



# RAMCO INSTITUTE OF TECHNOLOGY

Approved by AICTE, New Delhi & Affiliated to Anna University

NAAC Accredited with 'A+' Grade & An ISO 9001: 2015 Certified Institution

NBA Accredited UG Programs: CSE, EEE, ECE and MECH

**Department of Artificial Intelligence and Data Science**

**Academic Year 2025 – 2026 (Odd Semester)**

**Degree, Semester & Branch:** B.Tech ,V & Artificial Intelligence and Data Science

**Course Code & Title:** CW3551 & Data and Information Security

**Name of the Faculty member (s):** S.Pradeepha

## **Innovative Practice Description**

- **Unit / Topic:** Unit5/ SSL Protocols
- **Course Outcome:** CO5
- **Topic Learning Outcome:** TLO 45
- **Activity Chosen:** Jigsaw Puzzle
- **Justification:**

The **Jigsaw Puzzle** converts the complete handshake flow into a **visual puzzle** by breaking it into cards and puzzle pieces:

- Enhances memory retention
- Encourages active participation
- Helps students visualize abstract security concepts
- Promotes group-based problem solving
- Makes a technical topic engaging
- **Time Allotted for the Activity:** 45 Minutes
- **Details of the Implementation:**

### **Preparation by Faculty**

- Create handshake message cards:  
ClientHello, ServerHello, Certificate, ServerHelloDone, ClientKeyExchange, ChangeCipherSpec, Finished
- Create a large SSL handshake diagram → cut into **puzzle pieces**
- Shuffle every set differently for each group

### **Activity Flow**

1. Divide the class into groups of 4–5 students
2. Provide each group with:
  - Mixed puzzle pieces
  - Shuffled handshake message cards
3. Students must:
  - Reconstruct the handshake flow **like a jigsaw puzzle**

- Place each **correct message card** on the corresponding puzzle piece
- 4. Faculty moves around, guiding groups
- 5. Groups explain:
  - Why a particular message belongs in that step
  - What security purpose it serves
  - What would break if that step is removed
- 6. Faculty shows the correct flow at the end

**Learning Outcome:**

Students gain:

- Step-by-step understanding of handshake
- Ability to differentiate optional vs mandatory messages
- Deep clarity on certificate validation
- Team collaboration & presentation skills

• **CO – PO / PSO mapping:**

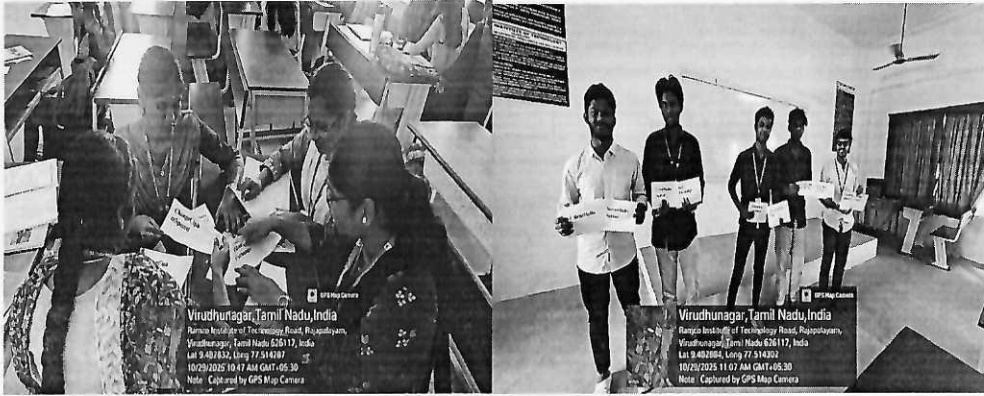
CO	PO1	PO2	PO5	PSO1
CO4	3	2	2	3

(1 – Low      2 – Moderate      3 – High)

**PO / PSO mapped:**

Innovative practice	PO1	PO2	PO5	PSO1
	3	2	2	3
<b>Justification for correlation</b>	Students apply basic security fundamentals to understand and solve problems related to the SSL/TLS handshakes	Students identify all components involved in the SSL handshake and select appropriate security mechanisms used in each step	Students apply SSL/TLS security policies such as certificate validation, key exchange, and cipher negotiation to complex communication scenarios	Students demonstrate knowledge of secure communication systems to solve real-world business and engineering problems using the SSL/TLS handshake.

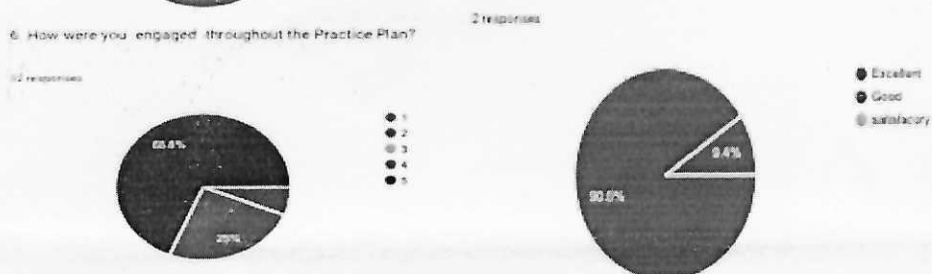
• **Images / Screenshot of the practice:**



• **Reflective Critique:**

❖ **Feedback of practice from students and other stakeholders:**

- Reported that the jigsaw puzzle helped them clearly understand the order of SSL handshake messages
- Found it more interesting than lecture-only approach
- Enjoyed group-based puzzle-solving
- Understood certificate validation and message roles more clearly



❖ **Benefit of the practice:** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

- Improved outcome attainment for CO5
- Students could reproduce the handshake flow easily in exams
- Enhanced listening, thinking, and problem-solving skills
- Increased engagement through gamification

❖ **Challenges faced in implementation:**

- students struggle to remember the sequence of handshake steps.
- They get confused between similar messages like ServerHello and ServerHelloDone.

**References:**

- <https://www.cloudflare.com/learning/ssl/what-happens-in-a-tls-handshake/>
- <https://www.ssl.com/article/ssl-tls-handshake/>

Signature of Faculty Member

HOD



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Department of Artificial Intelligence and Data Science

Academic Year: 2025- 2026 (Odd Semester)

## FEEDBACK

Active Learning Best Practices: Jigsaw Puzzle

Degree, Semester & Branch: V Sem B.Tech. Artificial Intelligence and Data Science.

Course Code & Title: CW3551 & Data and Information security

Name of the Faculty member: S. Pradeepha AP/AD

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Topic of discussion: SSL Protocols

Topics Covered: Unit- 5

Date and Time: 29.10.2025 & 10.30 A.M to 11.15 A.M

Google form Link : <https://forms.gle/89vC7vSEj2y9jNbx8>

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### Feedback Questionnaire:

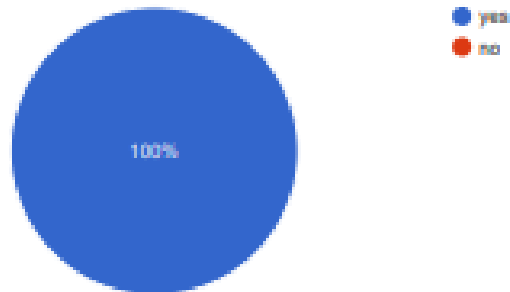
1. Did the plan align with your expectations? Yes no
2. How effectively was the Innovative Practice Plan implemented? **1 2 3 4 5**
3. How well did you understand the Objectives and Purpose of the Innovative Practice Plan?  
**EXCELLENT GOOD SATISFCATORY**
4. Were the necessary resources and support provided for successful implementation?  
**YES, NO**
5. Did you notice any specific Benefits or Changes resulting from this plan? **YES, NO**
6. How were you engaged throughout the Practice Plan? **1 2 3 4 5**
7. Did the plan provide Opportunities for Active Participation and Collaboration? **YES, NO**
8. Whether the Information system has been analysed in a best way using this Innovative Practice Plan? **EXCELLENT GOOD SATISFCATORY**
9. Does this activity learning improve Listening, Thinking, Describing and Problem-- Solving skills? **YES NO**
10. Is the Practice Plan sufficient to understand and discuss the concepts? **YES NO**

## Feedback Analysis

1. Did the plan align with your expectations?

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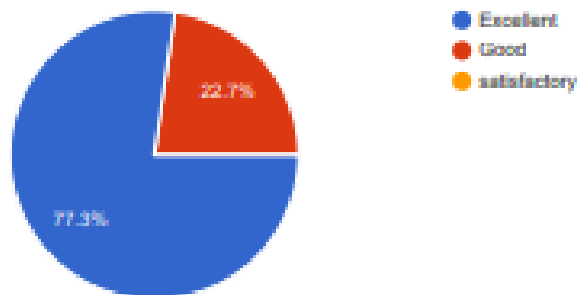
22 responses



2. How effectively was the Innovative Practice Plan implemented?

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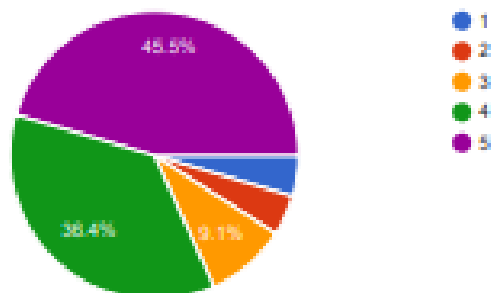
22 responses



3. How well did you understand the Objectives and Purpose of the Innovative Practice Plan?

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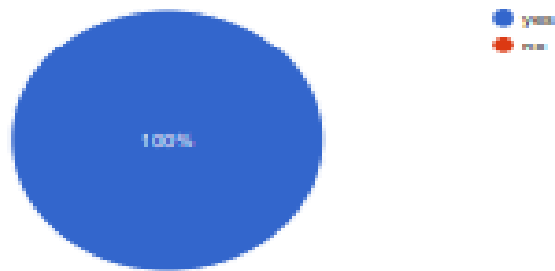
22 responses



4. Were the necessary resources and support provided for successful implementation?

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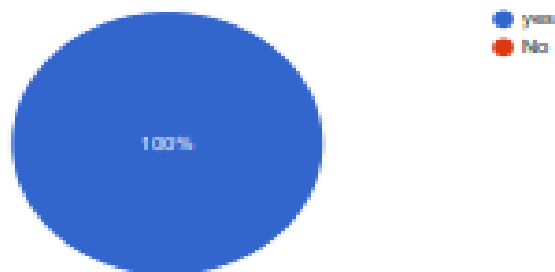
32 responses



5. Did you notice any specific Benefits or Changes resulting from this plan?

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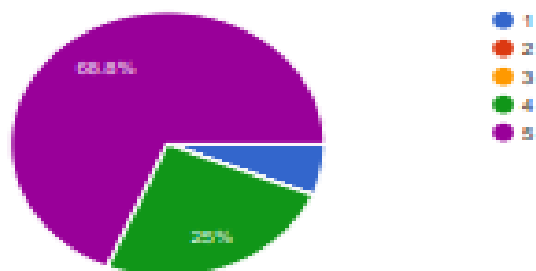
32 responses



6. How were you engaged throughout the Practice Plan?

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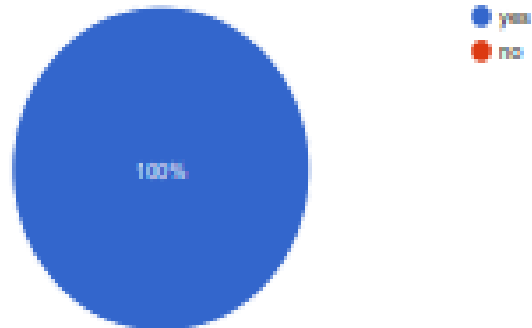
32 responses



7. Did the plan provide Opportunities for Active Participation and Collaboration?

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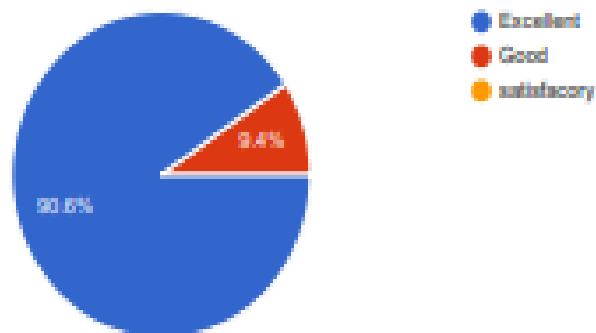
32 responses



8. Whether the Information system has been analysed in a best way using this Innovative Practice Plan?

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32 responses



9. Does this activity learning improve Listening, Thinking, Describing and Problem-Solving skills?

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32 responses

