

Section 5

Habits of Mind



Creating, Imagining, Innovating

Students' Resources

(This page for teachers and students)

Creating, Imagining and Innovating

Originality is simply a pair of fresh eyes

~Thomas Wentworth Higginson~

We know students are creating, imagining, and innovating when we see them deliberately and voluntarily employ strategies for stimulating, generating, and releasing inventive ideas for a new task. They expand the possibility of creative insight by preparing their minds with much knowledge about a subject. Then, they generate options and possibilities.

When students who have developed this habit face an impasse, they deliberately widen the scope of their search with techniques such as brain-storming, mind mapping, synectics, or metaphorical thinking. They search for theories, explanations, and frameworks that have generative potentials, which lead to further meanings. They pursue promising theories, and they constantly hunt for "nubs" and "kernels" of viable ideas. They explore options, think of possibilities, generate strategies, and explore consequences (Perkins, 1995)

Definition of Creating and Innovating

What is creating?

Creating means generating new ideas or concepts or ways that could solve a problem. Creativity is a complex, multi-faceted process. Creativity can be developed, sharpened, amplified, because it is a factor of nurture as well as nature.

What is innovating?

Innovating means to invent a tool, equipment or a method that can solve an existing situation or problem. It is closely linked with the creative thinking process.

Why is creating and innovating an important role in our life?

Without people that are creative and innovative, the world would not progress to the present state. Mankind will not develop sophisticated methods that fight serious disease and viruses. We would not have such a high standard of living. Everyday, there are numerous innovations created in the world; these innovations affect our lives and change our perception greatly. The invention of the computer and its usage is a good example. These days, people that could be linked together, share their thoughts, and work as a team in different parts of the world through the network system of the computer. This brings people together and "nearer" to each other, helping to create the globalised world that all of us are part of.

How can I be creative and innovative?

There are 10 keys to develop personal creativity. (from <http://www.topten.org/content/>)

1. Believe you are Creative

Everyone is. Or has the potential to be. It is part of being human.

2. Broaden your interest

Consciously seek out what you have not sought out before. Be open to new experiences, new sources of information.

3. Prepare to create

Gather information, hunches, impressions, colors, textures, sounds. Keep notes!

4. Look for (or better still, make) connections

The more varied your interests, the greater the chance of cross-fertilization; of combining two or more things that have not been combined before. Look for relationships between things that are not related.

5. Break habits

Our own habits are what often keep us from being more creative. The more you follow the script, the less you can improvise. Breaking even little habits can shake up the system enough to allow new connections to happen, new points of view to form.

6. Provide the right environment for own self

Some people like to listen to music; others prefer silence once they are in a creative flow. Experiment until you find what works for you.

7. Provide time to create

- (i) Time to sleep on it. Time without your conscious manipulation. Time for seemingly random thoughts and bits of input to percolate and bump into each other.
- (ii) Time away from the immediate demands of work and/or home or school, dedicated to the creative task at hand. In certain environments, time is so precious that it seems like an unrealistic element of developing your creativity. But even five minutes could make a difference.

8. Persevere

Don't give up on yourself or your project. Creativity is not necessarily easy. Make lots of mistakes. Learn from them. It is to be expected. It is part of the creative process. Keep going. There is a paradox here because sometimes an important part of being creative is knowing when to abandon an unproductive idea.

9. Maximize all your senses

The more you use all of your senses to gather and process information, the greater the chance of those bits of pieces of ideas bumping into each other...and sticking together to create something new.

10. Forget how much you know.

Adopt a beginner's mind. Conventional wisdom may say this or that cannot be done and then unconventional wisdom goes right ahead and does it. Learn to look at things with a fresh eye. Don't be afraid to ask "dumb" questions.

What are the words that are commonly used in creating and innovating?

Unique	Brainstorm	Fresh	Engender
Productive	Prolific	Ingenious	Unconventional
Fertile	Imaginative	Novel	Inventive
Generative	New	Fluent	Clever

What are the activities that nurture creative thinking?

- Art: Create a two dimension imaginative composition on "Singapore 2020".
- History: Post "what if" questions.
- D & T: Design a piece of multi-purpose furniture that could be used as bed, table and cabinet.
- Music: Create a piece of music that includes bird chirping and expresses the pleasant, morning mood.
- Language and Literature: Write a short story of your own fantasy.
- PCCG: Think of a creative way to solve the problem of "Keyhole Children".
- Sciences: Find a solution to solve the problem of noise from grass cutting machines.
- Maths: Is there a possible way to create a piece of two dimensional art work with a mathematical formula?

End of Students' Notes

WORKSHEET 1 (for Lesson 1)
Creating, Imagining and Innovating

Name : _____ () Class : _____ Date : _____

Name the objects on the pictures

Object 1 : _____

Object 2 : _____

Object 3 : _____


Link together anything about these objects to create as many new objects as possible. Name the new objects and describe their uses.

	<i>Objects Used</i>	<i>Name of New Object</i>	<i>Use(s) of New Object</i>
Innovation 1			
Innovation 2			
Innovation 3			
Innovation 4			

Innovation 5			
--------------	--	--	--

REFLECTION (for Lesson 1)

Creating, Imagining and Innovating

	<p>What is/are the method(s) you and your group used to make the new objects out of the objects in the pictures?</p>
---	---

What are the difficulties you encountered when creating the new objects?

--

Suggest one way how you can bring the habit of creating, imagining and innovating into your daily life.

HABITS OF MIND

CREATING, IMAGINING AND INNOVATING

PERFORMANCE RUBRIC (for Lesson Two)

(for teachers and students of 2 Express and 2 Normal Academic.)

	Beginning.	Got it!	Wow!
Attitude/Motivation	Shows a lack of interest in searching for alternative solutions.	Is amply motivated to look for different solutions. A willingness to test ideas.	Shows a passion for creative problem solving, through words and actions. Intrinsically motivated to look at alternative solutions to problems. Not concerned with material rewards but motivated by the challenge of problem solving.
Striving for better	Satisfied with the status quo	Some attempt to improve product, solution or technique.	Always seeking to improve product, solution or technique
Openness to Criticism	Unwilling to be judged	Accepts feedback positively.	Actively seeks feedback
Repertoire of Strategies	Does not have a technique for generating ideas.	Has few techniques to create innovative ideas and solutions	Has a variety of techniques to create innovative ideas and solutions such as brainstorming, mind mapping, making connections, etc

For Normal Technical students. (Lesson 2 Closure)

HABITS OF MIND
CREATING, IMAGINING, INNOVATING

I am holding a mirror to myself, and this is how I look like...

Tick (✓) the appropriate box that best describes your habit or behaviour.

	Seldom	Sometimes	Most times
I enjoy doing things differently			
<i>I like to explore different ways of doing things</i>			
I am most happy when I am creative and original			
I usually do things differently from my friends			
I create games that are fun			
I like to experiment with my dressing			
<i>I enjoy stories that are not of the usual type</i>			
I see problems from many different viewpoints			
I like to suggest interesting ways of doing things in class			

<i>I am most happy when I create and write interesting stories</i>			
--	--	--	--

How creative and innovating am I ?

Most ticks in "seldom"

I seem comfortable with safe solutions and do not like to take risks to try doing things differently from my friends or from my past habits.

Perhaps I do not like to be criticized or be embarrassed if my suggestions are not accepted by others.

I should try to experiment and be courageous when trying out things or when finding solutions to problems.

Most ticks in "sometimes"

I am perhaps like most people. Sometimes I dare to be different and be creative but sometimes I hesitate.

Perhaps in some areas of my life I am different but in some situations I prefer to be safe and rely on old ways of doing things.

Most ticks in "most times"

I like very much to be original and creative. I do not like to do things the same old ways.

I like to experiment with things and like to be creative when looking for solutions to problems.

Imaginative games and stories appeal to me. I love to read mysteries and watch programmes that have unpredictable endings.

I must continue to be creative and original as it helps me find the best solutions to problems.

I must also enjoy being challenged with different situations as then I can challenge myself to look for innovative ideas and solutions.

Name : _____ Class : _____

For Express and Normal Academic Students (Lesson 2 Closure)

Student Self- Assessment Checklist of Critical Thinking

Note: In this checklist, many habits of mind overlap, which is expected. Items 7, 8 and 9 focus directly on the habit of Creating, Imagining and Innovating.

Which behaviors most describe you? Please tick.

What does a Critical Thinker Look Like?	Most of the Time	Sometimes	Not Yet
1. Is persistent and persevering * I stay on task * I use a variety of strategies to solve problems * I might say, "Don't show me. Let me figure it out." * I complete my tasks or projects			
2. Has decreased impulsivity * I listen to instructions before I begin * I ask questions if I don't understand * I think before I act * I develop a plan before I start work * I accept suggestions to improve my work * I listen to other points of view			
3. Works accurately and precisely * I take time to be precise * I check that my information is correct * I review the requirements on assignments * I edit and revise to make my writing clearer * I check that my work matches the criteria			
4. Listens with understanding * I listen carefully to others and value their ideas * I respond appropriately * I build on others people's ideas			
5. Is flexible in thinking * I try to understand both sides of the issue * I consider all points and view in solving a problem			

<ul style="list-style-type: none"> * I am prepared to change my mind if there is a better idea or solution 			
<p>6. Has awareness of own thinking</p> <ul style="list-style-type: none"> * I am able to list the steps in my plan of action * I can describe what I know and what I need to know * I can evaluate my plan * I can explain the steps in my thinking * I can tell how thinking about thinking helps me 			
<p>7. Asks questions and solves problems</p> <ul style="list-style-type: none"> * I ask questions and I am curious about things * I think of a lot of ways to do things * I gather information and figure out what it means * I can think of more than one solution to a problem * I can explain why my thinking makes good sense 			
<p>8. Uses past knowledge in new situations</p> <ul style="list-style-type: none"> * I can use my past learning in new situations * I can see how two different ideas are created 			
<p>9. Thinks creatively</p> <ul style="list-style-type: none"> * I am willing to try new approaches * I like to think about things and wonder about them * I can think of ideas that are really unusual * I add a lot to my ideas and to other people's ideas 			