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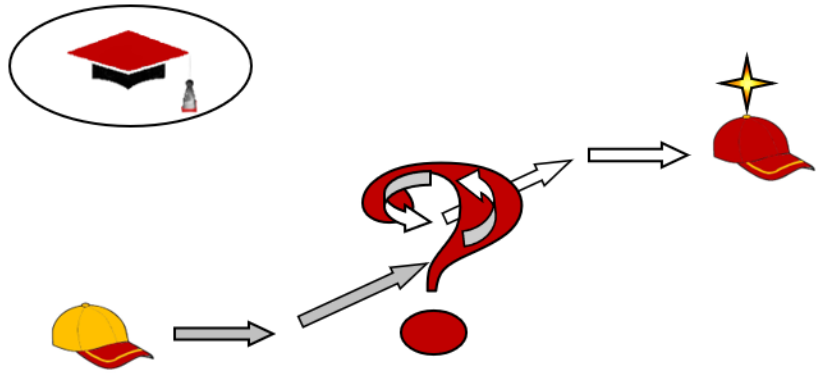

FORMATION AND DEVELOPMENT OF NEW SKILLS

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The world we live in is quickly changing.
To meet the challenges of the current situation, as well as new Goals and Problems, one needs new skills.
The KSA model of education is lagging behind the demands of the contemporary social mandate. New, useful skills are picked up outside of the educational system, like the capacity for mobile communication.

New education model

KSA + CCA => nKSA

The author proposes a cyclic model: **KSA + CCA = nKSA,** where:
KSA stands for knowledge, skills and abilities;
CCA stands for the cognitive and creative activity of the educational process' participants that causes the creation of **new KSA**.
The application of this model in practice has demonstrated that it does indeed result in the formation and development of new skills.

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A person's ability to use a particular method that results in the successful completion of the particular task at hand is referred to as their **SKILL**.

The Russian word ***SPOSOB****NOST* which means 'skill' is semantically rooted in the word ***SPOSOB***, meaning 'method.'
The method a person employs in relation to the task at hand directly relates to that person's particular skill.

A less obvious indication of skill

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Two ways of forming new human skills

First way: reproductive.
The adoption and use of established methods of action by people.

Situation: a task.
A defined situation with clear methods of action.

Second way: creative.
Independent invention of hitherto undiscovered methods of action.

Situation: a problem. An undefined situation without clear methods of action.

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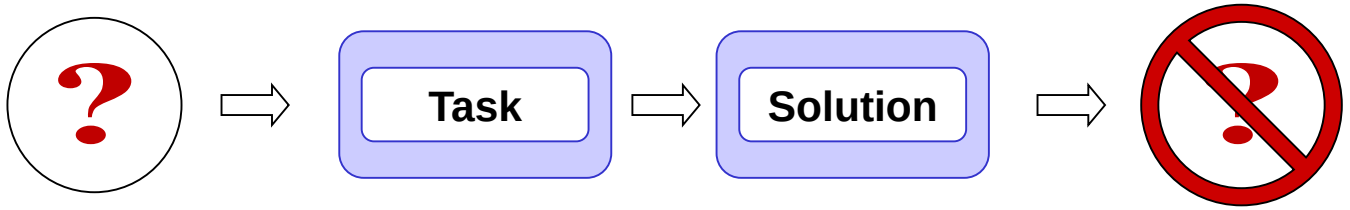
An undefined task whose solution method is yet unknown to the solver is referred to as a **PROBLEM**.

Two steps in generating a solution out of a Problem

Step 1, exploratory:
Problem analysis and transformation into **a defined creative task** that needs to be further solved.

Stage 2, inventive:
finding **a new way to solve** a defined creative task obtained in Step 1 that would lead to success.



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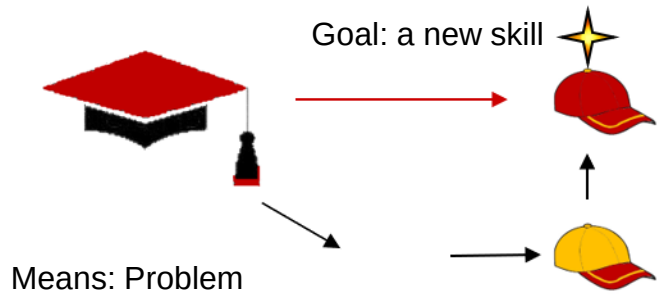
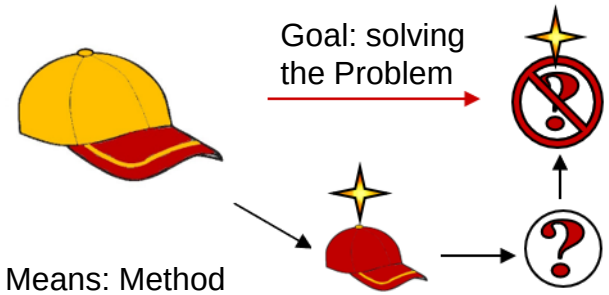
The deliberate creation of circumstances in which a learner will encounter an educational Problem specifically created for him or her in advance is a promising approach to modern education. Skills will be formed and developed out of the ability to analyse and solve the problem.

The goal of the learner's educational activity, as seen by a **'skill designer'** (pedagogue), is the development of a new human skill, and the educational Problem under consideration is the method for doing so.



The goal of the **'skill acquirer's'** (learner's) educational activity is to solve the outlined Problem, and the new skill gained along the way serves as the means of doing so.



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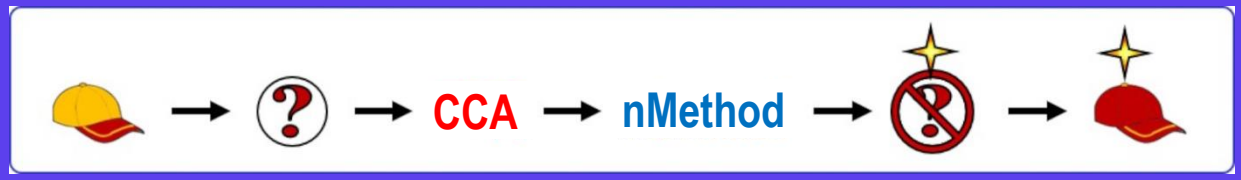
Value and prospects of the New Skill Design approach

The problem-solving approach used in education can be visualised using a cyclic model:

'Available skill ->
educational Problem ->
cognitive and creative activity (CCA) ->
new method of solving the Problem ->
successful Problem solution ->
new skill'

The new skill eventually becomes well-known, and the cycle goes on.



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EXAMPLES
of methods used in designing new skills

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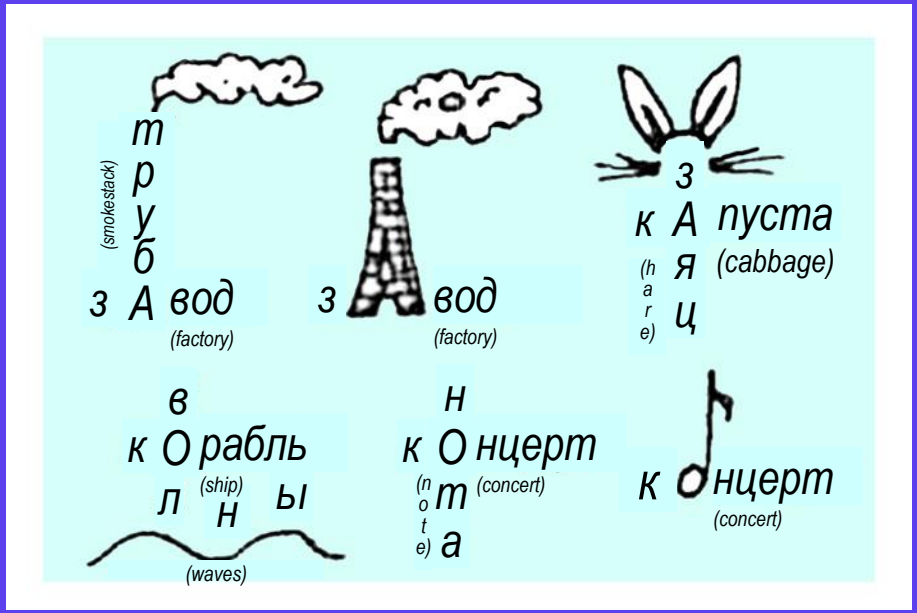
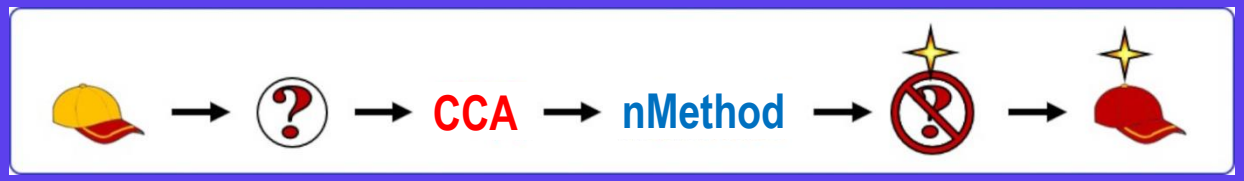
Dictionary Words Memorisation method



The method teaches learners to independently come up with vivid associative images for ambiguous orthograms in order to memorise dictionary words and write them correctly.



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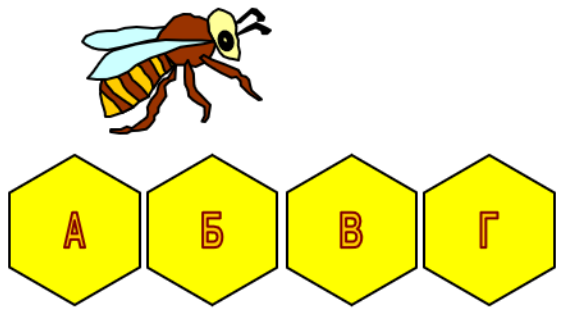
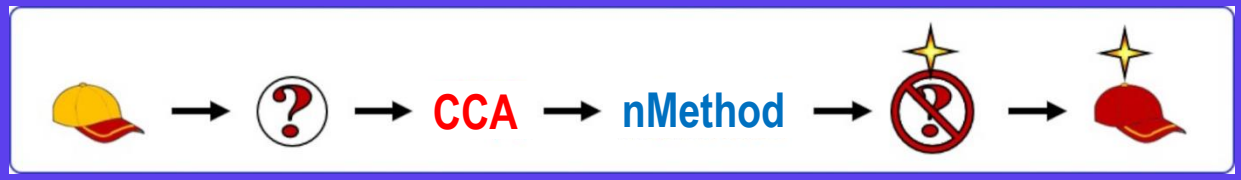
Bee method



The method teaches learners to develop their own grammatical rules based on the analysis of problem-carrying language material.



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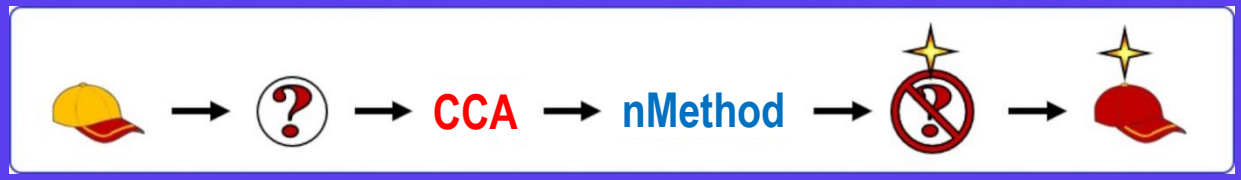
Mnemosyne and Metis method

The method teaches learners to independently develop an array of cognitive processes that includes:

attention, perception, imagination, memory, thinking.



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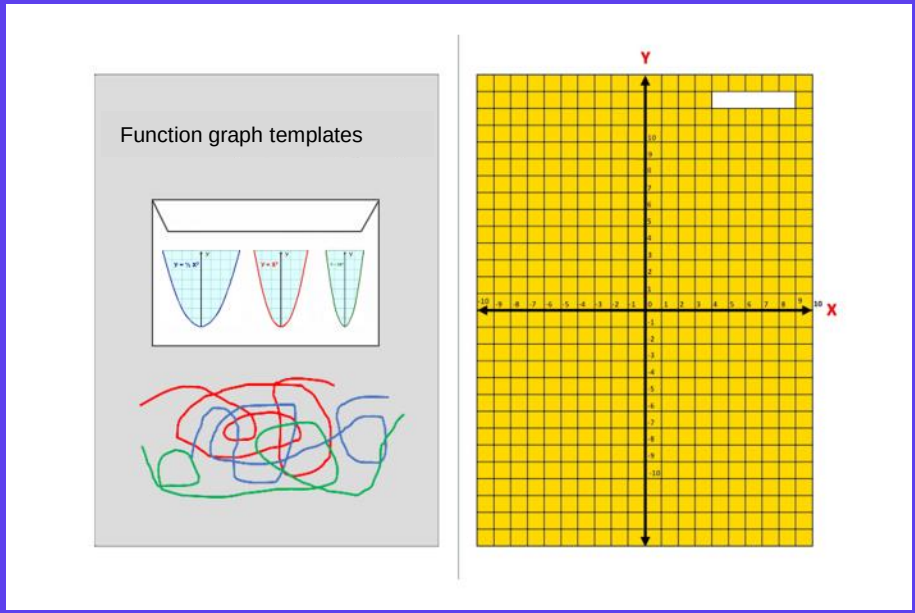
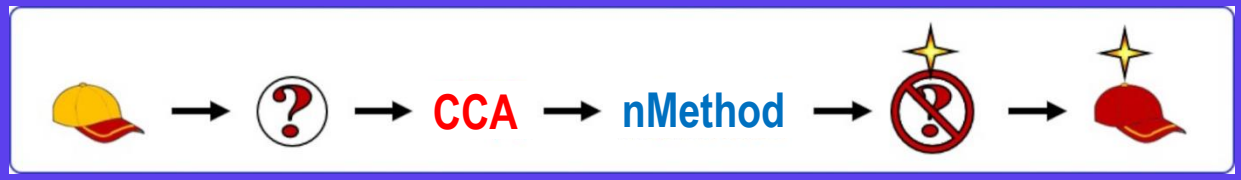
Math Thread Writing method



The method teaches learners to independently chart function graphs and promptly illustrate the rules for charting and transforming graphs.



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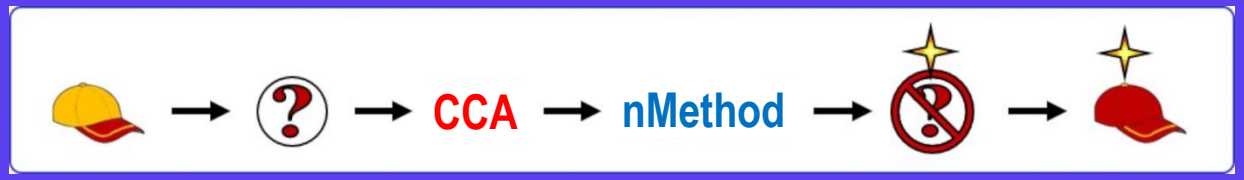
Creativity (Novelty) Levels method

The method teaches learners to independently acquire new levels of creative skills using the key component of creativity, known as 'novelty.'



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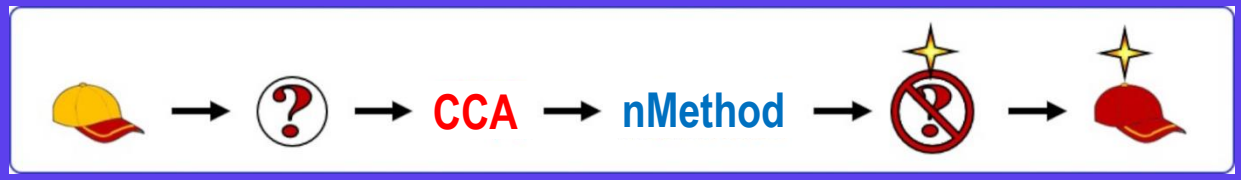
Learner-Researcher innovative project

The project teaches learners to independently conduct research on a subject of personal interest and consistently acquire new levels of information.



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Skill development stages

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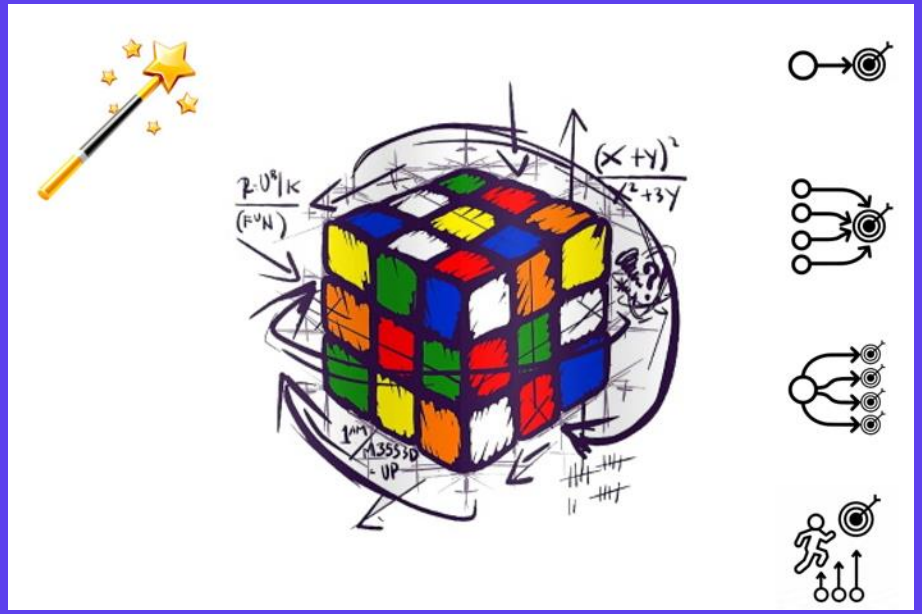
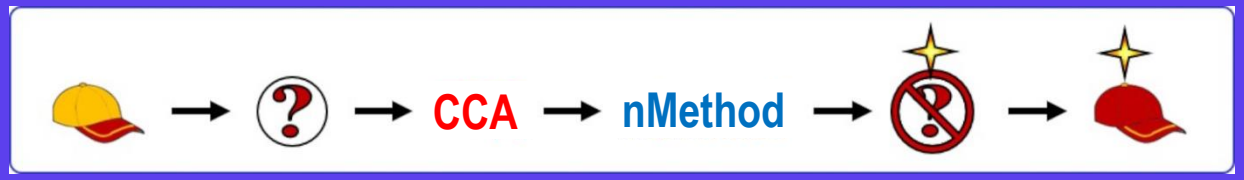
Morphological analysis method





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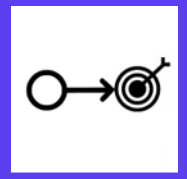
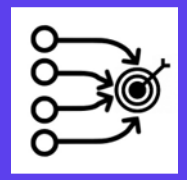
Skill development stages



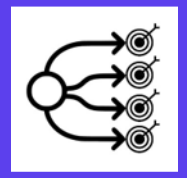
Skill formation Stage 1.

Task: achieve a known Goal using a known method.
Outcome: acquired skill of achieving a known Goal through learning and applying a known method.



Skill formation Stage 2.

Task: achieve a known Goal using a different method.
Outcome: acquired skill of achieving a known Goal through applying alternate methods.



Skill formation Stage 3.

Task: identify and achieve unknown Goals using known methods.
Outcome: acquired skills of identifying and achieving unknown Goals through applying (spreading) known methods.

Skill formation Stage 4.

Task: identify and achieve unknown Goals, create new methods.
Outcome: acquired skills of identifying and achieving unknown Goals through designing previously unknown (new) methods.

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EXAMPLES
of tasks for the gradual skills formation and development

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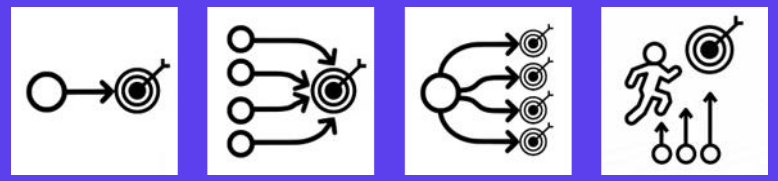
Task 1. Inflate a balloon.

Stage 1. Inflate a balloon using your mouth.

Stage 2. Inflate a balloon using a different method.
Examples: inflate a balloon using a stream of ambient air, a pump, a compressed air cylinder from...

Stage 3. Inflate another object.
Examples: inflate a ball, car inner tube, soap bubble, chewing gum bubble, life jacket, hot-air balloon, inflatable furniture, boat, toy, hangar...

Stage 4. Bring air into objects that require air.
Examples: supply air to a submarine without it surfacing; set up air supply to an underground pocket with people trapped inside...



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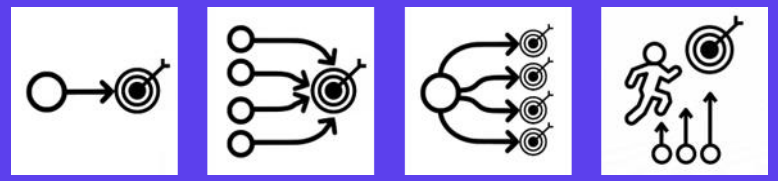
Task 2. Make a hole in a board.

Stage 1. Make a hole in a board using a drill bit.

Stage 2. Make a hole in a board using a different method.
Examples: make a hole in a board using a router, chisel, jigsaw, laser cutter, chemical etching machine...

Stage 3. Make a hole in a different object.
Examples: make a hole in a metal sheet, paper, rubber, silk fabric, window glass, concrete wall, dough, ice...

Stage 4. Make a hole in objects and processes that require a hole.
Examples: make an opening (hole) in snow to rescue people from under an avalanche; make a visually clear opening (hole) in the clouds during aircraft take-off/landing; make a visually clear opening (hole) during a vehicle's movement in dense fog...



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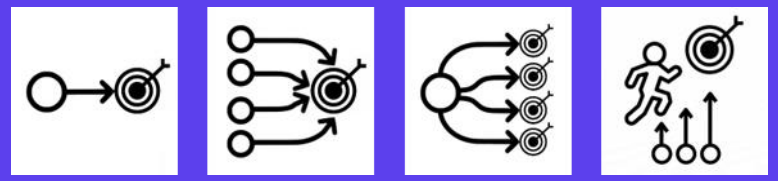
Task 3. Deliver a cargo.

Stage 1. Deliver cargo by truck.

Stage 2. Deliver cargo using a different method.
Examples: deliver cargo by ATV, snowmobile, train, helicopter, drone, boat, ship...

Stage 3. Deliver cargo to a special facility.
Examples: deliver cargo needed by polar explorers, mountaineers, geologists, the military, guerrillas, cosmonauts...

Stage 4. Deliver cargo to facilities that require the cargo.
Examples: deliver essential supplies to skyscraper top floor occupants, deliver life-saving cargo to sick body cells...



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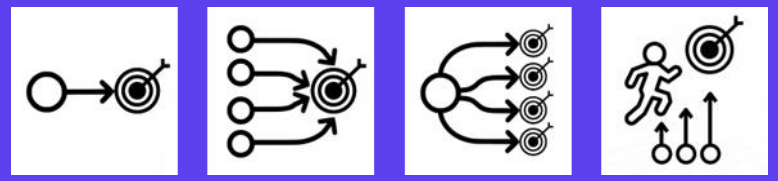
Task 4. Draw a particular image.

Stage 1. Draw a particular image on paper using a pencil.

Stage 2. Draw a particular image on paper using a different method.
Examples: draw a specific image on paper using a ball pen, marker, crayon, paint brush (oil, watercolour, gouache, ink), pyrographer, airbrush...

Stage 3. Draw a particular image on another object.
Examples: draw a particular image on a rock, utensil, window pane, fruit, grain, nail, skin, fence, wall, roof, square paving, road paving, sky, water surface....

Stage 4. Draw a particular image of an abstract concept.
Examples: draw a particular image of an abstract concept such as activity, fancy, delight, design, charisma, development, skill...



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CONCLUSIONS

1. The author proposes an approach for the formation and development of new skills, distinguished by the fact that the learner faces a pre-designed educational problem and develops skills through its analysis and solution.

2. The Problem-solver's skillset is widened by the deliberate search and invention of novel solutions to educational Problems.

3. The development of skills is broken down into four stages. Finding innovative action methods is necessary for each stage.

4. At this point, the outlined approach improves the educational process through and the learners' collaborative cognitive and creative activity.

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METHOD

MakE THine Own Designs

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Towards Ultimate Knowledge and Creativity!

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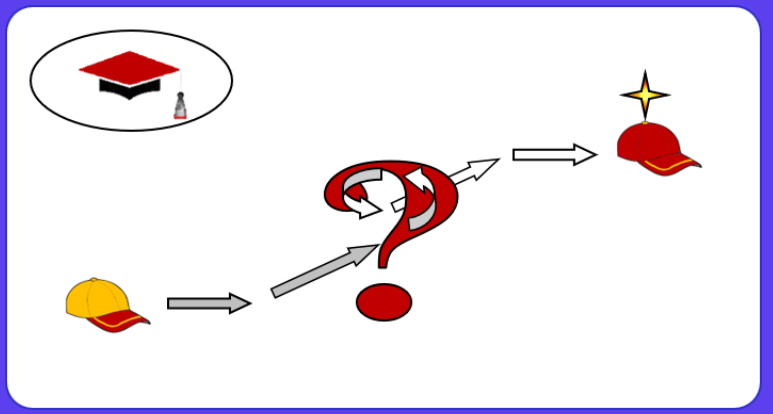

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Q&A

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I wish you success on this Path!

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