

Principles and Practice of the Maintenance of Physical Education Curriculum Facilities and Equipment in Schools

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The focus of this paper is to discuss an enhancing approach to the maintenance of physical education curriculum facilities and equipment in schools. In the course of doing this, the role of administrative policy, finance, information, process studies, proficiency and attitude measures, follow-up studies, programme improvement, making decisions about individuals; and administrative regulation were elucidated upon. The writer further explained the role and importance of Teacher's Aptitude, Magnitude and Attitude (TAMA) and Teacher's Aptitude Disposition and Attitude (TADA) on the outcome of physical education curriculum programme evaluation. He also emphasized the Analysis of Programme Performance (APP) as being more informative for the effective maintenance of physical education curriculum implementation facilities and equipment.

Date of Submission: 24 November 2014



Date of Publication: 15 December 2014

I. INTRODUCTION

A cursory look at our schools today would reveal the decay of facilities and equipment and this has been decried by concerned individuals and experts such as Ebhohimen, (1987) Uyanga (1993), and Orewa (1993). In spite of these cries, the status-quo remains. One of the reasons why this decay of facilities and equipment has become spectacles in our schools today, is possibly because government, school proprietors and heads have no documented maintenance responsibilities to be observed by schools and no tangible provision in their budget for maintenance and this has made quality control difficult (Omoifo, 1999). Information plays a vital role in quality control. Without constant interaction among the component parts, the comprehensive appraisal of the physical education curriculum facilities and equipment in schools would be difficult; this therefore necessitated the need for this paper to give knowledge and ideas that would guide and enhance sports maintenance culture in our schools.

II. MAINTENANCE OF PHYSICAL EDUCATION FACILITIES AND EQUIPMENT

Maintenance is the act of keeping up, retaining, continuing, supporting, protecting or keeping in good repair or working order (Hornby, 2002); while Ebhohimen (1987) opined that it is a combination of any action carried out to retain an item; or restore it to an acceptable condition; and Strasser (1973) maintained that maintenance is the making of repairs or the act of replacement necessary to keep the facilities and equipment up to the standards of their original condition of efficiency or completeness. This is the reason why Uyanga (1993) advised the need to institutionalize maintenance culture among members of the Nigerian society and government. He said with proper maintenance of public properties, there would be room for the improvement of existing facilities and equipment. It must be realized that the provision of new physical education curriculum implementation facilities and equipment can never be sustained without complementary capabilities in the area of maintenance of existing ones. Based on the fore-goings, it would be necessary to examine those factors that would enhance the completeness and efficiency of the facilities and equipment in schools.

Factors Enhancing the Maintenance of Physical Education Curriculum Facilities and Equipment in Schools.

Administrative Policy: To ensure the safety and protection of physical education curriculum facilities and equipment and those of the pupil's; education and school administrators must have some maintenance responsibilities, which have to be documented in specific terms for adherence and observance by all that have to do with the provision or availability of education in schools. This includes such policies on: replacing broken down facilities and equipment, making repairs to parts and surfaces; filling of potholes, trenches; weeding lawns and leveling of playground (Ebhohimen, 1987). It is important to note that depreciation of any facility and equipment is caused by such factors as wear and tear, physical decay, upon the strength, quality and texture of materials, the climatic influences, carefulness and maintenance strategy/policy in place (Ebhohimen, 1987).

Such policies must of necessity be integrated into the overall maintenance strategy of the school. For it is essential for school heads, education authorities and school proprietors to be aware of the available policy options with a view to adopting an appropriate one for a given maintenance problem. (Ebhoimen, 1987). He further opined that maintenance should be planned and preventive in such a way that it would reduce or prevent further deterioration of physical education curriculum facilities and equipment. By planning as stated above, the writer means that which is the responsibility of administration. It precedes policy formulation and implementation. It is that which gives rise to policy formulation and its implementation. Planning involves preparing for goal-oriented actions that are deliberate and direct towards the set goal by selecting the best available alternatives with a view to attaining specific objectives (Dror, 1963; Waterston, 1965; Kaufman, 1972; and Aghenta, 1993). It is current acts by the comprehensive study of prevailing problems, applying appropriate solutions, anticipating similar events, preparing for contingencies by formulating directions, mapping out activities or actions and providing orderly sequence of achieving such set educational objectives (Ackoff, 1970). Planning is different from implementation. Planning could be a masterpiece while its implementation could be a complexities and sophistications, planners ought to be integrated into the implementation process with a view to forestalling the lack of understanding of the techniques of implementation where this is not possible to attain, efforts should be made to check the states of the implementation through, on the one hand, the school authority and on the other through the ministry of education, inspectorate units (Aghenta, 1993). This should be a continuous process with a view to ensuring that objectives are well formulated and effectively implemented. These postulations have implications for human, financial and information inputs to facilitate the effective attainment of the set educational objectives for the programme (Buckley, 1967; Peretomode, 1991). In this wise therefore, efforts would be made to examine the role of finance and information in this attainment.

Finance: The role of finance in the maintenance of facilities and equipment cannot be over emphasized. Maintenance is capital intensive. In most developing countries of which Nigeria is one, education is a constitutional issue and it is on the concurrent legislative list and this therefore makes it the responsibilities of the three tiers of government; and since the private sector also ventured into state owned enterprise; the provision of education, it behooves on them to meet with the financial requirement so needed in their schools to finance the maintenance of physical education curriculum facilities and equipment. According to Orewa (1993), it is common knowledge that many state governments (and some private school proprietors) have no tangible provisions in their budgets for the maintenance of their school facilities. To this end, quality control will be difficult to achieve without improved funding (Emetaron, 1993). According to Nwoye (1994). Budgets map out the estimated amount of fund to be spent on plant, facilities and equipment. Budget therefore ought to be central to the availability and maintenance of physical education curriculum facilities and equipment. For the managers to plan the purchase and maintenance of such items, there is a need to determine its necessity in the running of the school business. Physical education curriculum facilities and equipment are assets that are indispensable. But these assets are not truly fixed. They wear out and must be replaced. Capital expenditure budget helps to accomplish this. This budget is based on analysis of future needs for the replacement and expansion of facilities (Nwoye, 1994). We are all aware of state government's budgets for education over the years; does it mean there had not been consideration for future needs. Why therefore are schools and physical education curriculum facilities and equipment suffering and lacking in maintenance? Nwadiani (1997) has this answer to proffer: "whatever is the form of government education financial culture, it has become uncontestable that education financial culture, it has become uncontestable that education particularly in less developed countries is acutely under-funded. The real value of the money appropriated for education reduces, hence the sector has remained underdeveloped. Should schools on the basis of excuse of dwindling economy be abandoned and left to decay? No, something must be done, Government – both Federal, states and local government must look inwards to resuscitate, rehabilitate and re-energize the school system and consequently the physical education curriculum facilities and equipment with a view to putting them on their right footings that maintenance culture could be revamped.

Information: It is the act of giving knowledge, signals, ideas or statistical data with a view to understanding the how, why and when the component parts are to interact in a physical education curriculum programme. Interaction among the administrators, teachers and pupils is a must if the programme must succeed. Information inputs to the school includes pupils' and teachers' statements and actions, comments from community members (Deca, 1982; Pettine and Nettleton 1980) legislative mandates, Ministry of Education's or State Universal Basic Education Board's directives and all the messages that could influence the interactions among the component parts (Peretomode, 1991). Without constant interaction among the component parts, the appraisal of the state, quantity and quality of physical education curriculum facilities and equipment in schools would be difficult resulting in inadequate provision and maintenance of physical education curriculum facilities and equipment. If the interaction is faulty, disrupted or distorted, filtered or interfered with, the intended educational goal would

not be realized; though interference could infringe at any stage of the information conveyance, but care must be taken both at the encoding, and decoding stages (Gibson, Ivancevich and Donnelly, 1973). This is to ensure that the sender's intent or idea are adequately and appropriately understood by the receiver who interprets the message in the light of his past experiences, idiosyncrasies and frames of reference (Omoifo, 1999) consequently enhancing the implementation of the programme by having first had information on the state of physical education curriculum facilities and equipment with a view to knowing those that are deficient and inadequate; and those that need replacement, repair or otherwise, using such media as telephone, face-to-face communication, systematic observation, group meetings, written records or memos, reports, questionnaires etc. (Mehrabian, 1972).

According to Bucher (1975), he did not only see information as stated above, he also enunciated the need to devote time to inspiring physical educators to constantly communicate the worth of their programme to the public using such media as radio, television, films and film strips, newspapers, magazines, etc. this design is to educate the public in respect to the important role physical education curriculum and its facilities and equipment play in the life of the pupils in particular and man in general. This is with a view to attracting the attention and financial support of the public to the maintenance needs of schools physical education curriculum facilities and equipment. Consequent upon the foregoing, he (Bucher, 1975) suggested the identification and selection of local project coordinators whose responsibilities it is to organize and report activities in their jurisdictions. This entails liaising with media houses for programming. He also suggested "Action Corps" to aid local coordinators or organizers with public information and media contact. These corps members should be selected on the basis of their enthusiasm and outstanding achievements on behalf of physical education. Many of these consultants should have their own programmes in the media house and they should all act in an advisory capacity to further the goal of publicizing the benefits of physical education and sports. Writing on this same issue of information, Nwadiani (1997) sees information as feedback planning; a procedure for "gaining information about the functioning or performance of the policy by comparing implementation outcomes with stated goals". Though he stated that this is not very popular in education policy development but it is the candid opinion of the writer that it should be given priority of place in physical education curriculum implementation in particular and education in general if the National Education goals are to be attained. He (Nwadiani, 1997) therefore advised education planners to evolve a medium through which information could flow from the implementers to planners in a partnership context and vice-versa. This is with a view to making control of policy effective. Oberholtzer and Madden (1957) sees "information feedback or evaluation as a careful process of collecting data" on curriculum implementation and educational objective attainment with a view to forming judgmental opinion on the curriculum programme; this is after weighing their findings in the light of curricular objectives or goals.

Government has been so interested in the evaluation of both pupils and teachers: even this is deficient and lopsided; without a corresponding evaluation of itself, programme and inputs. Though pupils had always been evaluated or assessed, with a view to gaining information or feedback, on the depth of their understanding, knowhow and performance, this has been in other subject areas and not in physical education where evaluation is conducted, it is always in the area of knowledge and sometimes in the affective domains without corresponding evaluation of the psychomotor domain. Government often times fails to note that success in one objective masks failure in another direction. This is why Gronback (1963) advised "since a composite score embodies (and usually conceals) judgments about the importance of various outcomes, only a report that treats the outcomes separately can be useful to the educator who have different value hierarchies". Government has never taken seriously effects of Teacher's Aptitude, 'Magnitude' and Attitude (TAMA) on the outcome of physical education curriculum programme evaluation most especially in these days of high inflation, poor wages and how morale on the part of teachers and population explosion in schools. These have serious implication for the effectiveness of the teacher in the physical education curriculum implementation programme evaluation should ascertain changes a course produces and should identify aspects of the programme that needs review. The outcomes observed should include general outcomes ranging far beyond the content of the curriculum itself; but it should include such outcomes as skills, physical development qualities acquired (Ojeme, 1985), attitudes, career choices, general understandings and intellectual powers and aptitudes for further learning in the field or related field. The Analysis of Programme Performance (APP) based on the analysis of single items, aspects or problems inherent in a programme is more informative for effective programme evaluation than the analysis of composite problems in the program (Cronbach, 1963). To attain this goal, Systematic Data Collection (SDC) would be more profitable; and it includes process studies, proficiency measures, attitude measures and follow-up (Cronbach, 1963).

Process studies: By process studies, it means the analysis and evaluation of the events taking place in the physical education classes, which often times are on the playfield.

Proficiency and Attitude Measures: By this it means that efforts should be made to analyze and or evaluate not only the changes observed in the teachers; since Teachers' Aptitudes, Dispositions and Attitudes (TADA) change either positively or negatively depending on the working environment and conditions; and these have the potential to either make or mar any programme no matter how beautiful and well intentioned the developers may be; but the changes observed in the pupils.

Follow-up studies: This has to do with the analysis and evaluation of the later careers of the graduates of the school system with a view to ascertaining their percentage that make a living or profession from the skills, knowledge, understandings and competencies gained in the physical when purposively and meticulously carried out, it would pave way for programme improvement, making decisions about individuals that make up the system and as well as the development of administrative regulations.

Programme Improvement: The analysis and evaluation done above would enable decisions to be taken on the instructional materials and methods that would satisfy the maintenance needs discovered in the programme.

Making Decisions about Individuals: The findings would also enable planners and developers to identify the needs of the pupils for the sake of planning their instruction and providing instructional facilities and equipment, judging pupils' merits for purposes of selection and grouping, acquainting the pupil with his own progress and deficiencies. It would also enable planners identify the needs of the teachers for the sake of planning his working conditions and environment. It would also enable planners to provide the facilities and equipment he needs and their maintenance for the effective implementation of physical education curriculum in his school.

Administrative Regulation: The findings would enable education planners to develop or evolve administrative regulations that would enable them judge how good a school system is and how good the individuals that make up the system are. Illustrative Examples of how Some Sports Facilities and Equipment should be maintained by End-users Track and Field Athletics: The upkeep of athletic track is necessary if it is to continue to be level, resilient and capable of retaining the correct amount of texture. Potholes should be filled daily and the athletic track brushed, leveled and sprinkled with water light. Some athletic tracks may require light rolling. Where a school can afford mechanization of her facilities and equipment maintenance, a fibre brush 91.44cm wide, dragged frequently around the track keeps the small holes filled. If a small motor truck is available, a metal doormat, 1.83m by 1.83m hooked – on, will permit a speedy job of cinder ovals; an application of sawdust might be beneficial Cinders should be renewed a little each year because they become crushed and loose their resiliency. A thin layer worked into the surface assures a track that provides bouncing or spring (Cretzemeyer, Alley, and Tipton; 1974).

Rough Fill Track: (1) To keep this type of tack in standard form, crushed rocks leveled and rolled to grade, 15.24cm to 20.32cm in thickness (2) Boiler run coarse cinders leveled and rolled to grade 15.24cm to 20.32 in thickness or (3) Cinders screened through 0.635cm mesh, leveled and rolled to grade, 15.24cm to 20.32cm in thickness. Drain tile is frequently laid in herringbone pattern at intervals 15.24m care should be taken that the tile is adequate to support the weight of the power machinery that subsequently will be used in grooming the track. (Cretzemeyer, Alley and Tipton; 1974). Screened Cinders Fill Track: To maintain this middle layer of the track frequently it should consist of cinder screened through a 0.635cm mesh ordinary boiler run cinders having only a few clinkers are acceptable. The thickness of this layer after leveling and rolling should be 15.24cm – 20.32cm. In a few cases such materials as sawdust, woven fibre matting, or peat has been added to the middle layer. It is claimed that these organic substances provide resiliency, help to retain a fair degree of moisture, and yet permit seepage of surface water.

Top Dressing of Athletic Track: The top dressing is the upper most of the three layers and ranges from 3.81cm to 10.16cm in thickness. If the top dressing consists only of cinders screened through a 0.635cm mesh, the track might not hold up under the drive of the spikes. Most running tracks require some materials added to the cinder as binders. Clay is commonly used, but care must be taken to prevent the formation of a nonporous sheet. This error results in a sealed track. Apart from preventing downward seepage, nonporous sheets of clay cinders become brittle in dry season and flakes out under the impact of running shoes. Loamy of clay loamy soil instead of clay serves to bind the cinders and yet permits drainage certain types of peat have been used as top dressing with good results.

The advantage of its use lies in the fact that it requires no mixing with loam, cinders, or clay. It is the opinion of many authorities that there is no need for heavy rolling with equipment that weighs above 508.02kg (a tennis court roller) it is believed that the resiliency or life is squeezed out of the track by so doing.

Surface Drainage: Running tracks differ from tilled land in that very little rainwater is desired on the cinder oval, and the excess should be drained off at once. One plan is to resurface the top surface of the running track several centimeters higher than the surrounding terrain. Outlets in the curbing at frequent intervals permit surface runoff without the washing of galleys in the cinder surface. A slight grade or fall from the pole position to the outer curb would drain the rainfall to the outside edge and away from the most-used lane of the oval. (Cretzmeyer, Alley, Tipton; 1974). **Curbing:** The inner edge of the track as defined by official rules shall be a solid curb of approximately 5.08cm above the level of the track. The upper surface of this curb should be rounded. Materials used for the curbs are creosoted wood, 5.08cm by 15.24cm or concrete. **Water Supply:** Whenever the drainage of a track and field is rapid, provisions should be made to supply an even amount of moisture. Water lines with convenient taps should be provided along the straight way and the oval tracks. More elaborate installations include fixed sprays which, when the valve is opened, sprinkles a considerable area. Prolonged windstorms are a hazard to cinder tracks, because if the weather is hot and dried particularly during the harmattan season, the valuable top dressing is carried skyward. Sprinkling the track with water and applying calcium chloride are two means of retaining the top dressing.

Long Jump: The runway should be maintained at about 38.1m to 45.72m long and from 1.22m to 1.52m wide, this is with a view to permitting the use of a power rollers, drag, leveler, or bush. The same plan for drainage and three layers of building materials as used on the running track seems adequate for the long jump made of cinder. It should always be conditioned to include coarse layer at the bottom and the screened cinder middle stratum to permit drainage. The top surface should be 7.62cm to 12.7cm higher than the adjacent ground. Daily attention should be paid to such tasks as filling holes, leveling, brushing and sprinkling. This results in presentable runway. The take-off board should be replaced regularly because of the continued chipping by jumping spikes. To facilitate taking up the old board and setting down the new board, a heavy beam or railroad tie sunk 5.08cm below ground level is recommended. Four nails are sufficient to secure the take-off board to the permanent beam. The landing area should be filled with builders sand and should be kept slightly moist. (Cretzemeyer, Alley, and Tipton; 1974).

Soccer: The football pitch should be regularly trimmed and resurfaced; this resurfacing arises as a result of wearing-off of the ground by boot on the playfield resulting from either public programmes as in independent day, children's National, May Day celebrations and the like or crusades/church programmes held on the field. The effects of these activities from shoes, chairs etc. result in the wear-off of the earth surface of the play area and also do a lot of damages to the grass causing them to wither-off. To keep the grass fresh and green, they should be watered regularly with the use of water spray and inorganic fertilizers should be applied to the grass. Where athletics should be kept away from the play field or kept to the barest minimum. All the markings on the playfield should be maintained and sustained. The goal posts should be made to align well and kept to standard. The nets when not in use should be folded and kept in the store away from rodents. Wet soccer boots should be dried up, cleaned, waxed and stored up away from rodents. Jerseys, shorts, shin guards, hose and stockings should be washed regularly particularly after use dried and stored: where any of them is damaged, it should be mended before storage. The ball should be inflated and waxed before storage; this is to keep the bladder in good condition, the leather in healthy condition and to prevent rodent from eating up the leather.

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