Science Resource Package: Grade 8

Cells, Tissues, Organs and Systems: Interdependence Among Cells, Tissues, Organs and Systems

New Brunswick Department of Education
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Acknowledgements

The Department of Education of New Brunswick gratefully acknowledges the contributions of the following groups and individuals toward the development of the New Brunswick Science Resource Package for Grade 8 Cells, Tissues, Organs and Systems: Interdependence of Cells, Tissues, Organs and Systems:

- The Science Resource Package Development Team:
  - Jean Anne Green, School District 14
  - Lisa Martin, School District 18

- Science East:
  - Michael Edwards, Director of Programming
  - Karen Matheson, Director of Education

- Kathy Hildebrand, Learning Specialist, Science and Mathematics, NB Department of Education

- Science Learning Specialists and science teachers of New Brunswick who provided invaluable input and feedback throughout the development and implementation of this document.

Note that at the time of posting, all URLs in this document link to the desired science content. If you observe that changes have been made to site content, please contact Kathy Hildebrand katherine.hildebrand@gnb.ca, Science Learning Specialist, at the Department of Education.

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Educational Programs and Services
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Rationale

This resource package models current research in effective science instruction and provides an instructional plan for one topic selected from the Grade 8 Atlantic Canada Science Curriculum. This curriculum includes STSE (Science, Technology, Society and Environment) outcomes, Skills outcomes, and Knowledge outcomes – all of which are important for building a deep understanding of science and its place in our world.

As has been true of our ancestors, we all develop “explanations” about what we observe which may or may not be valid. Once ideas are established, they are remarkably tenacious and an alternate explanation rarely causes a shift in thinking. To address these misconceptions or alternate conceptions, students must be challenged with carefully selected experiences and discussion.

A key part of this instructional plan is accessing prior knowledge. It is recorded in a way that it can and will be revisited throughout the topic. The intent is to revise, extend, and/or replace students’ initial ideas with evidence-based knowledge.

Science is not a static body of facts. The process of exploring, revising, extending, and sometimes replacing ideas is central to the nature of science. Think of science as an ongoing evidence-based discussion that began before our time and that will continue after it. Science is often collaborative, and discussion plays a key role. Students’ learning of science should reflect this as much as possible.

The intent of this instructional plan is to encourage a constructivist approach to learning. Students explore an activity, then share, discuss and reflect. The telling of content by the teacher tends to come after, as an extension of the investigation (or experience) explored by the students.

The learning is organized into cycles. The partial conceptions and misconceptions are revisited in each cycle so that students’ ideas will be revised. Each cycle will result in deeper and/or extended learning.
Hands-on activities are part of the instructional plan. Inquiry activities tend to be most structured in the first cycle. The teacher provides the question to investigate and gives a procedure to follow. In subsequent cycles, less structure tends to be given. For example, students may be given a question and asked to develop an experimental plan which they then implement. The goal is to move towards open inquiry in which students generate a testable question, develop an experimental plan using available materials, implement the plan, record relevant observations, and make reasonable conclusions. The included activities are meant to start this journey.

Discussion and written reflections are key parts of the lessons. Discussion (both oral and written) is a vehicle that moves science forward. For example, when scientists publish their evidence and conclusions, other scientists may try to replicate results or investigate the range of conditions for which the conclusion applies. If new evidence contradicts the previous conclusions, adjustments will be required. Similarly, in this instructional plan students first do, then talk, then write about the concept. A section on supporting discussion is included in this resource package.

Assessment tasks are also included in the instructional plan and assess three types of science curricular outcomes: STSE, Skills, and Knowledge. These tasks are meant to be used as tools for letting the teacher and the students know where they are in their learning and what the next steps might be. For example: Has the outcome been met or is more learning required? Should more practice be provided? Is a different activity needed?

When assessment indicates that outcomes have been met, it will provide evidence of achievement. This evidence may be sufficient and further formal testing (paper-pencil tests) may not be required to demonstrate that outcomes have been met.
Background Information

Prior Knowledge:
In grade 5, students learned about the structure and function of the major organs in the major body systems. They also explored how the skeletal, muscular, and nervous systems work together.

In previous years students have explored the characteristics of life, as well as identifying variables, observation skills, recording data, and precise use of vocabulary.

In this grade 8 unit students have explored cell structure, function, and cell division.

Did You Know?
Living cells require oxygen and nutrients (food) and produce waste products. This is true of unicellular organisms such as yeast and multi-cellular organisms such as humans.

Yeasts are unicellular fungi. There are yeasts living in a wide variety of natural habitats. For example they live on plant leaves, flowers, soil, water, and skin surfaces. The yeast used in baking and alcohol fermentation is usually a strain of *Saccharomyces cerevisiae*.

Yeast cells require both food (a source of nutrients) and water for survival, reproduction and growth. The growth of yeast is also influenced by the pH and temperature of the environment. The presence or absence of oxygen and the presence of metabolic products that they make through fermentation (acids or alcohol) will also affect yeast growth.

When yeast metabolizes sugar one of the waste products is carbon dioxide gas. In an anaerobic (without oxygen) environment, it also produces ethanol (alcohol) as a waste product.

As unicellular organisms are in direct contact with their environment they can absorb nutrients and release waste products directly to the environment. However, most cells of multi-cellular organisms are isolated from the environment and so receive nutrients and release waste through systems with specialized functions (e.g. circulatory, digestive, and excretory).

Each system of the human body groups organs that work together. Each organ is made up of two or more different kinds of tissue, and each type of tissue is made up of similar cells working together.
**Instructional Plan**

**Access Prior Knowledge**

Ask students if anyone has made bread from scratch. An important step of making bread is letting the dough “rise”. What ingredient makes the dough “rise”? (Yeast) (Students may think of baking soda or powder – a good example of a chemical reaction.) *What is yeast? Is yeast alive?*

“Yeast is alive. What do you know about yeast?”

Tell students to do a placemat activity. A sheet of paper is folded into four sections diagonally. In groups of four, each student has a separate section in which to write what they know about yeast.

After a few minutes, the teacher indicates it is time to share at the group level. The group stars or highlights all their facts about yeast to share with the class. Groups could be given index cards or large sticky notes to print their facts on.

As groups share, create a class chart of what is known about yeast. Accept all ideas and record in a way that these ideas can be revisited in later lessons. Do not indicate whether the suggestions are correct or incorrect at this time. If students disagree with each other, allow them to express their thinking and reasons to each other. The tips on supporting class discussion on pages 15-16 may be helpful.

Students should realize that yeast exhibits characteristics of life.

**Assessment:**

Note the concepts and misconceptions students are expressing. You will need to know these to plan effective questions for subsequent activities and discussions so that students will examine and adjust their alternate conceptions.

**Post student versions of curricular outcomes on chart paper (see page 18). Inform students that these outcomes will be addressed over the next portion of the unit. Point out to students which outcomes are being addressed in each activity.**
Growing Yeast Activity

In this activity, the students will grow yeast. A balloon can be used to capture the resulting gas or the reaction can be done in a Ziploc bag.

The procedure given to the students should be slightly vague. After the experiment, this will provide the opportunity to discuss the importance of controlling variables and the variability between experiments.

Materials:
- Yeast
- Sugar
- Water
- 2 containers per group (plastic water bottle)
- Balloons or Ziploc baggies
- Masking tape
- Marker
- Timing device
- Spoons of various sizes

Have students use 2 water bottles. In each bottle they should place a spoonful of yeast, a spoonful of sugar and a scoop of water. A balloon is placed over the mouth of each bottle.

Have students make observations. They can decide how to measure and record their observations. They should notice if their two bottles have similar results. Students should compare their results to those of other groups.

A sheet with directions for students can be found on page 19. Fill in the time required for observation before using the sheet with students.
Teacher note: If you would like the students to have results quickly, use warmer water and/or provide a larger spoon for measuring sugar. When providing materials to groups, you could provide some groups with warm and others with cooler water to see what the difference is in terms of the reaction. If you would like to have the students leave their experiments overnight, provide students with cold water and smaller spoons for the yeast and sugar.

**Assessment:**
During student activity, make notes on outcomes (or parts of outcomes) you observe being addressed. Process skill outcomes are part of the curriculum and should be assessed. Using the observation chart or the checklist (on pages 22-24) on a clipboard may be helpful to you. Develop your own code for quick notes.

A suggested code:
- √ for observed and appropriate,
- WD - with difficulty,
- RTT - refused to try,
- A - absent.

This chart may be used on multiple days, using a different coloured pen or pencil each day and putting the date in the corner. You may not have a symbol or note for every child every day. Some teachers like to focus on a group or two each time. However you choose to make note of your observations, you will always have a sense of who you need to take more notice of and who might need extra support. The information will also help you when it is reporting time.

**Reflection: In small groups**
- Have students discuss in their groups: *What did you notice?* Have them rotate around room to look at other results. Or put containers on a table at the front to compare. Photos may be taken if discussion needs to happen next day.
- Ask students to find the group with results most unlike theirs and talk with that group to figure out what they did differently.

**Reflection: Class Discussion**
- Have a class discussion to determine what factors may have contributed to the variety of results (amount of yeast, sugar, water, temperature of the water, temperature of the room – especially if they were left overnight, how fast the balloon was put on or the baggie sealed, if there was a tight seal between the neck of the bottle and the balloon or the baggie)
- Ask students: What is happening to the sugar? Why does the balloon or bag inflate?

- Revisit the created list of facts about yeast (see page 4). Ask: Are there any items that should be added to or revised? Is there other information we could add? Remind your class about respectful discussion. See the tips on pages 15-16.

**Reflection: Journaling**

In their journals, have students describe the variability in experimental results observed in their classroom. Have them suggest reasons for the variability.

**✓ Assessment:**

Journal entries should not receive a score or mark. A positive comment followed by a question to refocus attention or suggest the next step in learning is very effective.

When reading the journal entries, note which students are getting the idea of experimental variables and the importance of controlling variables (being fair and consistent).
Factors That Affect Yeast Activity

From the last activity students learned that yeast needs food (sugar) and water. Based on the similarities and differences between the experiments done earlier, the students will design and carry out some experiments to see what has an effect on yeast growth. Students who have made bread may refer to their experience. What do you do with bread dough when you want it to rise? (Cover it and place the container in warm water or a warm place.)

Try to keep this activity as open as possible, allowing students to design their own experiments. Students can check with you before starting to make sure they are only changing one variable at a time.

If the rubric is to be used for assessing student work, it should be given to students and discussed before the investigation. Examples of previous experimental write ups should be displayed. If this is new to students, the process should be modeled by the teacher several times before expecting students to complete one independently.

Materials:
- Ziploc bags or containers (water bottles) and balloons
- Liquids such as water, juice, and/or pop
- Salt, sugar
- Ice, hot water
- Teaspoons, tablespoons, measuring spoons, measuring cups
- Yeast

Have students in small groups write a question concerning the growth of yeast that they could test. They should outline their procedure with projected amounts, how they will make measurements and record them, and/or time and make a prediction that reinforces their choice of variable.

Students then try it out. To get a variety, have a class chart where students record their choice before starting and record their observations and results. Seeing what other
groups are testing may also help groups struggling to design an experiment. (Digital photos of results may be helpful for sharing results with the whole class or referring to results on subsequent days.) If time remains they can try another variable or combination not already tried.

See what students come up with on their own to speed up or slow down the production of gas. If they are stumped, show them a box of materials they could choose from without explaining how they would use the materials. Possible experiments may include altering the amount of sugar such as doubling or halving; adding salt; using different liquids such as juice, Five Alive, vinegar; adding carbon dioxide by blowing into the container with a straw; using hot water; or ice water; adding food colouring.

Students should write up their question, materials and procedure to hand in.

Have students self-assess their write up before handing it in to you. Give students the guidelines (see “got it” column) and ask them to comment on how well their work meets each criteria. The third column will be for you to give feedback (see sheet on page 21).

**Assessment:**
On observation chart (or other record), note how students are performing on the skill outcomes.
Reflection: Class Discussion

- Have students share their results with the class and what that tells us about yeast.
- Revisit the created list of facts about yeast (see page 4). Ask: *Are there any items that should be added to or revised? Is there other information we could add?* Remind your class about respectful discussion. See the tips on pages 15-16.

Reflection: Journaling

What factors seemed to make the yeast produce the most gas? The least? Explain why these factors affect yeast the way they do.

Assessment:

Journal entries should not receive a score or mark. A positive comment followed by a question to refocus attention or suggest the next step in learning is very effective. Were students able to identify factors that positively and negatively affected the yeast? Could they provide explanations for why the factors had an effect on the yeast?
3rd Cycle

Curriculum Outcomes

211-4 Evaluating individual and group processes used in researching the roles of the main organ systems.
304-7 Explain structural and functional relationships between and among cells, tissues, organs and systems in the human body.
304-8 Relate the needs and functions of various cells and organs to the needs and functions of the human organism as a whole.

Activity – Similarities and differences between yeast cells and cells of the human body

- Ask students to think about a giant vat of yeast cells and the similarities and differences among the cells in that vat.
- Then ask students to imagine that a human was liquidized and the resultant mixture of cells was placed in a vat. What are the similarities and differences between the human cells?

This thinking/discussion can happen whole class or in small groups or a combination of those. When you determine they are ready, have individual students make a foldable from a square piece of paper. First they fold each corner of the paper to the center. They should label each flap as shown. Under each flap they list the characteristics of that category.

Teacher note: The cells from the two different organisms have the same needs such as oxygen, temperature, food and so on. In the yeast all of the cells look identical and have the same abilities and functions. With human cells, the different kinds of cells look
different from one another and have different functions depending on which part of the body they come from. In most multi-cellular organisms, cell function is specialized.

**Assessment:**
The comparison foldable can be collected. Note whether students have the idea that while cells all have the same needs, those in a multi-cellular organism are not all the same; instead they are specialized.

Storage options for foldables:

- Insert into a large zippered plastic bag. The bag can be hole-punched and put inside a duotang or binder. A strip of wide tape folded over the left edge of the bag before punching the holes will keep the bag from ripping
- Glue into notebooks or duotangs
- Display them on bulletin boards

**Focus on Cell Function in Humans**

- Create a class list on the blackboard/overhead/SMART board of the different types of cells found in a human, along with their function. Based on the created list of cell function, ask students:
  
  *Can you identify where within the human body system each function (and its specialized cells) will be found?*

This will introduce the idea of different organs, each with their own function. Cells doing the same function are often located in the same area, creating organs.

**Cell Employment Advertisement Activity**

Students will work in pairs for this activity. Ask students to imagine they are a human organ looking for additional cells to join it. Research from book or online resources is necessary.

List of suitable organs:
Salivary glands, Stomach, Liver, Pancreas, Gall bladder, Small intestine, Large intestine, Lungs, Heart, Skin, Kidney, Brain, Eyes, Thyroid gland, Spleen, Appendix, Pituitary gland, Pineal gland, Adrenal gland.
Instructions (also given on a sheet for students on page 20):

Are You the Right Cell for the Job?!

For this project you will be creating an employment advertisement for a cell to work in a specific organ. Your advertisement must meet the following requirements:

- "Help Wanted" heading
- Position Open (Which organ will the cell be working in?)
- Picture of Organ (can be taken from a print or electronic resource that is properly cited)
- Job description – must describe ALL duties of the organ
- Qualifications/Education – knowledge and skills needed to perform the job duties
- Compensation/benefits – how will the cell be paid? (Cells do not use money – be creative)
- No grammatical or spelling errors
- Neat and colourful
- Advertisement should fill an entire 8½ x 11 inch unlined paper
- A bibliography of sources used (other than textbook) should be included on the back of the paper. Note: You are required to use an additional source.

After all students have completed their ads, display them on the wall.

Assessment:
The advertisement can be assessed using the components which the assignment states should be included. The job description and qualifications will indicate the understanding students have about cell structure and function.

Reflection: Journaling

- Have students write about the individual and group dynamics while working together. Questions such as the following may help students focus:

  How did I contribute to the group?
  My group worked well by . . .
  Our working together could be improved by . . .
  Group members showed cooperation by . . .
Possible Extension Activities:

- Ask each pair of students to pick out one advertisement to respond to as a cell looking for work. They should write a letter of application stating why they are suited for the job, their job experience, and so on. A sample letter of application for a job can be found at:


- Students can interview applicants for the position of working in their organ. Students should compile a list of questions to ask applicants.
Supporting Class Discussion

No one person is as smart as all of us together.

Page Keeley, in the book “Science Formative Assessment” (2008), uses the analogy of ping-pong and volleyball to describe discussion interaction. Ping-pong represents the back and forth question-answer pattern: the teacher asks a question, a student answers, the teacher asks another question, a student answers, and so on. Volleyball represents a different discussion pattern: the teacher asks a question, a student answers, and other students respond in succession; each building upon the previous student’s response. Discussion continues until the teacher “serves” another question.

A “volleyball” discussion encourages deeper student engagement with scientific ideas. Students state and give reasons for their ideas. Through the interaction, ideas may be challenged and clarified. Extensions and applications of ideas may arise as well. Discussions should avoid the personal and always revolve around ideas, explanations and reasons. The goal is for students to achieve better understanding.

Share the ping-pong and volleyball analogies with your students. Good discussion takes practice. You and your students will improve. Many teachers find discussion works best if all students can see each other, such as in a circle, at least until they become accustomed to listening and responding to each other.

As the teacher, you will need to:
- establish and maintain a respectful and supportive environment;
- provide clear expectations;
- keep the talk focused on the science;
- carefully orchestrate talk to provide for equitable participation.

It is important to establish discussion norms with your class. Your expectations may include:
- Everyone has a right to participate and be heard.
- Everyone has an obligation to listen and try to understand.
- Everyone is obliged to ask questions when they do not understand.
- The speaker has an obligation to attempt to be clear.

At first, discussions are apt to seem somewhat artificial. Initially, a bulletin board featuring cartoon talk bubbles with suggested sentence starters may be helpful.

I respectfully disagree . . .
I had a different result . . .
Could you show how you got that information?
When I was doing ____, I found that . . .
Even though you said ____, I think . . .
The data I have recorded in my notebook is different from what you shared. I found . . .
It is helpful if teacher questions refer to a big idea rather than specifics. (Could humans and chickens move their bones without muscles?) Questions should be phrased so that anyone can enter into the conversation. Opinion questions are especially good for this (What do you think . . . ? What if . . . ? Why . . . ?). Provide plenty of wait time for students. Students give more detailed and complex answers when given sufficient wait time. Allow wait time after student responses. When students are engaged and thinking, they need time to process other responses before contributing. If the discussion is not progressing, have students engage in partner talk. Partner talk enables the teacher the opportunity to insert “overheard” ideas.

Helpful teacher prompts:
1. What outcome do you predict?
2. Say more about that.
3. What do you mean by . . . ?
4. How do you know?
5. Can you repeat what ____ said in another way?
6. Does anyone agree or disagree with . . . ?
7. Does anyone want to add to or build on to . . . ?
8. Who understands ___’s idea and can explain it in their own words?
9. Let me see if I have got your idea right. Are you saying . . . ?
10. So you are saying that . . .
11. What evidence helped you to think that?
12. Okay, we do not agree. How does each position fit the evidence? What else could we find out?

References:

Materials List

- Ziploc bags or containers such as empty water bottles - several per group for cycle 1 and 2
- Balloons – several per group for cycle 1 and 2
- Yeast – prepare for up to 4 tablespoons per group for each of cycle 1 and 2 (likely less)
- Liquids such as water, juice, and/or pop – depends on how many students add this in the 2nd cycle
- Salt
- Sugar
- Ice, hot water
- Teaspoons, tablespoons, measuring spoons, and other spoons of various sizes
- Measuring cups
- Timing device
- Masking tape
**Student Version of Outcomes**

208-1 Change questions or define problems so that they may be tested.

208-6 Plan an experiment and identify the major variables.

209-1 Carry out procedures controlling the major variables.

210-7 Explain why there may be different results in experimental data.

211-3 Work cooperatively with team members to develop and carry out a plan, troubleshooting problems as they arise.

211-4 Explain how well your group works together and what you do to support the group (planning, problem solving, decision making, completing a task).

304-4 Explain that the cell is a living system that exhibits all the characteristics of life.

304-7 Explain how structure and function are related for cells, tissues, organs and systems in the human body.

304-8 Compare the needs and functions of cells to the needs and functions of the whole human organism.
Growing Yeast

Using the 2 water bottles provided, in each bottle:

Place 1 spoonful of yeast
Add 1 spoonful of sugar
Pour 1 scoop of water
Place the balloon over the mouth of each bottle and observe for _____

What do you notice?
Are both of your bottles the same?

Look at results from other groups. Which group has completely different results from what you found? Talk to them to see what they did differently.
Are You the Right Cell for the Job?!

For this project you will be creating an employment advertisement for an organ. Your advertisement must meet the following requirements:

- “Help Wanted” heading
- Position Open (organ name)
- Picture of Organ (can be taken from a print or electronic resource that is properly cited)
- Job description – must describe ALL duties of the organ
- Qualifications/Education – knowledge and skills needed to perform the job duties
- Compensation/benefits – how the organ will be paid (Organs do not use money – be creative)
- No grammatical or spelling errors
- Neat and colourful
- Create Ad using MS Publisher OR Fill an entire 8 1/2 x 11 inch unlined paper
- A bibliography of sources used (other than textbook) should be included on the back of the paper. Note: You are required to use an additional source.

You will present your advertisement to the class. You must speak loudly and clearly and can not read directly from your paper. You should know the function of the organ without looking at your paper. Your presentation should be three to five minutes long. Please refer to the rubric for a breakdown of how each requirement will be graded. Originality and The WOW Factor will be rewarded!!
## Student Self-assessment

<table>
<thead>
<tr>
<th>“Got it”</th>
<th>Student self-assessment</th>
<th>Teacher feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question is <strong>stated clearly</strong> and in a <strong>testable</strong> form</td>
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<tr>
<td>Materials list includes all <strong>necessary</strong> and <strong>appropriate</strong> items.</td>
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<tr>
<td>Written steps <strong>are detailed</strong> and in <strong>sequential order</strong>. Steps are detailed enough that <strong>variables are controlled</strong>. Procedure <strong>could be replicated</strong>.</td>
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<tr>
<td>Spelling and grammar <strong>errors are absent or rare</strong>.</td>
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Observation Chart Sheet

Outcomes:

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## Checklist Sheet

<table>
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<th>Outcomes</th>
<th>Correlations with Cycles</th>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td><strong>SKILLS</strong></td>
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<tr>
<td>208-1 rephrase questions in a testable form and clearly define practical problems</td>
<td>2nd cycle: Mark/record observations factors that affect yeast activity; student write up; journal</td>
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<tr>
<td>208-6 design an experiment and identify major variables</td>
<td>2nd cycle: Mark/record observations factors that affect yeast activity; student write up</td>
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<tr>
<td>209-1 carry out procedures controlling the major variables</td>
<td>2nd cycle: Mark/record observations factors that affect yeast activity</td>
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<td>210-7 identify and suggest explanations for discrepancies in data</td>
<td>1st cycle: Mark/record observations through class discussion; journal</td>
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<tr>
<td>211-3 work cooperatively with team members to develop and carry out a plan, and troubleshoot problems as they arise</td>
<td>1st cycle: Mark/record observations growing yeast activity 2nd cycle: Mark/record observations factors that affect yeast activity</td>
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<tr>
<td>211-4 evaluating individual and group processes used in researching the roles of the main organ systems</td>
<td>3rd cycle: Journal</td>
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<tr>
<td><strong>KNOWLEDGE</strong></td>
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<tr>
<td>304-4 illustrate and explain that the cell is a living system that exhibits all the characteristics of life</td>
<td>1st cycle: class discussion</td>
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<tr>
<td>304-7 explain structural and functional relationships between and among cells, tissues, organs and systems in the human body</td>
<td>3rd cycle: Foldable; discussion; cell employment ad</td>
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<tr>
<td>304-8 relate the needs and functions of various cells and organs to the needs and functions of the human organism as a whole</td>
<td>3rd cycle: Foldable; discussion; cell employment ad</td>
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<tr>
<td>names</td>
<td>208.1 rephrase questions in a testable form and clearly define practical problems.</td>
<td>208.6 design an experiment and identify major variables.</td>
<td>208.9 carry out procedures controlling the major variables.</td>
</tr>
</tbody>
</table>
## Student Record

<table>
<thead>
<tr>
<th>Outcome goal</th>
<th>Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>I can change questions or define problems so that they may be tested. (208-1)</td>
<td></td>
</tr>
<tr>
<td>I can plan an experiment and identify the major variables. (208-6)</td>
<td></td>
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<tr>
<td>I can carry out procedures controlling major variables. (209-1)</td>
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<tr>
<td>I can explain why there may be different results in experimental data. (210-7)</td>
<td></td>
</tr>
<tr>
<td>I can work cooperatively with team members to develop and carry out a plan, solving problems as they arise. (211-3)</td>
<td></td>
</tr>
<tr>
<td>I can explain how well my group works together and how I support my group (planning, problem solving, decision making, completing a task). (211-4)</td>
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</tr>
<tr>
<td>I can explain how the cell is a living system that exhibits all of the characteristics of life. (304-4)</td>
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</tr>
<tr>
<td>I can explain how cell structure and function are related for cells, tissues, organs and systems in the human body. (304-7)</td>
<td></td>
</tr>
<tr>
<td>I can compare the needs and functions of cells to the needs and functions of the whole human organism. (304-8)</td>
<td></td>
</tr>
</tbody>
</table>