Ruaha Catholic University, Journal of Education and Development (RUCUJED), Special Issue, 2022

Predicting the Effect of Secondary School Preparedness to Manage Disease Outbreaks on Curriculum Implementation in Iringa Municipality, Tanzania

Linus Method
Ruaha Catholic University
linusmethod68@gmail.com

and

Makungu Bulayi
Ruaha Catholic University

Abstract

The study examined secondary school preparedness to manage disease outbreaks and established parameters that were employed to predict the effects of secondary school preparedness on curriculum implementation. A pragmatic paradigm was adopted with a mixed-methods approach being employed. The sample size was 60 teachers, 18 school management teams and 36 students from six secondary schools in Iringa Municipality, Tanzania. The data were collected through questionnaires and semi-structured interview methods. The study findings revealed that school preparedness can be measured through six main parameters: school plans, training mechanisms, policy formulation and practice, school resources, budgeting and school community knowledge and involvement. The study recommends that the government through the Ministry of Education, Science and Technology should emphasize every secondary school to have plans and a school disease policy to manage diseases and disease outbreaks.

Keywords: Curriculum Implementation, Disease Outbreak, School Preparedness

1.0 Introduction

Disease outbreaks have been a serious issue leading to school closure, death of people and failure to complete daily routines (Mwebi, 2021). The fight against disease outbreaks has been in place, which sometimes leads to affect the implementation of curriculum. To a large extent, the world has experienced diseases that have been caused by either new or re-occurrence of infections, which together threaten human existence (Mwebi, 2021). From the Human Immuno-deficiency Virus (HIV) pandemic, which emerged early 1980s and recorded deaths leading to about 39 million, the Ebola virus pandemic in West Africa claimed a loss of nearly 9,000 lives in about a year after it started.

According to WHO (2020), Cholera outbreaks from Vibrio cholera bacteria have estimated that each year 1.3 to 4 million cases of Cholera and 21,000 to 143,000 deaths worldwide due to Cholera. Corona Virus also emerged and led to 5,719,442 million deaths from 385,508,990 cases, which also affected the implementation of the curriculum (Worldometer, 2022). Disease outbreaks are leading the world to failure to continue with planned daily routines. In schools, curriculum implementation is affected negatively. Disease outbreaks, such as Cholera and Corona Virus Disease (COVID-19), are examples of diseases that are not only affecting the world's economic activities they also affect curriculum implementation. As a result of the disease outbreak schools are closed, leading to a reduction in several teaching and curriculum implementations in general.

Tanzania has suffered from disease outbreaks such as Cholera, Meningitis, Diarrhea and COVID-19 from time to time. The effect in schools has been in terms of forced change of school culture and school timetable that directly affect teacher’s implementation of school curricula. A disease outbreak has led to a change in teaching approaches

and school curricula. The effects have been on failure to cover contents, minimum time of teaching, and reduction of teachers' working morale, teaching pace and teaching strategies (Pak, Adegboye, Adekule, Rahman, McBryde, & Eisen, 2020).

The Government of Tanzania's efforts to address the problem on a short-term basis has been to encourage online classes and other alternatives that provide teachers and students with alternative way to address the problem. The question remaining unanswered is: how schools are prepared to manage disease outbreaks to address the effects of the implementation of curriculum? This study examined secondary school preparedness to manage disease outbreaks and predicted the effect on curriculum implementation in schools. Since curriculum implementation is the primary function of schools, it was of significant and worthy investing.

1.2 Measuring Predictions and Effects of Disease Outbreaks

In measuring preparedness, the first task is to define variables, while the next task is to assign numbers or symbols to variables and finally record to suit the purposes. Different studies have been conducted on how prediction is measured. A study by Marmara (2016) on the prediction of infectious disease outbreaks based on limited information theto develop an early warning modelling approach that can predict emerging disease outbreaks had a mixture of findings and limitations. First of all, the study was purely quantitative and employed a questionnaire, which did not reveal the opinions of the participants.

Although it was employed with analysis of large scale epidemics of international impact including human and animal epidemics, the analysis was based on the principle objective which is to predict infectious disease outbreaks based on limited information by using correlation

analysis. The findings predicted that as time goes on and due to climatic change different influenza seasons and other infectious diseases may be predicted. The study suggested that there should be establishment of non-influenza consultation to tackle emerging diseases.

Davis, Borok, Malchan, Shebalin, Lahhr and Plumb (2010) conducted a study on earthquake prediction and disaster preparedness by using interactive analysis. The aim was to use predictions to provide information to properly prepare for the predicted hazard. The study employed a mixed-methods approach by using models and theories of prediction on how to identify the earthquake size, timeframe and spatial region with quantifiable errors. The study provided ways to use prediction for disaster preparedness and prediction strategies and public policy implementations.

The findings predicted that as time goes on due to the stock of disaster relief resources, contracts for post-earthquake supply and management centres, a joint exercises with emergency management centres, and personal and family emergence preparedness to be poor will lead to the high negative effect of earthquake due to poor preparedness. Based on the literature review, in this study, it was concluded that studies on the prediction of the effects of disease outbreaks on curriculum implementation are limited hence the need to conduct this study.

1.3 Theoretical Framework

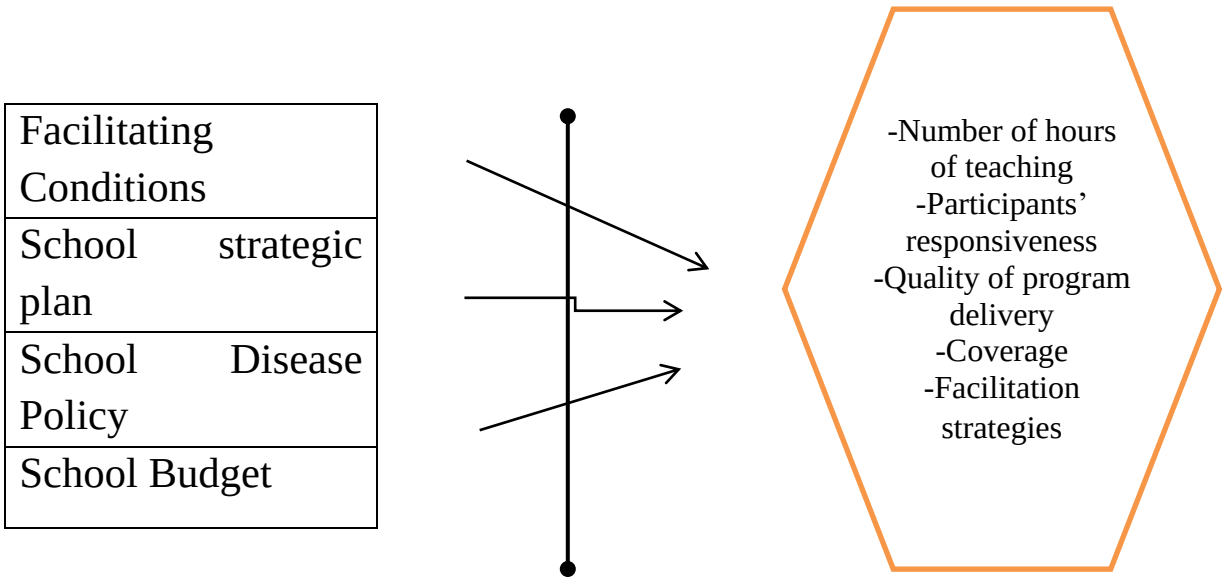
This study was guided by Bunner's (1966) instruction theory, which is advocated to be goal-oriented as it offers an explanation of methods of instruction to accomplish given goals under given conditions (Brunner, 1966). It offers explicit guidance on how to help people learn and advance their knowledge. The instruction theory of teaching was directly related and applicable to the study because it facilitated the study

exploration of knowledge of participants on how they learn about disease outbreaks to ensure effective instruction and curriculum implementation. Moreover, the instruction theory in teaching focuses on how best to structure material and instructional behaviour to facilitate learning; it concerns anything that is done purposely to facilitate the learning process (Brunner, 1966).

Additionally, the theory is based on the condition that curriculum implementers are required to be creative on strategies that are done purposively to facilitate the learning process. In this study, school management teams employed strategies that helped in the management of disease outbreaks; hence, they enabled to smooth running of the curriculum implementation process. The theory enhanced the process of identifying strategies that schools apply in the management of disease outbreaks.

Depending on the situation of the school and disease outbreak as an aspect of this study, the schools involved school communities in the planning and implementation of the strategies. Involvement was in terms of strategies to manage the effect of disease outbreaks in secondary schools to ensure effective instruction of teaching and curriculum implementation in general. The study employed the theory to examine school management knowledge on disease outbreaks, and on how it facilitated instructional of teaching. School community knowledge on the management of disease outbreaks affected the presence of disease and outbreaks in schools. The existence of disease in schools was linked to school policies and strategic planning to ensure curriculum implementation was in place. The link between school preparedness and the curriculum implementation process is summarized in Figure 1.

Figure 1: School Preparedness to Manage Disease Outbreak and Curriculum Implementation



2.0 Materials and Methods

This study adopted a pragmatic paradigm with an assumption that reality is not only purely objective, but also exists from human experience. In this study, reality was grounded in the environment in that participants in the study worked. It is contented that, studies of this nature can not only be encountered through human experience but also through objective means (Kaushik & Walsh, 2019). This research employed a mixed-methods research approach whereby a descriptive design was employed to understand participants' knowledge and practice of management of disease outbreaks in schools.

A correlation design was applied to predict the effect of school preparedness on the curriculum implementation process in the sampled schools. The sample size was 6 heads of schools, 6 academic teachers, 6 environmental teachers, 60 teaching staff and 36 students from six secondary schools in Iringa Municipality. Six secondary schools were included of which three were public owned, and the other three were privately owned. Purposive sampling was applied to select management teams and head teachers, while simple random sampling was applied to select the participant teachers. With the aid of the SPSS program, the linear regression analysis was used to predict the effect of school preparedness to manage disease outbreaks.

3.0 Results and Discussion

3.1 School Management Understanding of the Strategies to Manage Disease Outbreaks

With regard to school management's understanding of the strategies to manage disease outbreaks in schools, the findings revealed that the school management teams in the participant schools had an understanding that the disease outbreaks affect their roles in the process of implementing curriculum. This assertion is supported by a comment from one of the school heads, who was at School A:

> *In my understanding, more than 70% of members from this school know about the diseases that affect curriculum implementation. Especially, the outbreaks that are pandemic affecting school performances leading to school closure. That is why we make a lot of efforts to make sure there is effective management of disease outbreaks* (Interview with HoS_1, School A, 4th March, 2022).

The school management team from school B revealed that, through government directives and attention, schools use the government

directives as a source of knowledge about the disease that affect school routines. The data from an interview with a member of the school management team indicated that government directives enriched the school community's understanding of the diseases and outbreaks was presented by another school head as follows:

> *The school management team at this school is knowledgeable about ways of transmitting diseases and their effects on our lives. The strategies that we [teachers] plan include having a policy on management and daily monitoring of implementations* (Interview with HoS_2, School B, 8th March, 2022).

Interviews with academic teachers revealed that the strategies that reflected the preparedness of school management to manage disease outbreaks in secondary schools included school community knowledge of the strategies to manage the outbreaks, plans of training, and management of disease policy and resources. The following quotation which was taken from the interview with Academic Teacher revealed:

> *My school management team understands the government directives. We have a policy on the management of diseases, posters that guides the community, we always have a meeting with parents and students to think of budget to overcome diseases, we implement plans and at some point, we have achieved fruits. We think we have good plans* (Interview with Academic $Teacher_1$, School D, 14th March, 2022).

In addition, the introduction of a health safety committee was among, many more, strategies taken by the school management team to manage disease outbreaks. During the interview with an Environmental Teacher from School E, the following comment was uttered:

> *Our school introduced the Health Safety Committee to ensure efforts and plans made by the management team ensure the effective implementation of disease outbreaks. However, this committee enables us to get pure drinking water from our compound and allows us to have sanitary materials like a stock of pads for girls. This committee involves members from the management team, environmental teachers, and students* (Interview, with Environmental Teacher2, School E, 10th March, 2022).

In general, the study findings revealed that the school management team had an understanding of diseases that affect their curriculum implementation. The effects of implementation of the curriculum were school closures that led to a reduction of instructional time. Furthermore, the study revealed that the general understanding of disease outbreak management was received through government directions and media. The mentioned media stipulated guidelines that facilitated the planning of strategies to address the effects of curriculum implementation in schools such as knowledge creation for changing communities' attitudes and practices and, the introduction of health safety committees and clubs.

In their study, Endriyas et al. (2021) asserted that when communities fknow about diseases and strategies, the effects of the diseases are minimized. Furthermore, Endriyas et al. (2021) found that marital status and educational status are associated with knowledge of strategies to manage COVID-19. This study, which was on the effect of disease outbreaks on curriculum implementation, adds knowledge on the role of school community involvement and knowledge to address the effects on curriculum implementation.

3.2 School Preparedness to Manage Disease Outbreak and Curriculum Implementation

The findings from this study indicated that school preparedness to manage disease outbreaks in schools is linked to curriculum implementation. The data from interviews with the key participants indicated that school plans, budgeting, community knowledge of the strategies and their involvement in school plans are variables that can be used to describe school management preparedness. Schools with resources that are reflected in school budgets were regarded as the mechanisms to overcome disease outbreaks. During the interview with environment teachers, one of them had this to say:

> *I and my colleagues working in the Environment Safety Committee have plans to address the effects of disease outbreaks, and we have seen this when some diseases affect the world. The community is always involved in the school plans. Our plans include the participatory budget; that is, when it comes to disease control, we join hands. This is done to sensitize the community* (Interview with Environmental Teacher$_1$, School C, 11th March 2022).

Data from interviews with school management teams indicated that schools had documented their plans that help to describe curriculum implementation in schools when there are disease outbreaks. This was vividly explained by one academic teacher who described ways his school manages to implement curriculum when there is a disease outbreak:

> *As an academic in-charge, I have been telling my colleagues to be ready to teach extra in case we are about to close school because of the disease outbreak. This is our long-term plan because when the school closes, many*

> *hours are lost, and it is difficult to compensate them. Being ready and acting on time gives us the courage that devote our time to the profession and the community at large* (Interview with Academic Teacher4, School F, 1st April, 2022).

The previous excerpts indicate that schools were ready to take appropriate actions to manage diseases and implement the curriculum effectively. As a result, the same schools will get good academic performance for their students.

3.3 Predicting the Effects of School Preparedness to Manage Disease Outbreak on Curriculum Implementation

The findings from this study revealed that there is a significant positive relationship between curriculum implementation and school preparedness to manage disease outbreaks. Based on the data in Table 1, the coefficient of the relationship between school preparedness and curriculum implementation is 0.788. In addition, the value of the R-Square is 0.62, which implies that the independent variable which is the preparedness or explanatory variable is significant enough to explain 62% of the outcome variable. Based on the results, it was concluded that, when schools are prepared the curriculum implementation can be realized. Table 2 presents the relationship between school preparedness and curriculum implementation and the prediction of the effect of school preparedness to manage disease outbreaks on curriculum implementation.

Table 1: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.788[a]	.620	.614	.19182	.620	94.776	1	58	.000

a. Predictors: (Constant), School preparedness to manage disease outbreak

Table 2: ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.487	1	3.487	94.776	.000[b]
	Residual	2.134	58	.037		
	Total	5.621	59			

a) Dependent Variable: curriculum implementation

b) Predictors: (Constant), School preparedness to manage disease outbreak

The results from Table 1 shows the relationship between a dependent variable and the independent variable by using a predicator, which is school preparedness explained by 62% as demonstrated by an R square of 0.62. This means that the independent variable explains 62% of the variation in the dependent variable. Further analysis in Table 2 showed that overall, the model applied in this study can statistically significantly

predict the curriculum implementation in relation to school preparedness to a large extent. The linear regression analysis in this study describes that school preparedness to manage disease outbreaks is strongly significant in relating to secondary school curriculum implementation. The variables are:

Preparedness= school preparedness to manage disease outbreak

CI=1.296 + 0.625 (preparedness)

Whereby,

CI= curriculum implementation

The equation CI = 1.296 + 0.625 Preparedness implies that a Unit increase in the preparedness will increase Curriculum Implementation by 0.625 and a decrease by one unit will decrease Curriculum Implementation by 0.625. Therefore, good preparedness to manage disease outbreaks accelerates the effective implementation of the curriculum. The correlation significant is 0.788 equal to R2 of 0.788 which is 62%. There is a strong relationship between school preparedness and curriculum implementation of 0.788 (62%). Further analysis shows that Table 3 can be used as the regression model related to this study.

Table 3: Modeling Showing a Relationship Between Preparedness and Curriculum Implementation

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	1.296	.228		5.681	.000	.839	1.753

School preparedness to manage disease outbreak	.625	.064	.788	9.735	.000	.496	.753

a. Dependent Variable: curriculum implementation

These findings on preparedness and prediction revealed that effective preparedness is indicated by school plans and policies on the management of diseases that affect school routines. The National Research Council (1991) on a safe future revealed that safeness and control reduce the impacts of natural disasters. This study has added a model that can be used by schools to plan for the management of disease outbreaks. When the model is implemented management of the effects on curriculum implementation are minimized.

3.4 School Management Understanding of the Strategies to Manage Disease Outbreaks

With regards to school management's understanding of the strategies to manage disease outbreaks in schools, the study revealed that the school management team had knowledge and understanding of diseases that affect their implementation of the curriculum due to school closure. Furthermore, the study revealed that the general understanding of disease outbreak management was through government directions and media as a source of knowledge hence facilitating the availability of different strategies such as the introduction of the health safety committee. The findings are in line with the findings of Endriyas et al. (2021), who conducted a study on the knowledge and attitude towards COVID-19 and its prevention in selected towns of the SNNP region in

Ethiopia. The findings showed that almost all respondents heard about the Corona virus disease and they had some knowledge of disease and strategies, and the mean score of knowledge was 52.03% where marital status and educational status were associated with knowing COVID-19.

With regard to the prediction of the effect of school preparedness on managing disease outbreaks, a questionnaire was provided to ask teachers about the school preparedness and the effect of that preparedness and the study found that there is a strong relationship between secondary school preparedness and teachers' implementation of the curriculum. The study findings revealed that effective preparedness is the first side of the coin, and teachers' implementation of the curriculum is another side of the coin where good preparedness leads to good implementation of the curriculum. The findings are in line with the findings of the study conducted by the National Research Council (1991) on a safe future, reducing the impact of natural disasters. The difference between these studies is that this study was based on disease outbreaks and another study was based on disaster in general.

4.0 Conclusion and Recommendations

The study findings revealed that there is a strong relationship between school management preparedness and the implementation of the curriculum in schools. Preparedness to manage disease outbreaks is linearly related to school implementation of curriculum. Community understanding, and strategies to manage outbreaks are indicators of school preparedness to manage disease outbreaks. It is, therefore, recommended that the government, through the Ministry of Education, Science and Technology, should ensure sure every secondary school have a school disease policy to manage diseases and disease outbreaks hence accelerating the effective implementation of the curriculum.

The government should lay down a policy on managerial skills training for school management teams; this will help the teachers' implementation of the curriculum by involving teachers and students in decision-making and management of disease outbreaks. School management teams should ensure the availability of a school strategic plan as their mission is to manage disease outbreaks and their effect on teachers' implementation of curriculum. Furthermore, it is recommended that a similar study may be conducted in a broader area to broaden the understanding of school management on preparedness to manage disease outbreaks.

References

Brunner, J. S. (1966). *Towards a theory of instruction*. Cambridge MA: Harvard.

Davis, C. P.E., Borok, V. K., Malchan, G., Shebalin, P., Lahr, P., & Plumb, C. (2010). Earthquake prediction and disaster preparedness: Interactive analysis. *Journal of Natural hazard review* 173-184 retrieved from http://www.ascelibrary.org 20 June 2022.

Endriyas, M., Kawza, A., Alano, A., Hussein, M., Mekonnen, E. Samwel, T. (2021). Knowledge and attitude towards COVID-19 and its prevention in selected towns of SNNP Region-Ethiopia. *Journal of Plos One*, 1–13. Retrieved from https://doi.org/10.1371/journal.pone.0255884. On May 29, 2022.

Kaushik, V., & Walsh, C.A. (2019). Pragmatism research paradigm and its implications for the social work research. *Journal of Social sciences*, *8*(255), 1–17.

Marmara A. V. (2016). *Prediction of infectious disease outbreaks based on limited information.* Published PhD dissertation. University of Stirling.

Mwebi, R. B. (2021). Corona virus and education crisis in Kenya: Lessons learnt. *European Journal of Education and Pedagogy*, *2*(3), 133–136. Retrieved From *Http://Dx.Doi.Org/10.24018/Ejedu.* On December 12, 2021.

National Research Council (1991). A safe future: Reducing the impacts of natural disaster. Washington: The National Academic Press.

Pak, A., Adegboye, O. A., Adekule, A. I., Rahman, K. M., McBryde, E. S., & Eisen, D. P. (2020). *Consequences of the COVID-19 outbreak*: *The need for epidemic preparedness.* Frontiers in Public Health.

WHO (2020). Cholera annual report 2019. *Weakly Epistemological record*, *95*(38), 441–448.

Woldometer. (n.d). Corona virus pandemic. Retrieved from http:// www. Woldometer.info.coronaviruspandemic. On February 3, 2022.