

Assessment of Essential Physical Education Equipment and Facilities in Teacher Training Colleges in Kenya

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Abstract Increase in sedentary lifestyles adopted by children and neglect of primary school physical education call for effective training of pre-service teachers in physical education. The purpose of this research was to assess the adequacy of essential facilities and equipment for training pre-service teachers in physical education in Teacher Training Colleges (TTCs) in Kenya. Gross et al Model of implementation of an innovation guided the study. Mixed-methods approach and descriptive survey research design were used in the study. The study targeted essential physical education facilities and equipment in selected TTCs in Rift Valley Zone, Kenya. Observation schedule and document analysis were mainly used to collect data to inform on the research question. Descriptive (percentages, means, standard deviations, charts, and graphs) statistics were used to analyse the data. It was found that there were inadequacies in the quality and the quantity of such important influential factors like facilities and equipment in TTCs. Those concerned with curriculum design and development ought to set up a policy on minimum standards of facilities and equipment required for effective training of pre-service teachers in TTCs in Kenya.

Keywords Equipment, Facilities, Physical education, Teacher trainees

1. Introduction

Despite the recognised health risks associated with physical inactivity, most school going children and Kenyans, generally are not active enough to achieve health benefits and many report no planned physical activity at all. The US' Surgeon General's Report [1] and several research studies have provided evidence that most people do not exercise and are consequently at risk for numerous health problems. School physical education has been challenged to produce programmes that will develop positive activity patterns that youths will carry into adulthood and to foster dispositions that value physical activity.

Today's teachers must overcome serious obstacles if they are to succeed in promoting a physically active lifestyle. While critics blame teachers for low levels of academic achievement, physical educators are cited for not providing students with enough health-related physical activity. In highlighting some conditions and issues that affect physical education in today's schools, Sollerhead [2] describes poor facilities due to lack of support for school physical education programmes.

The purpose of this research was to assess the adequacy of essential physical education facilities and equipment for use by teacher trainees in Teacher Training Colleges (TTCs) in Kenya with a focus on a sample of TTCs in Rift-Valley Zone.

1.1. Research Question

How adequate are the essential physical education facilities and equipment for use by teacher trainees in teacher training colleges in Kenya?

1.2. Theoretical Framework

Gross *et al*, [3] model was used in this study. The model's elements specify how to implement a curriculum in educational institutions. An effective implementation of a curriculum like Physical Health and Education in TTCs could be done using the following six elements as posited by Gross *et al* [3]:

1. The clarity of the innovation by the implementers
2. The capability of the implementers
3. Availability of resources and facilities
4. Compatibility of the innovation with the existing organisational arrangements
5. Provision of management support
6. Teachers and pupils attitudes towards the innovations

This study assessed how the adequacy of facilities and

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equipment affect the training of pre-service teachers in TTCs in Rift-Valley, Kenya. The third element by Gross et al [3] on availability of resources and facilities formed the basis of this research.

1.3. Definition of Terms

Physical Education - Is the study, practice, and appreciation of the art and science of human movement [4] Physical Education (PE) is course in the curricula that utilises the learning in the cognitive, affective, and psychomotor domains in a play or movement exploration setting [5]. In this study, it refers to an instructional programme built around basic motor activities, which help achieve the goal of physical, emotional and mental wellbeing for every pupil, student and student-teachers. It includes education in health, hygiene, first aid, personal safety, and the teaching of manipulative skills. It is an integral part of the schooling process. In schools physical education is usually referred to by the abbreviation PE.

Pre-service Teacher – This study has assumed the conventional definition, that of a college student in an education programme with the specific goal of being a certified, practicing teacher in the future. In this case, upon successful completion of a P1 course that takes two years.

2. Literature

2.1. Physical Education Facilities and Equipment

In an up-date on the status of physical education in schools worldwide, a technical report for World Health Organisation (WHO) by Hardman [6] said that resources like financial considerations have had a number of impacts on physical education in not only Europe, but across the globe. The report further says that the failures to refurbish/ reconstruct/ replace/ maintain (out) dated and/or provide new facilities; shortages of equipment; employment of lower salaried unqualified teaching personnel; exit of physical educators to better paid jobs; and reductions in numbers of physical education lessons and time-table allocation has had negative impacts on the state of physical education. A widely reported impact of funding limitations is on the activity area of swimming: the considerable financial investment of gaining access to swimming facilities exposes this area of physical activity to reduced opportunities or even omission from curricula in many countries.

In terms of facilities and equipment, Physical education is commonly faced with the challenge of inadequate facilities and poor maintenance of teaching sites. Central and eastern European countries are less endowed with facilities and equipment and there are signs of deteriorating provision. The problem appears to stretch beyond the geographical and economic divides. Whilst there are higher expectations over levels and standards of facilities and equipment in more economically developed countries, there are indicators of inadequacies and shortages in facilities and equipment and low maintenance levels in other European regions. School

physical education facilities are reported as widely available for after-school hours' leisure time and/or community use [7].

For the qualified teaching personnel, the Hardman [7] report says that a common scenario is qualified 'specialist' physical education teachers at secondary level and 'generalist' teachers at elementary level; some countries do have specialist physical educators in elementary (primary) schools but the variation is wide and there are marked regional differences in some countries, the generalist teacher in primary schools is often inadequately or inappropriately prepared to teach physical education and initial teacher training presents a problem with minimal hours allocated for physical education teacher training and close to two-thirds of countries globally require in-service training (INSET), which means that one third does not; there are substantial variations in frequency (free choice or nothing to every five years) and time allocated (12 hours annually to 100 hours over 5 years) for INSET. A consistent feature on the issue of further professional development of teachers involved in physical education teaching is a need for INSET and a recognition that in some countries, in-service and resource materials has been minimal and has been exacerbated by a marked decline in physical education advisory service numbers. There is very limited use of volunteers in teaching physical education/sport classes. There is a need for induction, mentoring and monitoring for linked extra-curricular and out-of-school participation, the report then concludes.

In its update of the status of physical education in schools worldwide, WHO [6] says that in Africa, shortage of facilities and adequately trained personnel are widely reported throughout the continent as are the peripheral value in the curriculum (regarded as non-educational, non-productive use of time, is treated as recreation/play time especially in primary schools) and inadequate monitoring inspections in secondary schools (e.g. in Benin, Botswana and Uganda). Generally, priority is accorded to language and mathematics with even meagre allocated physical education/sport resources often diverted to other subjects. In some countries (e.g. Botswana and Malawi) physical education for girls often suffers from optional status with many preferring not to take part, a situation, which is exacerbated by dearth of amenities such as changing rooms. In South Africa, physical education as a school subject no longer exists though it is a focus (physical development and movement) of the learning area "Life Orientation" along with health promotion, social development, personal development and orientation to the world of work foci in grades R-9 as seen in the General Education and Training Band's assertion [8].

A study by Luke and Sinclair [9] however, revealed that facilities were ranked at the bottom as determinants of children's attitudes toward participation in physical education. The latest developments in Kenya are that "no athletics meet or competition is to be carried out in a grass track, but should at least be a marrum track for it to be

licensed” [10]. Yet again, Fernandes and Sturm[11] assert that poor facility provision is a potential barrier for school physical education programmes and facility provision is lower in schools that most need them like urban, high minority, and high enrolment schools.

3. Methodology

3.1. Research Paradigm

Mixed-methods (qualitative and quantitative) approach was used in this study. The use neutralized bias and convergence of results. This agreed with Creswell [12], and at the same time brought out clearly the contradictions and fresh perspectives. This in effect produced a final product which highlighted the significant contributions of qualitative and quantitative approaches as Jayaratne [13] asserts that qualitative data will support explicitly the meaning of quantitative research. Seefeldt [14] says that qualitative and quantitative data are turning ideas around by providing fresh insights. In this way the effectiveness of eclecticism in this study was informed on the premise that the weaknesses in each method were augmented by the strengths of the other. All methods entail certain strengths and weaknesses, and so a mix offers resources for more comprehensive and effective inquiry [15, 16]). The closed-ended questions in the tools of research formed good content for quantification, while open-ended that mainly asked for opinions on issues of physical education were presented qualitatively, yet again, the quantitative issues had to be explained qualitatively.

The choice of mixed-methods, therefore, was to take the stance that social reality (positivism) does not exist independent of the social actors (post-positivism). Hence, qualitative and quantitative methodologies reinforced each other through their interpretative and explanatory strengths. Studies using mixed-methods have shown that integration of these traditions within the same study can be seen as complementary to each [17].

3.2. Research Design

This study utilised a descriptive survey research design. A survey research collects data about variables of subjects as they are found in a social system or society. The central feature of survey is the systematic collection of data in a standardised form from an identifiable population or representative sample.

The study targeted TTCs in Rift-Valley – Kenya. Rift-Valley has 5 public TTCs namely: MoiBaringo, Tambach, Mosoriot, Kericho, and Narok.

3.3. Research Tools

The tools used were observation schedule and document analysis. These were used to check on the physical education equipment and facilities and related items in the selected TTCs. Observation schedule was drawn based on the KICD's (Kenya Institute of Curriculum Development)

physical education curriculum used in TTCs. Document analysis was basically used to capture the administrative information in colleges like the number of lecturers, student enrolment, time-tabling of PHE, amongst others.

3.4. Data Collection Procedures

Once the National Council for Science and Technology (NCST) under the Ministry of Education (MOE) gave research permit, a reconnaissance trip was done in the pilot college and the research colleges. The data was collected in two phases. Phase one was piloting. The second phase of the research was data collection phase for the purpose of informing on the research question. The researcher carried out systematic observation of aspects of physical education according to the drawn schedule.

4. Data Analysis

Three elements need to be taken into account in analysis of data [18]. First, reduce the data by condensing the material systematically to make it more manageable. Then, structure the data in terms of themes, patterns and interrelationship, and de-textualise the data by converting extended texts into more manageable forms such as summaries, charts, diagrams and illustrations and using the SPSS computer software to obtain both descriptive and inferential statistics. The above assertions are true of this research study.

Data editing was done by checking the completed schedules for errors, omissions and discrepancies soon after administration. This was a key step in this survey to ensure the quality of data. A mix of close-ended and open items in the observation schedule was used in data collection. However, the maximum questions were pre-coded to save time during the data collection, processing and analysis. The collected data were transferred to coding sheets in order to ensure complete accuracy. The few open-ended items used in the survey were converted into categories and then coded after administration. Some of the themes began to emerge in the process of data collection and others from insights garnered through the process of data collection. These themes were explored for the words that were used, the concepts that were discussed, the linguistic aspects emergent, and the non-verbal cues that were noted.

The researcher carried out the data cleaning process after completion of the entries to tally the entered data with the coding sheet and or original observation schedule. This cleaning of data was carried out to rid the data of mismatching codes, inconsistencies and improbabilities through computer editing.

4.1. Ethical Issues

Carrying out observation of physical education facilities and equipment was a sensitive venture that may have revealed inadequacies in the colleges under study and the researcher's intentions might have been misconstrued for 'inspection'. The respondents were made fully aware of the

nature, objectives, purpose and methods of data collection of the research. They were also guaranteed of confidentiality and anonymity of their responses.

4.2. Data Analysis and Interpretation

The student teachers were asked if physical education and sports facilities in their colleges are sufficient for their use, and if their colleges had adequate storage rooms for these facilities and equipment. Their responses are given in Table 1. This Table 1 shows that colleges are grossly in need of physical facilities and equipment, alongside storage rooms for the facilities and equipment. The student teachers disagreed (90.7%) to assertions that there are adequate facilities and equipment and only 9.3% said truly the equipment and facilities are adequate in their college. The storage rooms are not enough either as 76.4% disagreed that physical education equipment and facilities' storage rooms in their colleges were enough, as compared to 23.6% who agreed that these facilities and equipment had adequate storage places.

Table 1. Adequacy of PE facilities, Equipment and Stores

Gender	Adequate facilities/equipment		Enough storage rooms	
	True	False	Yes	No
Male	9(4.9)	83(45.6)	19(10.4)	73(40.1)
Female	8(4.4.)	82(45.1)	24(13.2)	66(36.3)
Total	17(9.3)	165(90.7)	43(23.6)	139(76.4)

It seems from the foregoing that TTCs do not have adequate facilities and equipment. It was then necessary to find out if the facilities/equipment present in TTCs were safe for use and the student teachers' sentiments are captured in Table 2a. The majority of the trainees (82.4%) said that the playgrounds in their colleges were safe and to only 17.6% said they were unsafe. Most of the fixed equipment in the colleges are in need of repairs and 45.1% of the respondents said these equipment were unsafe for use. Physical education specialists in colleges are fully aware of the legal issues in physical education and sports, and hence the need to make these facilities and equipment safe for use by the trainees.

College lecturers who have been involved in assessing student teachers during teaching practice sessions were asked to review the state of physical education facilities/equipment in the primary schools they have been to assess student teachers. Table 2b gives the lecturers' responses on the state of physical education facilities/

equipment.

The state of physical education facilities and equipment were given as very poor (7.3%), poor (31.7%), fairly adequate (31.7%), not adequate (14.6%), unworthy for use (7.3%) and satisfactory (7.3%). Those who viewed physical education facilities and equipment as not meeting the requirements comprised 92.7% cumulatively (7.3% + 31.7% + 31.7% + 14.6% + 7.3%). This paints a forbidding picture on the status of physical education facilities in primary schools in this region.

Generally, there was a consensus that physical education and sports facilities in colleges were inadequate. However, it was observed that these inadequacies varied from one college to another based on the location of the college. The curriculum areas that were seriously lacking facilities and equipment were observed to be swimming, rugby, soft ball and tug-of-war. In one of the surveyed colleges, a teacher of physical education was observed teaching a lesson on swimming remotely. The teacher had spread a mattress on the ground and told one of the trainees to lie on it so he could demonstrate front crawl in swimming. In yet one of the colleges, the students used a swimming pool in one of the adjacent hotels and they paid for it each time they went there for practical sessions. It was also observed that most colleges have very vast tracks of land which could be developed to provide enough facilities.

The interviewed secretary of Rift-Valley's KTCSA had issue with the government's registration of private TTCs in the region. The government is accused of not carrying out satisfactory inspection before registration of such colleges. Some of them are accused for having very small fields, no equipment and facilities and some do not have PE specialists, and in fact some are using recent P1 graduates who are yet to be employed by the TSC to handle PHE Course. This compromises the standards by all means.

To be able to acquire more facilities and equipment, the interviewed tutors were of the idea that corporate companies operating in the jurisdiction of some TTCs should come out and establish facilities and equipment. Multi-national tea companies, the Kenya Airports Authority, Kerio-Valley Development Authority, and Kenya Tourism Authority among others were mentioned. Some of the interviewed Games Co-ordinators felt that colleges should start PTAs to help in acquisition of physical education equipment and facilities, the same way secondary schools have done.

Table 2a. Safety of Playgrounds and Fixed Equipment in Colleges

Safety of playgrounds			Safety of fixed equipment		
Statement	Frequency	Percentage	Statement	Frequency	Percentage
Safe	150	82.4	Safe	100	54.9
Unsafe	32	17.6	Unsafe	82	45.1
Total	182	100	Total	182	100

Table 2b. State of Physical Education and Sports Facilities in TP Primary Schools

State	Frequency	Percentage
Very poor	3	7.3
Poor	13	31.7
Fairly adequate	13	31.7
Adequate	6	14.6
Unworthy for use	3	7.3
Good/Okay	3	7.3
Total	41	100

The interviewed sports secretary in the zone said that colleges were not able to finance most of the sports activities in the zone because of low payments of college fees by the student-teachers. The interviewed specialists cited the little activity fees (Kshs. 800 per student) charged on students as hampering their operations and purchase of physical education and sports equipment. Most physical educators interviewed said that the costs of quality physical education items are high. Table 3 summarises the costs of sampled equipment and facilities as given by the interviewed physical educators, Games Coordinators and Sports Officer.

Table 3. Costs of Sampled Physical Education and Sports Items

Item	Cost (Kshs.)
Rugby team kit	90,000
Tug-of-war rope	20,000
Hockey Stick	6,000
Soccer ball	5,000
Soft ball team kit	20,000

Soft ball was still a new sport in the country and Africa as a whole. It had just been introduced to the curriculum and is currently enjoying concession from the USA. This dispensation is seen as one way of popularising the sport in Africa and a team kit cost as little as Kshs. 20,000 as shown in Table 3. Despite these costs, the games coordinators said colleges could not do without them.

It was observed that most colleges do not have most team kits. Some of these colleges said they 'kitted' teams on a rotational basis, which is buying teams' uniforms at a time depending on availability resources.

In summary therefore, the facilities and equipment for physical education and sports in TTCs and primary schools used for teaching practice by teacher trainees in Rift-Valley Zone, Kenya are insufficient or outright deficient.

5. Discussion of Research Finding

UNESCO's International Charter of Physical Education and Sport [19], Article 5, Sections 5.1, 5.2, and 5.3 talk of planning and provision of adequate facilities and equipment as essential to physical education and sport. An up-date on the status of physical education in schools worldwide commissioned by WHO carried out by Hardman [6] said that resources like financial considerations have had a number of impacts on physical education in not only Europe, but across the globe. The report further says that the failures to refurbish/reconstruct/replace/maintain (out) dated and/or

provide new facilities; shortages of equipment; employment of lower salaried unqualified teaching personnel; exit of physical educators to better paid jobs; and reductions in numbers of physical education lessons and time-table allocation has had negative impacts on the state of physical education in schools.

In terms of facilities and equipment, the WHO Report [6] says physical education is commonly faced with the challenge of inadequate facilities and poor maintenance of teaching sites. Although, it is observable that most TTCs are well endowed with facilities and equipment and especially fields for various ball sports and athletics field and track events, there are signs of deteriorating maintenance or general non-use. The problem appears to stretch across all the TTCs in the research area. Whilst there are higher expectations over levels and standards of facilities and equipment in TTCs because of their important mandate of training teachers who are expected to impact largely the learners in primary schools in this country, there are indicators of inadequacies and shortages in facilities and equipment and low maintenance levels in all of them.

A part from the trainees reporting lack of storage rooms for the facilities available in these colleges, it was observed that indeed, where small stores were available as storage rooms, they were congested and the equipment were left haphazardly and metallic equipment were rusting and several wooden equipment had slivered and scattered all over, in fact locating an item in such stores would take lots of man hours. However, where these facilities are available they are safe for use by the trainees. This is because the teachers of physical education in colleges are specialists and are fully aware of the trends in legal issues in sports here in Kenya and globally.

The issue is, as much as physical education contributing to such roles as combating obesity, the teachers and school administrators should remain vigilant for legal issues related to injuries while trainees are out for physical education and sports. A recent study conducted by the Center for Injury Research and Policy of the Research Institute of Nationwide Children's Hospital, found that the number of physical education-related injuries to elementary school pupils in the United States increased by 150% between 1997 and 2007 [20].

The primary schools where student teachers did their TP were not better either, the lectures reported even a grimmer situation by saying that physical education equipment and facilities were ranging from very poor to fairly adequate and in some circumstances, the facilities were unworthy for use. This agrees with what ICHPER.SD [20] reported. This could be because of congested academic programmes or general neglect by the teachers who are mainly generalists as the WHO [6] report said. The generalist teachers (teachers without specialised training/education in physical education) in primary schools are often inadequately or inappropriately prepared to teach physical education and initial teacher training presents a problem with minimal hours allocated for physical education teacher training in TTCs. Such a case

presents a challenge in the acquisition of equipment and facilities for use in their schools. The good news is that the lack of adequate equipment and facilities has not affected the attitude of teacher trainees towards physical education in TTCs. This agrees with a study by Luke and Sinclair [9] that revealed that facilities were ranked at the bottom as determinants of children's attitudes toward participation in physical education.

The latest developments in Kenya are that “no national athletics meet or competition is to be carried out in a grass track, but should at least be a marrum track for it to be licensed by Athletics Kenya” [10]. This new development will make it very difficult for any college to host a national meet in Rift-Valley Zone unless they outsource the facility. The same is true of primary schools and this tends to agree with Fernandes and Sturm [11] that poor facility provision is a potential barrier for school physical education programmes and facility provision is lower in schools that most need them like in urban schools, and high enrolment schools as witnessed in Kenya when Free Primary Education (FPE) was introduced in 2003.

Some of the colleges, however, were built with these facilities, but due to disrepair the facilities have been run down. In one of the colleges, a good track for athletics was put up when the college was established through funding by the World Bank, but due to neglect in repairs, the underground drainage system has been blocked hindering drainage during the rainy season.

It can, therefore, be concluded that the necessary physical education facilities and equipment in colleges and TP primary schools are utterly wanting. This situation needs to be addressed if successful training of pre-service teachers in PE has to be done in TTCs.

6. Recommendations

From this research, the study makes this recommendation

1. MOE to establish clear policy on physical education equipment and facilities in TTCs in Kenya.

Appendix C: Physical Education Observation Schedule

A

Aspect	Observation		
	All	Some	None
Trainees change to PE tracksuit during PHE lessons			
Presence of PE ball games equipment			
Presence of PE bat games equipment			

B

Aspect	Observation		
	Available & Marked	Available & Unmarked	Not available
Status of playground for ball games			
Status of playground for bat games			
Status of athletics track			
Field events venues			

C

Team uniform for	Complete	Not complete	Not available
Ball games			
Bat games			
Others (specify)			

D

Identify and explain the conditions of athletics equipment/apparatus in the college.

E

Timetabling of Physical Education lessons (**double, single, blocks**). Explain the nature of timetabling.

F

Availability of other curriculum infrastructure such as swimming pool, tug of war ropes, water jumps, etc (explain).

G

Description of the general availability of physical education infrastructure in the college.

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