Chapter III
Methodology

3.1 Introduction
This research is dedicated to teach the fundamentals of the basketball game with fun and excitement in positive environment. It is expected that

- Every player should improve her basketball skills
- To have fun and learn to truly enjoy the basketball.

This program is designed for junior girls only.

This study is intended to discover the effectiveness of the two teaching methods viz. Traditional Teaching Method (TTM) and Video graphic teaching Method (VGT) on the skill Performance (SP) and Knowledge Performance (KP) of the Basketball fundamental skills on junior girls, Pune.

For achieving this purpose an experiment was carried out with subjects selected from “Pune Vyayam Shala” Pune. This chapter elaborates the method and procedure adopted for carrying out experiment.

This study has been carried out following mixed approach of research and the experimental research method was followed during this endeavor.

3.2 Design of the Study
An experimental design is a blue print of the procedure that enables the researcher to test hypothesis by reaching valid conclusion about relationship between independent and dependent variables.
The researcher has chosen pre-experimental design (the static-group comparison design) for the present research. This study consists of one control and other experimental group. The control group was taught by traditional method of teaching. The experimental group was provided video graphic teaching method. Pre-test, mid test, and post-test were conducted.

The Research design

\[
\begin{array}{ccc}
O_1 & \times & O_2 \\
O_4 & c & O_5 \\
O_3 & & O_6 \\
\end{array}
\]

Where,

X is treatment given to experimental group

C is no treatment to control group

\[O_1\text{ and }O_4\text{ Pre test}\]

\[O_2\text{ and }O_5\text{ Mid test}\]

\[O_3\text{ and }O_6\text{ Post test}\]

A parallel group design for conducting experiment was used in present study. Sample was divided into two groups. Pre-test was conducted on both the groups, the control group was taught with traditional method and experimental group was taught with video graphic teaching. Mid test was conducted on both the group exactly in between treatment duration.
Treatment was again continued to both the groups followed by post-test at the end of treatment.

Fig. 3.1: Research Design
3.3 Population and Sample of the study

A population is any group of individuals that have one or more characteristics in common that are of interest of researcher (Best, 1995). Therefore in this study, which is based on the experiment on junior girls, population is junior girls (under 13 years) from Pune Vyayam Shala, Pune, Maharashtra, India.

According to Best (1995) a sample is a small proportion of a population selected for observation and analysis. This study is experimental in nature. Hence a purposive sample was selected. The subjects selected for this study were girls of Pune Vyayam Shala, Pune studying in std. VI to std. VIII during the year 2011-12.

3.4 Tools Used for Data Collection

To study the efficacy of the teaching methods on the knowledge performance and the skill performance, paper pencil test and the basketball skill performance tests were used. The procedures of data collection and development of the knowledge tests are explained in the following section.

3.4.1 Dribbling, Passing and Shooting- paper pencil Test

Effect on knowledge was examined through knowledge performance test for the dribbling, passing and shooting. Researcher developed two different knowledge tests with the help of basketball experts on the basis of fundamentals of basketball. For developing knowledge test following procedure was employed.
3.4.2 Method of Developing Paper Pencil Test:

Knowledge test was used to assess the knowledge performance of the subjects in the fundamentals of Basketball. As there was not a single standardized test available to assess the knowledge performance in the said event, it was the need of the present research to develop the test.

Researcher used teacher made test for the same. Tests were developed and checked by experts and changes were done in the test according to the corrections given. Two paper pencil tests were conducted during the research period, to assess the cognitive aspect of the students.

It was a multiple choice test. There were 25 questions in each test. Time duration for test was 30min. One mark was awarded for each correct answer and score was calculated for each child.

3.5 Skill Test

Skill performance is one of the dependent variable in this study. A skill is a learned trait by samples selected for this endeavor based on the abilities that they possessed. Hence it was the need to use standardized test to assess skill performance of the students.

To see the effect of video graphic teaching aid in teaching basketball fundamental skills like Dribbling, Passing, and Shooting, the following APPHERD and SAI tests were used as they are standardized test and were suitable to the requirement of the present study.
A) SAI Basketball wall pass test  
B) AAHPERD Basketball control dribble test  
C) SAI Dribbling test of basketball –for speed dribble  
D) AAHPERD Basketball speed spot shooting test  

3.5.1 SAI Wall Pass Test of Basketball Skill  

Objective: The purpose of this test is to measure the basketball speed passing or throwing ability of basketball players.  

Equipment: Basketball, Tape, Floor wall marking, stopwatch  

Test Dimensions: Two restraining lines at a distance of 2.0 meters from a smooth surfaced plain vertical wall are to be marked on the floor. Another line is to be marked on the wall at the height of 1.0 meter from the ground.  

Test Administration: Two trials of 30 seconds each are allowed to the player and better of the two score is considered for the evaluation record. The performer has to stand behind the restraining line at distance of 2.0 meters for 12 to 14 years old players’. On the single Ready, Go! the performer is to start making maximum number of passes on the wall above the marked line in 30 seconds period with a mini basketball. Each time the ball hits the wall, it will be counted as one pass. The pass on the wall is always to be made by standing behind the designated line. In case, the ball does not rebound or caught, and fall on the floor, the performer has to move forward and retrieve the ball and come to the position behind the line and continue pass on the wall.
Violation/Penalties:

a) When the performer makes a pass from a point in front of the designated restraining line, no points are to be awarded for such a pass (foot fault)

b) When the pass made on the wall touches at a point lower than the one meter line of the wall, no point are to be awarded for such a pass (pass fault)

c) Any pass made after than 30 seconds stop single is to be discarded (overtime fault )

Scoring: One point is awarded for each correct pass. The final score is total of all correct number of passes out of the better of the two trials.

![Fig. 3.2: SAI Basketball wall pass test](image)
3.5.2 AAHPERD Basket Ball Control Dribble Test

Test Objective: To measure ball handling skill (dribbling).

Equipment: B.B, stopwatch, floor marking, cones, tape.

Administration & direction: Six cones are placed as in figure 2. On single line “Ready, Go”. The test performer who is dribbling with the non-dominant hand from the non-dominant side of cone A to the non-dominant side of cone B. For the reminder of the course the performer may use the dominant hand, & hands may be changed when appropriate. Three trials are given, with the first being a practice trial.

Scoring: The trial score is recorded to the nearest on-track of a second. The item score is the sum of the two trials. The trials is retaken for ball handling infractions, failure of the performer or ball to remain outside any cone, & failure to continue the test from the spot where loss of ball control occurred.
Fig. 3.3: Right Hand Control Dribble

Fig. 3.4: Left Hand Control Dribble
3.5.3 SAI Dribbling Test for Basket ball

**Objective:** The purpose of the dribbling test is to measure the skill in handling the B.B while the body is moving.

**Equipment:** B.B, stopwatch, B.B court.

Test Dimensions: A dribbling course starting at the point ‘S’ as shown in the figure, going along the free throw lane bounding anticlockwise in the B.B court, represents the test dimensions.

**Test Administration:** With the ball in hand the subject stands on starting point. On the signal ready, go to the subject moves forward dribbling the ball along the free throw lane bounding, timer starts the stopwatch at the signal go & stops it as soon as the subject completes two rounds dribbling along the designated course.

![Fig. 3.5: SAI Dribbling test for basketball](image)
3.5.4 AAHPERD Speed Spot shooting test

Objective: To measure skill in rapidly shooting from different positions & (to a limited extent, to measure agility & ball handling)

Equipment: Basketball, Stop watch, Tape, Floor marking

Administration & Directions: Floor markers are placed on the floor as shown in figure. The distance for the spots B, C, D is measured from the center of the back board, those for spots A &E are measured from the center of the basket. For fifth, sixth graders the shooting distance is 9 feet., holding a B.B, the test performer brings the test with the one foot behind anyone of the five markers on the signal “Ready, Go” the performer shoots retrieves the ball, & dribbles to & shoots from another spot. At least one shot must be taken from each of the 5 markers. A maximum of 4 lay-up shots may be attempted but no 2 may be taken in succession. Three 60 seconds trial are administrated with the first being a practiced trial.

Scoring: Two points are given for each shot made and one point is given for each unsuccessful shot that hits the rim (From above). The item score is sum of the scores for the 2 trials. The test administrator and if the performers attempts at least 1 shot from each of 5 markers. No score is given for shot that follow ball handling in fashion such as travelling and double dribbling or for more than 4 lay-up attempts. If the performers fail to shoot from each of the markers, trial is repeated.
Fig. 3.6: AAHPERD Speed Spot shooting test
3.6 Administration of the Skill Performance Test

For administration of the skill performance test, following process was pursued:

a. Students were given number of trials.

b. The actions of skills were recorded with video camera.

c. The performance of the students was assessed using skill performance observation sheet by experts by viewing the video recording.

d. No fouls was considered at the time of execution of the skills.

3.7 Skill Observation

Each skill was evaluated on a five point scale. The points were given for each elements of the skill which has been performed correctly. Observation sheet for analyzing skill acquisition was prepared with the help of experts to analyze skill of Basketball.

3.8 Evaluation of the Skill Performance

Three experts evaluated each student’s skill during pre-test, mid test and post-test with the help of video recorded performance of the students using skill-Observation chart. Average score of the skill performance was taken as the final performance of skill of the players. Average skill performance score and standard deviation of the skill performance test of the Experimental group and the Control group was considered for further analysis of the skill performance.
3.8.1 Dribbling  (Speed Dribble, Control Dribble)

a. **Body Position:** The cupped hand stays on the top of the ball, the fingers are spread. Knees are bent, lean forward

b. **Arm Position:**
   - The wrist moves up & down, the forearm remains parallel to the floor.
   - Low bounce dribble with protecting the ball with non-dribbling hand (control dribble)

c. **Control:** the ball bounces between the knee and waist

d. **Movement & Speed:**
   - Dribble the ball down court at a fast speed projecting the ball with a high bounce.
   - Dribble the ball down court at control pace projecting the ball with low bounce
   - Eye contact occasionally looks at ball, rarely looks at ball.

3.8.2 Passing (Chest Pass, Bounce Pass, Overhead Pass)

a. **Body Stance:** The feet are shoulder width apart, the knees are bent

b. **Hand placement:**
   - Hands are placed on the side of the ball, fingers are spread and thumbs are pointed upward
   - Elbows out, thumbs down
• Both the hands on ball above head, elbows pointed out
c. **Foot Work**: Passer step towards target during throw.
d. **Release & Follow through**: The ball is released at full arm extension. Fingers pointed towards the receiver.
e. **Accuracy**:
  • A passed ball is to be passing at the chest level by the intended target
  • Ball travel from passers stomach to receivers chest level and is catchable
  • Pushball out with both hands towards target, extended arms straight out

**3.8.3 Shooting**

**3.8.3.1 Lay-up Shot**

a. **Foot work**: Jump off the left foot while rising right foot and extending the ball in the right hand towards the basket, left hand guarded the ball

b. **Hand Placement**:
  • The shooting hand is placed under the ball with fingers spread. The guiding hand is on the side of the ball with fingers pointed
  • The elbow is under the wrist of the shooting hand
c. **Ball release**: The knees are straightened, the arms are extended, the wrist snaps, the ball is released and fingers pointed towards the target.
d. **Accuracy**: The field goal attempt needs to be close to the basket, with a chance of going.

e. **Follow Through**: Maintain body balance, land on the both feet with flexed knee in triple threat position.

### 3.8.3.2 Shooting (Jump Shot)

a. **Footwork**: the feet are shoulder distance, the knees are bent.

b. **Hand placement**:

   - The shooting hand is placed under the ball with fingers spread. The guiding hand is on the side of the ball with fingers pointed.
   - The elbow is under the wrist of the shooting hand.

c. **Ball release**: The knees are straightened, the arms are extended, the wrist snaps, the ball is released with jump.

d. **Accuracy**: The field goal attempt needs to be close to the basket, with a chance of going.

e. **Follow through**: Maintain body balance, land on the both feet with flexed knee
3.8.3.3 Free Throw Shot

a. **Footwork**: the feet are shoulder distance, the knees are bent, toes pointed towards the ring

b. **Hand placement**: The shooting hand is placed under the ball with fingers spread. The guiding hand is on the side of the ball with fingers pointed

c. **Ball release**: The knees are straightened, the arms are extended, the wrist snaps, the ball is released on toes.

d. **Accuracy**: The field goal attempt needs to be close to the basket, with a chance of going.

e. **Follow through**: Transfer power from leg to the ball, straighten the body and shooting arm in follow through

3.9 Preparation for the Research Program

**Step.1** Before entering the actual procedure the administrative permission was taken from the principal of Pune Vyayam Shala and was informed about the selected Girls for the research program. After formation of the groups, researcher conducted the meeting with the groups and explained them about the four months teaching program.

**Step.2** Preparation of lesson plan, observation sheet, paper pencil test, Score sheets for skill test, for both the groups according to the need of the study with the help of the experts and Guide.
Step.3 Selecting and Arranging video models (expert’s clips) from various sources like CD’s and internet according to the lesson plans for the experimental group.

Step.4 Arrangement of equipment’s for the teaching program was done.

The following equipment’s were used for VGT group:

Digital Camera: The digital camera of SONY-40x optical zoom was used for shooting students’ performance during teaching- learning process and for Assessment of student’s skill performance.

Lap top: The ACER lap top – i3 was used for immediate video feedback and for showing Experts clips.

CD's: The CD’s of Reference clips of Experts were used to show the correct techniques of fundamental skills.

Tripod: A tripod of movable neck was used for fixing the camera on it to shoot the students’ performance.

Pointer- A pointer was used during the video feedback.

Step.5 Execution of teaching program for both the groups
3.10 Procedure of the study

- A parallel group design is used for conducting experiment in the present study.
- The researcher selected 30 junior girls from Pune Vyayam Shala.
- They were divided into two equal groups (Group A and Group B) of 15 subjects each.
- Group A was treated as experimental group. This group was taught with traditional method along with video-graphic teaching aid for the period of four months.
- Group B was treated as control group. This group was taught with only traditional teaching method.
- Data was collected with the help of different assessment tools to see the effect of independent variable on dependent variables.
- The scores collected from paper pencil test was analysed.
- Marks were given to the correct answer for each question and total score was considered for analysis.
- Repeated measure ANOVA was applied to analyse the effect of independent variable.
- Analysis of the scores collected with the help of observation sheet.
- Experts analyzed the skills of subjects from control & experimental group. Total score was registered for each subject.
- Repeated measure ANOVA was applied to analyse the effect of independent variable.
• Analysis of the score collected with the help of skill test.
• Subjects have given four skill test and scores were noted.
• Repeated measure ANOVA was applied for each test & each group separately.
• Video shooting was done during the pre-test, mid test and post-test. Video shooting was done in each session for each student during the teaching and there was session of video graphic feedback after each 20 min. During teaching session.
• Assessment of learnt skills was done through video clips by experts using observation sheets.
• After collecting data from experts Analysis and Interpretation of Data was done using statistical tools.

3.11 VGT model for Experimental Group

The experimental group was taught for three days in a week for the period of four months by Video graphic teaching. During the sessions of one hour, the researcher at first used to demonstrate and explain the skill by traditional teaching method then video clips of experts were shown to show the correct technique of the skill which was followed by discussion. After that there was a practice session for the students. During the practice session video recording was done for the group. This recording was shown to them along with experts clip to provide the immediate video feedback with discussion and guidance for further improvement. Again a practice
session was taken to rectify the errors done by the students in the previous session.

The video recording of each student for fundamental skills of Dribbling, Passing and Shooting was also done during pre, mid and post-test for skill assessment. The recording was saved on DVD for observation purpose. These DVD’s were given to the experts for skill assessment with the help of observation sheet.

At the time of video shooting, the camera was set 3 meter behind the Centre line of the court to record the actions of the student during the practice session. The camera was set before each practice session well in advance.

Fig.3.7: Teaching design for Experimental Group
3.11.1 Teaching program for Experimental group

Warning Up 5 Minutes
Specific Exercise 5 Minutes
Teaching Part (Teaching program and video feedback and video clips) 40 Minutes
Lead up game 5 Minutes
Cool down 5 Minutes

Teaching Part: (40 min teaching)

Warm up → 20 min teaching & video shooting → 10 min video clips
watching & discussion → 10 practices

3.12 Teaching Procedure for Control Group

The control group was taught for three days in a week for the period of four months by Traditional teaching method. During the sessions of one hour,

Teacher explained the whole skill.

Teacher gave the whole demonstration of the skill. If necessary he repeated the demonstration two to three times.

The teacher divided the skill into sub-skills and gave demonstration of the sub-skills for two to three times and gave explanation.
Teacher took the practice of these sub-skills. If necessary gave feedback for proper executions of the sub-skills.

The teacher taught next sub-skill and followed the above process.

In this way at the last step the whole skill demonstration of the sub-skills was given again.

Student practiced the whole skill. While following the above process teacher explained general rules, safety precautions to be taken.

**Teaching Program for Control Group:**

- **Warning Up:** 5 Minutes
- **Specific Exercise:** 5 Minutes
- **Teaching Part Skill workout:** 40 Minutes
- **Lead up Game:** 5 Minutes
- **Cool down:** 5 Minutes

**3.13 Statistical tools**

Descriptive statistics was applied for the interpretation of scores of group and inferential statistics was applied for generalization purpose. Researcher has used mean, SD, SEM values for interpreting data and description of it and repeated measure ANOVA for comparing effect of VFT model of teaching and traditional teaching style on the learning basketball skills. ANCOVA was applied for interpretation of knowledge of basketball.
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