International Conference The Future of Education – 2nd edition
Florence (Italy), 7 – 8 June 2012

PROBLEM-BASED TEACHING vs. PROGRAMMED TEACHING: CHALLENGES FOR THE FUTURE OF EDUCATION

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  - *advantages and disadvantages*
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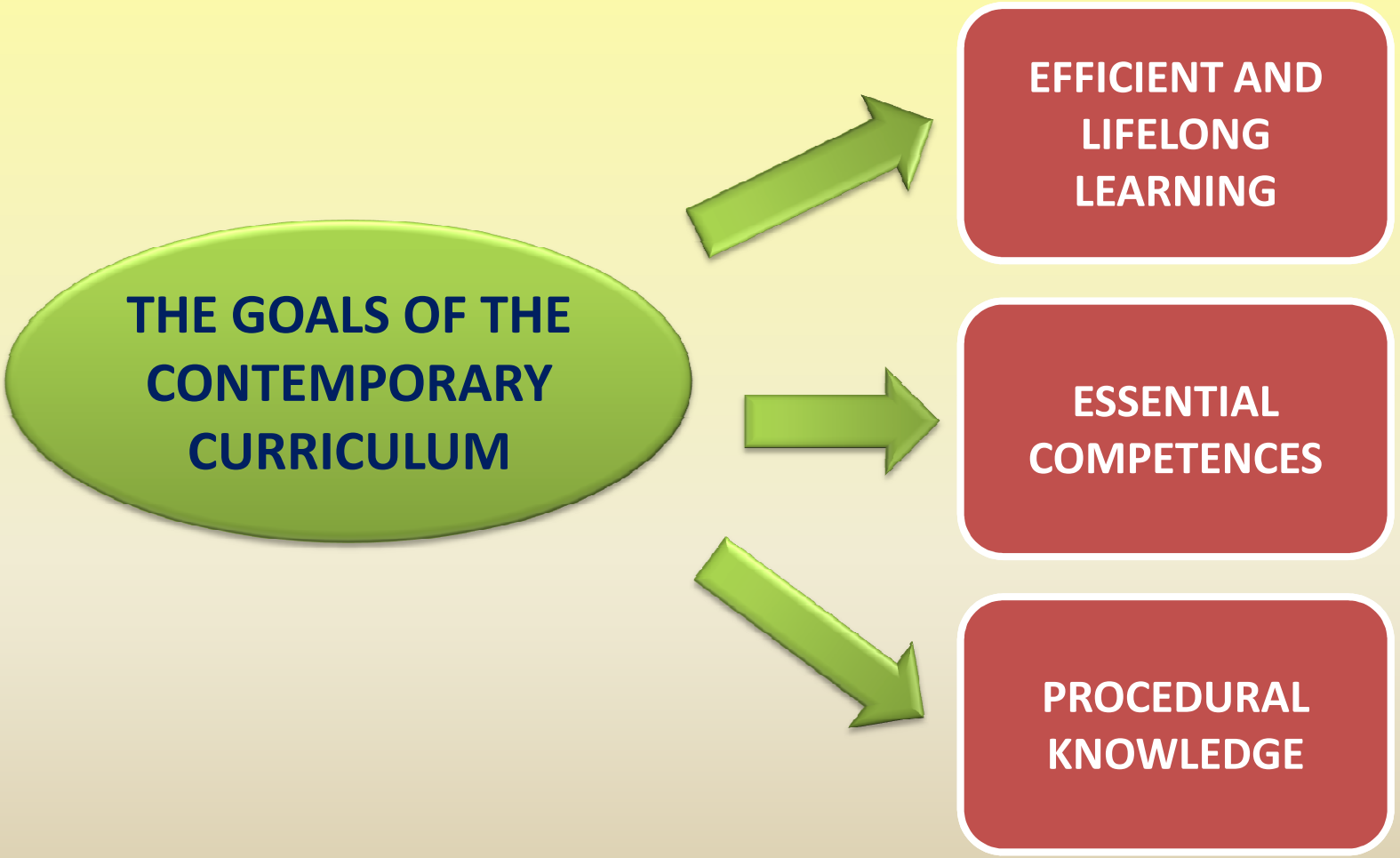
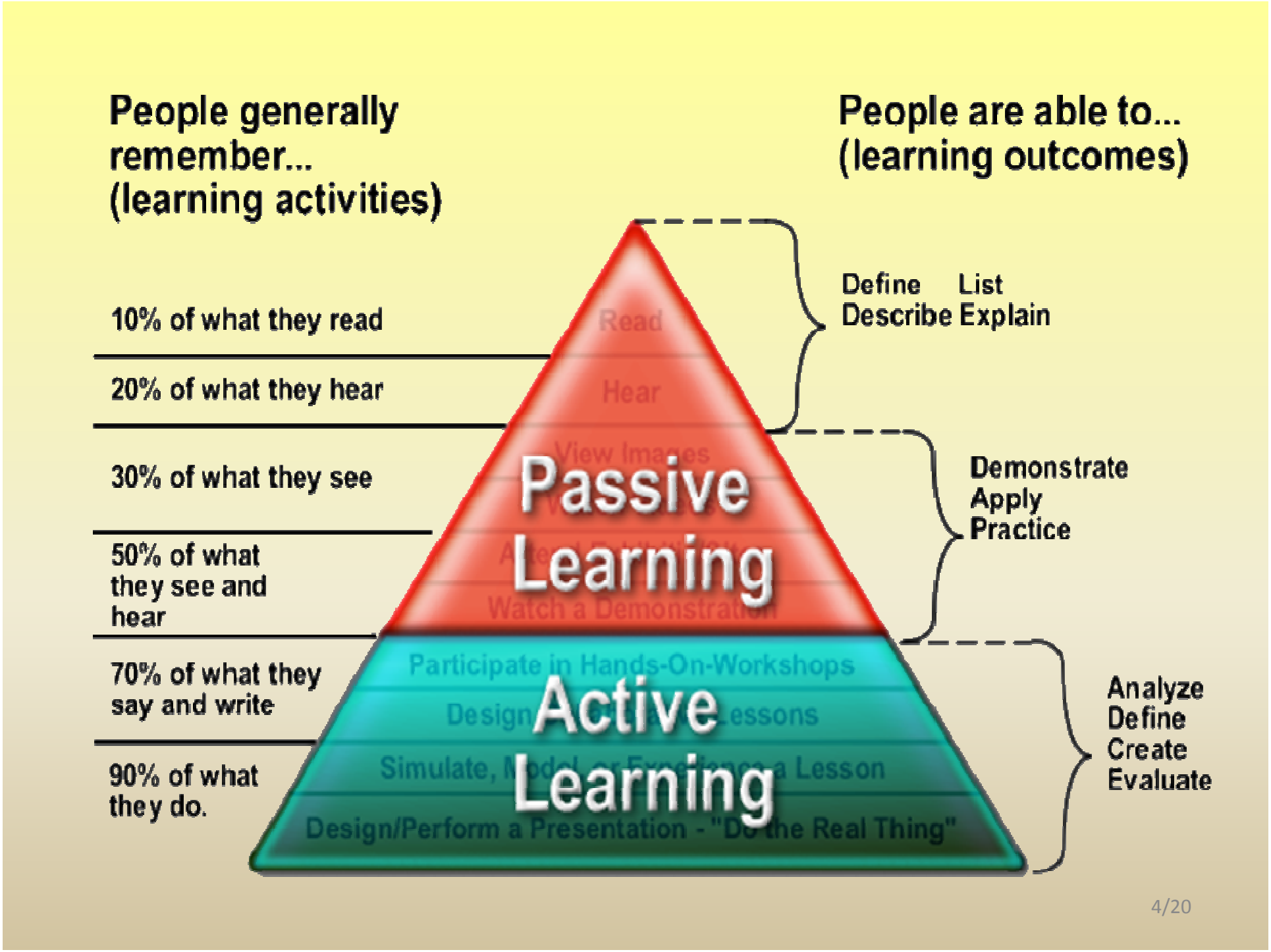
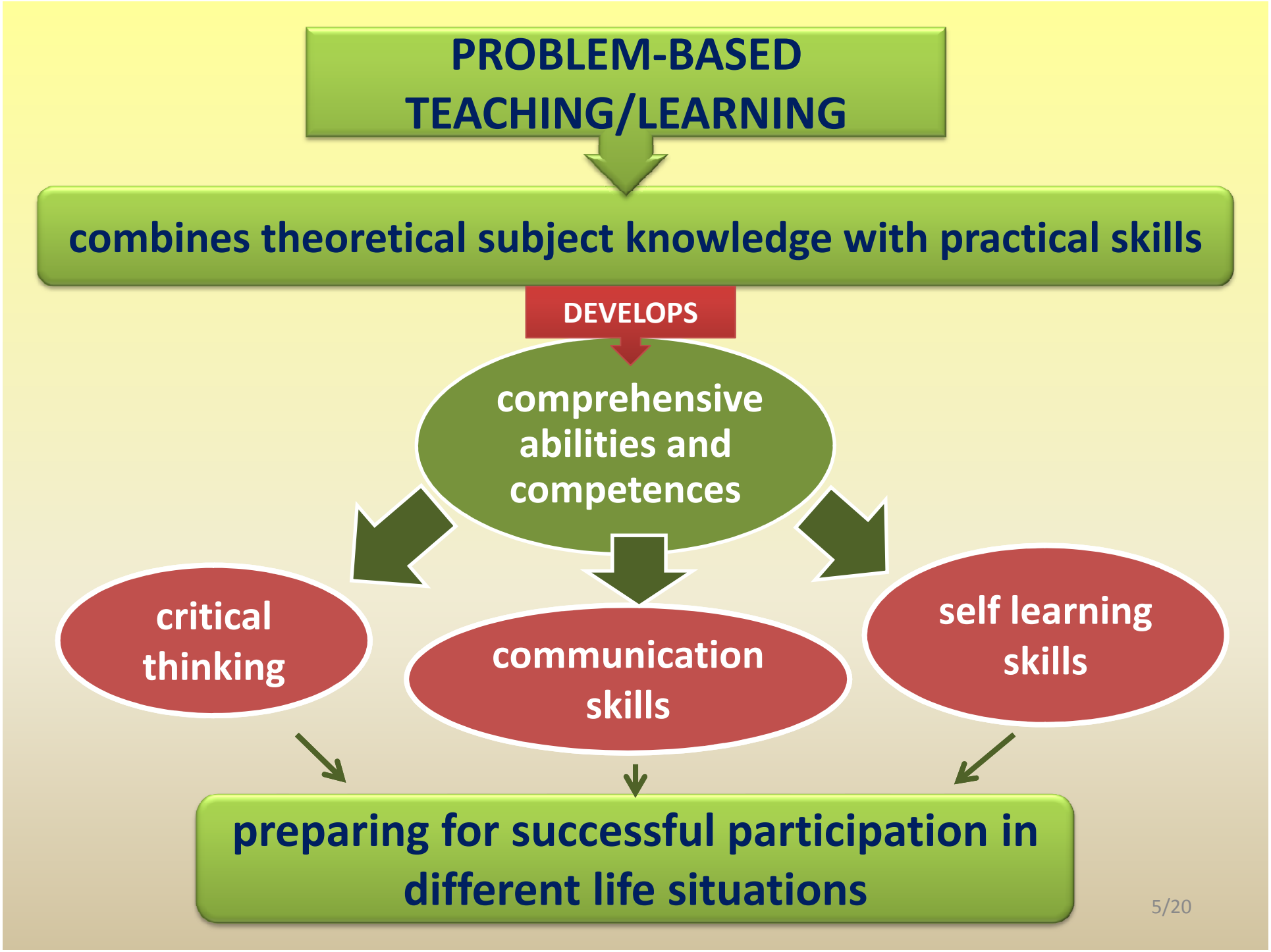
Introduction




People generally remember... (learning activities)
People are able to... (learning outcomes)
10% of what they read
20% of what they hear
30% of what they see
50% of what they see and hear
70% of what they say and write
90% of what they do.
Read
Hear
View Images
Watch a Demonstration
Passive Learning
Participate in Hands-On-Workshops
Design
Lessons
Simulate, Model, or Experience a Lesson
Design/Perform a Presentation - "Do the Real Thing"
Active Learning
Define List
Describe Explain
Demonstrate
Apply
Practice
Analyze
Define
Create
Evaluate


PROBLEM-BASED TEACHING/LEARNING
combines theoretical subject knowledge with practical skills
DEVELOPS
comprehensive abilities and competences
critical thinking
communication skills
self learning skills
preparing for successful participation in different life situations

PROGRAMMED TEACHING/LEARNING

a radical reconstruction of the traditional procedures for teaching

based on Skinner's theory of verbal behaviour as a means to accelerate and increase conventional educational learning

Problem-based teaching and learning – advantages and disadvantages

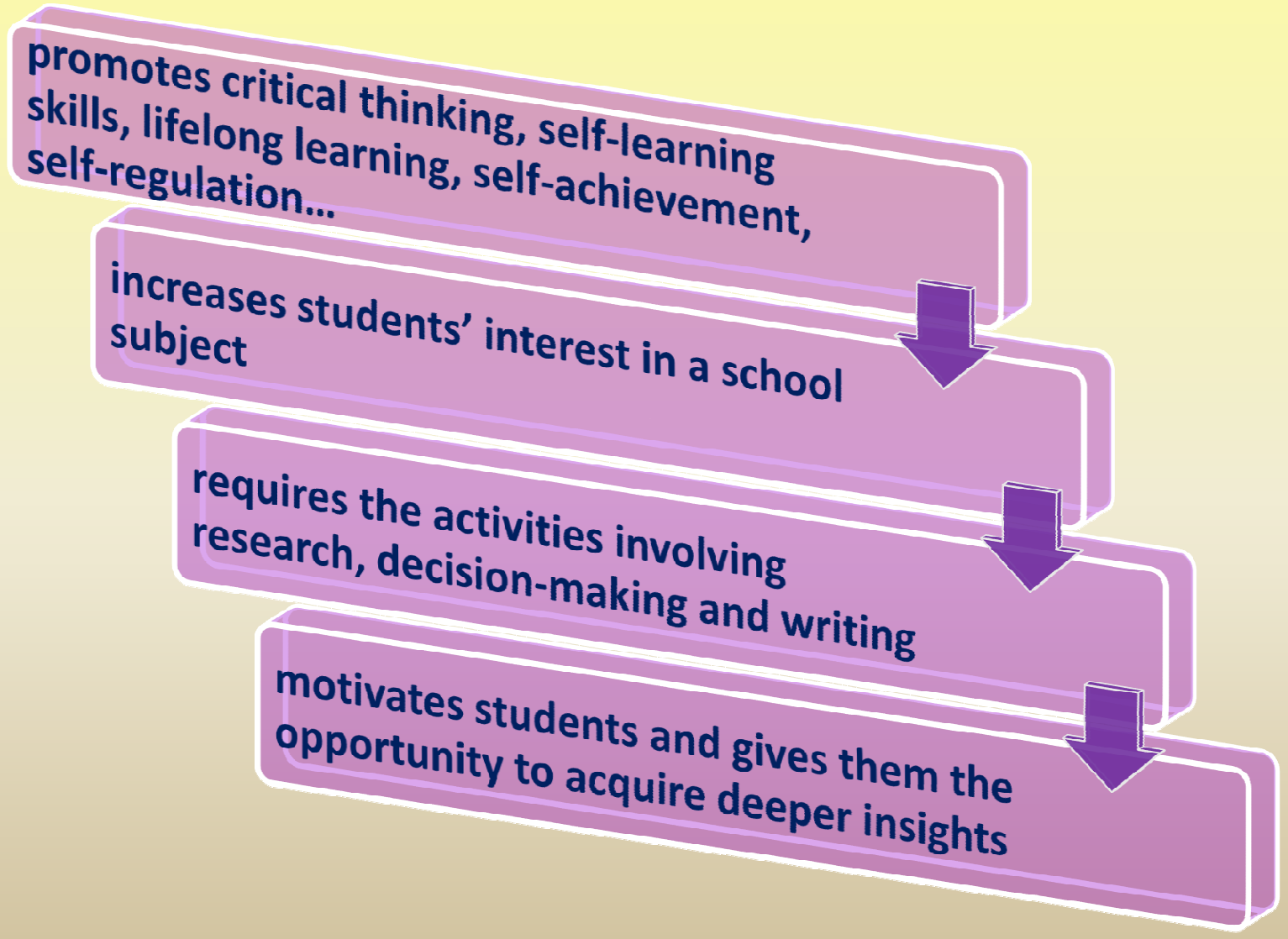
Dewey (1944):

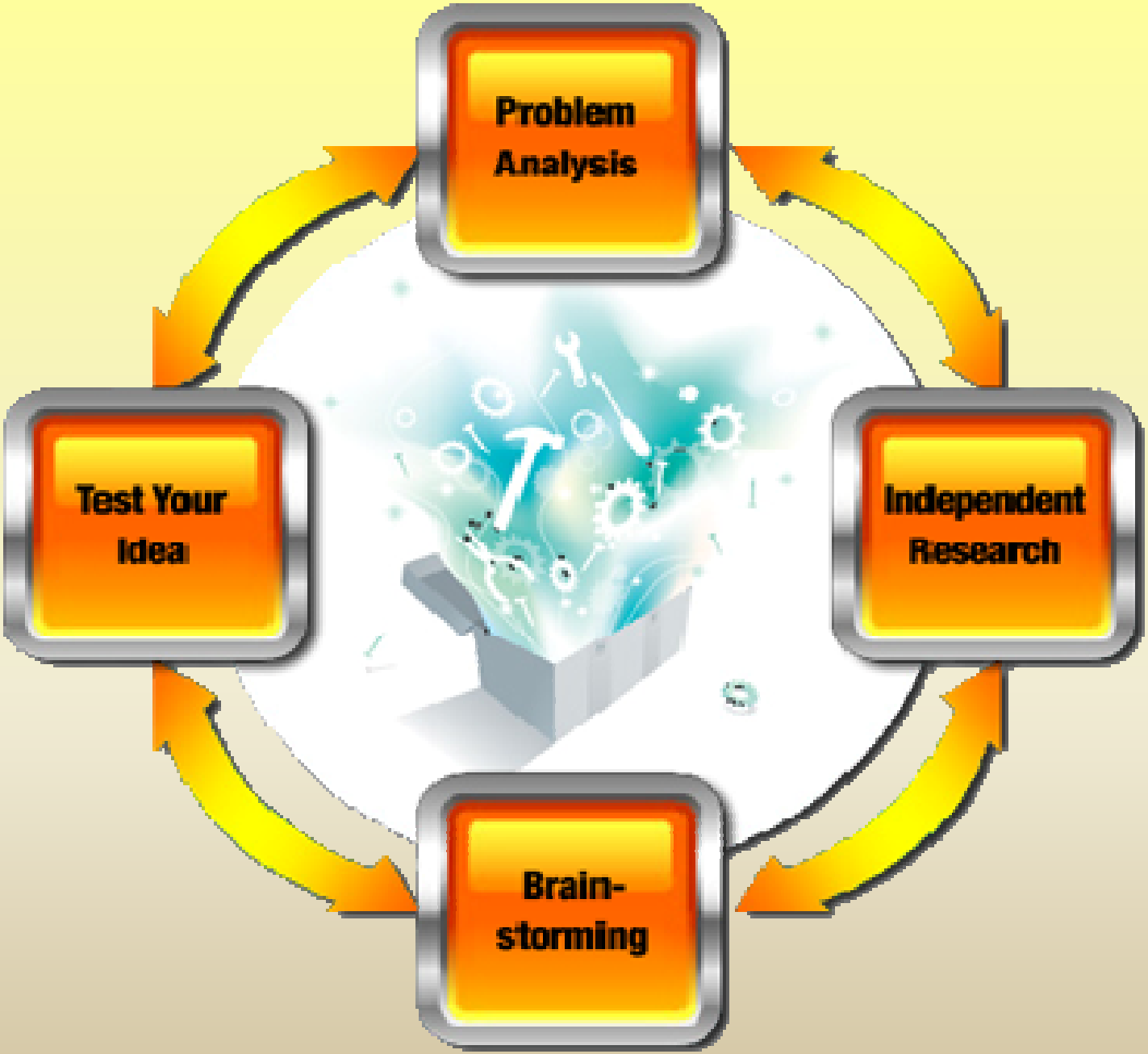
- teaching should appeal to students' natural instincts to investigate and create

Glaser (1991):

- learning is a constructive and not a receptive process

What includes problem-based teaching?




Problem Analysis
Independent Research
Brain-storming
Test Your Idea

PROBLEM-BASED TEACHING	
Advantages	**Disadvantages**
Students are the active participants of their education	Students might not be in the best position to determine the importance of resources
It motivates students for learning	Students might get lost in problem definitions
It enhances students´ problem solving skills and helps them face with practical life problems	It is preparation-demanding for teachers
It develops deeper understanding, critical thinking and development of different skills	It requires a lot of different resources which can be expensive
It develops students´ responsibility for learning	It is time-consuming

Programmed teaching and learning – advantages and disadvantages

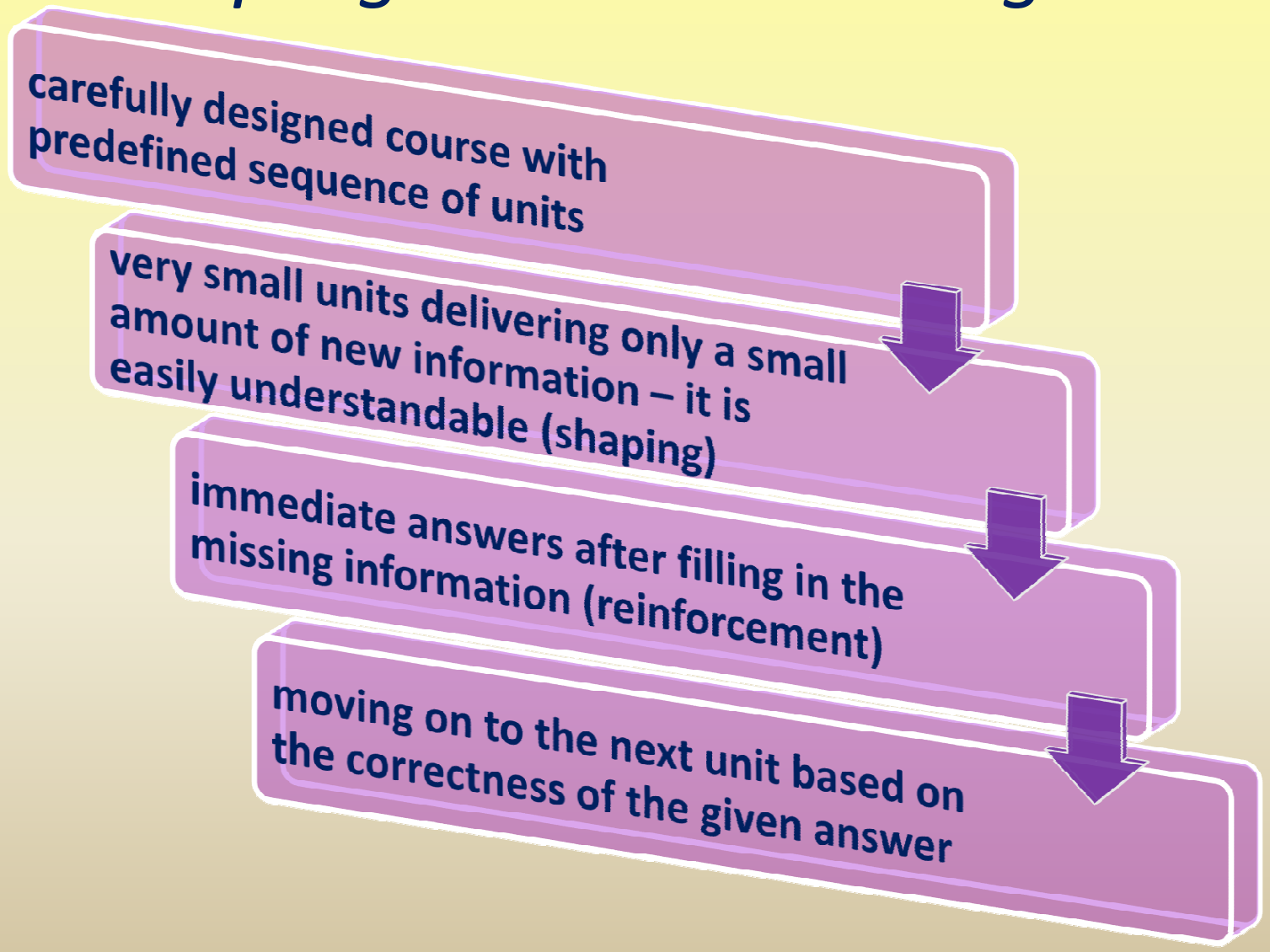
Research shows that programmed teaching:

- is superior to conventional teaching practices in the learning promotion
- it produces similar or inferior learning when compared to traditional approaches

Skinner (1968):

- emphasized the importance of feedback in instruction
- describing its function as shaping and maintaining the learner's responses

What includes learning from programmed teaching?



Linear model

- advancement through the instructional process in a particular order – to correct answers
- specific pieces of information in a series of frames
- recall or apply this information during the tests of comprehension

Branched (intrinsic) model

- use of several possible paths through the sequence of frames
- the remedial frames and remedial loops allows the correct misconceptions – from students' responses to individual steps
- offer students a variety of paths

PROGRAMMED TEACHING	
Advantages	**Disadvantages**
It individualizes learning and develops critical thinking	It limits students in creativity and originality
Students are the active participants of their education	It is appropriate only for independent students
It increases a focus on scientific design and development of instructional materials	It requires a time-consuming preparation of teaching material and teachers are not competent for designing it
In a short period of time students can learn a lot of contents	Only the material that has a logical-mathematical structure can be programmed
It immediately provides the results of knowledge	It restricts student-teacher communication

TEACHING

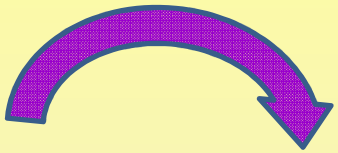
TRADITIONAL – PROBLEM-BASED – PROGRAMMED

Goal	Cognitive focus
Cognitive development of students	Knowledge as a static and fragmented category Replication and reproduction of knowledge Learning as a transmission process
Holistic development of students and development of different competences	Knowledge as a dinamic, holistic and developing category Interdisciplinary knowledge, divergent and critical thinking Learning as a transactional process
Devepolment of students' independence and of *learn to learn* competence	

Role of the student	Assessment and evaluation
Inert and inactive Waiting to be led	Individual assessment Mostly summative evaluation
Active learning through experience Evaluates resources and seeks out evidences Explains to each other concepts, theories and principles	Group assessment Formative evaluation Self-evaluation
Active learning Searches, learns and applies the new knowledge through his/her own self-test questions which provide immediate feedback	Individual assessment Self-evaluation, formative and summative evaluation

Example

Resources and materials



One-dimensional

Structured and predetermined

Traditional teaching

Multidimensional

Creative and different

Problem-based teaching

Completely structured (e-learning)

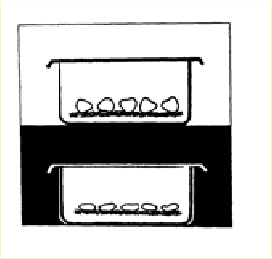
Pre-determined

Programmed teaching

Example of problem-based task

SEEDS AND PLANTS

One scientist was interested in conditions in which the seeds germinated faster. In two pots, on the moist paper, he puts a few grains of corn.



One pot was placed in a well lit, and the other in a darkened room. In both rooms the same temperature is maintained.
After four days, the researchers examined the yield of maize and found that ALL grains germinated.
Based on data from this trial try to conclude how the heat and light influence on germination of seeds.

Heat:_____
Light:_____

Example of programmed task

SEEDS AND PLANTS

Step 1: **The plant grows from seed. For sprouting, seeds need certain conditions. One of these conditions is appropriate temperature – heat.Light is not neccessary for sprouting of seeds. The seeds will sprout even in a dark place. But when the seed sprouts out of the soil the plant need light for its growing.When the seed sprouts out of the soil, the plant need light for its growing. Light is condition for life and growing of the plant.**

Step 2:

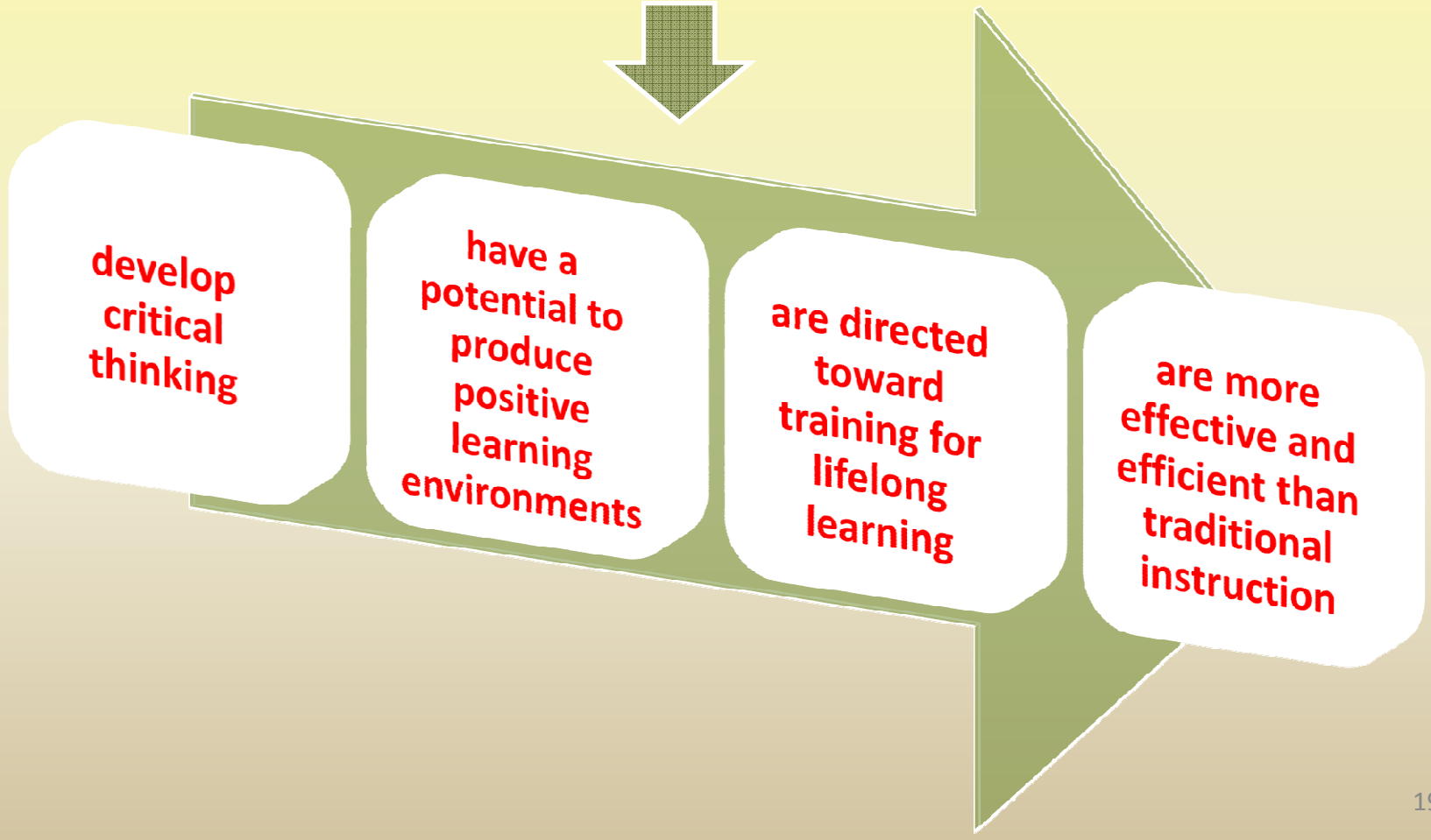
•If we put seeds in soil and leave that pot on room temperature, what will happen with seeds? Why? _____
•If we put seeds in soil and leave that pot in a dark room, what will happen with seeds? Why? _____
•If we put the plant in a dark room what will happen with plant? Why? _____

Step3:

•If we put seeds in soil and leave that pot on room temperature, seeds will sprout because seeds need appropriate temperature – heat for their sprouding.
•If we put seeds in soil and leave that pot in a dark room, seeds will sprout because the light is not condition for their sprouding.
•If we put the plant in a dark room, the plant will fade, because it needs light for its life and growing.

Conclusion

PROBLEM-BASED TEACHING AND PROGRAMMED TEACHING



Thank You for Your attention!!

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