (1987), Baker, J.H. (1966), Stein, S.S. (1968), Schwab, L. (1987).

INTRODUCTION

Every school, regardless of its size and location, may have visually defective pupils who can markedly deviate from the sighted children to such an extent that special attention and guidance services are needed. They will become useful citizens when people accept them as they accept visually normal persons, who could help themselves and make great contributions to the society. However, if people neglect them, they become dependent upon parents and the community at large. The larger proportion of our beggars belongs to this category.

Visually defective children may be socially segregated in classrooms too because of negative attitude from their sighted peers. Therefore, every pupil with any type of defect or disability has to be diagnosed and given help in this respect, for instance, by making seating arrangements which enable them to attend better. With this in mind, our work reports on the prevalence of children with visual defect and its influence on their academic performances in Fasilo Junior Secondary School, in Bahir Dar Town. This will help, we believe, to inform school planners, health personnel and other professionals so that they will be able to give remedial and psychological help and also plan educational programs accordingly.

MATERIALS AND METHODS

Fasilo Junior Secondary School students were taken as the population of the study. The number of the total population was found to be 2146. The school was selected randomly from junior secondary schools of Bahir Dar Town. The study has been handled in two ways:

1. The prevalence of visual defect has been investigated by screening 2146 pupils of the school with the Snellen Letter Chart (Barbe, 1963; Jackson, 1969; Dunn, 1973).

2. The effect of visual defect on pupils academic achievement was examined. Three central subjects (Amharic, English and Mathematics) were selected to study the effect. The selection of the school subjects was made purposefully because they are compulsory to all Ethiopian pupils in the education system. The sample population consisted of all severely defective and an equal number of sighted pupils who were selected (sample) randomly. The age of the pupils may range from 13 to 16 and most of them seem to come from poor families. Variables such as sex, age ethnicity, socio-economic status and etc. were excluded from the study.

Scores of severely defective and sighted students were obtained through documentary analysis. To examine the effect of visual defect on achievement in Amharic, English and Mathematics, means were calculated from the obtained scores of 1991 and 1992 first semester averages of the two groups. A t-test was employed to investigate the achievement differences of defective and normal vision students.

RESULTS

1. PREVALENCE OF VISUAL DEFECT

Table 1. The Prevalence of Visual Defect in Fasilo Junior Secondary School Students.

Respondent Category	Frequency	Percent
Visually Defective	476	22.18
Normal sighted	1670	77.82
Total	2146	100.0

Twenty two percent of the students in Fasilo Junior Secondary School were defective (Table 1). This is a good indicator for the school teachers, the parents and the health personnel that

they give special attention to these pupils specially to those whose visual acuity is highly defective.

Table 2. Degree of Vision Defect

Respondent Category	Frequency	Percent
Slightly defective	435	91.4
Severely defective	41	8.6
Total	476	100.00

The great majority of the students were slightly defective (Table 2). These children with minor visual problems will have sufficient sight to enable them follow regular school curriculum with little additional help. They can benefit from optical aids, preferential seating in class, eye rest activities and other simple modifications.

The eye is a basic importance to the acquisition of knowledge. More than eighty five percent of our input in learning comes by way of our visual process (Labate and Curtis, 1975; Hatlen and Curry, 1987). Thus, special attention should be given to the visually defective pupils so that their educational future shall not be hampered.

2. EFFECT OF VISION DEFECT ON THE ACADEMIC PERFORMANCE OF THE PUPILS.

Scores of the severely defective and those of an equal number of pupils with normal vision were considered in the documentary analysis. Mean scores of all the subjects (Amharic, English and Mathematics) were computed for each group ($\bar{x} = 63$ for normal and $\bar{y} = 53$ for defective) from the 1991 and 1992 first semester results. The combined mean score was 58.0 (Appendix).

Table 3. The Position of Results of the Visually Defective and Normal Sighted Pupils in Relation to the Combined Mean Score (58).

Respondent Category	Below the Combined Mean Score		Above the Combined Mean Score	
	Frequency	Percent	Frequency	Percent
Visually defective	27	65.9	12	29.3
Normal sighted.	19	46.3	22	53.7

Of the total of 41 visually defective 65.9 percent and out of the 41 normal sighted 46.3 percent were below the combined mean

score (Table 3). On the other hand, 53.7 percent of the sighted pupils were above the combined mean score as compared to the 29.3 percent of the defective pupils. This difference was statistically tested and found to be significant (Appendix).

The apparent educational retardation of the visually defective pupils is a consequence of not only the slower acquisition of information but also lack of any help provided to meet the same minimum standards as the sighted pupils.

DISCUSSION

The purpose of education is to assist children and youth to acquire life competencies enabling them to love, to work and to play (Tuttle, 1986). This applies to all children, abled or disabled. Handicapped children, however encounter problems in their attempt to attain these life competencies through the ordinary provisions of general education. Visual impairment places pupils at a disadvantage in cognitive development particularly in the areas of sensory stimulation, concept development and communications (Scholl, 1986). In this study, although few visually impaired pupils (29.3%) were above the combined mean score, the majority of them are

below it, and this is considerably lower than the sighted ones (Table 3).

With regard to the in group variations of the visually impaired pupils (Table 3), factors such as heredity versus environment, the nature of their development and the tendency of each child in attaining stability may explain why some students in the group with series defects show good academic progress while others do not. Moreover, visual impairment when it is genetic can have some forms of brain malfunctions and problems of visual perception which will in turn cause difficulties in concept development. Development as an increase in complexity also influences directly or indirectly visual impairment (Scholl, 1986; Parson, 1986). Furthermore, some children are more intelligent than others as seen in intelligence tests (Rossi, 1986).

It is generally accepted that students who are visually handicapped lag behind their sighted peers due to the fact that they are deprived of a valuable source of sensory input with the result that development may take place more slowly and be uneven across specific intellectual abilities. Although the tactile and auditory schemes unite to provide organization to the blind childrens' world, these do not perform the same unifying function that vision does for the visually normal ones. For this reason, they have unique educational and develop-

mental needs that are direct results of their inability or limited ability to observe the environment and respond accordingly (Tuttle, 1986; Hatlen and Curry, 1987). These needs must be assessed and incorporated in a special education to enable them acquire the skills essential to becoming fully participating members of the society. Educational modifications, as Tuttle (1986) and Hatlen & Curry (1987) put them, are generally required in one or more of the following categories.

1. Curriculum
2. Methodology (Learning strategies, Materials and devices, Classroom management etc.)
3. Environmental (Physical barriers)

Moreover, visually handicapped pupils need teachers who

a. are skilled in enriching the total curriculum
b. are sensitive to each student's cognitive learning styles and provide experiences that match the styles; and
c. know where and how to obtain appropriate materials to use in teaching (Huebner *et. al.* 1986). To obtain such professional teachers, provision of special workshops and inservice sessions to regular teachers of the visually impaired pupils is necessary.

In the Ethiopian objective conditions, there are four possible key participants to be involved in the process of providing the required modifications to meet the need of the visually handicapped pupils. These are the central government, the regional bureau of education, the zone office of education and the local agencies & organizations. The central government should have a hand in policy making, protecting the civil rights of the handicapped children and prohibiting discriminations in education, housing, transportation and employment. It should also have the responsibility to monitor and enforce the compliance of the lower bureaucracies. The regional bureau of education is responsible for the application of the policies and monitoring the local agencies, organizations or schools for the role they play in the actualization process. The responsibilities include providing leadership in professional development of teachers, designing search plans, serving as local consultants to the zone bureau of education & local agencies, maintaining communication facilities etc. At the zone and local level, the teachers of the visually handicapped are the primary advocates for and facilitators of appropriate quality education for all visually handicapped children within the zone or the school. The efficient implementation of the program and its periodical evaluation depends on the zonal and local authorities. When all the participants work together, then the educational right of the handicapped will be fulfilled.

The process of program implementation should consider the following.

1. Child-find (search) -- in order to reach every potentially eligible handicapped child, extensive child find is required. Mass Media informational campaigns, school and community vision screening programs etc. can be useful in this child find process.

2. Eligibility -- the first question to be answered is whether a child is eligible for special education service. For this purpose, a multidisciplinary team (educational, psychological, medical and other professionals) is required.

3. Assessment -- since children's needs change form time to time a regular periodic assessment must be conducted.

CONCLUSION AND RECOMMENDATIONS

1. The fact that visually defective pupils are prevalent in a school in Bahir Dar indicates the possible prevalence of the problem through out the country. Hence, the problem should attract attention and a minimum possible visually defective child find trials (at least in major cities and towns)

should be made. Schools can arrange special classes for handicaps and assign trained teachers to them.

2. Country-wide studies on the etiology of visual defect should be made so that it will be possible to provide some educational measures as eye glasses, adaptation of the curriculum and change in methodology. Although this might not be economically feasible when viewed against our countries standard, aid provisions from non-governmental organizations and foreign donors could be of great help.

3. Joint planning by health and educational authorities is required to organize, lead and meet the needs of the visually impaired pupils at least at a minimum level.

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APPENDIX

Students's scores from the 1991 & 1992 academic years documents.

Sample no.	Normal Sighted				Visually Defective				Difference of the total average (di-d)	(di-d)
	Average Score of Each Subject total				Average Score of Each Subject total					
	Amharic	English	Maths	Average	Amharic	English	Maths	Average		
1	67	53	64	61	67	53	64	61	0	0
2	58	67	76	67	56	44	36	45	22	161.29
3	26	25	24	25	75	78	88	86	-55	4134.49
4	69	84	86	80	68	54	75	66	14	22.09
5	75	52	60	62	71	60	80	70	-8	299.29
6	72	24	42	46	55	36	82	58	-12	453.69
7	88	83	92	88	70	50	54	58	30	428.49
8	60	51	60	57	56	37	48	47	10	.49
9	53	38	62	51	75	56	70	67	-16	640.09
10	88	70	76	78	64	28	42	45	33	561.69
11	72	61	58	64	82	43	52	59	5	18.49
12	78	32	32	47	68	53	58	60	-13	497.29
13	84	86	90	87	58	29	54	47	40	942.29
14	78	38	44	53	56	37	54	49	4	28.09

Sample no.	Normal Sighted				Visually Defective				Difference of the total average (di-d)	(di-d)
	Average Score of Each Subject total				Average Score of Each Subject total					
	Amharic	English	Maths	Average	Amharic	English	Maths	Average		
15	70	34	44	49	74	43	42	53	-4	176.89
16	95	81	100	92	56	32	44	44	48	1497.69
17	75	39	52	55	73	45	74	64	-9	334.89
18	57	34	56	49	60	60	36	52	-3	151.29
19	92	89	100	94	57	44	38	46	48	1497.69
20	74	55	34	54	80	41	50	57	-3	151.29
21	67	49	68	61	60	40	42	47	14	22.09
22	86	98	100	95	79	57	79	72	23	187.69
23	66	48	63	59	64	48	70	61	-2	127.69
24	49	42	39	43	61	86	91	79	-36	2052.09
25	77	76	98	84	44	25	41	37	47	1421.29
26	79	54	47	60	46	25	40	37	23	187.69
27	52	34	66	51	64	30	57	50	1	68.89
28	80	77	87	81	75	40	56	57	24	216.09
29	67	47	66	60	68	38	50	52	8	1.69
30	49	42	54	48	62	46	44	51	-3	151.29
31	86	92	98	82	65	28	44	46	46	1346.89
32	67	68	66	67	38	40	33	37	30	428.49

Sample no.	Normal Sighted				Visually Defective				Difference of the total average (di-d)	(di-d)
	Average Score of Each Subject total				Average Score of Each Subject total					
	Amharic	English	Maths	Average	Amharic	English	Maths	Average		
33	65	30	47	47	49	33	42	41	6	10.89
34	78	76	88	81	77	33	36	49	32	515.29
35	65	28	52	48	65	24	48	46	2	53.29
36	63	24	40	42	63	52	71	62	-20	858.49
37	78	76	96	83	70	40	47	52	31	470.89
38	56	40	46	47	64	34	46	48	-1	106.09
39	43	42	44	43	73	25	46	48	-5	204.49
40	79	90	98	89	73	35	37	48	41	1004.89
41	72	26	64	54	56	36	44	45	9	.09
				2594				2193	381	21434

$\bar{x} = 63$ $\bar{y} = 53$ $\bar{d} = 9.3$

$\bar{d} = 9.3$; $s^2 = (di - \bar{d})/(n-1) = 21434/(41-1) = 535.85$

$s = \sqrt{535.85} = 23.15$ $t = \bar{d}\sqrt{\frac{n}{s}} = 9.3\sqrt{\frac{41}{23}.15} = 2.57$

t calculated = 2.57

t tabi;ated at 5% level of significance = 2.02