Department of CSE (Artificial Intelligence and Machine Learning)

Academic Year 2025 – 2026 (Odd Semester)

Degree, Semester & Branch: I Semester – B.E. CSE (AIML)

Course Code & Title: CS25C01 Computer Programming: C

Name of the Faculty member (s): Dr. R. Venkatesh, ASP & Head /CSE (AIML)

Date of Implementation : 31.10.2025

Innovative Practice Description

- **Unit / Topic: Module IV - String Handling: input/output, string library functions**
- **Course Outcome:** CO4
- **Activity Chosen: Flipped Classroom**

Justification:

The flipped classroom method reverses the traditional teaching pattern by shifting the introduction of concepts to pre-class learning. Students go through videos, notes, and sample programs at home, while classroom time is devoted to discussion, clarification, and application-oriented tasks. This approach is especially effective for String Handling because it involves:

- Understanding multiple input/output functions
- Practicing frequently used string library functions
- Identifying common mistakes like buffer overflow and missing null characters

Using in-class program explanation enhances learning by:

- Encouraging peer learning
- Strengthening conceptual clarity
- Improving code reading and debugging skills

Time Allotted for the Activity: 20 Minutes

Pre Implementation:

- The learning materials related to *String Handling* such as string input/output functions (scanf, gets, fgets, puts) and string library functions (strlen, strcpy, strcmp, strcat) were shared with the students two days before the class activity.
- The materials included short notes, sample programs, and step-by-step explanations demonstrating how each function works with different inputs.
- Students were instructed to go through the study material at home and try executing the provided programs in their system or online compilers.
- They were asked to write down the output of each program and identify the purpose of every function used in it.
- A clear instruction was given that each student should be ready to explain at least one string handling program during the class session.

Details of the Implementation:

- Pre-class learning materials containing string I/O functions (scanf, gets, fgets, puts) and commonly used library functions (strlen, strcpy, strcmp, strcat) were uploaded for students.
- Students were instructed to study sample programs and write down their understanding of how each function behaves with different inputs.
- During the class activity, students were divided into small groups and were asked to discuss the programs they learned at home.
- As shown in Figure 1 Students Arun Balaji A and Shanjayram M explained sample programs involving:
  – Reading strings using fgets()
  – Comparing strings with strcmp()
  – Copying strings with strcpy()
  – Determining string length using strlen()
- Students discussed execution flow, input boundary issues, and the role of the null character.
- After group discussion, one student from each group presented the explanation and output of a selected program to the class.

- **CO – PO / PSO mapping:**

CO	PO1	PO2	PO3	PO9	PO10	PSO1
CO2	2	2	2	1	1	1

(1 – Low 2 – Moderate 3 – High)

- **PO / PSO mapped:**

Innovative practice	PO1	PO2	PO3	PO9	PO10	PSO1
Justification for correlation	Apply basic C programming knowledge for string manipulation	Analyze and differentiate string functions and their behaviour	Develop logic to use string library functions in programs	Work effectively in teams during program explanation activity	Communicate coding logic and function behavior clearly	Apply string handling concepts in problem-solving

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

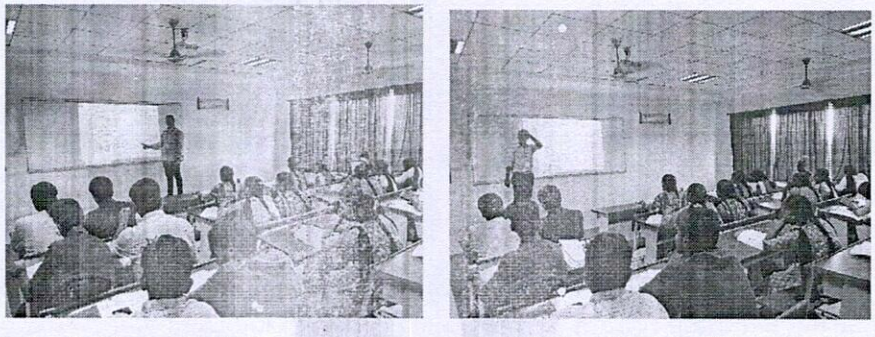

Fig 2: Students (Arun Balaji A and Shanjayram M) involved in Flipped Classroom Activity

Reflective Critique:

Feedback from students and other stakeholders:

- Students reported that explaining programs helped them understand concepts more deeply.
- Peer-to-peer doubts and clarifications improved learning for slow learners.
- Students requested similar activities for arrays, pointers, and structures.

Benefit of the Practice:

- Helps students remember and apply string functions correctly.
- Strengthens program tracing and logic-building ability.
- Encourages active participation and collaborative learning.
- Enhances confidence in presenting and discussing code.

Challenges Faced:

- Some students found it difficult to recall the differences between similar functions (strcpy vs strncpy).
- A few struggled to understand null termination and memory-related errors.
- Time constraints restricted the number of students who could present.

References:

- https://en.wikipedia.org/wiki/Flipped_classroom
- E. Balagurusamy – Programming in ANSI
- https://www.ritrjpm.ac.in/images/computer-science/CS8603-FlippedClassroom.pdf

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Signature of Faculty Member

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HOD-CSE (AIML)