

INTERNATIONAL JOURNAL OF DECCAN PHARMA AND LIFE SCIENCES

www.ijdpls.com

(Biological Sciences)

(Original Article)

Received: 15-08-2012; Revised; Accepted: 18-08-2012

IMPLEMENTATION OF STUDENT-CENTRED LEARNING OF BIOLOGY AND ALLIED SCIENCES IN WESTBENGAL SCHOOL LEVEL CURRICULA: AN EXPERIMENTAL VIEW

Subhadeep Ganguly*

Department of Biological sciences, Sankrail Abhoy Charan High School (H.S) Sankrail, Howrah, West Bengal , India

Keywords:

Out-line, Teaching,
strategies, Biology, Life
Sciences

For Correspondence:

Subhadeep Ganguly

Department of Biological
sciences, Sankrail Abhoy Charan
High School (H.S) Sankrail,
Howrah, West Bengal , India

E-mail:

subhadeepgangulyphysiol@
rediffmail.com

ABSTRACT

The present study out-lines the teaching strategies of school level Biology and allied sciences like life sciences in West Bengal School level curricula, West Bengal, India and suggest to improve it. Reasonable teaching strategies have been proposed to improve the student-centred learning process.

INTRODUCTION

The cognitive approaches of teaching highlight the inadequacy of teaching and learning methods, where the teachers and students are conceived as mere transmitters and receivers of knowledge respectively¹. But through out the world, most of the educational institutions follow the teacher-centred strategies of teaching. The same situation occurs in my discipline, Biology and Life Sciences². Here, a teacher acts as a story-teller and students' learning is essentially passive. In most of the cases, the monotonous assessments of students outcomes are employed and teaching-learning methods are rarely evaluated³. What the civilized society is demanding for school teachers could be defined as follows: teacher should be well equipped

with new teaching strategies, making an ethical commitment to society and enhancing teaching practice through reflection⁴⁻⁸.

More effective teaching strategies could be used in order to attract the students of different back-grounds. Approaches should include problem-based learning, seminars, model-based learning and uses of LCD-projectors (for better understanding of 3D aspects of different structures), peer learning etc⁹⁻¹². Students should work in teams so that the interpersonal skills are developed via their learning activities¹³. By these ways, teaching of Biology and allied Sciences become more student-centred, and students are more active participants in this learning process.

CLASS WISE DESCRIPTION OF CURRICULA

Introduction of life sciences in class VII

Curriculum of this class include:

- 1.Reproductive structures of plants**
- 2.Organs and systems of animals**
- 3.out-line ideas and importances of plants and animals**
- 4.concept of Characteristic features of plants and animals**

Syllabus for class VIII

1. Units of Life
2. Organization of living body
3. Outline idea of anatomical structures of man
4. Experiments of plant Physiology
5. Identification of plants and animals

Bifurcated syllabus for class IX

1. Photosynthesis and respiration
2. Nutrition: metabolism and digestion, food, vitamins, enzymes, minerals and water
3. Circulation of plants and animals
4. Movements and locomotion
5. Environment, ecosystem and conservation

Bifurcated syllabus for class X

1. Excretion
2. Nervous system and sense organs with reference to human being
3. Hormones
4. Cell division
5. Reproductive and heredity
6. Evolution
7. Adaptation
8. Virus, microbes, diseases and hygiene

The above mentioned syllabi (ie. From class VII to class X) can easily be completed within the allocated time span. But if we go through the

distribution pattern of syllabi and allocation of classes for class XI and XII, we are able to realize the actual problem.

Syllabus for Class XI

<i>Chapters</i>	<i>Allocated periods</i>	<i>Allocated Marks</i>
<i>1.Nature and scope of Biological Sciences</i>	2	2
<i>2.Unit of life</i>	10	6
<i>3.cell function</i>	4	6
<i>4.Enzymes</i>	2	4
<i>5.Chromosome</i>	10	8
<i>6.Cell division</i>	2	6
<i>7.Genetics</i>	7	8
<i>8.Respiration</i>	5	8
<i>9.Taxonomy</i>	8	6
<i>10.Origin and Evolution of life</i>	4	4
<i>11.Population Biology and Social Physiology</i>	10	7
<i>12.Environmental Biology</i>	9	7

Syllabus for class XII

<i>Chapters</i>	<i>Allocated periods</i>	<i>Allocated marks</i>
BOTANY	33	25
1.virus and Bacteria	4	5
2.Tissue and Tissue system	4	5
3.Forms and functions of plants	15	5
4.Photosynthesis	5	6
5.Growth,metamorphosis and aging	5	4
ZOOLOGY	25	25
1.Classification of animal kingdom	5	4
2.Outline features of mammalian form (Eutheria) Guinea pig (<i>Cavia porcellus</i>)	6	6

3.Outline knowledge of medical Zoology	4	4
4.Outline knowledge of agricultural zoology	5	6
5.Outline idea about Economic Zoology	5	5
PHYSIOLOGY	39	30
1.Conservation of matter and energy in human system	10	5
2.Blood and body fluid	5	2
3.Cardiovascular System	5	3
4.Respiratory System	3	3
5.Nerve and muscle-The excitable tissue	3	3
6.Nervous System	3	3
7.Endocrine System	4	2
8.Excretory System	2	2
9.Skin and Body temperature regulation	1	1
10.Reproduction and Developmental Biology	4	4
11.Immunology	4	4

Thus the total allocation of periods are quite insufficient for the proper completion of the syllabi of higher secondary section (ie. class XI and class XII) by traditional lecture method. Now a days, I use three strategies in my teaching: (1) Lecture with 3D projections of the concepts using LCD projector, (2) tutorials and (3) relevant experiments in Biology Laboratory. We usually deliver our lecture according to the syllabi. I also use teaching charts ,models ,acoustic matters and visual materials (like LCD projector). The

tutorial classes comprise of relatively few students (10-15) in a group and it helps to reinforce newly acquired information. Finally in a laboratory, generally 3-4 students work in a peer group to receive critical training about specimen preparations and instrumental operations. Students have to perform experiments, collect data, analyse them and then present them as writing reports. Learning is gathering knowledge or skills as consequences of experiences, instructions or both¹². Learning is dependent on the imaginative powers of

learners¹². To a biologist, learning results from information delivery from peripheral receptors to the central nervous system, synaptic plasticity, building of new memory tracts due to potential propagation and protein synthesis¹³. However, memory can be divided into short-term and long term memory¹⁴. The students' learning can also be influenced by good teacher's notes. If we provide notes after completion of our lectures; the student can involve them completely understanding the lecture.

Continuous scientific evaluation of students learning is another very effective method so far as my experiences were aware of assessment of outcomes of teaching strategies. But I think, Scientific investigation of teaching strategies such as students' comments, questionnaire, evaluation of assessment outcomes etc will enable us to improve students' learning.

REFERENCES

1. Modell H, Adv Physiol.Edu.,23(1)(2000):101-107.
2. Ponce AA, World Appl.Sci.J.,7(3) (2009):350-354.
3. Lagowski, J. Chem. Edu., 67 (1990) :811.
4. Trigwell K, Prosser M and Waterhouse F, Higher Education, 37(1999) :57-70.
5. Marton F and Saljoo R, Brit .J.Edu.psychol.,46(1976):115-117.
6. Wilkerson L and Irby DM, Acad.Med., 3(4) (1998) :387-396.
7. Modell H, Adv. Physiol. Edu., 31(2) (2007):186-192.
8. Bowen J, Eng. J.Med., 355(21) (2006) :2217-2225.
9. Posner G, Strike K, Hewson P and Gertzog W, Sci Edu., 66(2) (1982): 211-227.
10. Feresin C and Sonzogno M, Rev .Lat- Am. Enf., 15 (6) (2007): 1092-1098.
11. Allen DE and Tanner KD, Cell. Biol. Educ., 2(2003):73-81.
12. Felder RM, Silverman LK, Engr. Educ.,78(7) (1998):674-681.
13. Powell K,Nature,425(2003):234-236.
14. Tanner KD, Chatman ES and Allen DE, Cell Biol.Educ.,2 (2003):1-5.