

Objectives: microscope essay sample



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After performing this activity, you should be able to:

1. handle the microscope properly;
2. identify the parts of the microscope;
3. describe what parts of the microscope can do;
4. prepare materials for microscope study;
5. focus the microscope properly;
6. compare the image of the object seen by the unaided eye and under the microscope;
7. compute for the magnification of objects observed under the microscope.

Procedure:

A. THE MICROSCOPE, ITS PARTS AND THEIR FUNCTIONS

1. Get the microscope from its box or the cabinet. Do this by grasping the curved arm with one hand and supporting the base with the other hand.
2. Carry it to your table or working place. Remember to always use both hands when carrying the microscope.
3. Put the microscope down gently on the laboratory table with its arm facing you. Place it about 7 centimeters away from the edge of the table.
4. Wipe with tissue paper or old t-shirt the metal parts of the microscope. Q1. What are the functions of the base and the arm of the microscope?
5. Figure 1 shows a light microscope that most schools have. Study and use this to locate different parts of the microscope.

6. Look for the revolving nosepiece. Note that objectives are attached it. You should know that there are lenses inside the objectives. Q2. What have you observed about the objectives?

Most schools have light microscopes with three objectives. Others have four. Usually, the shortest one marked 3x, 4x or 5x is called the scanner. The low power objective (LPO) is marked 10x or 12x while the high power objective (HPO) is marked 40x, 43x or 60x. The objectives magnify the object to be observed to a certain size as indicated by the 3x, 10x or 40x, etc. marks. If the longest objective of your microscope is marked 97x or 100x or OIO or the word “oil” on it, then it has an oil immersion objective (OIO). This objective is used to view bacteria, very small protists and fungi. The OIO requires the use of a special oil such as quality cedarwood oil or Cargille’s immersion oil.

7. Find the coarse adjustment. Slowly turn it upwards, then downwards. Q3. What is accomplished by turning the coarse adjustment upwards? downwards?

8. Looking from the side of the microscope, raise the body tube. Then, turn the revolving nosepiece in any direction until the LPO is back in position. You will know an objective is in position when it clicks. Note that the revolving nosepiece makes possible the changing from one objective to another. Q4. What is the other function of the revolving nosepiece?

Q5. Which part connects the eyepiece to the revolving nosepiece with the objectives?

9. Locate the eyepiece. Notice also that it is marked with a number and an x. Know that the eyepiece further magnifies the image of the object that has been magnified by the objective. If the eyepiece is cloudy or dusty, wipe it gently with a piece of lens paper.

10. Look through the eyepiece. Do you see anything?

11. Now, locate the mirror. Then, position the microscope towards diffused light from the windows or ceiling light. Look through the eyepiece and with the concave mirror (with depression) facing up, move it until you see a bright circle of light. The bright circle of light is called the field of view of the microscope. Adjust the position of the mirror so that it is not glaring to the eyes. Practice viewing through the microscope using both eyes open. This will reduce eyestrain. Q6. What are the two functions of the eyepiece?

Q7. Describe the function of the mirror.

12. Locate the diaphragm. While looking into the eyepiece, rotate the diaphragm to the next opening. Continue to do so until the original opening you used is back under the hole in the stage. Q8. What do you notice as you change the diaphragm openings? Q9. What can you infer as to the function of the diaphragm?

13. Find the inclination joint.

Q10. What parts of the microscope are being connected by the inclination joint?

14. Grasp the arm and slowly pull it towards you. Sit down and try looking through the eyepiece. Q11. What does this movement do?

B. MAKING A WET MOUNT

A specimen is a part or sample of any material e. g. plant, animal, paper or mineral, for study or examination under the microscope. Specimens should be small and thin for light to pass through them.

15. Cut out a small letter “ e” from a newspaper page. Using forceps or tweezers place it in the center of a glass slide in an upright position. Q12. Describe your specimen. Explain why you are using this kind of material.

16. Add a drop of tap water over the specimen. It will act as a mounting medium and make clear the image of the specimen. Position the cover slip at 45° with one side touching one edge of the water on the slide (Fig. 2).

17. Slowly lower the other edge of the cover slip until it rests on the water and the printed letter. Bubbles are perfect circles you see on your preparation. Remove or minimize trapped bubbles by gently tapping the cover slip with the eraser-end of a pencil. Make the bubble move towards the edge of the cover slip.

C. OBSERVING SPECIMENS

18. Put the slide on the stage. Make sure that the letter is in the center of the hole in the stage and under the LPO. Hold it firmly with the stage clips.

19. Watching from the side, carefully lower the body tube until the end of the LPO almost touches the cover slip.

20. Look through the eyepiece. Slowly turn the coarse adjustment upwards to raise the objective until the letter “ e” appears. Continue until you see the

letter clearly. This would indicate that you have focused it already. Q13.

Describe the position of the letter as seen under the microscope. Q14.

Compare the image of the letter that you see using your unaided eye with what you see through the microscope.

21. Look through the microscope again. Slowly move the slide to the right, then to the left. Q15. To which direction does the image move?

22. Move the slide to the center. To shift to the HPO, raise the body tube first. Looking from the side turn the revolving nosepiece to put the HPO in place. Then, using the fine adjustment slowly lower the objective till it almost touches the cover slip. Looking through the eyepiece, turn the fine adjustment until you see the clearest image. Q16. Why do you have to watch from the side when changing objectives? Q17. Why should the fine adjustment knob be used only with the HPO? Current microscope models are said to be parfocal. This means the image in clear focus under the low power objective, remains focused after shifting to HPO. If the microscope you are using is not parfocal, slightly turn the fine adjustment knob in either direction to get a clear picture.

23. Look through the eyepiece again. Then, shift to the LPO, and scanner carefully observing the image of the letter. Q18. In which objective/s can you see the whole letter " e"? Q19. What are the advantages of using the HPO? the disadvantages? Q20. In which objective is the light darker? brighter?

D. MAGNIFYING POWER OF THE LIGHT MICROSCOPE

Can you recall the functions of the objectives and the eyepiece? The

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magnification of a specimen can be calculated by multiplying the number found in the eyepiece with the number found on the objective being used. So, if a specimen is viewed using a 10x objective and a 10x eyepiece it will be magnified 100 times.

24. Examine the numbers indicated on the eyepiece and scanner. Q21. How much is the letter " e" you are now viewing under the scanner magnified? under the LPO? Under the HPO? Q22. If a cell being observed has been magnified 200x under the HPO, what is the magnifying power of the eyepiece used? Q23 . In what ways would the microscope contribute to the study of different objects and organisms?

25. After using the microscope, lift the stage clips to remove the slide from the stage. Wash and wipe or air dry the slide and cover slip. Keep them in their proper places. Dispose trash or other materials properly.