

CP 2

**IMPROVISATION OF EQUIPMENT AND FACILITIES FOR SPORTS
AND GAMES IN NIGERIAN SCHOOLS THROUGH THE USE OF -
LOCAL MATERIALS.**

CONFERENCE PAPER

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IMPROVISATION OF EQUIPMENT AND FACILITIES FOR SPORTS AND GAMES IN NIGERIAN SCHOOLS THROUGH THE USE OF LOCAL MATERIALS.

ABSTRACT

Since the school system is a principal consumer of sports equipment, improvisation has become a paramount importance of procuring physical education equipment in Nigerian Schools. I will therefore focus on the equipment for the Primary, Junior Secondary Schools and Senior Secondary Schools. This is because physical education as a subject cannot be effectively taught without the use of equipment.

The present economic situation in the country and the Structural Adjustment Programme (SAP) have made direct purchase of manufactured/imported equipment and supplies impossible and out of the reach of many institutions. Infact, there are many schools that do not have any facilities or equipment with which to work. However, this does not mean teachers should throw up their hands and do nothing about physical education. For the creative and resourceful teacher, much can be done through improvisation. This may mean utilising any available space within the school as play areas, adapting activities to the classroom and making use of locally available materials for the construction of unique equipment. The ingenious teacher will provide for the physical education of his/her students.

INTRODUCTION:

The importance of facilities and equipment in any field of human endeavour cannot be over-emphasised. The Physical Education teacher, farmers, traders, students, contractors and even the administrator need facilities and equipment to carry out their administrative functions successfully as expected of them. The teachers responsibilities are not limited to teaching alone but a number of other relevant functions have to be performed.

Facilities and equipment have experienced various changes since the years, especially during the ancient Greece. In the ancient Greece, people run bare-footed on a straight course that measured close to 100-200 of a course.

The Greeks did their throws on open grassland and used heavy implements such as, iron-disc, and stone.

With the advent of modern Olympics there has been systematic improvement in scientific production of equipment and facilities that has helped to reduce the chances of injuries and led to better performance.

During the late 19th century, people running on clay and cinder track. Areas were carved out for throwing events and these were classified into Javelin, discus, shot put, high jump, and long jump.

In the scientific world, development will continue as long as there are enough funds to carry out experiments on research discoveries. The use of starting blocks came to lime light after the second world war. The use of spiked shoes also followed immediately.

At this juncture, it is very important to clarify misunderstanding or misconception as regards these three words, Improvisation, Facilities and equipment.

WHAT IS IMPROVISATION

The Webster Dictionary defines improvisation as composing, extemporising, or to make the best of materials at hand. While Oxford Advanced Learner Dictionary of English defines improvisation as doing something quickly in time of need or using whatever happens to be available in our locality.

Also Phillips A.O. (1991) defines Improvisation as the provision of a substitute or an alternative from available materials for a particular manufactured equipment that is not available. Improvisation itself means substitution.

There are variations in the degree of substitution or Improvisation is the act of providing inexpensive materials to aid in the adequate teaching of Physical Education activities.

Improvisation brings to the learner the following.

- (a) Reality to lesson taught.
- (b) Arouse more interest in participant.
- (c) Enhance greater attention in learners.
- (d) Opportunity for learners to assess performances.

A resourceful physical education teacher, coach, or organiser can improvise equipment and supplies in so many ways.

For examples are:-

- (i) Bamboo poles to construct goal posts for various games, pole vaults, high jump poles, soccer poles, hockey, volleyball and handball goal posts.
- (ii) Ropes with strips of white cloth or old fishing nets for tennis, Table tennis, Volleyball, Badminton etc.

- (iii) Stones and metals or iron to make discus, shot put.
- (iv) Sharpened planks, sticks, bamboo for javelin.
- (v) Plastic for making hockey balls and tennis balls.
- (vi) Rubber for providing protective design as chinguard, pads etc.
- (vii) Metal/Aluminium for making poles, baton for relay, official stand, etc.
- (viii) Wood - for making table tennis, table tennis stand, official stand, etc.

WHAT ARE FACILITIES:

Facilities can be defined as permanently constructed indoor and outdoor structures that may house the total athletic programme or provide playing space for physical education, intramural and extramural sports.

They are infrastructures used to teach and learn movement activities in sports and games.

Examples of facilities are:

- (i) Gymnasium
- (ii) Athletic track
- (iii) Swimming Pool
- (v) Hockey Field/Pitch
- (vi) Soccer field.

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WHAT ARE EQUIPMENTS:

Equipment on the other hand is defined as large time or special apparatus that may or may not be attached to a facility and requires a capital outlay for purchase. Equipment can also be defined as apparatus or sports soft wears that can be moved from place to place.

Examples:-

- (i) Table tennis

- (ii) Sticks
- (iii) Football - boot and so on.

Equipment are often classified as short or long-term. This grouping depends on the life span of the equipment (durability).

Examples of short term equipment are; badminton rackets and hockey sticks, while long-term equipment include soccer goal post and trampolines. Like facilities adequate equipment is of vital importance to a successful implementation of any physical education/sports programmes, physical education/sports equipment are usually very expensive, more so the long term ones.

CLASSIFICATION OF IMPROVISATION

In classifying the physical education equipment, it is necessary first of all to identify all the required equipment, once this is done our problem is minimal.

The following are the areas we can classify the equipment into:

- (i) Rubber type
- (ii) Wood type
- (iii) Plastic type
- (iv) Metal type
- (v) Rope type
- (vi) String type
- (vii) Modelling type
- (viii) Aluminium type
- (ix) Iron type and cement for other uses.

Classifying can be made of these equipment can be made in schools i.e, by the teacher, given the guide and these that have to be produced by the manufactures, and they must conform to the specification.

SKILLS FOR IMPROVISATION

The skills involved in the improvisation of equipment falls into three main category/groups:

- (i) Mental skills
- (ii) Measuring skills
- (iii) Creative skills.

Mental Skills:

This involves, the observation, measurement and creativity, manipulative techniques such as, drawing, painting, sign, writing collect, as well as practical skills such as cutting, glueing, soldering and glass bending.

(i) Observation:

The teacher must develop the skill of observation in order to know the resources around him;/her that might help him in constructing or improving any equipment. The resources which must be observed include.

(ii) Surrounding Environment:

The teacher must have a good and thorough knowledge of his/her surroundings. He/She must know the different types of places such as rivers, junkyards, jump/sites, pond, zoos, markets, hospitals, factories etc. that are available in the area.

1. Books:

From books, the teacher will find out the methods and processes for carrying out activities at hand. These books are the relevant textbooks, manuals, resource books, and those that teach skills such as modelling, carving, welding or carpentry.

2. Measuring Skills:

Measuring involves the co-ordination of the senses, particularly the eye with the muscles of the hand. In other to avoid both instrument error and human error.

3. Creativity Skill:

Creativity involves making use of previously acquired knowledge and skills to develop something new to be able to improvise any equipment, the teacher should know what the improvised equipment will be used for and how the standard manufactured equipment works. The teacher should also know how to go about designing and making the equipment.

It must be stressed here that the school activities for this children should be designed to provide for the physical and emotional developments of the children. These activities must be carefully selected, guided and must be of different categories. They should be selected not only to reflect the available facilities and to suit the seasons, but also to meet the students needs and their capabilities. Some schools are so limited by their financial positions that they cannot afford to purchase equipment. A qualified physical education teacher should make adaptation and adjustments to improvise equipment and supplies from local materials.

But in doing this, quality and safety should not be sacrificed. For example, the stream or the river may be used as an alternative to a swimming pool. Local play ground may be used to supplement school facilities. Goal posts and other uprights can be made from local materials.

Hockey sticks, tennis bats, ropes, hoops, and bean bags, wood, cane, rags and ropes can be made locally.

Instead of concrete floor, plain flat ground could be used for construction of courts. Improvisation is a possibility in almost all cases, but it requires carefulness and wise choice of local materials.

This paper deals with improvisation in (16) Sixteen sports, and they would be discussed under the following headings:

1. Name of the equipment
2. Description of the equipment
3. Type of material that can be use to improvisation
4. Specification of the equipment
5. Diagram of the equipment to be improvised
6. Step to be taken to improvise the equipment
7. Cost of production
8. Approximate cost in energy.

(a) The Sports In Alphabetical Order

- | | |
|------------------------------|------------------|
| 1. Athletics - Track & Field | 9. Hockey |
| 2. Badminton | 10. Judo |
| 3. Basketball | 11. Lawn Tennis |
| 4. Chess | 12. Soccer |
| 5. Cricket | 13. Swimming |
| 6. Golf | 14. Table Tennis |
| 7. Gymnastics | 15. Volleyball |
| 8. Handball | |

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1. Name Starting Block
2. Description of Starting Block:

Instrument used for starting a race from 100 metres to 400 metres and relays.

An athlete use the starting block to aid their starting balance and take off on the signal of the starter.

3. Materials that can be improvised from the following:

1. Wood (2) Aluminium (3) Metal (4) Iron (5) Thick plastic.

4. Specification For The Starting Block

1. The parallel material is 50cm long
6cm high
8cm wide

- 2, The leg lock is 15cm long
10cm Base/wide
12cm high

Holes are made or bored at 5cm away from each other.

DIAGRAM

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STEPS ON HOW TO IMPROVE

- (i) The wood iron, or metal shall consists of two plates, against which the athletes feet are pressed in the starting position.
- (ii) The foot plates shall be mounted on a rigid frame, which shall in no way obstruct the athletes feet as they leave the block.
- (iii) The foot plate shall be stopped to suit the starting position of the athlete, and it may be flat or concave.

- (iv) The surface of the foot plates shall be prepared to accommodate the spikes in the athletes shoe and covering the surface of the foot plate with suitable material, like rubber or soft plastic to permit the use of spiked shoes.
- (v) The mounting of the foot plate to each other should be made adjustable both backward and forward but it must allow no movement of such on either side.

Cost of One (1) = N500 - N750

Approximate energy cost:- three days.

Name: (2) Hurdle-stand

Description of Hurdle-stand:

The hurdle stand is an instrument used during a competition. It is a barrier that an athlete jump or sail over.

Materials To Be Used To Improvised The Hurdle Stand:

(1) Wood (2) Metal (3) Thick rubber.

5. Steps On How To Improvise

- First, it consist of two feet and two-uprights supporting a triangular frame.
- The frame is reinforced by one or more crops bars, the uprights to be fixed at the extreme and if each base.
- The hurdle shall be of a design that force at least - equal to the weight of 3.6 kilograms applied to the centre of the top edge of the top bar is required to overturn it.

Cost of ten hurdles (10) - N500 - N1,000

Appropriate Energy cost:- 3 - 5 days.

1. Relay Baton

2. Description: The baton shall be a smooth hollow tube. Circular in section or shape.
3. Type of Material for Improvisation: I) Wood ii) Metal iii) Plastic or any other rigid material in one piece.
4. Specification: The length of which shall not be more than 300m and not less than 280mm.
 - The circumference shall be 120mm to 130mm and shall not weigh less than 50 grams.
 - It should be coloured so as to be easily visible during the race.

5. DIAGRAM:

Cost of one (1) N150

Approximate energy cost 1 - 2 days

Specification: Weight male 800gm

Weight female 600gm

1 weight range M 8.05 - 825g

1 weight range F 6.05 - 625g

Length of max. 330mm - 330mm

Length of min. 250mm - 250mm

DIAGRAM

Cost per one (1) N10 - N20

Energy cost. 2 - 3 days.

DIAGRAM:

Cost 2 Poles N250 - N500

Energy cost 2 - 3 days

The above materials have been improvised at one time or the other and found to be very durable.

BASKETBALL**Material Improvised:**

- (a) Ring - made of metal, Backboard - made of wood, thick number and plastic, Ring net, woven twine.
- (b) Upright and stand.

The boards were made from planks 1.80m by 1.20m thick. A rectangular shape was drawn on the surface with dimension of 0.59m by 0.45m.

The borders 5cm were painted black while the background was painted white the rings were shape in a circular way and to specification of 45cm in diameter and net made with twine.

Amount N250 - N500

Energy cost 3 - 5 days

DIAGRAM:**CRICKET**

Cricket Bat: It is an implement used to clear away the ball that is being bowled b a bowler during play.

Materials Required: Strong wood or plank, Rubber, Scrapper

Specification: 96.5cm in Length and 10.8cm in width.

DIAGRAM:

Discus (Wooden):- This is made with plank and cut into shape of a discus.

<u>Specification:</u>	Width/Thickness	12mm
	Diameter	50mm
	Weight male	2kg
	Weight female	1kg

DIAGRAM:

Amount per (1) One N600 - N800

Energy cost 2 to 3 days.

Shot Put: Some quantity of cement, sand and stone were mixed together with an iron rod well studded in with water to blend and shape it into a ball.

<u>Specification:</u>	Width/Thickness		
	Diameter	-	130mm 110mm
	Weight male	-	7.260kg
	Female		4.000kg
	1 weight range M 7.		265kg
			F 7. 005kg. 4. 025kg

DIAGRAM:

Javelin: Made by cutting long straight sticks to sizes, peeled and made to javelin length.

Twine was used to hold the area of the grip.

- Materials Improvised: - Nets, or poles
- The pole can be made of Aluminium, Iron or Wood.
 - Net can be made of twine or cane materials

<u>Specification:</u>	- Pole	-	Height	-	1.55m
	Weight	Weight	-		4.00g - 5.00g

DIAGRAM:

Cost 2 Poles N250 - N500

Energy cost 2 - 3 days

The above materials have been improvised at one time or the other and found to be very durable.

BASKETBALL**Material Improvised:**

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Amount N250 - N500

Energy cost 3 - 5 days

DIAGRAM:**CRICKET**

Cricket Bat: It is an implement used to clear away the ball that is being bowled b a bowler during play.

Materials Required: Strong wood or plank, Rubber, Scraper

Specification: 96.5cm in Length and 10.8cm in width.

DIAGRAM:

Steps in Producing It:

- Cut the wood to the specification of 96.5 in length and 10.8cm in width.
- Scrape the wood to make the body smooth.
- Scrape one side well to make it flat.
- Scrape the other side to make it a little bit round as if forming a triangle.
- Scrape the bottom of the wood to make it round for easy gripping and make it reduce than the rest.
- Rubber or leather can be used to lie the grip side in order to avoid slippery.

Amount Per One:- N500 - N600 Energy cost:- 2 to 3 days.

STUMPS

The stumps is a vertical wood in which bails are placed on to make a complete wicket during the game of cricket. It is a target for the bowlers as well as the fielders during play.

Materials Required:- Wood, Scraper, Grease

Specification:- 81.5cm in length/height.

DIAGRAM:

- STEPS: (i) Cut the wood to the specification of system in length and about 7.5cm at the pointed edge.
- (ii) Scrape the wood so as to make it smooth
- (iii) Make the edge sharp and pointed in order to allow it enter 7 when nailed on the ground.

Amount per (1) One N80d - N100

Energy cost 1 - 2 days.

BAILS

Bails are horizontal wood that one placed on the stumps to make a complete wicket. It is the target for the bowler and the fielders during play.

Materials to be Used:- Wood, Scraper, Grease.

Specification:- 11cm long

DIAGRAM:

- STEPS:
- Cut the wood to specification of 11cm long.
 - Scrape the body of the wood to make it smooth.

Amount per One (1) N100 - N150

Energy cost:- 1 - 2 days

PADS:- Pads is a piece of soft stuff used as a cushion for protect, mainly use by goalkeepers and plays.

Materials Used:- Rubber, Plastic

Specification: No specific dimension, ones it covers the essential part.

DIAGRAM:

Amount per (1) One N100 - N150

Energy cost: 2 to 3 days.

GLOVES:- A protective device used in covering the hand. It is commonly use by the goalkeeper.

Materials Used: - Rubber, Leather

Specification:- No specific dimension, so far it fits into the hand of the goalkeeper.

DIAGRAM:

Chess:- Chess board is a device made of wood use in playing the game of chess.

Materials To Be Used: Wood, Plastic.

Specification:- Length 40cm Breadth 40cm

DIAGRAM:

- STEPS:-
- Cut the wood to four sides and to specification
 - Scrape the wood to make the body smooth
 - Colour the board to make it clear and visible.

EQUIPMENT THAT CAN BE IMPROVISED: Golf

- Stick - Carved wood or thick plastic
- Ball - Stone carved with rubber
- Clubs - Made of Aluminium or Iron and very durable.

GYMNASTICS

- Mat - Rubber mat bind together with thick frame

HANDBALL

- Ball - Hard plastic moulded together in form of a ball
- Post - The post can either be made of wood or metal
- Net - Fishing net could be used in this case, woven twine to the size of the post
- Rafia leaves can be used, e.t.c.

HOCKEY

- Stick - Carved wood could be used
 - A very matured bamboo tree is cut in the bush, after cutting the matured bamboo tree, it is thereafter cut into ribs and split into shape.
- The ribbed edge is shaped to form the hockey stick flip for controlling the ball or the buck while the remaining part of the stick is carefully sharpen to form the handle of the hockey stick.

- Ball -
1. Wood carved or thick rubber in a spherical shape.
 2. A number of polythene bags or Nylon paper collected together
- Fire is used to melt these polythene bags or the Nylon papers together and the melting residues are collected together.
- The melting residues having collected together are re-mould into a round object to form the improvised hockey ball.

CHIN GUARD:-

- In producing a chin guard, one would have to make use of the following
- Use of form
- Short straight sticks arranged sequential and covered with leather and buckles were attached to make it firm on the chin.

Specification:- 91.50cm long and 2.80cm thick with a curved tip of 12.01cm.

Keepers Pad:- Rubber and woven twine can be used to improvise this equipment.

Specification:- Keepers pad 45cm high and touches the high of the keeper.

JUDO

Mat: Thick foam

Knee Cap:- Rubber or plastic

TENNIS:-

Ball: Rubber Specification 56.7g - 58.5g (White or Yellow)

Racket: Made of plastic wood, etc. Specification 382.7g - 396.9g

Net: Woven twine Net Post: Iron or Wood

Net Post Hole: Aluminium

SWIMMING: Floats - unused tubes

Kickboard - wooden plastic

dividing lines - ropes or twine.

TABLE TENNIS:

- Bat** The bat shall be of any size, shape or weight. The blade shall be of wood plastic and rubber.
- Net** The net could be made of either Nylon strings or with strings or raffia which could be able to stop the ball when hit against it.
- Specification:** is 15.25cm.

Upright Post:- Which the cord of the net is fastened should be made of either metal, iron or aluminium. This should be welded as in the diagram with a screw used in faster to the table.

Table/Stand:- Should be made of wood and aluminium

Specification:- Length 2.74m, Height 7.6cm "weight 1.52m

Ball: The ball should be made of plastic.

VOLLEYBALL:-

- Material Improvised:-** Volleyball net
- Woven twine
- Raffia
- Cane can be used

Specification:- Length 9.50m

Pole:- The volleyball pole could be made of wood, metal, and aluminium.

Antennae: The volleyball could be made from plastic, or rubber

Ball:- The ball could be made from leather

Specification:- Circumference of the ball 65 - 67cm

Amount per (1) Actual weight of the ball 260 - 280g = N250 - N500

Energy cost 2 to 3 days

WEIGHT LIFTING

Bar:- Made of wood or iron

Weight:- Aluminium

Amount N100 - N150

Energy cost - 2 to 3 days

WHAT ARE THE ADVANTAGES AND DISADVANTAGES OF IMPROVISATION?

ADVANTAGES OF IMPROVISATION

1. It exposes the teacher to varieties of equipments to work with.
2. It enhances the teaching of the subject effectively.
3. The pupils/students learns faster with equipment available at their disposal.
4. It saves time.
5. It develops awareness in the teacher and makes him/her creative.
6. It enhances more interest in the subject.
7. It discourages importation of sports good into the country.
8. It patronises made in Nigerian goods.

DISADVANTAGES OF IMPROVISATION

1. The potentials of the pupils/students are not developed on time.
2. Time is wasted.
3. It develops redundancy on the part of the teacher.
4. Teaching of the subject matter is prolonged.
5. The goals and objectives are not met on time.
6. It creates boredom for the pupils.

PRESERVATION OF IMPROVISED EQUIPMENT

Much has been said about the improvisation of sport equipment, but at the same time it is very essential to mention that the equipment so improvised are also needs to be preserved so as to make it last longer. The preservation of improvised equipment can be done in the following ways:

1. The equipment should not be placed in a moist environment.
2. The store/room should be well ventilated.
3. The store/room should have good lightning.
4. The equipment should be cleaned when used.
5. The aluminium, Iron and metal materials should be kept away from water.
6. The equipment should be sprayed with the use of insecticides regularly.
7. The metal, Iron or aluminium material should be painted to avoid rusting.
8. The equipment should not be placed on the ground, they should be stacked on a frame.
9. Regular check of equipment is very important.

SPORTS SAFETY

By safety, I do not mean any condition which will be completely accident proof, but a condition where sports activities can be conducted in such a way as to reduce accident to be bearest minimum. To guarantee safety, the teacher, the coach and/or the organiser's should:

1. See that all pot-holes in the playing fields, courts and athletic tracks are filled before use.
2. Inspect all equipment regularly before and after use for repairs or make immediate replacement.

3. Provide shock absorbing foams or mattresses for high jump and pole-vault, where sand is used the pit should be filled.
4. Subject pupils and participants to thorough medical examinations, so that those who are certified fit should be allowed to participate in sports activities.
5. Ensure that in all throwing events, all throw should be to the same direction in order to avoid preventable accidents shoulder minor cases of sprains, dislocation due to improper and insufficient warm up and lack of fundamental skills or cur, the situation should be attended to immediately if a school has the financial capability, the should buy insurance policies for the pupils from a reliable insurance company. This is a measure of protection, and a proof of legal responsibility. This is an element of good administratives that must be encouraged in our schools.

Thank you for your participation in this workshop; kindly feel free to ask question, or to express your observation and air your contribution.

“THANK YOU FOR LISTENING”

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