Best Teaching Practices Conference

Teacher ID: BTPC07_07

SUBJECT: BIOLOGY

Class: X

TOPIC: Exploring our Nervous System

OBJECTIVES: Use Information Technology to enable the students to:

- **Explain** the general functions (Four Functions) of the nervous system.
- **Identify** the two main parts of the Central Nervous System.
- **Describe** the structure of a neuron and describe the functions of each major part.
- **Distinguish** between sensory neurons (receptor), motor neurons and interneuron.
- **Describe how** the central nervous system is protected from injury.
- **Describe the structure** of the spinal cord and its major functions.
- **Describe the structure** of a spinal nerve.
- **Explain** the role of neurotransmitters in transmitting a signal across a synapse.
- **Explain how** information passes from one neuron to another.
- **Describe** the roles of the sensory and motor divisions of the peripheral nervous system.
- **Distinguish** between the somatic nervous system and the autonomic nervous system.
- **Distinguish** between the sympathetic division and the parasympathetic division.
- **Summarize** a spinal reflex (The Patellar Reflex).

Methodology: An IT integrated lesson, the teaching strategy is as follows:

- Introduction of lesson through brain storming using the **SMART BOARD**
- **Using Human Anatomy Atlas CD** to show the positioning of the nervous system
- **Using the Human 3D CD** to show the
  - three dimensional view of the human body showing the different parts of the nervous system
  - Three dimensional view of the human brain showing its different parts
  - Total number of nerves in the body
  - Structure of a neuron
- **Teaching the Lesson through a pre-designed lesson by the Edurite Group.**

  This helps in generating interest in the students and also the visual effects give a clearer concept. The multiple choice questions given alongside help in revising concepts and assess the learning outcomes.

- **Power point presentation**
  - highlighting the main points of the lesson
  - Labeled diagrams of the human brain and the neuron that can be drawn by the students. These can be downloaded from the net
  - A diagram showing the relation between the parts of the brain and muscular coordination
  - Short questions for recapitulation
  - Homework exercises
- Using the SMART board/e-beam technology along with the presentation. This can be done while teaching the lesson as well as for testing/evaluation. While teaching this can be used to:
  - Highlight the main points
  - Draw diagrams
  - Write on the board
  - Store the notes for further use
  - Use different colors on the board
  - Use lines of different thickness
  - Many more such applications that make the lesson easier and more interesting
- Make a mind-map/concept map after the chapter is complete.
- Using the net for online exercises/tests on the module from the Lessons in Biology site

Project on Brain Diseases: Students to work in groups of four to find out information about the different types of brain diseases and present their findings in form of power point presentation. They shall be guided towards specific case studies. They shall interact with their group members via the net and also submit their projects on line/e-mail to the teacher for guidance and modification.

Conclusion: Teaching though technology is indeed an effective method to engage the students in the classroom as they relate to it with interest. It breaks the monotony of teacher talk and gives students time to imbibe the learnings and reflect on the outcomes. Various technological tools can be used depending upon the requirement and the situation. In fact, a lesson can be taught in different ways. A teacher can be very creative in designing lessons. A lot of information already available on the net can be made use of. In fact, lessons can directly be taught through the internet. This also updates our knowledge and gives us a chance to share our teachings/learnings with fellow teachers.

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This worksheet has been downloaded from the net

Chapter No. 7 **Class X: Biology** **Reference: NCERT text**
Topic: Control and Coordination **Teacher: Ms Manju Sethi**
Date: **Class work**

1. The brain and the spinal cord are the:
   a. peripheral nervous system c. central nervous system
   b. sympathetic nervous system d. parasympathetic nervous system

2. What is the basic functional unit of the nervous system?
   a. cell body b. reflex arc c. neuron d. neutron

3. Which of the following is true?
   a. Dendrites carry information toward the cell body. c. Axons carry information toward the cell body.
   b. Dendrites carry information away from the cell body. d. None of the above

4. Neurons carry information through the body in the form of
   a. nerve impulses. b. dendrites. c. axons. d. nerve fibers.

5. Which neurons conduct information toward the central nervous system?
   a. sensory neurons b. motor neurons c. interneurons d. none of the above

6. Neurons with myelin sheath conduct nerve impulses
   a. faster than neurons without myelin sheaths. c. slower than neurons without myelin sheaths.
   b. at the same speed as neurons without myelin sheaths. d. in greater numbers than neurons without myelin sheaths.

7. Messages take the form of electrical signals, and are known as
   a. sensory neurons b. nerve impulses c. motor neurons d. reflex arc

8. What are the spaces between adjacent neurons called?
   a. reflex arc b. effector c. synaptic cleft d. resting potential

9. What is the function of neurotransmitters?
   a. hurl neurons through synapses to create new nerve impulses
   b. chemically link neurons across the synapse to conduct impulses

c. receive and transmit ultrasound waves across synapses
d. none of the above

10. If you accidentally touch a hot stove, you pull your finger away before the impulse is relayed to the
a. spinal cord b. effector c. brain d. receptor

Fill in the blanks with the correct word:

1. A(n) _____ is an automatic response to a stimulus.

2. The _____ is the basic functional unit of the nervous system.

3. Within the spinal cord, motor and sensory neurons are connected by _____.

4. A(n) _____ is a chemical substance that is used by one neuron to signal another.

5. _____ hormone in humans is known as the 'fight or flight" hormone.

6. Deficiency of _____ hormone cause goiter.

7. Plant responses are regulated by chemical substances called _____.

8. _____ movements in plants are independent of growth .

9. Two growth promoting hormones in plants are _____ and _____.

10. _____ hormone in plants inhibits growth.

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Exercise that can be attempted using the SMART BOARD

1. Mind mapping:
Mind maps are a way of creating memory (i.e., learning) in a way similar to that of the brain by presenting information in a visual and connected form. Mind maps contain information in a predigested form which the memory can most easily assimilate and access. Mind maps appeal to the right side of the brain which processes colours, relationships, pictures and symbols. Using mind naps can increase your understanding of information and boost your recall of it dramatically.
TRY THIS
Develop a mind map that summarizes the information about the brain that you have just learnt.
TIPS:

- Use curved lines- they are easy to write on.
- Draw connecting lines like branches.
- Use unlined paper and place it horizontally.
- Relax and use your imagination to create your map.
- Use nouns, verbs and adjectives.
- Use upper case for key words and lower case for those that branch out.
- Use at least three colours to decorate your map.
- Use your own codes, arrows and symbols.

2. In your presentations is a slide showing your **Left mode and Right mode indicators**. Copy this table in your notebook. Use a five 'x' grading scale (x = not very comfortable with this type of action and xxxxx = very comfortable with this type of action.) to grade each of the actions in the table. Did you have more 'x's in the left or the right hemisphere column? This gives you an indication of which areas you feel you are most comfortable with in your learning.

The Left Hemisphere	**The Right Hemisphere**
Processes language, numbers and symbols	Processes pictures and images
Like to *tell* how	Likes to *show* how
Responds to being told what to do	Responds to being shown how to do
Solves problems sequentially	Solves problems with hunches
Prefers talking and writing	Prefers essay tests
Reads articles first	Sees picture first
Follows instructions step by step	Plays it by 'ear'
Is punctual and organized	Is intuitive
Is a mismatcher (looks for differences)	Is a matcher
Controls feelings	Is free with feelings
Follows direction	Is creative

3. Analgesics such as paracetamol and aspirin act on the brain to deaden the sensation of pain. What are the advantages and disadvantages of this?