

# ***Assessment in Inquiry-based Learning (IBL)***

(Part 2: More info and sample checklist,  
rated scale, worksheet, etc.)


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**By R&D Specialists, SEAMEO RECSAM**

# Objectives

1. To be aware of the current trends of classroom-based assessment.
2. To acquire knowledge and strategies in assessing inquiry-based learning (IBL) process involving planning, executing and criteria.
3. To apply appropriate methods and tools (e.g. rubrics, checklist, rated scale, worksheet, etc.) in assessing various forms of science learning through inquiry-based learning (IBL).
4. To examine how checklist, rated scale, worksheet, etc. can be adapted to promote assessment through IBL in science education.
5. To understand the concepts of assessment for/as/of learning.
6. To construct rubrics, checklist, rated scale and worksheet, etc. to assess primary science learning through IBL

# Inquiry continuum

	<div> <b>Teacher directed</b>  <b>Student directed</b> </div>		
	<b>Confirmation/ Structured</b>	<b>Guided</b>	<b>Open</b>
<b>Question formation</b>	Teacher poses topic, teacher poses question	Teacher poses topic, teacher poses main questions, students pose sub-questions	Students pose topic, students pose question
<b>Evidence</b>	Teacher provides data & information	Teacher provides data, students collect information	Students collect data, students collect information
<b>Findings/ argument</b>	Teacher provides explanation/argument	Teacher guides students in forming explanation/argument	Students formulate explanation/argument
<b>Communication</b>	Teacher provides steps for communicating findings	Teacher guides students in communicating findings/argument	Students choose mode and approach to communicating findings/argument

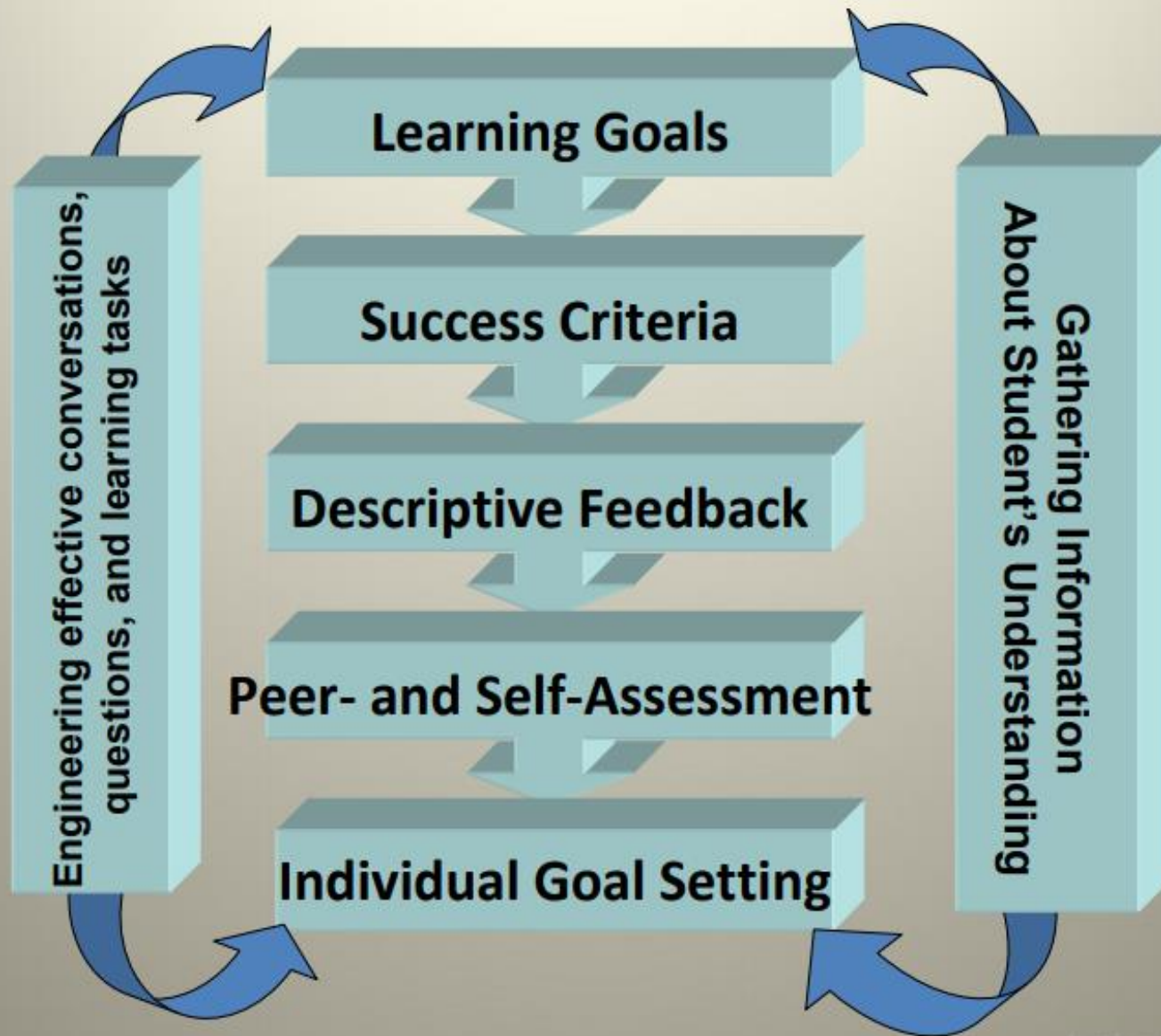
# Assessment Literacy

“Terms such as *diagnostic*, *formative*, and *summative*...have recently been supplemented with the phrases *assessment for learning*, *assessment as learning*, and *assessment of learning*.”

**“What matters is how the information is used.”**

Activate Windows

Dufournaud, A. & Piper, J. (n.d.). *Assessment For, As and Of Learning: Assessment Practices for Aboriginal Students*. Retrieved August 16, 2019 from <http://www.edu.gov.on.ca/eng/aboriginal/5AAssessmentPractices.pdf>





# Planning with the End in Mind

*What do I want  
them to learn?*

*How will I know  
they **are learning**  
it?*

*How will I  
design the  
learning so that  
**all will learn?***

## Assessment

How will students demonstrate their knowledge and skills **while they are learning?**

How will we monitor their progress?

Exit cards, journal entries, observation, conversations, ...

How will I plan with DI in mind?

What instructional strategies are appropriate for the learners in my class?

Adapted from the Ministry of Education, Ontario

The primary purpose of assessment and evaluation is to improve student learning

## Key Learning

- Learning Goals and Success Criteria are Foundational
- The active partner is what distinguishes AfL from AaL.
- If students are engaged in using the above to peer and self assess then AaL is happening

# Assessment *for* and *as* Learning

The policy states that teachers need to:

- ✓ share learning goals and success criteria with students;
- ✓ gather information about student learning using a variety of assessment strategies and tools;
- ✓ use assessment to inform instruction, and help students monitor their progress towards achieving their learning goals;
- ✓ give and receive specific and timely descriptive feedback about student learning; and
- ✓ help students to develop skills of peer and self-assessment.



# Assessment *for Learning* and as *Learning*

Establish where  
learners **are** in  
their learning

Establish what  
needs to be done  
to **get them there**

Establish where  
learners **are going**

## **Assessment for Learning**

The ongoing process of gathering and interpreting evidence about student learning for the purpose of determining where students **are** in their learning, where they **need to go**, and **how best to get there**. (p. 144)

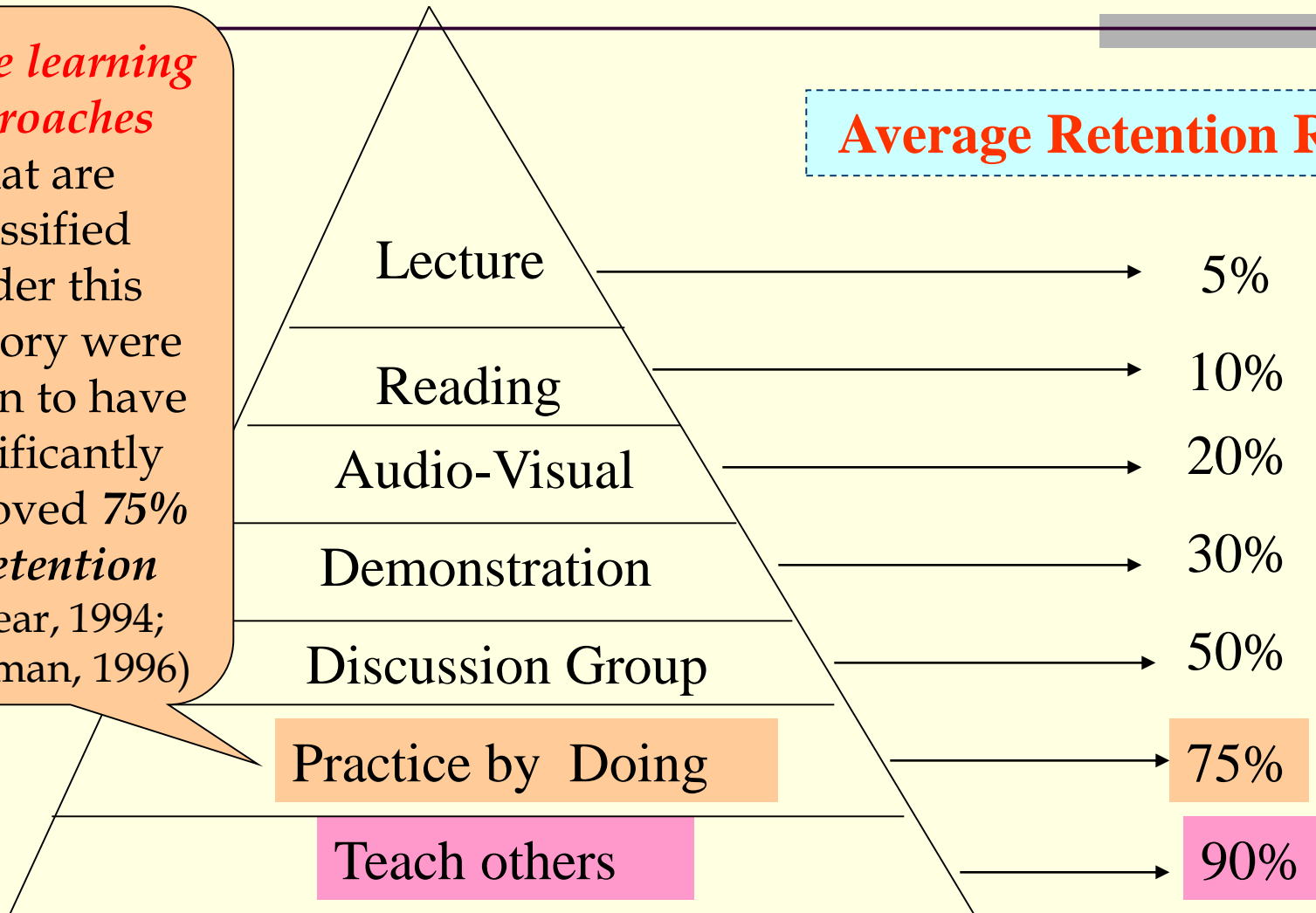
## **Assessment as Learning**

The process of developing and supporting student metacognition. Students are **actively** engaged in the assessment process; that is, they **monitor their own learning**. (p. 143)

# Learning Pyramid

*Active learning approaches* that are classified under this category were shown to have significantly improved **75% of retention** (Lazear, 1994; Silberman, 1996)

## Average Retention Rate



# Assessment of Learning

- The process of collecting and interpreting evidence for the purpose of summarizing learning at a given point in time, to make judgements about the quality of student learning on the basis of established criteria, and to assign a value to represent that quality. The information gathered may be used to communicate the student's achievement to parents, other teachers, students themselves, and others. It occurs at or near the end of a learning cycle. (p. 144)



Features	Formative	Summative
Alternate phrases used	Assessment _____ learning, _____ -assessment	Assessment _____ learning, _____ -assessment
Time in academic learning	_____ a course or project	_____ a course, semester, project or an academic year
Purpose/s	Probe _____ (diagnostic), provide _____ to learner, help teachers make _____ judgements based on students' _____	Measure _____ as regards outcomes, make appropriate _____ about _____, inform parents and administrators
Mediated through	Self, _____ and/or _____	Exam boards, external agencies
Outcome for learner/s	Present a _____ account of performance on various _____	Grades or _____ by non-biased, _____ personnel (experts)
Examples	Classroom _____, _____ probing students' _____, etc.	_____ -based assessment, unit _____, board _____, etc.

Activity 1: Sample cloze (an e.g. of worksheet) to assess understanding on Assessment

Features	Formative	Summative
Alternate phrases used	Assessment <i>for</i> learning, Forward-looking assessment	Assessment <i>of</i> learning, End-assessment
Time in academic learning	Throughout a course or project	End of a course, semester, project or an academic year
Purpose/s	Probe understanding (diagnostic), provide feedback to learner, help teachers make informed judgements based on students' understanding	Measure achievement as regards outcomes, make appropriate decisions about promotions, inform parents and administrators
Mediated through	Self, peers and/or teachers	Exam boards, external agencies
Outcome for learner/s	Present a reflective account of performance on various tasks	Grades or marks by non-biased, informed personnel (experts)
Examples	Classroom tests, tasks probing students' reasoning, etc.	Standards-based assessment, unit tests, board exams, etc.

## Building students' skills for learning to learn

***Formative assessment*** builds students' "learning to learn" skills by:

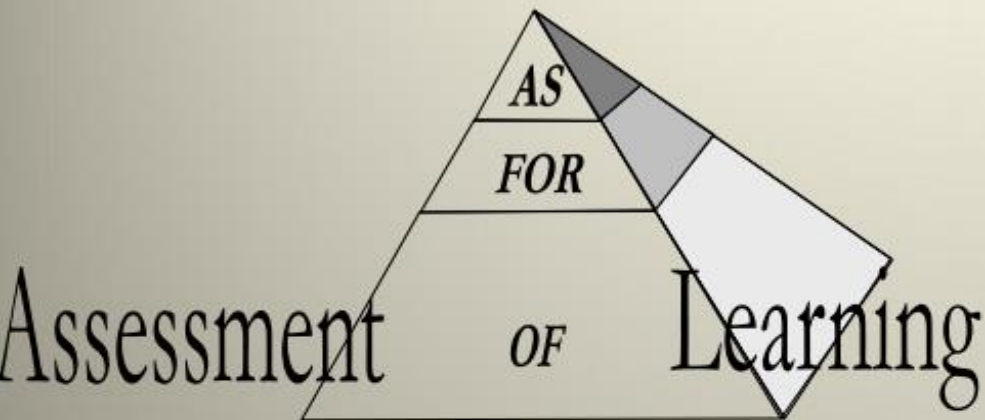
- Placing emphasis on the process of teaching and learning, and actively involving students in that process.
- Building students' skills for peer- and self-assessment.
- Helping students understand their own learning, and develop appropriate strategies for "learning to learn" (OECD, n.d.)

# Assessment

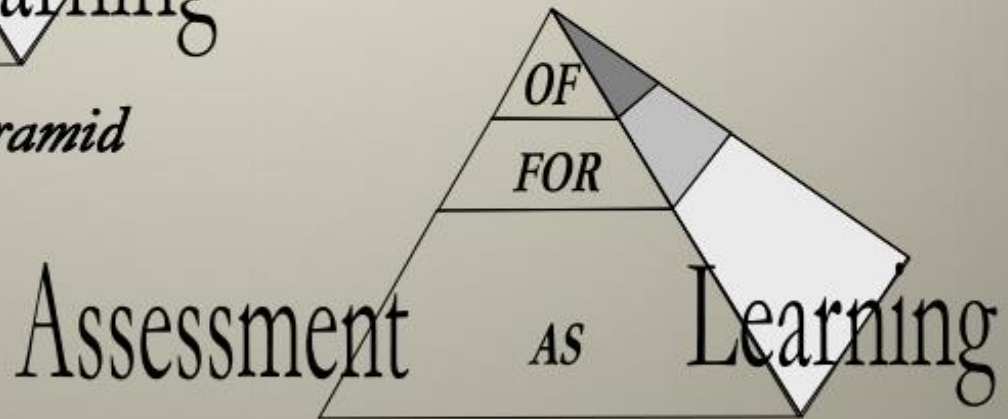
For Learning	As Learning	Of Learning
<ul style="list-style-type: none"> <li>•By teachers</li> <li>•to determine what to do next instructionally (strategies, differentiation)</li> <li>•To provide descriptive feedback to students (what they are doing well, what needs improvement and how to improve)</li> </ul>	<ul style="list-style-type: none"> <li>•By student</li> <li>•to determine what to do next in my learning (e.g. strategy, focus)</li> <li>•To provide descriptive feedback to peers and self (peer and self assessment)</li> <li>•Goal is to become reflective, self-monitoring learner</li> </ul>	<ul style="list-style-type: none"> <li>•By teacher</li> <li>•to determine student's level of achievement of overall expectations at a given point in time</li> <li>•As evidence to support professional judgment</li> </ul>

GS p. 31

# Shifting the Balance



*Traditional Assessment Pyramid*



*Reconfigured Assessment Pyramid*

[Link to Assessment for Learning Definition](#)

[Link to Assessment as Learning Definition](#)

Activate Windows

Dufournaud, A. & Piper, J. (n.d.). *Assessment For, As and Of Learning: Assessment Practices for Aboriginal Students*. Retrieved August 16, 2019 from <http://www.edu.gov.on.ca/eng/aboriginal/5AAssessmentPractices.pdf>



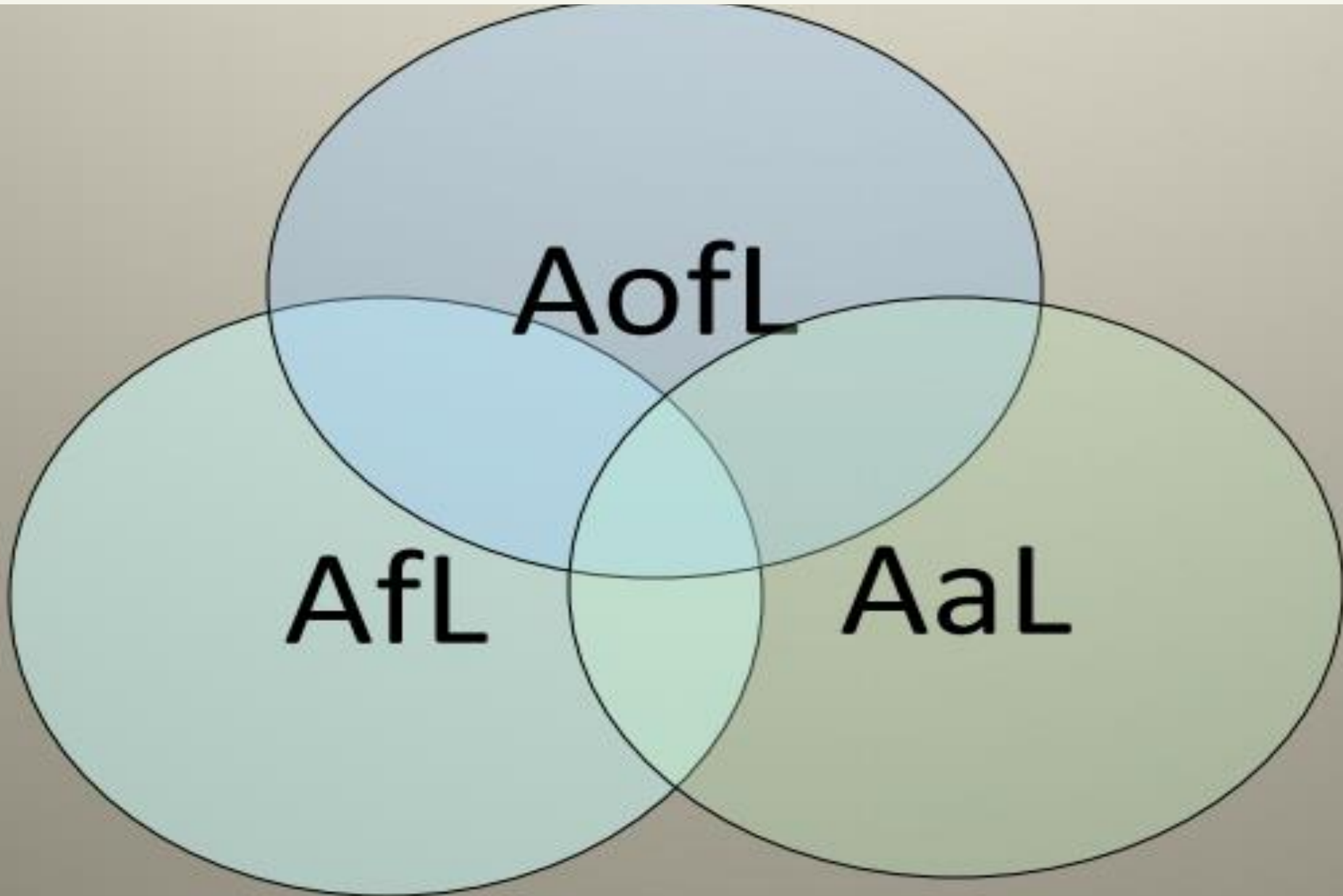
# What does it ..... and

Assessment	Look like	Sound like	Students can
For			
As			
Of			

	Assessment <b>For</b> Learning	Assessment <b>As</b> Learning	Assessment <b>Of</b> Learning
Who is the active partner?			
What is the information used for?			

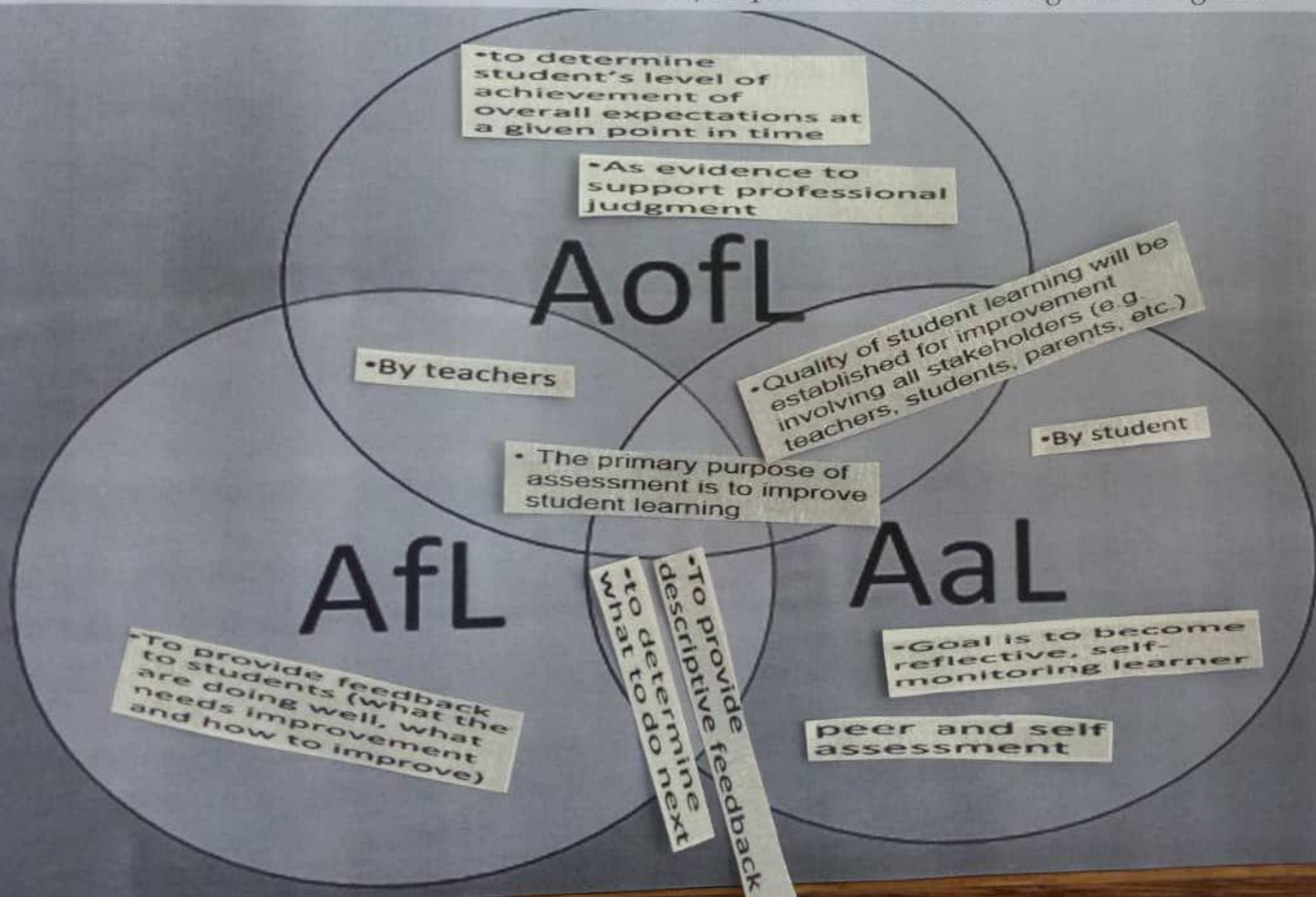
**Activity** (To gain better understanding of AfL, AaL and AofL)

Open the envelope with labels of statement. Decide in your respective team, where should each of the label (with different statement written on it) be placed on the following Venn Diagram.



**Activity** (To gain better understanding of AfL, AaL and AofL)

Open the envelope with labels of statement. Decide in your respective team, where should each of the label (with different statement written on it) be placed on the following Venn Diagram.



## **Activity** (To gain better understanding of AfL, AaL and AofL) (continued)

The following are the *labels of statements* for use in the Activity as aforementioned (Ppt p.5).

•By teachers

•By student

•Goal is to become reflective, self-monitoring learner

•Quality of student learning will be established for improvement involving all stakeholders (e.g. teachers, students, parents, etc.)

•to determine what to do next

•To provide descriptive feedback

peer and self assessment

•to determine student's level of achievement of overall expectations at a given point in time

•As evidence to support professional judgment

• The primary purpose of assessment is to improve student learning

•To provide feedback to students (what they are doing well, what needs improvement and how to improve)



# Assessment

<b>For</b> Learning	<b>As</b> Learning	<b>Of</b> Learning
<ul style="list-style-type: none"> <li>•By teachers</li> <li>•to determine what to do next instructionally (strategies, differentiation)</li> <li>•To provide descriptive feedback to students (what they are doing well, what needs improvement and how to improve)</li> </ul>	<ul style="list-style-type: none"> <li>•By student</li> <li>•to determine what to do next in my learning (e.g. strategy, focus)</li> <li>•To provide descriptive feedback to peers and self (peer and self assessment)</li> <li>•Goal is to become reflective, self-monitoring learner</li> </ul>	<ul style="list-style-type: none"> <li>•By teacher</li> <li>•to determine student's level of achievement of overall expectations at a given point in time</li> <li>•As evidence to support professional judgment</li> </ul>

GS p. 31

## YouTube

### Assessment For Learning vs. Assessment Of Learning

This video was produced as part of a partnership between NJIT and the NJDOE to provide support for NJ educators in the Online Professional Learning Exchange ...



<https://youtu.be/Q7QuQpMStS4>

## YouTube

### Module 2-Assessment FOR, AS, & OF Learning

A short module on the various types and purposes of assessment

## Assessment for Learning

"Assessment *for* learning is the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go, and how best to get there."

*(Growing Success: Assessment, Evaluation, And Reporting In Ontario Schools, p. 31)*

Descriptive  
Feedback

Coaching For  
Improvement

<https://youtu.be/Q7QuQpMStS4>



<https://youtu.be/upX9EqIF1Q0>

### YouTube

#### Assessing as learning in ACTION!

This video is a Facebook Live recording of assessing as learning in a secondary school setting. The recording features Ophelia H&PE Curriculum Consultant Joann...



<https://youtu.be/upX9EqIF1Q0>

<https://youtu.be/u5If-qMZqW0>

### YouTube

#### Assessment as Learning | Learning Beyond Letter Grades

In this module, you have the chance to explore the concept of assessment as learning. Much of what is done on the world of assessment is considered assessment...

- 2. What's the difference between:
  - Assessment of Learning.
  - Assessment for Learning
  - & Assessment as Learning?

*Assessment for Learning*  
IS FORMATIVE ASSESSMENT

#beyondlettergrades



<https://youtu.be/u5If-qMZqW0>



# Introduction to (2) checklist, rated scale, worksheet and Subsequent Group Activities

In the subsequent slides, you will be reintroduced to:

- (a) **timeline** and samples of assessment tools;
- (b) three **models of IBL**.

You are requested to do the following:

- (1) In your respective team, explore **how** the four **assessment tools** introduced could be **incorporated** in various IBL phases.
- (2) Refer the three models/phases of IBL. . Suggest **which phase of the IBL process** can be incorporated with the tools
- (3) Refer any learning output or those selected in last section:
  - (a) Draft checklist, rated scale, worksheets (referring the samples given or from web resources) to evaluate any learning output.
  - (b) Discuss in groups through blended-mode activities during these last four sessions of the course.

## (2) Checklist

### Section 1: TPACK Observation Checklist

- Observe the lesson
- Circle your rating of the teacher's TPACK application
- Make comments where you think it is necessary

TPACK OBSERVATION CHECKLIST		Poor	Good	Very good	Excellent	Comment
<b>A) Technological Knowledge (TK)</b>						
1	The teacher has essential technology tools for the lesson	1	2	3	4	
2	The teacher uses technology to support instructional strategies	1	2	3	4	
3	The teacher uses technology tools without any problems	1	2	3	4	
<b>B) Content Knowledge (CK)</b>						
1	The teacher exhibits a good mastery of subject matter knowledge	1	2	3	4	
2	The teachers presents relevant and accurate facts in relation to the topic	1	2	3	4	
3	The teacher provides a variety of references for the students to gain relevant content in MEIS subject(s)	1	2	3	4	
4	The teacher reinforces the topic lesson by providing assignments to students	1	2	3	4	
<b>C) Pedagogical Knowledge (PK)</b>						
1	The teacher knows essential pedagogical approaches for the lesson preparation and presentation (direct instruction, collaborative learning, problem-based learning etc)	1	2	3	4	
2	The teacher demonstrates an understanding of different styles of student learning	1	2	3	4	
3	The teacher structures the lesson to promote student learning	1	2	3	4	
<b>D) Technological Content Knowledge (TCK)</b>						
1	The teacher uses technology to demonstrate complex ideas that would otherwise be difficult to learn	1	2	3	4	
2	The teacher uses technology to allow students to observe things that would otherwise be difficult to be observed by the naked eye	1	2	3	4	

## Preparation Checklist

A variety of items need to be considered when you embark on a Challenge Based Learning experience. Depending on the circumstances surrounding your challenge, you may not need to consider all of these items or may need to add others.

- ☐ Read the Challenge Based Learning Classroom Guide and explore the website.
- ☐ Identify partners in other academic areas to work with. Meet with them to review the CBL process and discuss how to work together.
- ☐ Discuss the CBL process with your supervisor.
- ☐ Secure the needed permissions if your students will be leaving the school or working with community partners.
- ☐ Present the concept to parents.
- ☐ Set up or identify the online collaborative environment your students will use during the process.\*
- ☐ Complete a timeline and student contract documents.
- ☐ Analyze your curriculum scope and sequence and standards to determine how the challenge could fit.\*
- ☐ Analyze your schedule to determine how time will be used.
- ☐ Research potential big ideas from a local and global viewpoint.\*
- ☐ Determine how to introduce your students to the CBL process.
- ☐ Provide students with skills they will need for the challenge (group work, research, technical).
- ☐ Determine the potential student deliverables and how they will be assessed. \*
- ☐ Determine what technology is available for your students:
  - Computer (MacBook, iMac)
  - Video camera (iPod touch, iPhone, or built-in iSight camera on MacBook or iMac)
  - Digital camera (iPod touch or iPhone)
  - Audio capture (iPod touch and earphones with microphone)
  - Online research (iTunes U, iPad, apps)
- ☐ Identify the big idea.\*
- ☐ Identify the essential question.\*
- ☐ Identify the challenge.\*

\*Can be done ahead of time without students or with the students as a part of the process

(3) Rating scale

# Integrating authentic assessment with ICT and diagnostic assessment instrument

## Checklist for Investigative Field Work

<https://www.stem.org.uk/resources/elibrary/resource/25641/global-solar-partners>



Key for the rating scale depicting  
students' level of skills



- 1 Very poor
- 2 Poor
- 3 Moderate
- 4 Good
- 5 Very good or can be done most independently



# Science Across the World (SAW) Global unit

## Solar Energy

<https://www.stem.org.uk/resources/elibrary/resource/25641/global-solar-partners>

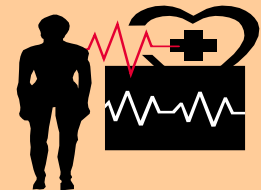
### Areas for the assessment of scientific skills

### (A) Skills in Planning, Implementing and Reporting Experiment(s)

#### (1) Planning/implementing experiments taking precautions

Students are able to ...

- follow instructions and carry out experiment systematically
- use scientific equipment & construct experiment correctly
- take necessary precautions for the health  
and safety aspects of experiments



# Science Across the World (SAW) Global unit

## Solar Energy

<https://www.stem.org.uk/resources/elibrary/resource/25641/global-solar-partners>

### Areas for the assessment of scientific skills

### (A) Skills in Planning, Implementing and Reporting Experiment(s)

## (2) Making observations

Students are able to ...

- use more than one senses to observe the events
- select and use simple instruments to enhance observations
- identify simple differences, e.g. hot/cold, long/short, etc.
- identify and describe simple variables that change over time, e.g.  
the changes of the length of shadow over time or the direction of sun.



# Science Across the World (SAW) Global unit

## Solar Energy

<https://www.stem.org.uk/resources/elibrary/resource/25641/global-solar-partners>

**Areas for the assessment  
of scientific skills**

**(A) Skills in Planning,  
Implementing and  
Reporting Experiment(s)**

### **(3) Measuring, estimating, using numbers & calculating**

Students are able to ...

- select the appropriate instrument for measuring data
- use standard & non-standard measures (e.g. rulers, graph paper)
- use appropriate units & quantify variables to the nearest division
- apply formula and use instrument to calculate quantities or determine relationships



# Science Across the World (SAW) Global unit

## Solar Energy

<https://www.stem.org.uk/resources/elibrary/resource/25641/global-solar-partners>

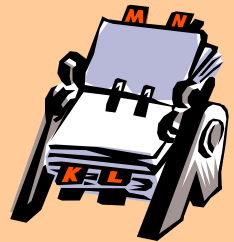
**Areas for the assessment  
of scientific skills**

**(A) Skills in Planning,  
Implementing and  
Reporting Experiment(s)**

### **(4) Collecting, recording and interpreting data**

Students are able to ...

- gather info. and record data systematically and accurately
- analyze data & organized by determining patterns/relationships
- read/explain tables, graphs, diagrams, and use it to answer questions
- interpret observations in terms of a generalized statement,  
e.g. as the time closer to the noon, the shorter the shadow, etc.





# Science Across the World (SAW) Global unit

## Solar Energy

<https://www.stem.org.uk/resources/elibrary/resource/25641/global-solar-partners>

**Areas for the assessment  
of scientific skills**

**(A) Skills in Planning,  
Implementing and  
Reporting Experiment(s)**

### **(5) Communicating ideas and presenting data**

Students are able to ...

- give or exchange information in many forms, i.e.  
verbally, orally and/or in writing
- describe and communicate observations, ideally through  
talking in groups or graphs and tables to summarize findings



# Science Across the World (SAW) Global unit

## Solar Energy

<https://www.stem.org.uk/resources/elibrary/resource/25641/global-solar-partners>

### Areas for the assessment of scientific skills

### (B) Skills in Using Information and Communi- cation Technology (ICT)

Students are able to ...

- locate the correct URL for SAW Global Unit “Solar Energy”
- communicate with SAW team and students via e-mail

[Refer also ASE-SAW website and other sub-topics =>

<https://www.ase.org.uk/resources/global-learning/>

<https://www.stem.org.uk/elibrary/collection/3023>

- follow the navigation tools & indicators to relevant sections
- enter data on the Solar Exchange Form and





sources ▾

Worksheets ▾

Reading Worksheets

Science Worksheets

Coloring Worksheets

Activities ▾

Dreamworks ▾

Education ▾

Teachers

You are here: [Home](#) ▸ [Common](#) ▸ [Body parts](#)



ICESTORM ISLAND  
50 NEW SCIENCE QUESTS [Play Now](#)

★★★★★

Average 4.5 out of 5 (1 Vote)

## Body Parts

JumpStart

Body Parts

Name the labeled body parts.



Body Parts

'Body Parts' is an elementary science worksheet that requires 4th grade kids to identify relatively advanced body parts like gall bladder, intestines, esophagus, spleen, and the likes. Without delving too deep into the smaller parts of each of the illustrated body parts, kids will learn the right way.

Browse more [science worksheets for 4th grade kids](#) online.

GET IT NOW!

## Body Parts

Check out Body Parts, our free science worksheet for kids! You can view, download, or print it here.

DOWNLOAD PDF

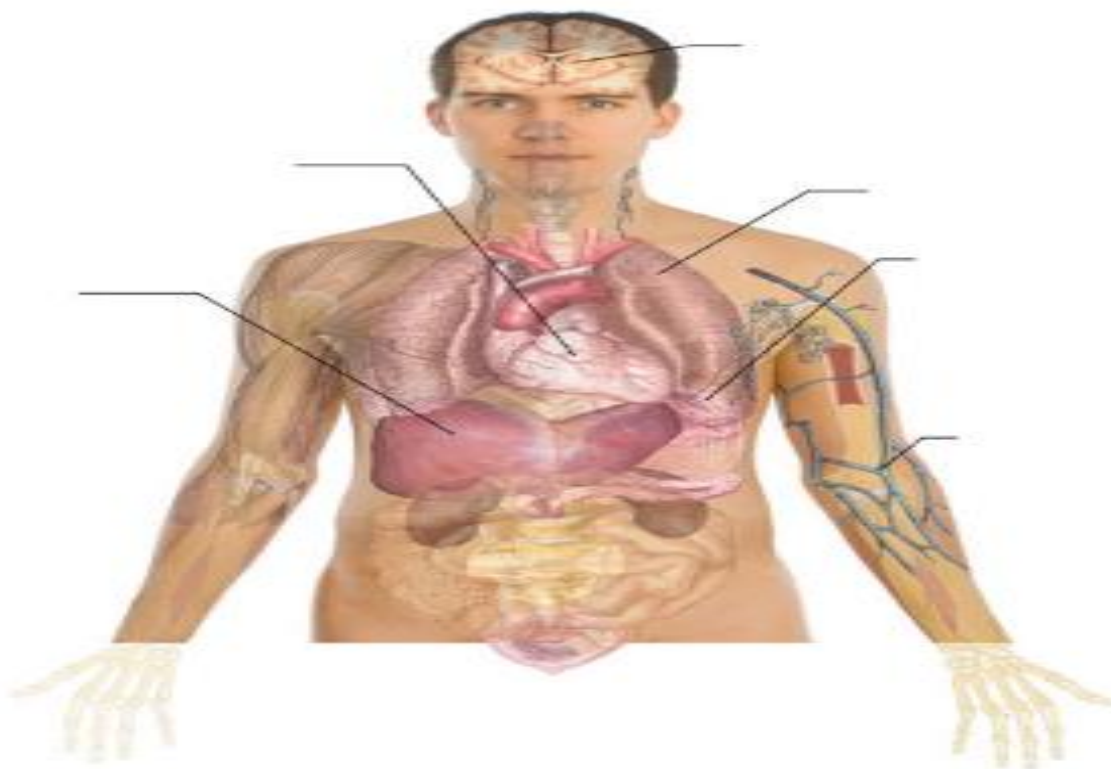
PRINT

JUMPSTART

4th Grade Science

### Body Parts

Name the labeled body parts.







Average 4.5 out of 5 (1 Vote)

## Liver Function

### Liver Function

The liver is one of the most important organs of the human body that performs a number of functions to keep the body in perfect condition. What are these functions and why are they so important? Your fifth grader is just about to find out! JumpStart's 'Liver Function' is a free printable life science worksheet that will teach your little ones about the human liver with the help of a diagram and brief paragraph of information. Put your kid's comprehension skills to test by encouraging her to complete the sentences based on her understanding of the information on the liver.

Also check out other [printable 5th grade worksheets](#) here!

**GET IT NOW!**

Color

Color

More settings

Print using system dialog... (Ctrl+Shift+P)



<http://www.jumpstart.com/common/liver-function-view>

function-view

Liver Function View - Free Printable Anatomy Worksheet for 5th Grade - JumpStart



PRODUCTS

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PLAY NOW

### The Liver and its Functions:

The liver is located in the upper right side of the abdominal cavity. It is located under the diaphragm and above the stomach, kidney and intestines. It is reddish-brown in color and the adult liver weighs 3 pounds. The liver produces bile which breaks down fat in the small intestine and helps in digestion. It also helps carry away waste. Liver produces cholesterol and special proteins, converts excess glucose into glycogen for storage, regulates blood levels of amino acids, process hemoglobin, converts poisonous ammonia to urea, clears blood of drugs and regulates blood clot among other things.

**Request a Demo**

First Name

Last Name

Phone

Email

School:

District:

City

State

/Province

**SUBMIT**

### Complete the Sentences:

The human liver is \_\_\_\_\_ in color. It produces \_\_\_\_\_ which breaks down fat in the small intestine and helps in \_\_\_\_\_.

It is located under the \_\_\_\_\_ and above the stomach, \_\_\_\_\_ and \_\_\_\_\_.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## Liver Function

Read the information about the functions of the liver and complete the sentences below.

### **The Liver and its Functions:**

The liver is placed in the upper right sand side of the abdominal cavity. It is located under the diaphragm and above the stomach, kidney and intestines. It is reddish-brown in color and the adult liver weighs 3 pounds. The liver produces bile which breaks down fat in the small intestine and helps in digestion. It also helps carry away waste. Liver produces cholesterol and special proteins, converts excess glucose into glycogen for storage, regulates blood levels of amino acids, process hemoglobin, converts poisonous ammonia to urea , clears blood of drugs and regulates blood clot among other things.



### **Complete the Sentences:**

The human liver is \_\_\_\_\_ in color. It produces \_\_\_\_\_ which breaks down fat in the small intestine and helps in \_\_\_\_\_. Liver regulates blood levels of \_\_\_\_\_. It is located under the \_\_\_\_\_ and above the stomach, \_\_\_\_\_ and \_\_\_\_\_.



Page 4.5 out of 5 (1 Vote)



### Plant a Tree

'Plant a Tree' is a plant worksheet that involves kids planting a tree and observing its life cycle. Besides learning about [plants and their life cycles](#), the printable plant worksheet will also help them grow an interest in the hobby of gardening. Choose a sapling for the activity that is easy to grow without any extra care.

Browse more [free printable worksheets](#) online.

**GET IT NOW!**

DOWNLOAD PDF

PRINT

JUMPSTART

Plants - Grade 4

### Plant a Tree

Plant a sapling and write down your observations from day 1 through day 10.

Day 1 \_\_\_\_\_

Day 2 \_\_\_\_\_

Day 3 \_\_\_\_\_

Day 4 \_\_\_\_\_

Day 5 \_\_\_\_\_

Day 6 \_\_\_\_\_

Day 7 \_\_\_\_\_

Day 8 \_\_\_\_\_

Day 9 \_\_\_\_\_

Day 10 \_\_\_\_\_







Worksheets ▾

Activities ▾

Dreamworks ▾

Educational

Common ▸ Biosphere Mix-Up Fix-Up



Average 4 out of 5 (29 Votes)

## Biosphere Mix-Up Fix-Up

### Biosphere Mix-Up Fix-Up

Whoops! Things seem to be out of place here. Can your 3rd grader use her knowledge of the biosphere to set things right? Once she's proved her understanding of the different biomes on Earth, let her pack for a trip around the world with the suggested activity at the end of this free science worksheet for 3rd grade.

Also check out these fun [science activities](#) for all grades.

**GET IT NOW!**

**Biosphere Mix-Up Fix-Up**

As you know, Polly has her fun by giving you clues. Read the descriptions of the biospheres below. Then, write the name of the correct biosphere on the line.

1 It's hot all year round. Every afternoon there's a rainstorm. Lots of lush green trees and plants are the result. Many animals live here.

2 It's hot all year round. Every afternoon there's a rainstorm. Lots of lush green trees and plants are the result. Many animals live here.

3 The nights are usually cold and clear. The days are burning hot. The sand blows into dunes.

4 Large water-filled hollows in the earth's crust. Home to many plants and animals.

5 Dry, grassy plain dotted with trees and shrubs. Home to many large animals, including elephants, zebras, and lions.

**Here's Help!**  
rain forest savanna desert ocean mountains

**Botley Says:**  
You've had a chance to visit each biosphere by now. On a separate piece of paper draw yourself in each biosphere above and put in a speech bubble to show what you would be saying.



Science—Comparing biosphere's attributes



### Biosphere Mix-up-Fix-up

As you know, Polly has her fun by giving you clues. Read the descriptions of the biospheres below. Then, write the name of the correct biosphere on the line.

1 It has different areas, or zones. Forests are at the lowest zone. Farther up is a zone of small plants. Snow covers the top, which is very cold.

2 It's hot all year round. Every afternoon there's a rainstorm. Lots of lush green trees and plants are the result. Many animals live here.

3 The nights are usually cold and clear. The days are burning hot. The sand blows into dunes.

4 Large water-filled hollows in the earth's crust. Home to many plants and animals.

5 Dry, grassy plain dotted with trees and shrubs. Home to many large animals, including elephants, zebras, and lions.

#### Here's Help!

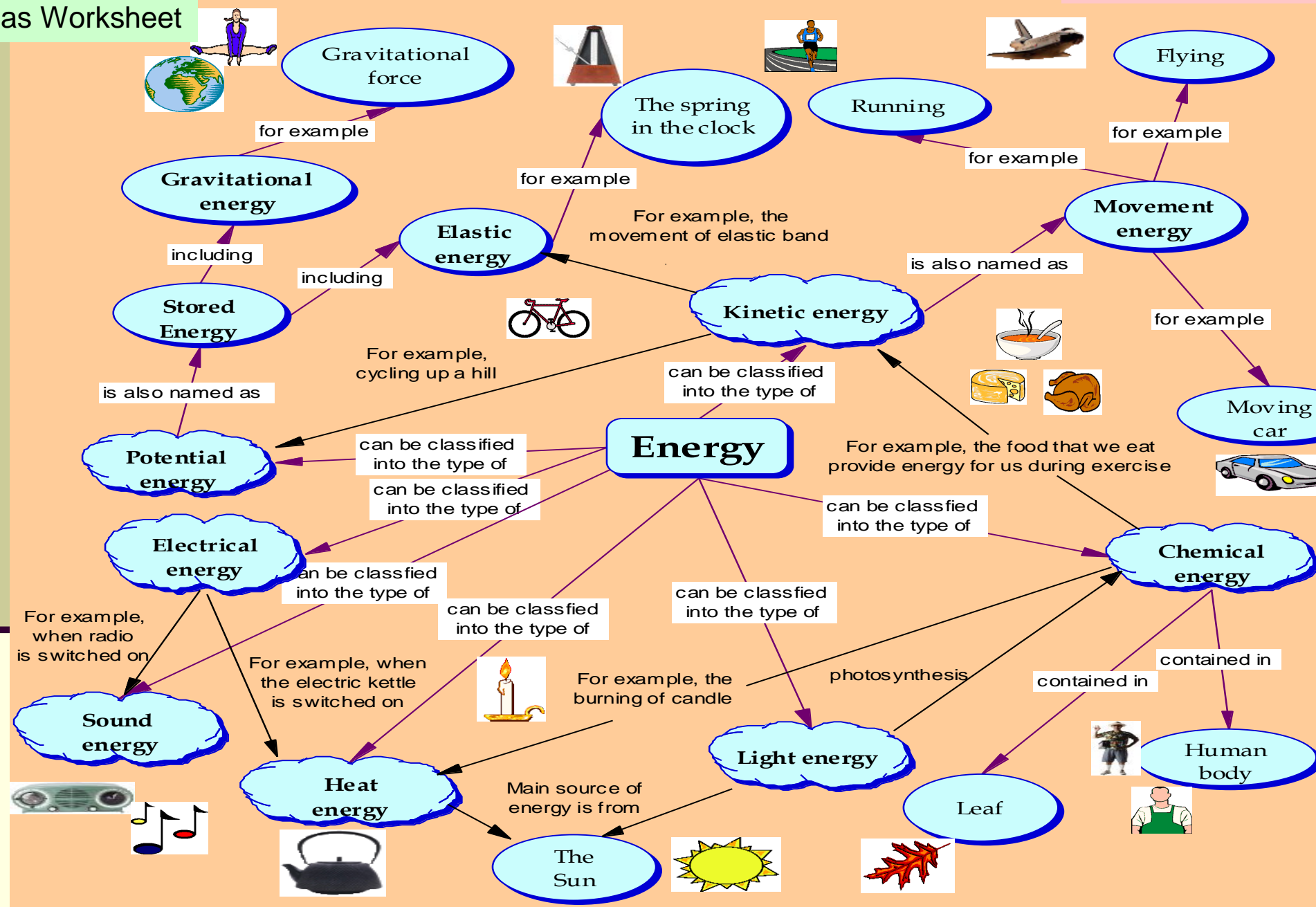
rain forest savanna desert ocean mountains



You've had a chance to visit each biosphere by now. On a separate piece of paper draw yourself in each biosphere above and put in a speech bubble to show what you would be saying.



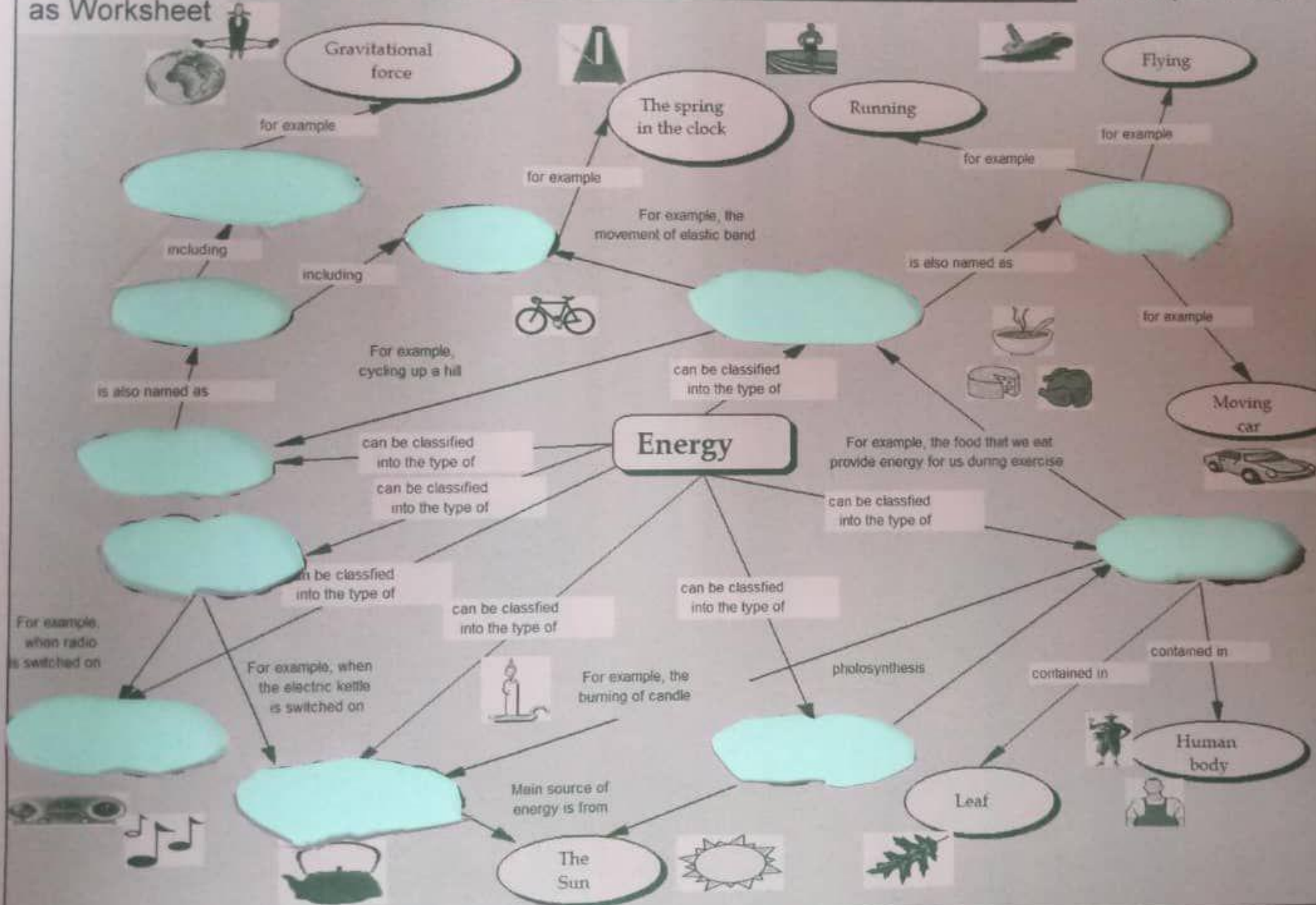




# Sample Concept Map as Worksheet

## TYPES OF ENERGY AND SOME EXAMPLES ON THE CONVERSION OF ENERGY (PRINCIPLE OF THE CONSERVATION OF ENERGY)

Sustainable Energy  
for All (SE4ALL)



Examples of projects/programmes to be assessed using **worksheet** related to topics:

(1) Water-based education or Telecare and Healthy Lifestyle (**TeleHeal**) or

URLs:

<http://www.jumpstart.com/common/body-parts>

<http://www.jumpstart.com/common/liver-function>

(2) Recycling or Conservation and Wise Use of Resources (**ConWUR**) or

URL:

<http://www.jumpstart.com/common/plant-a-tree>

(3) Climate related education to promote Climate Awareness and Disaster Risk Reduction EDucation (**CADRRED**)

URL:

<http://www.jumpstart.com/common/biosphere-mix-up-view>





here.

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6th Grade Science

## They are Almost Dead

Find the names of endangered species of animals from the word-search.





K	B	E	P	W	W	Y	O	G	T	N	J	X	X	Y	T	A	M	Y	R	G	R	N	S	V	Z	V	M	F	O
W	A	F	U	Q	E	J	L	R	S	I	H	D	Y	F	H	A	S	W	R	E	H	O	O	N	A	U	P	Y	A
C	U	K	F	Z	Y	S	F	F	H	Y	V	R	W	P	G	D	G	J	D	D	N	R	R	I	R	E	V	Q	L
A	Z	E	A	W	T	F	T	L	R	I	O	F	K	E	X	A	Q	N	F	Q	N	T	E	O	P	J	Y	O	X
V	S	U	T	P	X	X	I	E	Y	E	Z	T	L	W	N	Y	A	G	P	Y	A	H	C	F	I	W	C	O	W
X	H	M	T	O	O	Q	L	Z	R	W	T	L	E	Y	H	M	P	D	V	N	J	E	O	N	S	F	R	V	P
N	B	B	Z	I	W	P	B	Z	T	N	A	T	Z	Y	A	R	O	Y	Z	B	I	R	N	G	L	T	J	Z	Y
I	G	O	C	V	I	U	A	Z	H	N	L	T	U	L	L	M	U	O	M	I	R	N	I	A	D	R	Z	H	W
X	D	K	U	P	Z	H	D	R	I	W	V	O	A	B	G	C	S	B	M	B	A	R	H	R	D	U	K	M	G
X	M	B	L	A	M	H	E	C	R	B	N	S	W	Y	H	E	Z	C	T	Q	J	I	R	D	J	S	I	S	L
F	Y	Q	L	F	J	R	P	T	L	O	T	A	T	L	H	C	Z	N	V	H	J	G	N	O	O	B	P	O	V
U	W	N	V	E	A	E	K	U	F	N	T	A	H	H	A	A	R	Q	T	G	G	H	A	W	Q	H	G	U	L
N	Z	O	K	Q	N	Q	E	P	A	L	Q	T	O	Z	Q	N	Y	A	K	J	I	T	V	U	S	G	D	Z	G
M	F	P	X	G	B	F	F	I	C	N	H	L	Q	O	P	M	D	U	N	H	Z	W	A	W	M	C	E	V	B
Y	Y	V	U	S	I	L	G	R	A	E	B	R	A	L	O	P	L	G	R	O	C	H	J	O	F	O	F	O	A
A	R	I	O	N	S	E	E	Q	O	X	A	Z	F	J	T	Q	V	A	O	L	M	A	A	L	A	F	I	L	W
V	N	V	T	V	S	Q	X	L	P	U	K	P	O	X	M	N	P	P	G	R	Q	L	A	F	X	I	L	I	P
Y	V	U	D	E	L	T	R	U	T	K	C	A	B	R	E	H	T	A	E	L	I	E	U	U	H	I	Z	O	M
M	N	Y	N	H	S	V	E	D	V	K	Z	Y	R	M	G	O	N	C	D	R	L	E	K	R	O	P	J	B	
A	I	I	E	C	W	G	K	O	G	W	N	P	D	J	R	J	J	J	Y	G	A	E	L	O	P	T	A	K	D
D	H	I	V	O	R	Y	B	I	L	L	E	D	W	O	O	D	P	E	C	K	E	R	G	A	V	G	M	M	Q
C	C	R	V	P	A	C	I	F	I	C	W	A	L	R	U	S	X	C	G	Q	N	Q	I	Y	V	U	V	L	
J	L	U	G	C	B	U	A	V	Z	X	H	N	P	C	W	G	D	U	A	Y	I	Z	M	M	T	U	R	Z	H
F	P	Z	J	Z	M	X	C	N	W	U	L	S	S	E	V	D	W	T	F	A	U	V	I	I	E	S	L	V	K
L	N	U	X	D	I	Z	O	R	J	G	W	O	Q	U	L	P	J	I	T	B	K	G	X	P	D	J	E	V	J
P	Y	P	U	J	R	M	D	M	D	C	Q	B	L	I	U	K	H	N	J	Z	E	E	G	F	C	R	O	I	J
L	I	K	J	I	N	O	T	T	S	V	Q	G	W	Q	S	R	U	C	W	N	A	T	V	E	Z	O	P	S	Z
G	Y	I	U	G	B	W	A	K	J	B	M	D	A	Q	C	O	N	L	X	Y	A	T	R	T	N	X	A	K	E
O	X	N	A	W	B	D	X	B	Z	Y	Y	V	I	H	M	C	A	A	Q	C	G	U	C	N	R	V	R	N	B
X	S	K	F	K	Q	L	Y	Z	W	C	Y	K	O	M	V	Q	J	Q	U	Z	C	Q	J	N	V	P	D	O	D

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Science—Animals: Recognizing mammals



## Not Always As It Seems

I thought I knew a lot about animals. For example, I know that the major groups of animals are mammals, fish, birds, insects, and reptiles. However, I was once on a case where I had to identify the mammals on a list of animals. Easy, huh? Well, I found out that things are not always as they seem. Look at my list. If it's a mammal, circle the letter under YES. If it is not, circle the letter under NO.


OK, the clue in this case was that an animal was holding some information in its pocket. What animal was I looking for? Look at the letters you circled. Do they spell something? Write them here.

At first, I still didn't get it. What does that word have to do with pockets?

I studied the list for a long time. Then it hit me. I looked at the letters I *didn't* circle. Suddenly, I understood everything and knew right where to go to get the information I needed.


Can you explain how I knew? \_\_\_\_\_

Is it a mammal?	YES	NO
elephant	M	A
whale	A	K
penguin	A	R
platypus	S	N
bat	U	G
manatee	P	A
armadillo	I	R
stingray	O	A
dolphin	L	O



Go Home now...

After I solved the case, I decided to find out more about this special group of mammals. My informant is the most famous member of the group, but a few other interesting characters belong to it. Can you name at least two more?



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<http://www.jumpstart.com/common/they-are-almost-dead-view>





## ADVANCES IN HEALTH SCIENCES EDUCATION

[springer.com](#)

*Adv Health Sci Educ Theory Pract*. 2011 Oct; 16(4): 517–528.

PMCID: PMC3167389

Published online 2011 Mar 17. doi: [10.1007/s10459-011-9288-1](https://doi.org/10.1007/s10459-011-9288-1)

PMID: [21409538](https://pubmed.ncbi.nlm.nih.gov/21409538/)

### Effect of worksheet scaffolds on student learning in problem-based learning

[Serene S. Y. Choo](#),<sup>1,2</sup> [Jerome I. Rotgans](#),<sup>3</sup> [Elaine H. J. Yew](#),<sup>4</sup> and [Henk G. Schmidt](#)<sup>5</sup>

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#### Abstract

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The purpose of this study was to investigate the effect of worksheets as a scaffolding tool on students' learning achievement in a problem-based learning (PBL) environment. Seventeen PBL classes ( $N = 241$ ) were randomly assigned to two experimental groups—one with a worksheet provided and the other without. Students' learning of the topic at hand was evaluated by comparing results from pre- and post-lesson concept recall tests. We also obtained information about students' perceptions of factors impacting their learning using a Learning Impact Questionnaire. The data was analyzed by means of analyses of variance. Results of the study indicated that there was no statistically significant difference between the levels of understanding for both groups of students. In addition, survey results revealed that the strongest factor perceived by students to impact their learning in a PBL context is the tutor followed by team and class dynamics, while the influence of the worksheet was rated lowest. These findings suggest that scaffolds such as worksheets may not play a significant role in enhancing students' learning within the social constructivist framework of problem-based learning. On the other hand, the importance of the role of tutor and collaborative small group learning which are key features of PBL is reinforced.

**Keywords:** Collaborative small group learning, Tutor, Problem-based learning, Student learning, Scaffolds, Worksheet

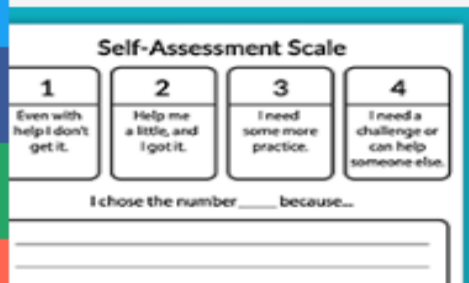
# Student Assessment Advice and Forms

Student assessments can be a tricky task. Our collection of ideas and forms will make it easier for you to evaluate and grade your students' work, no matter their grade level. There are as many variations of assessment as there are students. Look below to find ideas on assessment strategies, modifications, and enhancing your existing methods. These assessment forms and techniques will work across the curriculum, so use them for math, science, reading, language arts, social studies, and your other subjects.

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## Featured Editor's Picks



**Self-Assessment Scale**

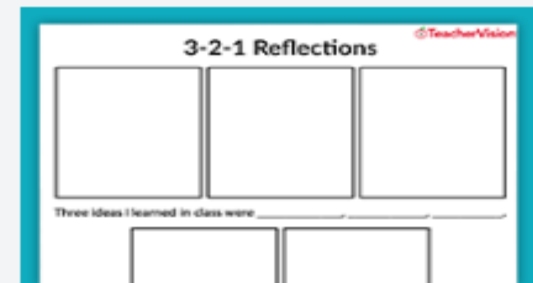
1	2	3	4
Even with help I don't get it.	Help me a little, and I got it.	I need some more practice.	I need a challenge or can help someone else.

I chose the number \_\_\_\_\_ because...

**FORM**  
Self-Assessment Scale



**TOOLKIT**  
Formative Assessment Toolkit Ideas



**3-2-1 Reflections**

Three ideas I learned in class were \_\_\_\_\_

**WORKSHEET**  
3-2-1 Reflection

Activate  
Go to S

## 3-2-1 Reflection



The graphic organizer is titled "3-2-1 Reflections" and includes the TeacherVision logo. It consists of several boxes for student input:

- Three boxes at the top for "Three ideas I learned in class were".
- Two boxes in the middle for "I can use these ideas by doing" and "and".
- A single box at the bottom for "What confused me most in class was".

A red circle with a white plus sign is positioned between the middle two boxes.

Preview

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Before students leave your class, you can use the 3-2-1 Reflection graphic organizer in order to support students to self-reflection and determine their next steps. Meta-cognition, or thinking about thinking, is important for students, so they develop self-awareness. When students better understand themselves as learners, they are able to articulate what they know, what they still need help with, and what they will do in order to have their needs meet. Before you use this graphic organizer, model the process for your students using a Think Aloud, where you make your own self-reflection visible.



## LOUISIANA VOICES

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Go to Settings to activate Windows



# Continuum of Voice

By Barbara Bray @bbray27

&  
Kathleen McClaskey @khmmc



## EXPRESSION

- offers opinions & answers questions
- creates Learner Profile (LP) on how they learn best



## CONSULTATION

- takes surveys
- provides input and feedback
- shares PLP and works on PLP with teacher



## PARTICIPATION

- attends activities with role in decision making
- articulates action steps to meet learning goals



## PARTNERSHIP

- collaborates with teachers and learners
- contributes to design of lessons, projects and assignments



## ACTIVISM

- identifies problems and generates solutions
- advocates for change in and outside of school



## LEADERSHIP

- guides group as leader of change
- co-plans and makes decisions
- accepts responsibility for outcomes

Teacher-Centered | Learner-Centered | Learner-Driven

Adapted from @StudentCentrHub

[bit.ly/continuumvoice](http://bit.ly/continuumvoice)

@sylvia duckworth



LesmatBorderless

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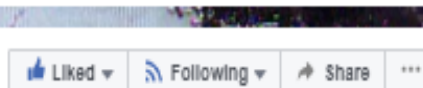
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Promote

Welcome to 'Learning Science and Mathematics Together' in a Borderless World [LeSMaT (Borderless)] that promote blended-mode sharing and networking activities in line with the UN's 'Sustainable Development Goals' (SDGs).



Posts



LesmatBorderless

17 August 2016 ·

Dear all,

Greetings! TQ for visiting and like our page, also thanks for active participation during the recent networking session during the 11th SSYS congress. Please refer <http://bit.ly/lesmatetcupdates> for the sharing of resources including the guide to register Teacher's/Student's account on <http://www.edmodo.com/> After you create own account, click Join Code: 4ryg7a (valid from 11/3 to 25/3, 14 days only) or [https://edmodo.com/pub.../borderless-lesmat-/group\\_id/13656669...](https://edmodo.com/pub.../borderless-lesmat-/group_id/13656669...)

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Information to register Edmodo will be updated every two weeks (14 days).

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Resources related to LeSMaT etc. will also be shared through this google drive link;

<http://bit.ly/lesmatedmodo>

and/or #LeSMaT (Borderless) communication groups

(a) **Telegram** group invite link: <http://bit.ly/lesmattelegramgroup>

(b) **WhatsApp** grp invite link: <http://bit.ly/lesmatwhatsappgroup>

Thank you

Merci

Nan dhri

Terima kasih

谢谢您

ありがとうございました

Xie xie ning

Arigatogozaimatsu