

Creative and Scientific Thinking

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CRE252

Information Technology Department

Lecture 7



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Learning Objectives:

- **Problem Solving Steps**
- **Techniques for Generating Solutions**
- **Individual Techniques**

Problem Solving Steps

Chapter

03

WHY DO WE NEED PROBLEM SOLVING?

To be in control of what happens and to avoid bad decisions.



Problem-Solving Steps:

1. Recognize that there is a problem
2. Identify the problem
3. Generate alternative solutions

Problem-Solving Steps

4. Evaluate the alternative solutions
5. Choose among the alternative solutions
6. Implement the chosen solution
7. Choose a Follow Up Date to Evaluate

Chapter

03

Recognize that there is a problem



Problem-Solving Steps: 1-Recognize that there is a problem

1-Recognize that there is a problem



Something is wrong

Recognize that there is a problem

Identify the problem

Generate alternative solutions

Evaluate the alternative solutions

Choose among the alternative solutions

Implement the chosen solution

Choose a Follow Up Date to Evaluate

1. Techniques for Recognizing Problems:

- Comparison against others
- Monitor for weak signals
- Comparison of current performance with objectives or past performance
- Listing complaints

Recognize that there is a problem

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Identify the problem



2. Identify the Problem: Ask Who?

Who – what – when – where – why - How



Recognize that there is a problem

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2. Identify the Problem: Ask Who?

- Who says that this is a problem?
- Who caused or is causing the problem?
- Whom does it or will it affect?
- Who has done something about the problem (tried to solve it)?

2. Identify the Problem: Ask What?

Who– **What** – when – where – why - How

Recognize that there is a problem

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2. Identify the Problem: Ask What?

- **What happened or will happen?**
- **What are the symptoms?**
- **What are the consequences to others?**
- **What circumstances surround the occurrence of the problem?**
- **What is not functioning as desired?**

2. Identify the Problem: Ask When?

Who– What – **When** – where – why - How

Recognize that there is a problem

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Choose a Follow Up Date to Evaluate

2. Identify the Problem: Ask When?

- When did it or will it happen?
- When did it first occur?

2. Identify the Problem: Ask Where?

Who– What – When – **Where** – why - How

Recognize that there is a problem

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2. Identify the Problem: Ask Where?

- Where is the problem occurring?
- Where did it or will it have an impact?

2. Identify the Problem: Ask Where?

Who– What – When – Where – **Why** - How

Recognize that there is a problem

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2. Identify the Problem: Ask Why?

- Why is this a problem?
- Why did it or will it occur?
- Why was nothing done to prevent the problem from occurring?
- Why is a response needed now?

2. Identify the Problem: Ask Where?

Who– What – When – Where – Why - **How**

Recognize that there is a problem

Identify the problem

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Choose among the alternative solutions

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Choose a Follow Up Date to Evaluate

2. Identify the Problem: Ask How?

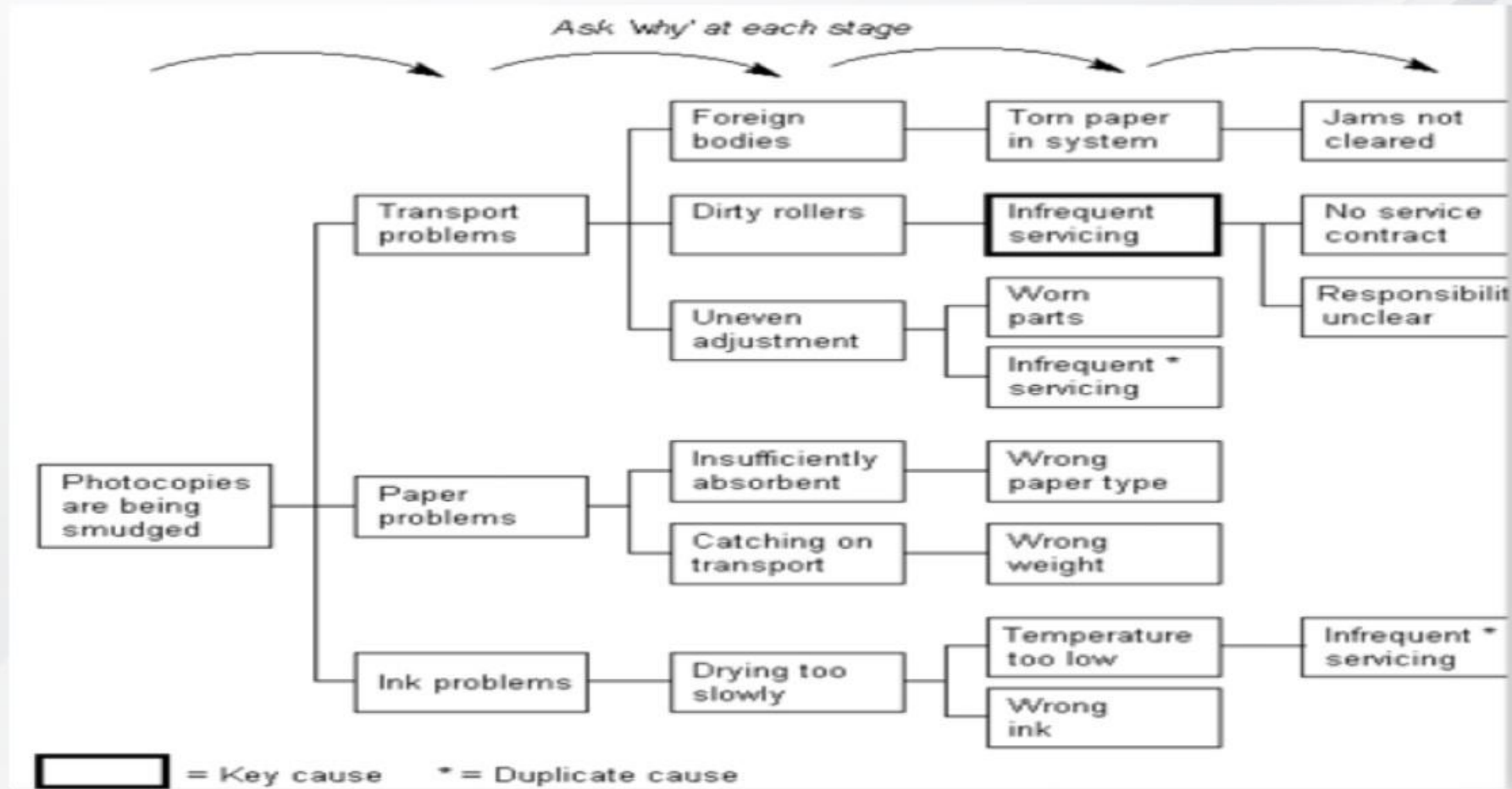
- How should the process be working?
- How are others dealing with this or similar problems?

Techniques for Identifying the Problem

- **Creating Why-Why Diagram**

- a Tree Diagram where each child statement is determined simply by asking 'why' the parent occurs.

Techniques for Identifying the Problem



Problem Statement:

- Problem Statement is the end result of problem identification.
- Brief, clear, to-the-point identification of the specific problem to be addressed, including the key rationale for why it should be solved.

Recognize that there is a problem

Identify the problem

Generate alternative solutions

Evaluate the alternative solutions

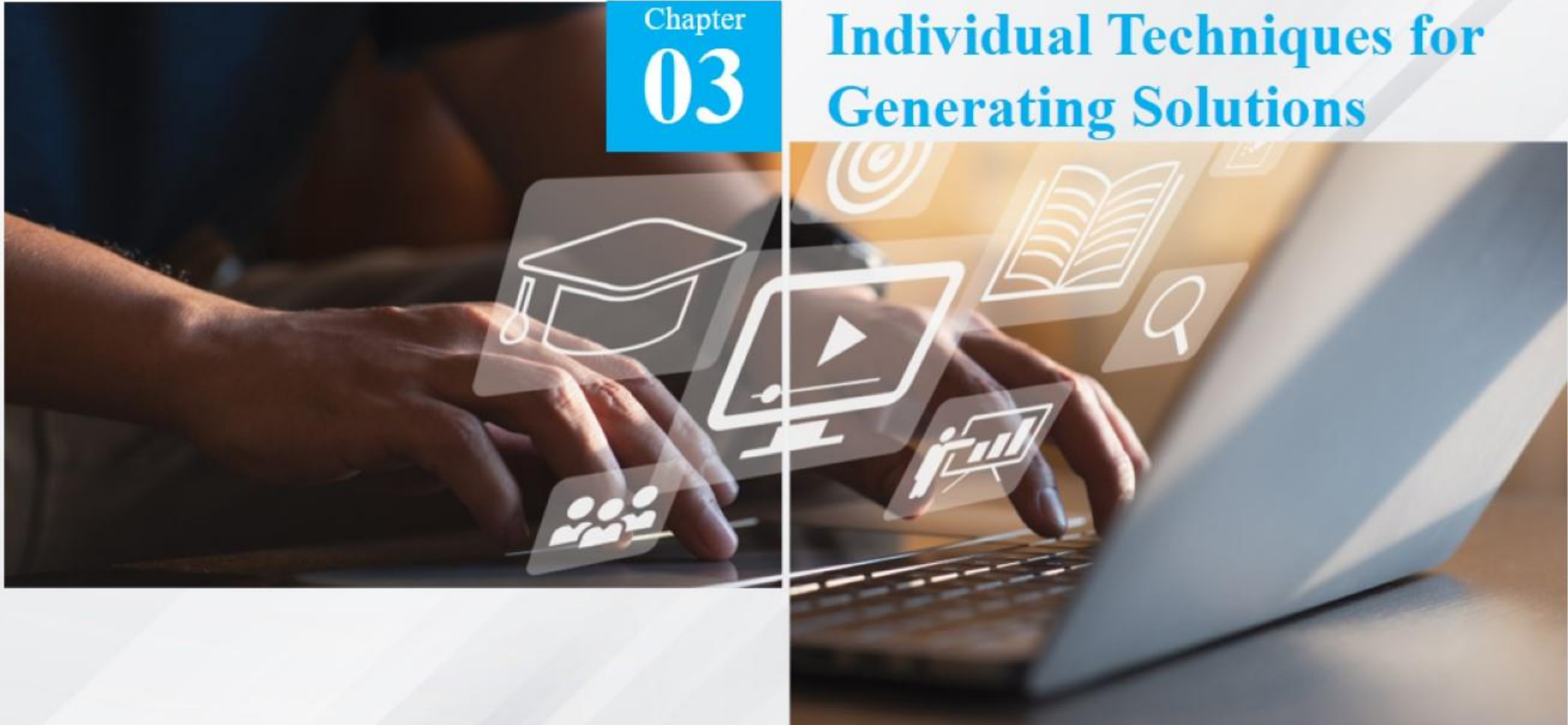
Choose among the alternative solutions

Implement the chosen solution

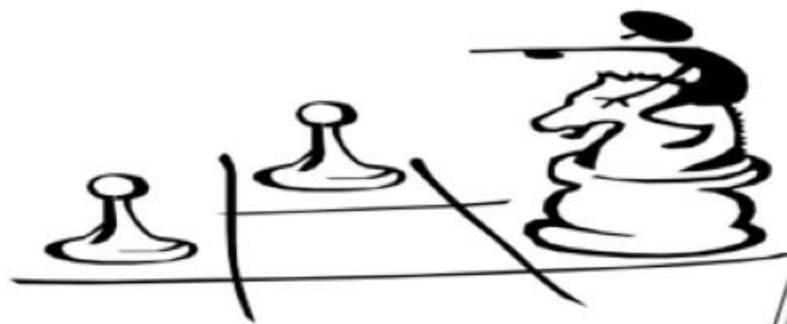
Choose a Follow Up Date to Evaluate

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Individual Techniques for Generating Solutions



THINK OF SOLUTIONS

[illegible]

Recognize that there is a problem

Identify the problem

Generate alternative solutions

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Choose among the alternative solutions

Implement the chosen solution

Choose a Follow Up Date to Evaluate

3. Generate Alternative solutions:

- Generate ideas.
- Do not eliminate any possible solutions until several have been discussed.



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Questions To Encourage Ideas

1. What if...?
2. How can we improve...?
3. How will the Optimist Member and/or the community benefit?
4. Are we forgetting anything?
5. What's the next step?

Questions To Encourage Ideas

6. What can we do better...?
7. What do you think about...?
8. What should we add?
9. What should we eliminate?
10. What other ideas do you have...?

Techniques to Generate ideas

- Individual Techniques for Generating Solutions (Mind mapping)
- Group Techniques for Generating Solutions (BrainStorming)

Individual Techniques for Generating Solutions:

Mind mapping:

- A diagram used to represent words, ideas, tasks or other items linked to and arranged radially around a central key word or idea

Individual Techniques for Generating Solutions:

Mind mapping:

Definition:

- A visual picture of a group of ideas, concepts or issues.

Individual Techniques for Generating Solutions:

Mind mapping:

Purpose:

- Unblock our thinking.
- See an entire idea or several ideas on one sheet of paper.

Individual Techniques for Generating Solutions:

Mind mapping:

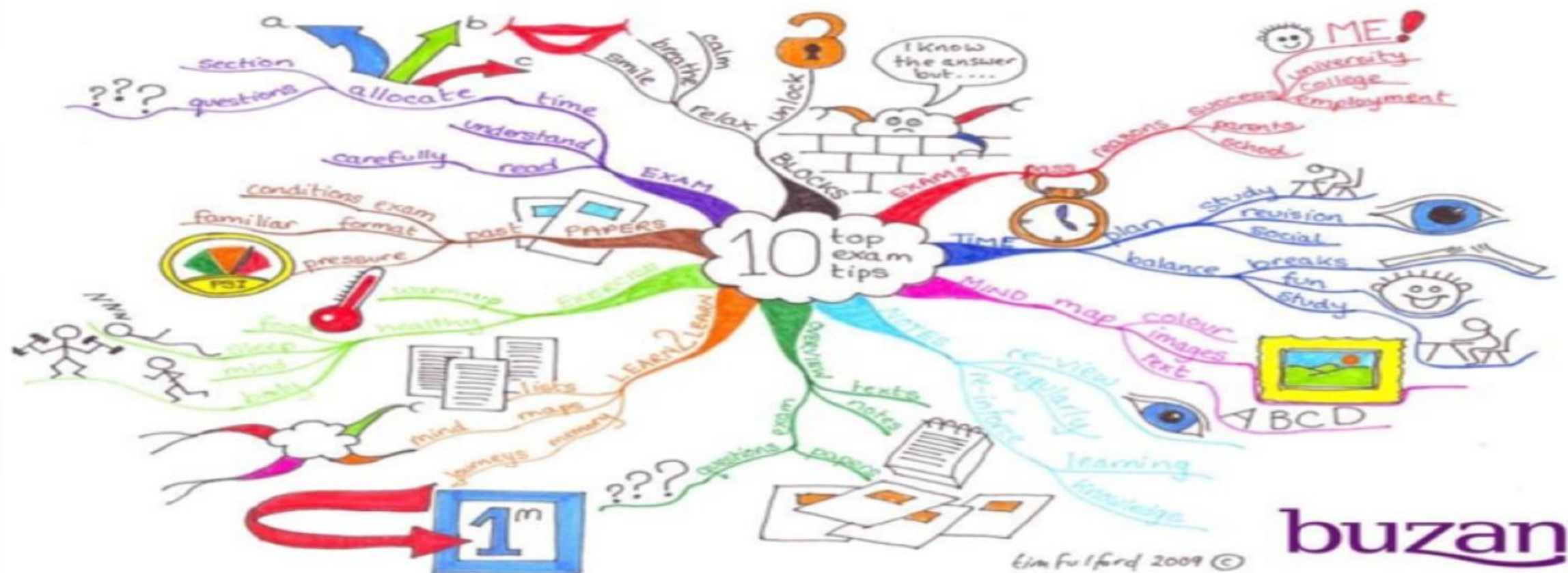
Purpose:

- See how ideas relate to one another.
- Look at things in a new and different way.



Why Mind Map?

- Organize thoughts when brainstorming
- Effective method of taking notes
- Harnesses the full range of skills– word, image, number, logic, rhythm, color and spatial awareness
- Aid creativity, memory, and specifically the recall of information.







Thank You