

Strengthening Teaching Competences  
in Higher Education  
in Natural and Mathematical Sciences



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## COMBINING TRADITIONAL AND CONTEMPORARY METHODS IN DIDACTIC AND METHODIC MODELING OF TEACHING

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IMPROVEMENT OF PEDAGOGICAL AND METHODICAL COMPETENCIES  
OF TEACHERS / ASSOCIATES IN HIGHER EDUCATION INSTITUTIONS, Niš,  
December 20-24, 2021



# TRADITIONAL TEACHING METHODS



ORAL  
PRESENTATION  
METHOD

DEMONSTRATION  
METHOD

METHOD OF TEXT  
READING AND  
ANALYZING

CONVERSATION  
METHOD –  
DIALOGUE METHOD

METHOD OF  
PRACTICAL WORK

METHOD OF  
WRITTEN AND  
GRAPHIC WORKS

LABORATORY  
METHOD



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# INNOVATIVE TEACHING METHODS

METHOD OF MORPHOLOGICAL ANALYSIS

PROJECT METHOD

BRAIN-STORMING METHOD

UNIT METHOD

SNOWBALL METHOD

SIMULATION METHOD

FILPPED CLASSROOM METHOD

MAPPING METHOD

PROBLEM-SOLVING METHOD

MODELLING METHOD



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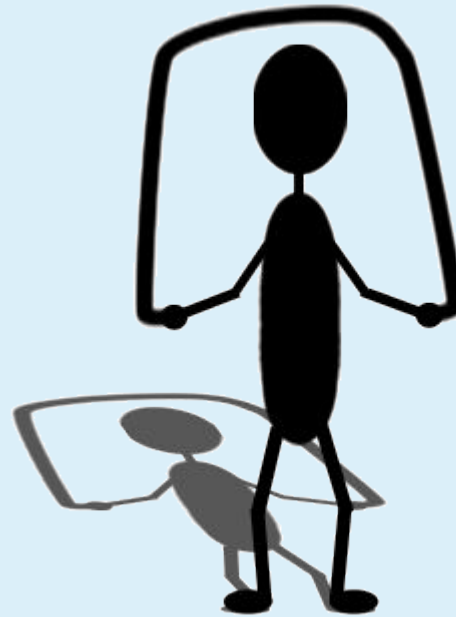
# IMPLEMENTATION OF PROBLEM-SOLVING METHOD IN TEACHING AND LEARNING



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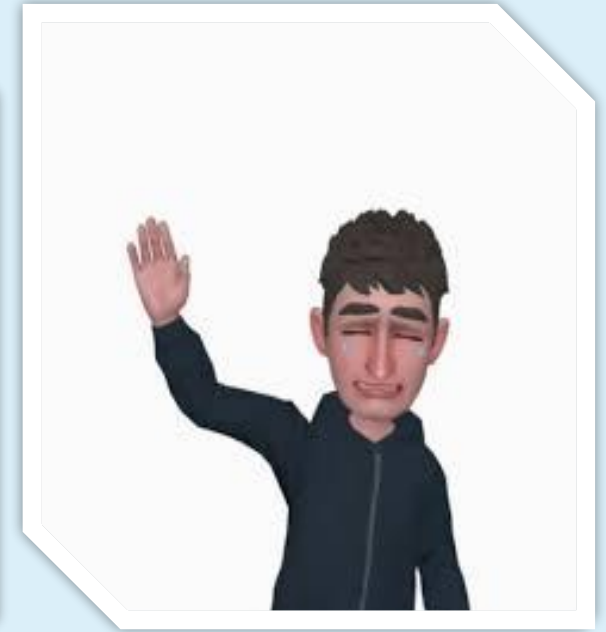
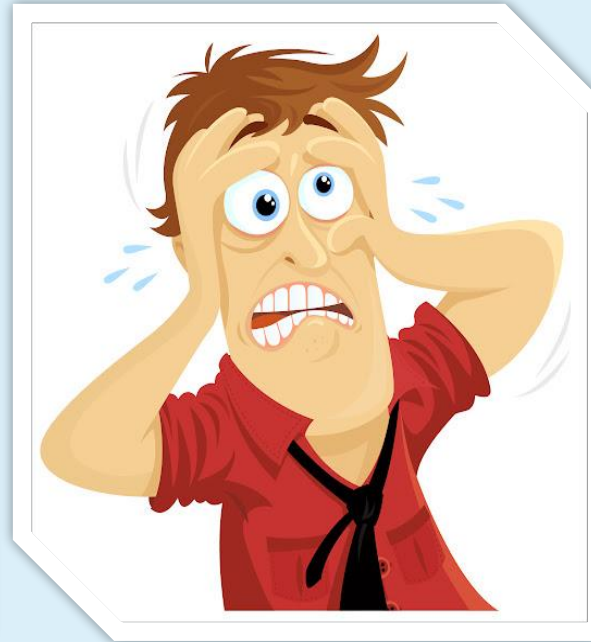
WARM-UP ACTIVITY - "PROBLEM"  
FOLLOW THE LINK BELOW:



<https://ideaboardz.com/for/Problem-solving/4253005>

# FACE RECOGNITION INTRODUCTORY ACTIVITY

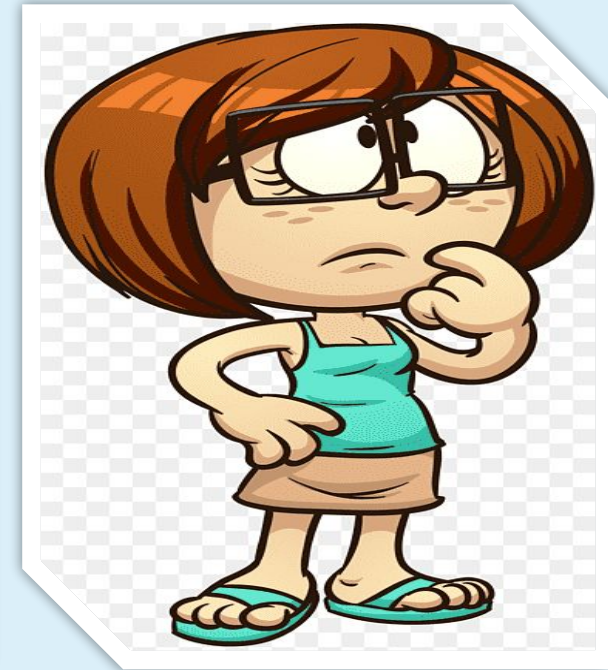
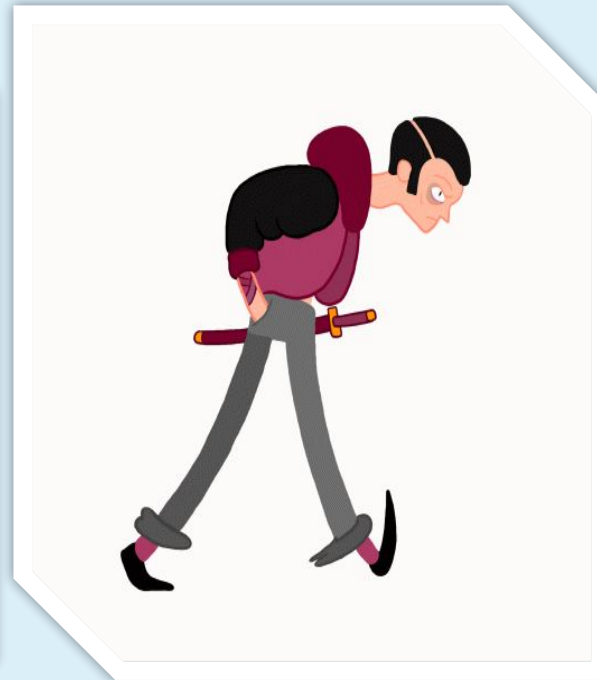
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# FACE RECOGNITION INTRODUCTORY ACTIVITY



# FACE RECOGNITION INTRODUCTORY ACTIVITY



# IT'S OK TO...



**FEEL ANGER**



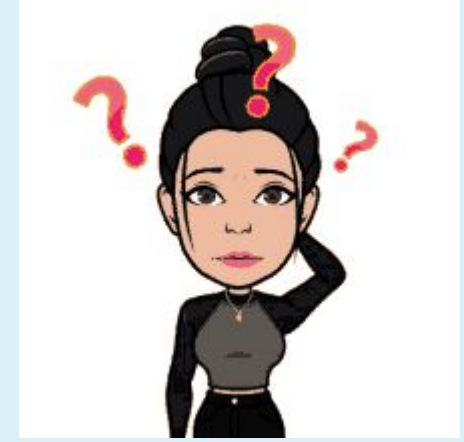
**YELING**



**TRY TO FIGURE OUT AGAIN**



**BE QUESTIONABLE**



**BE SUSPICIOUS**



**BE CURIOUS**



**BE CHALLENGED**



**STRUGGLE**



**FEEL TRAPPED**



**FEEL MISUNDERSTOOD**



# Psychological, epistemological and didactic values of problem solving



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## STUDENTS

Problem = dilemma/obstacle

- investment of efforts in overcoming barriers
- step by step in finding solution
- learning how to behave in new situations
- developing independence
- building enthusiasm
- influencing confidence
- improving self-directed learning



"sage on the stage"



"guide on the side"

# TASK FOR PARTICIPANTS

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## **“FIND THE SOLUTION”** EDUCATIVE CLIP

**CAREFULLY LOOK TO A GIVEN VIDEO AND TRY TO FIND THE SOLUTION**

[https://www.youtube.com/watch?v=BgLEO\\_mW3X0](https://www.youtube.com/watch?v=BgLEO_mW3X0)

# STAGES IN PROBLEM SOLVING

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**DEFINE THE PROBLEM**

**DETERMINE THE ROOT  
CAUSES OF THE  
PROBLEM**

**DEVELOP ALTERNATIVE  
SOLUTIONS**

**SELECT A SOLUTION**

**IMPLEMENT THE  
SOLUTION**

**EVALUATE THE  
OVERCOME**



# PROCEDURES IN PROBLEM SOLVING

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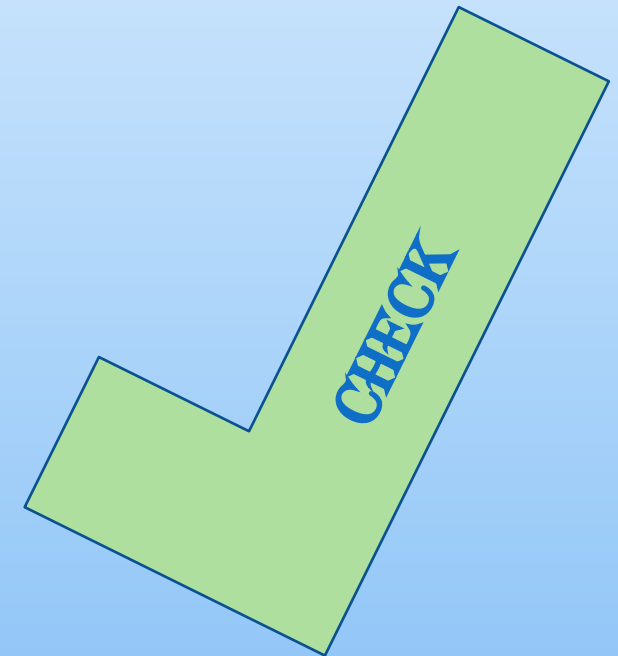
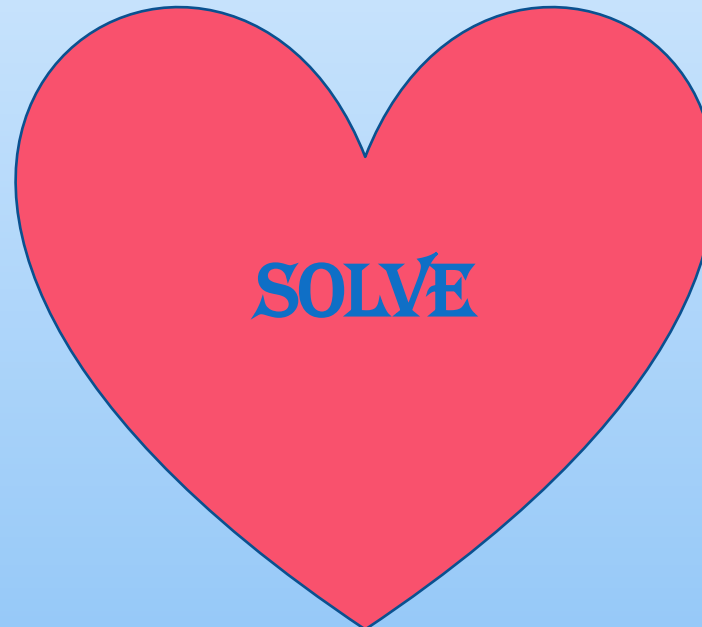
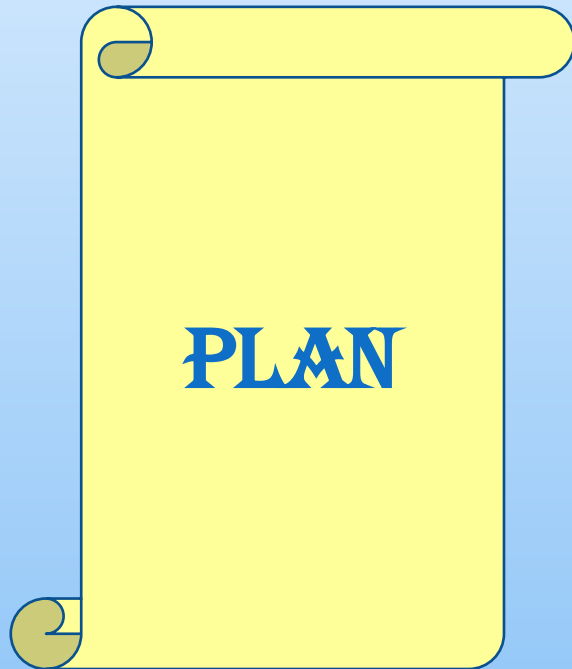
**ALGORITHMIC  
PROCEDURES**

**HEURISTIC  
APPROACH**

**INTUITION**

# GUIDELINES IN PROBLEM SOLVING

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# SOLUTION OF THE TASK

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## **“FIND THE SOLUTION” - PART 2**

### EDUCATIVE CLIP

**CAREFULLY LOOK TO A GIVEN VIDEO TO TEST YOUR SOLUTION**

<https://www.youtube.com/watch?v=X3COVU75VbA>



# THANK YOU FOR YOUR COOPERATION

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