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|----|---------------|------|---|
|    |               |      | New Delhi.  |
| 6. | Das, R.C.     | 1985 | Science Teaching in Schools, Sterling Publishers Pvt. Ltd. New Delhi.         |
| 7. | Venkataih, S. | 2001 | Science Education in 21st Century, Anmol Publishers, New Delhi.               |
| 8. | Rao, D.B.     | 2001 | World Conference on Science Education, Discovery Publishing House, New Delhi. |
| 9. | Singh, U.K.   | 2003 | Science Education, Common Wealth Publishers, Daryaganj, New Delhi.            |
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## METHODOLOGY OF TEACHING BIOLOGY

**Objectives**—To enable student Teacher to :

1. Understand the Nature, Place, Values and Objectives of teaching Biology at Secondary level.
2. Establish its Correlation with other subjects.
3. Evaluate critically the existing syllabus of Biology prescribed for Secondary/Senior Secondary level in the State of Rajasthan.
4. Develop yearly plan, unit plan and lesson plan for Senior Secondary classes.
5. Provide training in Scientific method and develop Scientific temper among their students.
6. Use various methods and approaches of teaching Biology.
7. Acquire the ability to develop instructional support system.
8. Plan and organise Biology practical work in the Laboratory.
9. Organise Co-curricular activities and utilize community resources for promoting Science learning.
10. Use method most appropriate to assess the progress and achievement of the pupil & thus prepare appropriate test for the purpose (both theoretical & practical).

### Contents

#### *Unit-I Nature, Scope and Objectives*

1. Nature of Science with special reference to Biology.
2. Main discoveries and development in Biology.
3. Place & values of teaching Biology at Secondary/Senior Secondary level.
4. Correlation of Biology with other subjects.
5. Objectives of teaching Biology at Secondary/Senior Secondary level.

### *Unit-II Curriculum and planning*

1. Principles of Biology curriculum at Secondary/Senior Secondary level.
2. Modern trends in Biology Curriculum : B.S.C.S., Chem Study, Nuffield-O & A level.
3. Critical appraisal of Biology syllabus at Secondary/Senior Secondary level prescribed by Board of Secondary Education, Rajasthan.
4. Planning Daily lesson plan, unit plan & yearly plan.
5. Qualities & responsibilities of Biology teacher. Teacher's role in training students in Scientific method and in developing creativity and Scientific temper among students.

### *Unit-III Methods and approaches*

1. Lecture method, Demonstration method, Lab based methods, Inductive & deductive method, problem solving, Heuristic & Project method.
2. Inquiry approach, programmed instruction, Group discussion, self study, Team teaching, computer assisted learning, seminars and workshops.

### *Unit-IV Instructional Support System*

1. Multi sensory aids : Charts, models, specimen, bulletin-boards, flannel Board, Transparencies, slides, projector, OHP, Computer, T.V. Radio etc.
2. Co-curricular Activities : Organisation of Science club, Science fair trips and use of community resources.
3. Biology Lab : Organisation of Biology Laboratory, Arrangement of Apparatus, Care & Maintenance of equipment & specimen, organisation of practical work in Biology.
4. Role of State & National Level Institutions & Laboratories Research Centers in Botany, Zoology & Agriculture.
5. Characteristics of a good text book and Evaluation of a Text Book.

### *Unit-V Evaluation in Biology*

1. Evaluation : Concept, Types and Purposes.
2. Type of test items and their construction.
3. Preparation of Blue Print & Achievement Test.
4. Evaluation of practical work in Biology.

### **Sessional Work : (20 Marks)**

- (1) One test of 10 Marks.
- (2) Any two of the following: Each 5 Marks-10 Marks.
  1. Life sketch & contribution of anyone prominent Indian Biologist.

2. Preparation of Harbarium (scrap book)
3. Prepare any one of the following related to environment education :  
(i) poster (miniature), (ii) Article, (iii) Story, (iv) Play.
4. Description of any two teaching models.
5. Prepare a Radio or T.V. Script.
6. Make a list of local (resources useful in teaching Biology and prepared lesson plan using some of them.
7. A case study of any one Senior Secondary lab of Biology.
8. Preparation of 10 frames of Linear or Branching type programmes on any topic of Biology.
9. Construction and administration of Diagnostic test on any one unit of Biology.

### Reference Books:

<i>S.No.</i>	<i>Author</i>	<i>Year</i>	<i>Title &amp; Publisher</i>
1.	Sood, J.K.	1987	Teaching Life Sciences, Kohli Publishers, Chandigarh.
2.	Sharma, L.M.	1977	Teaching of Science & Life Sciences, Dhanpat Rai & Sons, Delhi.
3.	Kulshrestha, S.P.	1988	Teaching of Biology, Loyal Book Depot.
4.	Yadav, K.	1993	Teaching of Life Sciences, Anmol Publication, New Delhi.
5.	Yadav, M.S.	2000	Modern Method of Teaching Sciences, Anmol Publication, New Delhi.
6.	Singh, U.K.	2003	Science Education Common Wealth Publishers, Daryaganj, New Delhi.
7.	Venkataih, S.	2001	Science Education in 21st Century, Anmol Publication, New Delhi.
8.	Yadav, M.S. (Ed.)	2000	Teaching Science at Higher Level, Anmol Publication, New Delhi.
9.	Eger, Marlow & Rao, D.B.	2003	Teaching Science successfully, Discovery Pub. House, New Delhi.
10.	Mangal, S.K.	1996	Teaching of Science, Arya Book Depot, New Delhi.
11.	Dave, R.H.	1969	Taxonomy of Educational Objectives & Achievement

Testing. London University Press.  
London.

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## METHODOLOGY OF TEACHING PHYSICS

**Objectives**—To enable student Teacher to :

1. Understand the Modern Concept of Physics.
2. Understand Aims and Objectives of teaching Physics.
3. Appreciate the contribution of eminent physicists in connection with the development of physics.
4. Plan curriculum at Secondary and Senior Secondary level.
5. Analyse the Syllabus of the subject in relation to its applicability to practical situations.
6. Develop scientific attitude and provide a training to scientific method to their students.
7. Write the objectives in behavioural terms, analyse the content and be skills in concept formation.
8. Develop unit and lesson plan.
9. Use various methods and teaching aids with appropriateness of content, level and classroom situation.
10. Plan and organise Physics practical in the laboratory.
11. Organise co-curricular activities related to Physics.
12. Use methods most appropriate to assess the progress and achievement of the pupils using variety of tools and techniques for Physics theory and practical.
13. Diagnose the gaps and misconception in learning Physics and take remedial measures.

### Contents

#### *Unit-I Nature, Scope and Objectives*

1. Nature of Science Physics as a fundamental science.
2. Major milestones in the development of Physics.
3. Contribution of Indian Physicists, C.V. Raman, M.N. Saha, K.S. Krishnan, Narlekar, J.C. Bose, S.N. Bose, H.J. Bhabha and S. Chandra Shekhar.
4. Objectives and values of Teaching Physics at Senior Secondary Level.

#### *Unit-II Curriculum and planning*

1. Principles of selection and organisation of course, content and experiences for senior secondary level Physics curriculum and characteristics of good Physics curriculum.

2. Correlation of Physics with other school subjects and its role in daily life
3. Writing of objectives in behavioural terms, content analysis, developing yearly unit and daily lesson plan and concept mapping.
4. Teacher's role in planning for developing scientific attitude and creativity among students and for training them in scientific method.

#### ***Unit-III Methods and approaches***

1. Demonstration method, laboratory method, project method, problem solving method and assignment method.
2. Heuristic approach, Inductive deductive approach.
3. Out of class activities like science club, science fairs and field trips.

#### ***Unit-IV Instructional Support System***

1. Physics Laboratory-Planning, Equipping and Organizing practical work.
2. State and National level institutions and laboratories (DST, NPL, ISRO, CEERI, RAPS and BARC)
3. Community resources like Science Centres/museums, planetarium and solar observatory.
4. Multisensory aids : chart, models, over-head projector, computer and internet, improvised apparatus.
5. Text books—Characteristics of a good text book and evaluation of text book.

#### ***Unit-V Evaluation***

1. Type of test items and their construction.
2. Preparation of blue print and achievement test.
3. Diagnostic testing and remedial teaching in Physics.
4. Evaluation of practical work.

#### **Sessional Work (20 Marks)**

- (1) One test of-(10 Marks)
- (2) Any one of the following: (10 Marks)
  1. Case study of one senior secondary lab of Physics.
  2. Description of design of any improvised apparatus.
  3. Planning an out of class activity to use local resources to teach Physics
  4. Life sketch and contribution of one Physicist.
  5. Preparation of scrap book containing original science (scientific cartoon) / stories / latest articles / feature / play / interview report useful for teaching Physics.

**Reference Books :**

1. Heiss, Oburn and Hoffman : Modern Science "The Macmillan Company", New York, 1961.
2. Thurber W. and A. Collette : Teaching Science in Today's Secondary Schools, Boston Allyn and Bacon Inc. New York, 1959.
3. मंगल, एस.के. : साधारण विज्ञान शिक्षण, आर्य बुक डिपो, नई दिल्ली, 1996
4. Vaidya, N. "The impact of science Teaching", Oxford and IBH Publishing Company, New Delhi, 1971.
5. Richardson, S. : "Science Teaching in Secondary School", Prentice Hall, USA 1957.
6. Sharma, R.C. and Sukla : "Modern Science Teaching", Dhanpat Rai and Sons, Delhi, 2002.
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8. Ravi Kumar S.K. : "Teaching of Science" Mangal deep Publication, 2000.
9. Rao Aman : Teaching of Physics, Anmol Publication, New Delhi, 1993.
10. Wadhwa Shalini : "Modern Methods of Teaching Physics" Sarup and Sons, New Delhi, 2001.
11. Prasad Janardan : "Practical Aspects in Teaching of Science", Kanishka Publisher, New Delhi, 1999.
12. भटनगर, ए.बी. : भौतिक विज्ञान शिक्षण, आर.लाल बुक डिपो, मेरठ, 2000
13. निगम डी.एस. : विज्ञान शिक्षण, हरियाणा साहित्य अकादमी, चण्डीगढ़, 1990.
14. Nanda V.K. : "Science Education Today" Anmol Publication, New Delhi, 1997.
15. Kumar Amit : "Teaching of Physical Science" Anmol Publication, New Delhi, 1997.
16. नेगी, जे.एस. व नेगी रक्षिता : भौतिकी शिक्षण, विनोद पुस्तक मंदिर, आगरा, 1999.

**METHODOLOGY OF TEACHING MATHEMATICS****Objectives :**

1. To enable pupil teachers to understand and appreciate mathematical structure and their isomorphism with physical realities.
2. To improve their understanding of the basic concepts and make them appreciate their unifying strength and wide of applicability.
3. To enable the student teacher, to have a clear idea of the plan of mathematics in school curriculum and of its relation with the objectives of general education.

4. To enable them to analyse the school syllabus of mathematics in relation to its objectives.
5. To enable them to see meaningfulness of the school mathematics programme in relation to life situations.
6. To give them competence in teaching **different** topics effectively.
7. To enable them to check up the results of their teaching against the objectives and their valid criteria.
8. To enable them to devise and suitably use aids for teaching so that it may result in better learning.
9. To enable them to use various techniques and practices in the classroom to make pupil learning lasting and meaningful.
10. To enable them to organise co-curricular activities in mathematics.
11. To enable them to enrich and refresh their knowledge of content in Mathematics.

**Notes :**

1. The questions on the units such as methods of teaching aids in teaching, Unit and lesson planning, objective and evaluation will be based on the Unit I.
2. The question on unit I will not be asked directly without any reference to Methodology.
3. The unit I may be discussed by adopting any suitable methodology such as use of library assignments, discussions etc.

**Contents**

**Unit-I**

Diagnostic, Remedial and Enrichment programmes with respect to the following content areas :

- (a) Set theory and Mathematical structures-sets, Relations and Functions. An elementary idea of Boolean algebra and numbers with different bases.
- (b) **Statistics** : Graphical representation of the statistical data. Measures of central tendency, dispersion and coefficient of correlation.
- (c) Axiomatic development of Geometry : Concepts of line, ray, line segment, angle, triangle, interior and exterior of angles and triangles. Concepts of equality, congruency and similarity.
- (d) Any other topic from the prevailing syllabi at upper primary, secondary and higher secondary stages in the state.

**Unit-II**

- (a) The nature of Mathematics, Importance of Mathematics in the Secondary school Curriculum, History of Mathematics and

contribution of Indian Mathematicians. Meaning of Mathematics according to the following schools of thought :

- (i) Logistic (ii) Institutionists, (iii) Formalists  
(b) Aims and Objectives of teaching mathematics. Introduction to Blooms Taxonomy of education and educational objectives in relation to knowledge, understanding, application and skills.

### *Unit-III*

- (a) The Mathematics, Curriculum, Strategy and Principles of curriculum construction for the secondary level. Recent trends in mathematics curriculum, Critical evaluation of existing mathematics curriculum, Critical evaluation of existing mathematics curriculum prescribed by Rajasthan Board of Secondary Education at different levels.  
(b) Unit and Lesson planning.  
(c) Methods of teaching :  
(i) Analytic and Synthetic (ii) Inductive Deductive  
(iii) Demonstration : Laboratory (iv) Heuristic and project  
(v) Problem solving.

### *Unit-IV : Aids in Teaching and their proper use :*

- (a) Mathematics room (Planning and Equipment)  
(b) Text Books  
(c) Audio Visual aids, film strips, field trips and excursion Mathematics Association, work-book.  
(d) The Mathematics Teacher—Academic and professional preparation.  
(e) Journal and reference books on Mathematics teaching.

### *Unit-V Evaluation in Mathematics :*

- (a) Concept of evaluation, distinction between evaluation and examination. It is characteristics and functions.  
(b) Formulation of objective, learning experience.  
(c) Preparation and use of tests for evaluation such as achievement tests, diagnostic test, aptitude tests, observation schedules etc.

### **Sessional Work : 20 Marks**

- (1) One test of-10 Marks  
(2) Any one of the following: 10 Marks  
1. Make a Diagnostic, Remedial and enrichment programmes of set theory and mathematical structures.  
2. Preparation and construction of an achievement test based on any unit.  
3. Preparation of a lesson plan based on any Innovative method.



4. Preparation of 10 frames of linear or Branching type programmes on any topic of Mathematics.

### Bibliography

1. Agarwal S.M. : Teaching of Modern Mathematics, Dhanpat Rai and Sons, Delhi.
2. Ryangar and Kuppaswami, N.A. : Teaching of Mathematics in the new education Universal Publication.
3. Butler and Wren : The Teaching of Secondary Mathematics, McGraw Hill Book Company.
4. Jagadguru Swami : Sri Bharti Krishna Tirthji Vedic Mathematics, Moti Lal Banarsidas Publisher, Delhi.
5. Kapur, J.N. : Modern Mathematics for Teachers, Arya Book Depot, New Delhi.
6. Mangal, S.K. : Teaching of Mathematics, Prakash Brothers, Ludhiana.
7. Sidhu, K.S. : Teaching of Mathematics, Prakash Brothers, Ludhiana.
8. श्रीवास्तव एवं भटनागर; गणित शिक्षण, रमेश बुक डिपो, जयपुर
9. Shanti Narayan, Modern Abstract Algebra, S. Chand & Co. New Delhi.
10. Kapoor and Saxena : Mathematical Statistic, S. Chand & Co. New Delhi.

## PAPER VII : COMPUTER LITERACY & EDUCATIONAL APPLICATION

### Objectives :

1. The student teachers will have understanding of Computer System and its working.
2. The student teachers will be able to understand and operate Windows.
3. The student will develop skill in using Windows and the applications.
4. The student will be able to understand the Educational Applications of Computer.
5. The students will develop positive attitude towards handling of computers.
6. The students will develop skills in the use of Internet.

### Course Content

#### Unit-I

#### Computer Fundamentals

1. General awareness about functioning of Computer :  
(a) Characteristics and uses of Computer. (b) Block diagram of Computer.  
(c) Classification of Computer.
2. Concept of hardware and software.
3. Input/Output devices keyboard, Mouse, Monitor, Printer.
4. Storage devices (Secondary)-Hard disk, Floppy disk, CD-ROM, ZIP.
5. Computer memory and its units-RAM, ROM, bit and byte.

#### Unit-II

#### Operating System

1. Basic features of Windows
2. 'Windows' and its accessories  
(a) Explorer, (b) File Manager, (c) Managing Printing

3. MS-Office

- (a) MS-Word-Text Management, (b) MS-Excel- To support database and graphics, (c) POWER POINT-Preparation of Slides

*Unit-III*

**Internet and Multimedia**

1. Server, Modem, E-Mail, Internet Surfing for educational purpose websites, Search Engineers.
2. Concept of Multimedia and its educational uses.

*Unit-IV*

**1. Computer as teaching machine :**

- (a) Computer Aided Instruction (CAI)-Concept and modes  
(b) Concept of other terms like CMI (Computer Managed Instructions), CBI (Computer Based Instructions), CALT Computer Assisted Learning and Teaching).

*Unit-V*

1. Information Technology and Computer (Concept, role, impact on education system).
2. Role of Computer in Education System (e.g. Library Management, Educational Management and Research School Management, Evaluation Distance Education, Education of special Children etc.)

*Unit-VI*

**Communications and Networks :** Connectivity, The Connectivity, The wireless revolution, Communication systems, Communication Channels, Physical connections, wireless connections, Infrared, Broadcast radio, Microwave, Satellite, GPS, Connection Devices, Modem, Connection service, types of connections, Data Transmission, Bandwidth and its categories, Protocols, Networks, Specialized terms in computer network, Network types, LAN, MAN, WAN, Home Network, Network Architecture, topology, star topology, ring topology, bus topology, hybrid network, network strategies, terminal network system, Client Server network systems, peer to peer network systems, Organizational internets : Intranets and Extranets, Firewalls

**Practicals and sessional Work (any two)**

1. Preparation of Mark-sheet and Question Bank.
2. Preparation of instructional material/course ware (based on content analysis to be used as transparencies/charts using MS-Word/Power Point.
3. Preparation of marks register of a class and its statistical analysis and graphical presentation.

**Evaluation**

1. Theory paper of 50 marks
  2. Practical evaluation  
Practical exam - 20 marks  
Submission of report - 10 marks + (one test 10 marks)  
Viva - 10 marks
- Total - 50 Marks

**References :**

1. Reghavan, S.S. (1986) 'Micro Computer in Science and Language teaching', Mysore R.C.E.
2. Osborne, A (1982), 'An Introduction to Micro Computers', Galgotia Book Source, New Delhi.
3. कौर, हरजीत (1993); 'कम्प्यूटर-एक परिचय', पीताम्बर पब्लिशिंग कम्पनी प्रा. लि., नई दिल्ली
4. वैकटाचमल, एम; 'कम्प्यूटर एक परिचय', पीताम्बर पब्लिशिंग कम्पनी प्रा. लि., नई दिल्ली
5. Balamurali. Sawtha' (1996). 'An Introduction to Computer Science'. Vikas Publishing House. Pvt. Ltd., New Delhi.
6. Payal Lotia and Pradeep Nair - 'Computer-An Introduction'. BPB Publication. New Delhi-110001.

## PAPER VIII

### EDUCATIONAL AND VOCATIONAL GUIDANCE

**Objectives :** To enable the student teachers to :

1. Understand the basic Concept, Nature and Scope of educational Vocational Guidance.
2. Understand the Aims and Objectives of Educational and Vocational Guidance.
3. Understand the Importance of Educational and Vocational Guidance in the present national scenario.
4. Understand the Role and Responsibilities of guidance workers in School.
5. Understand the Nature and Types of guidance services with reference to School Education.

#### Contents

##### *Unit-I Concept, Nature and Scope of Guidance*

Importance of guidance in the lives of individuals, meaning of guidance. Distinction between guidance and counselling.

##### *Unit-II Importance of Guidance*

Philosophy and Aims of Guidance. Importance of Guidance in Schools for individuals and for society.

##### *Unit-III Areas of Guidance*

Areas of Guidance, Educational Guidance, Vocational Guidance, Personal Guidance, Development Guidance, Psychology of Careers, Concept of Vocational development and Careers Patterns.

##### *Unit-IV Guidance in Present Context*

Guidance Implications in the current Indian Scenario, Education and Guidance Democracy and Guidance, Individual Difference and Guidance.

##### *Unit-V Guidance Services*

Introduction to Guidance Services : Individual Inventory Service Cumulative Record, Information Service, Follow up service. Group Guidance Service. Guidance in the School Programme Role & Responsibilities of Guidance worker in Schools.

#### Sessional Work : (20 Marks)

- (1) One test of 10 Marks
- (2) Any one of the following: (10 Marks)
  - (i) Evaluation an Educational Programme Guidance and Curriculum Approach.
  - (ii) Write one essay and two abstracts.

#### **Books Recommended**

- (i) Erickson, Clifford E. : A Basic Tent for Guidance Workers. N.Y. Prentice. Hill Inc. 1947.
- (ii) Forlich Clifford P. : Guidance Services in Smaller Schools New York McGraw Hill Book Co. 1950

- (iii) Hoppock : Group Guidance, Principles, Techniques and Evaluation.
- (iv) Strang, Ruth : The Role of Teacher in Personnel work, New York Teachers College, Columble University, 1933.
- (v) Super, Donald : Appraising Vocational Fitness New York, Harper and Brothers, 1947.

## METHODOLOGY OF SCHOOL LIBRARY ORGANISATION

**Objectives :** To enable the student teachers to :

- 1. Know and understand the basic Concepts in School Library Organisation.
- 2. Know and understand the Aim and Objectives of School Library Organisation.
- 3. Know, understand and use the Principles and Methods of School Library Organisation.
- 4. Know, understand and use the Techniques of Classification.

### Contents

#### *Unit-I*

- (a) Five Law's of Library Science
- (b) Library in Education
- (c) Library Equipment
- (d) Library Furniture

#### *Unit-II*

- (a) Aims and Objects of School Library
- (b) Planning of Library Building
- (c) Class Library and Subject Library.

#### *Unit-III*

- (a) Organisation and Administration of School Library
- (b) Issue Methods
- (c) Brown Charging System
- (d) Network Charging System
- (e) Book Selection

#### *Unit-IV*

- (a) Catalogue : Meaning, Aims and Functions of Catalogue
- (b) Library Rules
- (c) Stock Verification

#### *Unit-V*

- (a) Catalogue : Meaning, Aims and Functions of Catalogue
- (b) Types of Catalogue : Physical Form
- (c) Accession Register
- (d) Reference Service : Meaning, Need and Function of Reference Service.
- (e) Types of Reference Service.

### Sessional Work : (20 Marks)

- (1) One test of-10 Marks
- (2) Any one of the following: (10 Marks)

1. One Essay
2. Survey of School Library and preparation of a report.
3. Classification of 25 Books by Dewey-Decimal classification Scheme of 18th Edition.
4. Simple cataloging of Five Books by Rangnathan "Classified Catalogue Code".

### **Bibliography**

3. Ranganathan, S.R. : Pustakalya Vigyan Ke Panch Sutra, Rajasthan. Hindi Granth Academy, Jaipur 1980.
4. Shukla, Lalita S : Basic of Library Science, Metropolitan Book Co., Delhi.
5. Ranganathan, S.R. : Library Manual, Asia Publishing House, Bombay, 1960.
6. Fargo, L.F. : School Pustakalaya Ke Vividh Roop. Atama Ram and Sons, Delhi, 1966.
7. Shastri, D.P. : Pustakalaya Vargikaran, Sahitya Bhawan, 1974.
8. Tripathi, S.M. : Adhunik Granthalaya Vargikaran, Shri Ram Mehta & Co. Agra, 1976.
9. Bhargava, G.D. : Granthalaya Vargikaran, Madhya Pradesh Hindi Granth Academy, Bhopal, 1971.
10. Agarwal, S.S. : Catalogue Entries and Procedure, Lakshmi Book Store, New Delhi, 1972.
11. Agarwal, S.S. : Suchikaran Ke Siddhant.
12. Giraj Kumar and Kumar, C : Suchikaran Ke Siddhant, Vikas Publishing House, New Delhi, 1976.
13. Ranganathan, S.R. : Library Administration, Asia Publishing House, Bombay.
14. Mittal, R.L. : Library Administration Theory and Practice, Metropolitan Book Co., Delhi-6, 1973.
15. Banarjee, P.R. : Library Administration Vyavasthapan, Madhya Pradesh Hindi Granth Academy, Bhopal.
16. Shrivastava and Verma : Pustakalaya Sangathan Avam Sanchalan, Rajasthan Hindi Granth. Academy, Jaipur.
17. Kanti, M : Pustakalya Vigyan Nirgam Paddhatiya, Chaitanya Prakashan, Kanpur.
18. Sundeshvaran, K.S. : Sandarbh Seva, Madhya Pradesh Hindi Granth Academy Bhopal.
19. Dewey, Melvil : Dewey Decimal Classification, Edition IS, Forest Press, New Delhi.

## METHODOLOGY OF TEACHING MEASUREMENT AND EVALUATION

**Objective :** Student Teacher will be able to understand :

1. The meaning of Measurement and Evaluation.
2. Recall the relationship between Measurement and Evaluation.
3. The preparation of objective type test items.
4. The meaning of Intelligence, Interest, Personality and Creativity.
5. Development of standardized and teacher made test.
6. Analyse the statistical methods.
7. Use techniques of Evaluation.

### Contents

#### *Unit-I*

- (a) Meaning of Measurement and Evaluation.
- (b) Relationship between Measurement and Evaluation.
- (c) Significance of Educational Measurement and Evaluation.
- (d) Techniques of Evaluation.

#### *Unit-II*

- (a) Examination and how to improve it.
- (b) Preparation of objective type test items.
- (c) Item analysis.

#### *Unit-III*

- (a) Measurement of Intelligence
- (b) Measurement of Interest
- (c) Measurement of Personality
- (d) Measurement of Creativity.

#### *Unit-IV*

- (a) Standardized versus Teacher made test.
- (b) Constructing an achievement test.
- (c) Characteristic of Good Evaluation System.
  - (a) Reliability
  - (b) Validity
  - (c) Objectivity
  - (d) Comparability
  - (e) Practicability

#### *Unit-V*

- (a) Frequency distribution
- (b) Measures of Central Tendency
- (c) Standard Deviation
- (d) Co-efficient of co-relation : Product Moment and Rank Difference.

### Sessional Work : 20 Marks

- (1) One test of 10 Marks
- (2) Any one of the following: (10 Marks)
  - A detailed essay on any aspect of measurement and Evaluation.

- Construction administration and item analysis of a test in any school subject

### **Bibliography**

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2. Asthana, Dr. Bipin Agarwal, Dr. R.N. (1983) : Measurement and Evaluation in Psychology and Education. Vinod Pustak Mandir, Agra-2
3. Anastasi, A. (1968) : Psychological Testing (3rd Edition) New York.
4. Ferguson, George, A. (1971) : Measurement and Evaluation in teaching . MacMillan Co. Fourth Printing, New York.
6. Numally Jum. C. (1964) : Educational Measurement and Evaluation. McGraw, Hill Book Company, New York.

## **ENVIRONMENTAL EDUCATION**

**Objectives** : To enable the pupil Teachers to :

1. Understand the concept of Environment and the problems concerning Environment through multi disciplinary approach.
2. Develop environmental consciousness in their students.
3. Develop the skills of planning and organising Ecological activities in the schools so that the children can be equipped to play their role in protection and enrichment of environment.
4. Use different techniques and material for the effective dissemination of Environmental information.
5. Conduct local surveys, arrange field trips and Environmental games and related activities.

### **Contents**

#### ***Unit-I***

1. Concept of Environment.
2. Concept of Ecology, Ecosystem, Components of Ecosystem and interdependence.
3. Relationship of man and Environment.
4. Personal & family responsibility about the Environment

#### ***Unit-II***

Problems of Modern Civilization :

1. Population Explosion.
2. Pollutions-Air, Water, Noise, Waste and Cultural
3. Deletion of Natural resources : Causes and measures for conservation of forests and wild life.
4. Water, energy and soil management.

### *Unit-III*

1. Meaning, Objective, Importance and Philosophy of Environmental education.
2. Scope of environmental education—Multi-disciplinary approach correlation with other school subjects.
3. Environment Education as a subject, its curriculum at different levels.

### *Unit-IV*

1. Methods and Approaches : Group discussion, project, problem solving, observation, field-trips/excursion, activity method, Games and simulation, puppet, lecture-demonstration, Ecology club, Ecology-laboratory, Library and publications.
2. Role of Mass-Media Films and Audio-Visual material in Environmental education.

### *Unit-V*

1. Role of different agencies : UNEP, W.W.F. Friends of trees, N.G.O.s and Government organisations.

#### **Sessional Work : 20 Marks**

- (1) One test of-10 Marks
- (2) Any one of the following: (10 Marks)  
Select one from each section :

#### ***Section-A (Each 5 Marks-10 Marks)***

Any one of the following :

1. Prepare a scrap-book of an Environmental articles and news.
2. Preparation of maps or charts or models or Transparencies related to Environmental issues.
3. Study any Environment problem and write a report of the same.
4. Find out Environment friendly or degradable products and prepare a list.
5. Study the role of any local NGO.
6. Planning of an out of class activity/Games/simulation related to Environment.

#### ***Section-B***

Prepare an article on any one of the following :

1. Concept of Eco-system and Interdependency.
2. Green house effect Global warming.
3. Depletion of Ozone Layer and Acid rain.
4. Acts related to conservation of Environment.

#### **Bibliography :**

1. Bedydo, M.L. : Global Ecology. Progress publishers, McGraw, 1980.
2. Clapham, W.B. : Natural Ecosystem: Macmillan and Co. London



3. Deshbandhu and G. Berberet : Environmental Education for conservation and Development Indian Environmental society, New Delhi.
4. Dubey and S. Singh : "Environmental Management" Geography Deptt. Allahabad University.
5. Garg, R.K. & Tatair Prakash, "Paryavaran Shiksha", Community Centre.
6. Holliman, J. : "Consumer's Guide to the Protection of the Environment", Ballanine London.
7. Laptex, J. : "The world of man in the world of nature", Progress publishers, Moscow.
8. Pal, B.P. : "National Policy on Environment", Deptt of Environment, Govt. of India, New Delhi.
9. Sharma, H.S. & Singh H.P. : "Environment Education Teaching" (Hindi), Radha Prakashan Mandir, Agra.
10. Sharma, R.A. : "Educational Environment", R Lall Book Depot, Meerut
11. Simmons, I.G. : "The Ecology and Natural Resources", Edword Arnold, London.
12. Unesco, "Trends in Environment Education", UNESCO, Paris, 1977.
13. Verma, V.A. : "Text-book of Plant Ecology", Emkary Publication, Delhi, 1972.
14. Vya, H. : "Paryavaran Shiksha", Vidya Vihar, New Delhi.

## POPULATION EDUCATION

**Objectives** : Students will be able to :

1. Understand the Meaning, Scope and Importance of Population education.
2. Understand the Meaning, Factors and Impact of standard of life.
3. Understand the Need and Means of Population Control.
4. Understand the Role of different agencies in the Population Education.

### Contents

#### Unit-I

**Population Education** : Meaning and definition. Scope, Need and Importance of Population Education. Role and purpose of Population Education as integral part of education

**Population of India in a world perspective** : Concept of population. Theories of population. Under Populations: Growth, Distribution and density of population. Over Population with demographic data of India in world perspective.

### *Unit-II*

**Standard of Living and the Quality of Life :** Food and nutrition, health-hygiene, Sanitation; Housing, Clothing; Education travel, leisure, Employment, Income, Consumption levels; Efficiency and output, Social cultural and spiritual enlightenment; Ethics and aesthetics; Different aspect and their inter relationship with example and illustration from India and abroad, Population and India's Development Endeavor, population growth and production with special reference to National Income. The impact of development of family life on society, Culture and Personality.

### *Unit-III*

**Population Control and Planning :** India's Population Policy, The role of society and the formation of public opinion favourable for Population Control, Role and responsibility of family and individual; A small family unit for healthier, happier and better homes, improved standard of living, better quality of life.

**Population Equilibrium :** Emergency and long measures role of Population Education.

### *Unit-IV*

**Emergence of Population Education :** Action taken for Population Education (Historical Background), Introduction of Population Education in School; Colleges and teacher education institution, Role of Different Agencies and Organisation, Home, School, Community; Government (Population policies and programmed voluntary Agencies; Mass media.

### *Unit-V*

**Teacher of Population Education :** His Preparation, qualities; Role of teacher education. Education Activities for Population Education; Extension lectures, Debates, Survey, games, Exhibitions, Dramas, Meeting with parents; Preparation of aids, etc.

#### **Sessional Work (20 Marks)**

- (1) One test of-10 Marks
- (2) Any one of the following: (10 Marks)
  1. Study the causes of population problem and write a report of the same.
  2. Write one essay on any topic of population.
  3. Write any two abstracts related to population education.

### **ELEMENTARY EDUCATION**

**Objective :** Student-Teachers will be able :

1. To understand the concept, scope and objectives of elementary education.

2. To recall the constitutional provision and understand the efforts made by different agencies for the expansion of Elementary Education.
3. To understand the ideology and experiments of Mahatma Gandhi and Giju Bhai in the field of elementary education.
4. To understand the child and development of school-community relationship.
5. To use the teaching methods in the elementary school classrooms
6. To prepare and use teaching-learning material in the classrooms
7. To understand and use techniques of evaluation.
8. To understand and analyse the significant problems related to elementary education.

## CONTENTS : THEORY

### *Unit-I*

- (a) Elementary Education : Concept, Scope and Objectives.
- (b) Constitutional provisions and efforts made after independence

### *Unit-II*

- (a) Status of UEE (Universalisation of Elementary Education) in Rajasthan.
- (b) Role of State, Local bodies and NGOs in the expansion of UEE.
- (c) Experiments and Schemes (DPEP, Gurumitra, Lok Jumbish, Shiksha Karmi, Sarswati Yojna, Sarva Shiksha Abhiyan, Rajeev Gandhi Pathshala, Para Teachers etc.)

### *Unit-III*

- (a) Experiments in elementary education by Mahatma Gandhi and Giju Bhai.
- (b) Training, Service conditions and responsibilities of elementary school teachers.
- (c) Role of elementary school teacher in developing school-community relationship.

### *Unit-IV*

- (a) Objectives and methods of teaching language, environmental studies Mathematics and SUPW.
- (b) Methods of Teaching : (i) Story telling (ii) Activity (iii) Play-way (iv) Multi-subject teaching
- (c) Continuous and Comprehensive evaluation

### *Unit-V*

- (a) Problems in Elementary Education (Status, Causes and suggestions)
  - (i) Quality V/S Quantity
  - (ii) Dropouts

(iii) Disparity in enrolment of girls and groups based on Socio-economic states and categorise (ST/SC etc.)

(b) Administration and supervision of elementary schools.

**Sessional Work : 20 Marks**

(1) One test of-10 Marks

(2) Any one of the following: (10 Marks)

1. Observation of learning process (five periods of any one elementary class)
2. Preparation of instructional material on any topic/concept in any of the two subjects.
3. Planning, Organisation and Reporting of one play-way class.

**Bibliography**

1. Mohanty, J & Mohanty, B: Early Childhood care and Education. Deep & Deep Publications, New Delhi, 1964.
2. Rawat, D.S. & Others: Universalisations of Elementary Education : NCERT, New Delhi, 1981.
3. Mohanty, Jagmohan, "Primary and Elementary Educations" Deep & Deep Publications, Pvt. Ltd. F-159, Rajouri Garden, New Delhi-110027, Published in 2002.
4. कुलपति, निर्मला, बाल शिक्षण की आदर्श चार विधियाँ, जनवाणी प्रकाशन प्रा.लि. दिल्ली-110 032, संस्करण-2003.
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6. Grewal, J.S. (Dr.) "Early Childhood Education National Psychological Corporations 4/230, Kacheri, Ghat, Agar-282004 (U.P.) India Printed in 1995.
7. बधेका, गिजुभाई, प्राथमिक विद्यालय की शिक्षा पद्धतियाँ, संस्कृति साहित्य, दिल्ली-110032, प्रकाशन वर्ष 2000.
8. Shukla, Chaya "Teaching of Social Studies in Elementary School, Mohit National Publication-2002.
9. चौहान, आर.एस. बाल विकास के मनोवैज्ञानिक आधार, प्रकाशक, आगरा साहित्यिक, 2002.
10. बधेका, गिजुभाई, गिजुभाई ग्रंथमाला मोन्टेसरी बाल शिक्षण समिति, राजलदेसर (चूरू) प्रकाशन वर्ष 1998.
11. National Policy on Education 1986. Programme of Action 1992. (New Delhi : MHRD, 1992 a)
12. National Policy on Education 1986 (Programme of Action 1992). New Delhi : MHRD, 1992 b)
13. Report of the Committee of State Education Ministers on Implications of Proposal to make Elementary Educations a

- Fundamental Right (New Delhi. Department of Education) (1997).
14. Sinha. Amarjeet. Primary Schooling in India. (New Delhi : Vikas) 1998
  15. Elementary Education in the 1990s, Problems and Perspectives Mimeo NIEPA A. New Delhi (1994).
  16. Public Report on Basic Education in India. Oxford University Press. (1998).

## PHYSICAL EDUCATION

### Objectives to develop :

1. Understanding of the aims and objectives of Physical Education
2. The ability to organise and administer Physical Education Programme in Sec. Schools.
3. The Student teachers for teaching Physical Education.
4. Acquaintance with the physiological principles of body building and with the biological and psychological characteristics of secondary school students.
5. The ability to evaluate the Physical Education programme

### Contents : Theory

#### Unit-I

Modern concept of Physical Education, its relation to education, its place in schools, Aims and Objectives of Physical Education, Olympic games & their place in India, Physical Education in democracy : its Social, Economic and Political implications

#### Unit-II

Psychological foundation of Physical Education, Age characteristics, need & interest of secondary school children, activities to meet their needs, Programmes of Physical activities for a school.

#### Unit-III

Organisation and administration of tournaments, intra-murals, extra murals, excursions, play days, play centers, Athletic meet, Marking of standard Track (400 M) (imitation method, demonstration method, whole part whole method, discussion method and lecture method).

#### Unit-IV

Biological foundation of Physical Education, Physical and medical checkup, Corrective remedial exercises, first aid, yoga, fatigue

#### Unit-V

Rules of major games & sports, Making of grounds, Main points of coaching in different games Via Football, Volleyball, Hockey, Cricket, Kho-Kho, Kabaddi, Basketball, Badminton and Athletics

**Practical and Sessional Works : 20 Marks**

- (1) One test of-10 Marks
- (2) Any one of the following : (10 Marks)
  1. Pupil teachers will be required to perform and show proficiency in atleast three activities which include marching as one. out of the following :  
One major game. Two minor games. Marching. Athletics. Yogasan
  2. Prepare teaching aids-any two from the following (1) Charts (2) Diagram (3) Model.
  3. Report of physical Education programmes of a Sec/Sr. Sec. School.

**Books Recommended :**

1. National Plan of Physical Education and Recreation (Ministry of Education, Govt. of India).
2. Thomas, J.P. : Organisation of Physical Education Madras Y.M.C.A.
3. Williams, J.F. : Principles of Education. —
4. Sharma, J.R. : Principles of Physical Education. —
5. Tirunaryan, O and Harisharan, S. : Methods in Physical Education. (A.C.P.E. Karakaikudi-4)
6. Rice, E.A. : A Brief History of Physical Education.
7. Weight Training in Throwing Events—Viodya Sagar Sharma (NIS Edition).
8. Dr. R.I. Anand : Playing Field Manual (NIS Edition)
9. लायल, शारीरिक शिक्षा (शकुन्तला प्रकाशन, लखनऊ)
10. मोहन, वी.एम.ए. शारीरिक शिक्षा के सिद्धांत एवं तत्त्व ज्ञान (क्रेट्रोपोलिटन बुक कम्पनी, दिल्ली)
11. Syllabus of Exercise for Primary, Upper Primary and Secondary Schools. Education Department, Govt. of Rajasthan.
12. हरीकिशन शर्मा : विद्यालयीन शारीरिक शिक्षा एवं खेल संचालन, प्रशासन एवं पर्यवेक्षण (पण्डित प्रकाशन, 1933, बैरवाड़ा, नई दिल्ली)।
13. Y.M.C.A. Madras : Rules of Games and Sports.
14. B.D. Bhatt and S.R., Sharma : Teaching of Physical and Health Education. Kanishka Publishing House. 9/2325. Street No. 12. Kailash Nagar. Delhi-110 003.
15. डॉ. जी.पी. शैरी, स्वास्थ्य शिक्षा, विनोद पुस्तक मंदिर, आगरा।



## **14 ART (Methodology)**

Objectives :

The students teacher will be able to :

- (i) Understand the important concepts used in the discipline.
- (ii) To prepare unit plan, lesson plans for different classes.
- (iii) Critically evaluate existing school syllabus and text books.
- (iv) Prepare achievement test and diagnostic tests, administer them and analyse the results.
- (v) Prepare suitable teaching aids and use them in the class-room effectively.

### **SYLLABUS**

1. Principles of Class room teaching.
2. The aims and values of Teaching Art.
3. The place of Art in General Education  
The Educational value of Art and its relation with other school subject.
4. The important of creative activity in Elementary Education.
5. Different stages of development and artistic expression.
  - A. Beginning of self-expression.
  - B. First representational attempts.
  - C. The achievement of form concept.
  - D. The Daurining realism.
6. Qualities of Art teacher :
7. Teaching of Art at different stages of development from nursery to high school. Its curriculum and new concept of Art Education.
8. Visual aids in teaching art, the black-board, art object and reproduction photographs and other aids.
9. Educational values of Exhibitions, Art Galleries and Museums.
10. Art in Basic School.

12. Art and International understanding.

**SESSIONAL WORK – 20 MARKS**

1. Ont Test of 10 Marks

2. Any one of the following 10 marks :

(i) Content analysis and preparation of instructional material related to any unit of subject related to Arts.

(ii) Preparation of a plan for equipping an Arts Lab.

(iii) Writing of an Essay on any topic based on the contents of the above units.

(iv) Visit of any Art Gallery/Exhibition.

(v) Life sketch and contribution of one artist.

**Recommended Books :**

- |   |   |
|---|---|
| 1. कला शिक्षा शिक्षण  | यशवन्ती गौड़  |
| 2. कला शिक्षण   | कुसुम शर्मा   |
| 3. शिक्षण कला   | एस.एस. माथुर  |
| 4. कला शिक्षा शिक्षण  | दीप्ति पाण्ड्या, भगवती अहीर, राकेश भट्ट                         |
| 5. कला शिक्षा एवं कार्यानुभव<br>शिक्षा शिक्षण (दक्षताएँ, विषयवस्तु<br>एवं शिक्षण विधियाँ) | डॉ. एम.एम. शर्मा, श्रीमती सरोज रॉय<br>महेन्द्रा भाटी, रितु बाला |

**15. MUSIC**

*Objectives :*

The Student will be able to :

- (i) Understand the important concepts used in the discipline.
- (ii) To prepare unit plans and lesson plans for different classes.
- (iii) Critically evaluate existing school syllabus and text books.
- (iv) Prepare achievement test and diagonostic tests, administer them and analysis the results.
- (v) Prepare suitable teaching aids and use them in the class room effectively.