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Performance of Visually Impaired Learners: Narok Integrated Program for the Visually Impaired in Kenya

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Abstract

Using the Behavioral Engineering Model (BEM), this study investigates possible causes and solutions to teachers' performance at Kenya's Narok Integrated Program for Visually Impaired (NIPVI). The model has been used in organizations to identify challenges to improve workers' performance. In this context, the instrument replicates its use to discover challenges and solutions to teachers' performance at the NIPVI. The study used a quantitative content analysis design. A secondary data collected in 2011 was coded using categories and subcategories from the BEM. Statistical tests were utilized to analyze the content. The outcomes revealed possible performance causes displaying specific factors influencing the challenges and measures the institution can attend to improve the performance.

Keywords

Integrated Program, Visually Impaired, Performance, Behavioral Engineering Model, Disability

1. Introduction

The performance of teachers is essential to the academic achievement of students. Chepkwony, Kibett, and Manduku (2020), Pandian and Baboo (2010) stated that knowledge and skills influence the performance of teachers. Agesa (2014), Kiarie (2004), Majinge and Msonge (2020), Annie, Ndhlove, and Kasonde-Ng'andu (2015), Yalo, Indoshi, and Agak (2013) posit the importance of trained personnel for desirable outcomes. Lack of knowledge and skills can be detrimental to instructing learners (Westbrook & Croft, 2015). These challenges

can be compounded, particularly when teaching learners with disabilities (Szumski, Smogorzewska, & Karwowski, 2017; United Nations, 2018). Students with disabilities exhibit significant challenges in learning.

Kvande, Bjørklundb, Lydersenc, Belsky, and Wichstrøm (2019), and World Bank (2018) indicated a failure to teach students with disabilities using traditional strategies. In this regard, special education (SE) services compensate for the shortcomings of conventional schooling. According to Kvande et al. (2019: p. 401), "SE refers to a wide range of adaptions of schooling including alternative teaching methods, curricula, and learning goals; use of special equipment; small group or one-on-one teaching; personalized assistance for attention and memory; and provision of richer explanations of concepts while simplifying curricula." It is suggested that some students with disabilities are also enrolled in special classes or schools.

Past empirical studies that explored the performance of teachers teaching visually impaired students observed negative factors towards the teaching of visually impaired students. Agesa (2014), and Yalo et al. (2013) steered studies in Kenya at different institutions focusing on teachers' performance in providing instructions to learners with defective vision. Outcomes from both studies suggested that teachers without training in special education can exhibit undesirable performance in teaching visually impaired students (VIS). Westbrook and Croft (2015) examined instructors providing instructions to students with disabilities in Tanzania. The results demonstrated undesirable performances of students attributed to ill-trained teachers for VIS. Annie Ndhlovu, and Kasonde-Ng'andu (2015) and Akakandelwa and Munsanje (2011) from Zambia observed comparable results in a study centering on challenges in teaching learners with visual impairments. Indicators from the analyses revealed a negative impact on the achievement of students with disabilities from teachers without SE training services.

2. Description of the Problem

Education is believed to have the potential to shape the life of an individual. Kagema, and Cecilia (2018); Slavin and Madden (1999) indicate that every child can succeed in school and life. Kuncel, Hezlett, and Ones (2004); Kariuki, Njoku, and Mbugua (2019) posited that academic performance is valid for predicting performance in both educational and work domains. Kalu (2011) conducted a study focusing on factors affecting the academic performance of visually impaired students at the NIPVI through a qualitative approach. The outcomes revealed undesirable teachers' performance in the program. As a result of these outcomes, this case study uses the data obtained during the 2011 study to look at elements affecting teachers' performance through a content analysis design. In this context, the researcher utilized the BEM, the third leisurely theorem of Gilbert's scientific management. Gilbert (2007) stated that leisurely theorems provide a window for performing something differently, leading to better outcomes.

From the said problem, teachers needed information to conduct their teaching differently, especially for the visually impaired students to achieve better performance.

Research Objectives

In view of the problem statement, the researchers investigated the performance of instructors at the Narok Integrated program as follows:

1) What are the main factors influencing the performance of teachers teaching visually impaired students in the program?

2) What are the possible interventions to improve the performance of the teachers in the program?

3. Narok Integrated Program for the Visually Impaired (NIPVI) in Kenya

NIPVI is among other integrated programs initiated by the Kenyan government in the early 1990s. The Kenyan government responded to a global campaign focusing on the teaching of children with disabilities along with their sighted peers (The Republic of Kenya, 2009; UNESCO, 1985). In the past, students with any disabilities were formally taught in special institutions. In essence, schools managed each type of disability in different institutions, specifically for the disability.

The NIPVI program is in a boarding school, Ole Sankale Elementary School. According to the Ministry of Education (MOE) (2004), Ole Sankale Elementary School has teachers trained to instruct regular students. During training, teachers acquire a general knowledge of preparing instruction without emphasis on teaching students with disabilities. Kalu (2011) revealed that general knowledge is inadequate, and a lack of expertise for instructing such students makes teachers incompetent, resulting in poor students' performance. The situation is compounded by the excessive enrollment of students per class, rendering teachers incapable of effectively teaching the students.

Ole Sankale Elementary is a public school (government-run school). Going by the Kenyan government regulations on public schools (Yakaboski & Nolan, 2011), Ole Sankale Elementary is expected by the MOE to accommodate most students within its area of jurisdiction. Kalu (2011) stated that the school's total enrollment was 594, including 124 visually impaired students during the study time. The school has grades one to eight, with each class accommodating 60 - 80 students, including those visually impaired, and it has 17 teachers. Visually impaired students take up approximately 5% of the population in the classroom.

In addition, 25 more schools are affiliated with the NIPVI program because there are one or two students with vision problems in those schools, and the NIPVI program is assumed to be the mother of the other schools. NIPVI teachers travel to those schools to advise teachers on handling visually impaired students while using a nationally standardized curriculum.

The program follows the Kenyan national standardized curriculum. MOE

(2004) indicates that the curriculum is general; there are no modifications to meet the needs of children with disabilities. In this regard, teachers are expected to modify the syllabi to teach students with disabilities. Changing syllabi requires knowledge and skills, which according to Kalu (2011), most teachers at the NIPVI program lack. Due to the lack of knowledge and skills in this area, teachers at the program underperform, impacting the achievements of the students with disabilities. As such, the academic success of the visually impaired children in the program is jeopardized. In fact, for a couple of years, no visually impaired students managed to score grades that would secure positions in national high schools, which are considered superior to other schools.

Because of the students' performance with the disabilities, researchers were motivated to investigate the root cause of the performance challenges. To conduct the study, the researchers utilized the Behavioral Engineering Model (BEM) to find out the cause of performance problems through secondary data collected in 2011 at NIPVI.

4. The Behavioral Engineering Model (BEM)

The BEM is extensively engaged by organizations to explore causes of predicaments regarding human performance in an organization. For this reason, the case study used BEM to find out the cause of performance problems in the NIPVI program. The BEM is one of the most widely employed models by organizations to improve human performance. According to Chyung (2005), BEM involves diagnosing and engineering human behavior to produce worthy performance. In addition, Gilbert (2007) stated that the model assists managers in identifying causes of human competencies and incompetence and emphasizes that poor management of any of the six elements (see Table 1) causes human incompetence.

Table 1. Behavior engineering model (Source: Gilbert, 1978, p. 88 as cited in Chevalier, 2003: pp. 8-9). (This table need be nicely edited)

	Information	Instrumentation	Motivation
Environment	**Data** 1) Relevant and frequent feedback about the adequacy performance 2) Descriptions of what is expected of performance 3) Clear and relevant guides to adequate performance	**Resources** Tools, resources, time, and materials designed to match performance needs	**Incentives** 1) Adequate financial incentives made contingent upon performance 2) Non-monetary incentives made available 3) Career development opportunities 4) Clear consequences for poor performance
Individual	**Knowledge** 1) Systematically designed training that matches the requirements of the exemplary performance 2) Placement	**Capacity** 1) Flexible scheduling of performance to match the peak capacity 2) Job aids 3) Physical shaping 4) Adaption 5) selection	**Motives** 1) Assessment of people's motives to work 2) Recruitment of people to match the realities of the situation

Chyung (2005) indicated that Gilbert stressed the importance of finding appropriate interventional measurements to make performance worthy in an organization. These measurements can eliminate the cause of performance problems at a low cost and produce desired outcomes in an organization.

The BEM model is appropriate in this case study because its updated version efficiently identifies performance problems. Chevalier (2003) recognized that the new version presents a more efficient method for troubleshooting performance. It also assists in discovering the essential opportunities for improving individual performance. Since the administration sought intervention measurements to curb the causes of performance problems at the NIPVI program, the BEM provided the appropriate approach to identify the causes. According to Chyung (2008), the BEM is associated with Herzberg's motivation-hygiene theory, which seeks to find both hygiene and motivation factors in performance. Teachers in the program may lack skills to teach the students and lack motivation issues that would propel their performance. Furnhama, Petridesa, Jackson, and Cotterc (2002) indicate that hygiene factors (working conditions, supervision, interpersonal relation, status, salary, job, and personal issues) as well as motivation factors (achievement, recognition, responsibility, work itself, growth, and advancement), influence human performance. In this context, the researcher utilized BEM because it includes parameters that can impact teachers' performance in the program.

5. Methodology

A quantitative content analysis research design was employed to study the subject in question. Data collected through interviews at the Narok Integrated Program for the visually Impaired was coded using a codebook created as a frame of reference for distinct elements in the BEM. Two coders were trained to conceptualize definitions of categories in the codebook and coding data process. Trainees performed both inter and intra-coder reliability for accurate coding. There was a one-week interval for the two reliabilities since it was not massive data. For both types of reliabilities, there was 85% total agreement of coding reliability. Coding of the entire data took one week to complete before the analysis. In contexts with a lack of clarity during coding, coders consulted with the researcher to ensure accuracy in the data. Afterward, cleaning of the data took place. Since it was minimal data, the researchers completed analyzing the data in days. Statistical tests were used to analyze the data.

Ethical Issues

The study used secondary data acquired in 2011. As such, no human participants met the researchers of this study. During the original research data collection, participants consented to a request that the researchers use the data in other studies for academic advancement; however, with a caution that the researchers do not reveal the participants' identities.

6. Results

This section displays the study's outcomes, whose focus was on factors affecting teachers' performance at the NIPVI. It utilized the BEM Model to obtain the data by coding the secondary data. Additionally, the results present possible interventional measures to enhance the teachers' performance in the program. The outcomes are discussed in three different subject areas: demographics, BEM elements, and intervention measures.

6.1. Teachers' Demographics

This sub-section illustrates age, gender, and population of teachers, qualifications, experience, enrollment of students both regular and visually impaired students in different levels.

Table 2 illustrates the demographics of the teachers at NIPV categorized into four age groups. The classification reveals a nearly equal teacher count within each age range, though two teachers are in the age range (25 - 29). In terms of gender, the school has more female (7, 0.64%) than male teachers (4, 0.36%).

6.2. Qualifications and Experience

This subsection presents the teachers' qualifications, years of experience, and ongoing training for special education. As the asterisks indicate, the activity of teachers is meant to equip them with skills and knowledge to teach visually impaired students.

Table 3 illustrates that five (5, 0.45%) teachers have the knowledge and skills to teach students with disabilities. Six teachers (6, 0.55%) trained to teach regular students (see Table 3). Also, the school administration reported training these six teachers to equip them with knowledge and skills for teaching students with disabilities (*). Besides, Table 3 shows seven teachers (7, 0.64%) with above ten years of experience and four teachers (4, 0.36%) with less than ten years of experience.

6.3. The BEM Data

The study adopted BEM to explore possible causes of undesirable performance at the NIPVI. The researcher subdivided each category into individual elements for investigation (see Table 4). A content analysis method was utilized to collect

Table 2. Teachers' demographics.

Category	Age Range	Count	Gender	
			M	F
1	25 - 29	2	0	2
2	30 - 34	3	2	1
3	35 - 39	3	2	1
4	40 - 44	3	0	3

Table 3. Teachers' qualifications, years of experience, and training for special education.

1D	Qualifications	Years of Experience	Training
T1	P1 Teacher	13	*
T2	Undergraduate (B.Ed.).	16	
T3	Certificate (In-service Sp. E)	15	
T4	Diploma in Special Education	20	
T5	P1 Teacher	6	*
T6	Diploma in Special Education	16	
T7	Diploma in Special Education	17	
T8	P1 Teacher	10	*
T9	P1 Teacher	7	*
T10	P1 Teacher	6	*
T11	P1 Teacher	3	*

Table 4. Frequencies and percentages of individual elements from the BEM.

Number	Element	Frequency	Percentage
1	Feedback	2	18%
2	expectations	7	64%
3	Guides	3	27%
4	Training	9	82%
5	Placement	4	36%
6	Tools	9	82%
7	Time	8	73%
8	Materials	10	91%
9	scheduling	2	18%
10	Job Aids	10	91%
11	Shaping	3	27%
12	Adaptations	8	73%
13	Selection	5	45%
14	Financial	7	64%
15	Non-Monetary	3	27%
16	Career Development	10	91%
17	Consequences	8	73%
18	Motives	7	64%
19	Recruitment	7	64%

data guided by a codebook as a frame of reference. Table 4 illustrates the frequencies and percentages of each element. The frequency of a component demonstrates the possibility of that element as an influencing factor in the teach-

ers' performance in the program (see Table 4).

Table 4 illustrates the frequencies and percentages of the individual elements adopted from the BEM. The scores reflect the number of teachers at the Narok Integrated program mentioning the elements during the interviews. The outcomes are classified into three levels: high, moderate, and low. High level scores range between 71% and 100%, which include training (82%), tools (82%), time (73%), materials (91%), Job Aids (91%), adaptions (73%), career development (91%), and consequences (73%). These items featured most during the interviews, indicating that they are potentially significant factors shaping the teachers' performance in the program. Percentages of the moderate elements ranged between 51% and 70%. They include financial (64%), motives (64%), and Recruitment (64%). The frequency of these elements was significant; however, they do not appear to have a strong impact on the teachers' achievements. The low-level group percentages ranged between zero percent to 50%. They include feedback (18%), guides (27%), placement 36%), scheduling (18%), shaping (27), selection (45%), and non-monetary (27%). The mention of these factors during the interview was minimal, a clue that these attributes play a low significant role in the teacher's performance at the NIPVI.

Table 5 illustrates the frequencies and percentages based on the number of items (variables or elements) in each area. For each item, you have 11 subjects, so a particular item (e.g., feedback in the information category) could have a maximum of 11 responses. The numbers and the presents in the table reflected the number of items in each category. According to the BEM, Information has five elements (feedback, expectation, guides, training, and placement) and 11 subjects (number of respondents) of which a maximum number of items mentioned would be 55. The category only had 25 mentions of a possible 55 (45%). The same logic applies to Instrumentation (tools, time, materials, scheduling, job aids, shaping, adaptations, and selection). This category has eight items; if multiplied by 11, it has possible 88 responses. The items only had 55 mentions of a likely 88 (63%). Finally, Motivation has six items for a possible answer. Of this, the item had only 42 observations of a possible 66 (64%).

Table 6 depicts numbers and percentages of environmental and individual factors that can impact teachers' performance at the NIPVI. In the ecological elements, resources (82%) comprising time, training, and materials, featured as the most influencing factor. Incentives (64%) come second in the ranking. These two environmental factors pose possible detrimental challenges to better teachers' performance in the program. In contrast, data appears not to be a threat to

Table 5. Frequencies and percentages of categories in BEM.

Categories	Numbers	Percent
Information	25 (55)	45%
Instrumentation	55 (88)	63%
Motivation	42 (66)	64%

Table 6. Ecological and individual factors as adopted from the BEM.

		Data	Resources	Incentives	Total
Environment	#	12	27	28	67
	%	36%	82%	64%	61%
		Knowledge	Capacity	Motives	Total
Individual	#	13	28	14	55
	%	59%	51%	64%	56%
All Categories	#	25	55	42	122
	%	45%	63%	64%	58%

the program's success. Individual factors, which include knowledge (59%), capacity (51%), and motives (64%), appear to have a moderate effect on the performance of the teachers. None of them threatens the achievement of the program, however, strategies need to be taken to lower any possible risks to the performance.

7. Discussion

The discussion of these results is shaped by the demographic information and BEM outcomes. According to scholars, demographic measurements can predict the performance of an institution or organization, which is rational for including them in this study. The BEM provides data directly related to the performance of any organization.

7.1. Demographics Data

This study gathered demographic data of the teachers regarding age, qualification, class enrolment, the number of visually impaired students in different classes, and years of experience. These parameters displayed significant differences (see Table 4). For example, many classes' enrolment is over 50 regular students with one or two visually impaired students. Such enrolments can easily divide the teacher's attention leading to close attention to traditional students and less to the visually impaired students. This behavior can jeopardize the students' performance, reflecting in the teachers' performance.

Also, according to the data, teachers in the NIPVI have essential basic qualifications and experience to provide instructions to both the regular and the visually impaired students. However, the issue of training featured most in the interviews. Instructors claimed dynamics in teaching and behavior management of students usually emerge as they offer instruction. For instance, the new enrollment of students in a program like the NIPVI brings divergent and challenging elements that make teachers feel incompetent when executing their work. The state of feeling unqualified compel teachers to advocate for further training to enhance their ability to provide and manage learning contexts.

7.2. BEM Data

The BEM elements guided the data collection and analysis. The outcome demonstrates divergent views on what possible factors influence teachers' performance in the program. Arora (2016) stated that performance improvement depends on the different approaches to instruction. According to Neito (2019), employees can acquire new skills through training or observing other professionals. This school of thought demonstrates the rationale for numerous mentions of the training item during the interviews. Training or observations can enhance professional development for assisting both the regular and the visually impaired students in the program. The manner an institution trains its faculty can impact their productivity. The institution can utilize various training approaches to promote teachers' performance in the NIPVI, which may yield better performance for the entire institution. Empirical studies indicate that a motivating and knowledgeable instructor is the most significant school-related factor in shaping student achievement (Makwana, 2013). It is vital to pay attention to how institutions train and support teachers, particularly at the NIPVI. Further, as teachers aspire to perform better in the program, they need skills to achieve their goals. Instructor preparation provides educators with the tools to execute their services (Makwana, 2013). Therefore, both veterans and novice instructors should have frequent opportunities to develop professional skills, specifically on contemporary methods on how students learn new curriculum resources and tools in the classroom.

The outcomes also revealed a lack of tools, materials, and time for executing the curriculum (see Table 6) as possible factors influencing teachers' performance. Teachers use various instructional materials such as charts, textbooks, graphics, tangible objects, and improvised materials. These materials promote the comprehension of instruction in any learning context, which is reflected in the teachers' performance. These are essential and significant instructional elements needed for teaching and learning to promote teachers' efficiency and improve students (Ajoke, 2017). Besides, the results demonstrate that job aids (e.g., reading glasses), adaptations (ability to adapt materials to meet the needs of the students), career development, and consequences (fear of students' performance) featured more during the interviews. Once more, these are vital ingredients for providing instruction to students. Other scholars suggested that gaining confidence and developing instructional ability can improve teachers' and learners' performance (Arora, 2016; Ajoke, 2017). Teachers develop confidence in executing duties when all needed items are available and accessible to them and the students (Neito, 2019). Instrumentation and motivation categories can improve performance (see Table 5). As stipulated in this essay, each type can play a vital role in enhancing staff performance. Instruments facilitate and enhance the cognitive ability to comprehend concepts during instruction. On the other hand, motivation acts as a stimulus that generates the energy to perform (Wanakacha, Aloka, & Nyaswa, 2018). Therefore, organizations need to adopt or

adapt strategies to stimulate staff to perform better, especially where performance is dwindling.

8. Conclusion

This study explored possible causes and solutions at the NIPVI through the lens of the BEM. The BEM guided the collection and analysis of the data. The outcome demonstrated that some categories are possible influencing factors to the program's performance, issues that require actions to alleviate the current teachers' performance. Items that did not feature more in the interviews do not mean they are not influencing the performance. Note that all elements can potentially impact the program's performance; however, items featured less during the interviews are not a threat to the teaching.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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