

# GRADE 9 SCIENCE: Meiosis Wind Chime

Summary of Learning Opportunity		
<p>Students learned about the process of meiosis and how it makes genetic variation possible. The teacher used direct instruction which included using diagrams from a textbook and video clips. Students were then tasked with creating a model of meiosis to demonstrate their understanding of the curricular content. Although the task seems straight forward, the teacher recognized and supported students' practice of aspects of literacy such as Applying Understanding and Communicating Ideas and Information. This task provided students with another opportunity to develop and practice transferrable literacy skills, which in turn further engaged and supported students in learning science content.</p>		
Curricular Competencies and Content	Science 9	<ul style="list-style-type: none"> <li>• Formulate physical or mental theoretical models to describe a phenomenon</li> <li>• Communicate scientific ideas, claims, information... for a specific purpose and audience, ...using appropriate scientific language, conventions, and representations</li> <li>• Sexual reproduction: meiosis</li> </ul>

Literacy Connections	Instruction and Assessment	Competencies and Content Developed, Practiced, and/or Assessed
LITERACY: Applies Understanding— Extracts ideas and information	<p>1. Students extracted information from the class lesson, their notes and textbook. Students asked questions of the teacher and their classmates to further check their understanding.</p>	Sexual reproduction: meiosis
LITERACY: Communicates Ideas and Information-- Expresses Ideas and Information	<p>2. Students built their windchime model illustrating the stages of meiosis.</p> <p>One concept which the teacher wanted students to realize on their own was that although colour selection did not matter, it was important for students to communicate their understanding of crossing over and independent assortment via their choice in where to place their selected colours.</p>	<p>Formulate physical or mental theoretical models to describe a phenomenon</p> <p>Communicate scientific ideas, claims, information... for a specific purpose and audience, ...using appropriate scientific language, conventions, and representations</p>
LITERACY: Communicates Ideas and Information-- Expresses Ideas and Information	<p>3. Students self-assessed how well they communicated their understanding of the stages of meiosis.</p>	Communicate scientific ideas, claims, information... for a specific purpose and audience, ...using appropriate scientific language, conventions, and representations

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## Proficient Student Work, Teacher Assessment, and Reflection

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### Teacher's Assessment

This student asked many questions when planning their model. They communicated their understanding of the stages of meiosis, even extending expectations by showing the breakdown and formation of the nuclear envelope. Practicing these literacy skills helped this student demonstrate proficient understanding of the content.

### Teacher's Reflection

Using the Learning Pathways helps me plan, teach, and assess in a much more holistic way. It also helps me design my teaching and assessment with a growth mindset. Rather than focusing on students' mistakes in understanding, I can emphasise the implicit skills they need in order to demonstrate proficient understanding.

Since demonstrating proficient understanding of the content requires students to think about how they will communicate through their model, I provided feedback by paraphrasing what students have communicated in class and through their model and checking to see if that is what they mean to communicate.

Overall, using the Learning Pathways and promoting demonstration of proficient literacy thinking and communication skills have helped the lessons and class discussions become richer and more interesting for the students.

### Teacher's Assessment

This student checked in with me to ensure that the information that they had extracted from their notes was accurate and in the correct order. They also worked to communicate how genetic variation is created in the 4 haploid cells. Practicing these literacy skills helped this student demonstrate proficient understanding of the content.

