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Microscope mania student worksheet

LESSON PLAN Teachers: Jennifer Park Lesson Title: Microscope Mania Lesson Length: 60 Minutes Name of Course: Biology Grade Level: 9th Grade Honorable or Regular or Magnet: Regular Source of Lesson: gk12/lessons/LabSkills/Lesson%20Plan-Basic%20Skills%20of%20Microscopy.doc TEXT PROCESSED: (1) Scientific Processes. The student conducts at least 40% of the teaching time through field and laboratory studies using safe, environmentally friendly and ethical practices. The student is expected to: (A) Demonstrate safe practices in field and laboratory studies (2) Scientific processes. The student uses scientific methods in field and laboratory studies. The student is expected to: (B) Collect data and make measurements accurately (5) Science concepts. The student knows how the organism grows and how specialized cells, tissues and organs develop. The student is expected to: (A) compare the cells of different parts of plants and animals, including roots, stems, leaves, epithelia, muscles and bones, to show the specialization of structure and function; The concepts Many organisms and biological structures are too small to be seen with the naked eye. Biologists often use a light microscope to observe such samples. The light microscope is used to enlarge the sample, and the magnifying is usually accompanied by a better resolution (capable of separating two dots into two separate and separate points). We studied the functions of the primary parts of the microscope and learned how to use it to observe and identify differences and similarity between plants and parts of animal cells. Performance or learner results Students can: · Identification and identification of the function of the basic parts of the microscope · Discover basic light microscopian skills such as carrying a microscope, refining the microscope, preparing the slide and determining magnifying. · Use a microscope to identify cell parts. · Compare and shade plant and animal cells Required resources, materials and accessories · Combination microscope (one for each group of four) · Classroom slide set (approx. 16 clean slides per group) · Thick crayon · Cover tags · Class set of scientific prepared slides · Toothpicks · Onion · Water · Jodi · blue · Disposable beanies · Gloves Safety considerations Students should be careful when handling slides and handling microscopes. Students should also treat iodine and methylene blues with great care, as they may be harmful when swallowed, inhaled or skin contact (students should wear gloves when working with these chemicals). They can also cause eye irritation. Students should warn the teacher about the leakage of chemicals. Additional materials, handouts Parts of light microscope transparency Parts light microscope Parts lab spreadsheet Microscope Mania word search and make-a-word challenge tables Engage: Teacher Does Displays images that can only be detected through a microscope, such as epithelial cells, bacteria, etc. Tell students that today they learn how to use microscopes to see organisms and structures that are too small to be seen with the naked eye. Time: __5__ minutes questions Can you tell me what this is a picture of? What are several things that are common in all these images? Student reactions/misunderstandings Cells, bacteria, etc. Explore: The teacher does first, go through the parts of the Light Microscope spreadsheet with students (transparency above). Save the section over magnifying power for later. Review the safety rules for microscopes, slides, in particular iodine and methylene treatment, before the start of the laboratory. Emphasize that students need to wear gloves to continue in the lab. Start a lab and walk around the classroom and track the progress of each group. *Note: If it appears that class time runs out before performing a laboratory exercise, half of each group prepares and examines onion cells, while the other half works in cheek cells. Then, at the end, students can exchange and explain their findings to each other. Time: __40__ minutes questions What is the function of a rough control knob? Eyepiece? Etc. How should the microscope be carried? What should you do if you break a prepared slide/ spill chemicals / are in direct contact with chemicals? When should you wear gloves? Where should you start researching slides? What knob are you turning to move the stage away from the goal? Which scientific prepared slide did you choose? What do you find most interesting about the slide you're watching? Describe the general shape of onion/cheek cells. What is the purpose of dyeing onion cells? Which parts of the onion cells were better visible after dyeing? Describe the similarities and differences between onions and cheek cells. How do you calculate the total magnifying? Student Misunderstandings Move the step up and down refinement; includes an eye lens, etc. Holding on to the arm and supporting the base. Tell the teacher, don't touch it. Before the start of step 10 of the laboratory instructions. With the lowest power target. Coarse control knob Different responses (E. coli, Salmonella, etc.) Different answers. Different responses to the visibility of parts of onion cells. Different responses Onion and cheek cells have both kernel and cytoplasm. Onion cells have cell walls and chloroplasts, while cheek cells do not (instead, there are cell membranes). Multiply the eye lens with the lens magnification. Explain: The teacher goes through the lab spreadsheet to make sure all students perform their lab work correctly. Go through how to calculate magnification. The large forecasting body for each goal is engraved on the side of the lens (e.g. 4x, 10x or 40x). The eye is the lens through which you look and usually enlarge the image 10 times. So, to calculate the overall magnifying, you would multiply the magnifying of the eye lens with an objective lens. Time: __15__ minutes questions 1. Describe what you observed in scientific made slides. (Select and select the questions from the lab spreadsheet you want to go through) What is eye lens magnification? What are lens magnifying? How do you calculate the total magnifying? For example, what is the total magnification of a plant cell observed in the 40X target? Explain the answer. Student responses/ misunderstandings Different answers. 10X 4X, 10X, 40X Multiply the eye lens with the lens magnification. 400X because 10X times 40X equals 400X. Expand/Develop: Teacher does If students are made before lab time, get them to work with Microscope Mania word search and word puzzle. Time: __0__ minutes students' answers/misunderstandings Assess: Teacher Whether students turn to lab spreadsheets for evaluation. Time: __0__ minutes Student answers Name: Date: Basic microscopic skills Materials: Procedure: 1. Remove the microscope from its closet and carry it upright by grabbing the arm and the other supported the microscope below its base. Place the microscope on the workstation. 2. Make sure the target is clicked in the low power (4x or 10x) position. To do this, turn the nosepiece until the small power is in the same alignment of the body tube. 3. Always start examining slides in the power start target. 4. Move the phase 1 cm from the target by turning the coarse control knob on the side of the microscope. 5. On the slide, type the normal size letter e with the crayon and it on the right platform and attach it to its place. Make sure e is on top of the light source so you can see the light shining in the e through the microscope. 6. Now that you are at the power level, turn the rough adjustment until you can concentrate. You should enlarge your letter. If you do not, gently move the slide on stage until the letter is surrounded by light. 7. Focus up and down to get the best picture. 8. Now take the scientific, prepared slide and study it. Always try to get the clearest picture. Draw the information that you see in the data form. This step is up to your teacher. 9. When you get the clearest picture, multiply the lens and eye lens magnification together to find the total magnification of the image. The lens of the eye is 10x, so only multiply 10 times the magnification of the objective lens. 10. WEAR GLOVES NOW BEFORE CONTINUING IN THE LAB. Prepare the wet fastening of the onion film. A. First take a thin layer of onion skin from the onion. B. Put it on the slide. c. Use a pipette to put a drop of iodine stain on it. d. Carefully place the cover slip on top, remembering to tilt it. E. Examine the cells at low, then medium power, then gently move the lens to high power. F. Draw a few cells that show what you observed at high power. 11. Next, prepare the wet attachment of the cheek cells. A. Use a toothpick to scratch the inside of your mouth. B. Carefully place it in the middle of the slide. c. Use a pipette to place a drop of methylene-sin stain on it. d. Repeat steps d-f from the skin directions of the onion. Data Table Total Magnification: _____ Onion and Cheek Cell Cells