Department of Computer Science and Engineering

Academic Year 2024 – 2025 (Odd Semester)

Degree, Semester & Branch: III Semester B.E. CSE

Course Code & Title : CS3352 Foundations of Data Science

Name of the Faculty member (s): Dr.M.Swarna Sudha

Innovative Practice Description

Unit / Topic: Unit III/ Flipped Classroom

Course Outcome: CO 3

Topic Learning Outcome: TLO11

Activity Chosen: Correlation- Scatter plots

Justification:

- A flipped classroom approach was implemented for the topic **Regression** in Data Science due to its critical importance in analyzing relationships between variables and predicting outcomes. Students were introduced to regression concepts, such as linear regression and key terms like coefficients and residuals, through pre-class videos and readings. This allowed classroom time to focus on applying regression techniques to real-world datasets, interpreting results, and addressing challenges such as overfitting. The approach was chosen to encourage active participation, deepen conceptual understanding, and provide practical skills for one of the most vital topics in data science.

- **Time Allotted for the Activity:** 40 minutes

Details of the Implementation:

• Before the class, students were provided with online resources and videos covering **Regression** concepts, such as linear regression, multiple regression, logistic regression, and their real-world applications. They were instructed to review these materials and prepare questions or points for discussion. Students were encouraged to identify key concepts, reflect on the pre-class material, and prepare queries or observations related to regression techniques. During the class, students were divided into three groups with 6 to 7 members in each:

- **Group 1**: Deepalakshmi M, Dhivya Dharshini A, Dhurka Devi S, and Diliban S M
- **Group 2**: Divyadharshini Aselvamani M, Senthatti Kalai Pandiyan P, Shenbagapriya A, and Srija A
- **Group 3**: Sindhe Mohith Siva Sai, Siva K, and Sivapriya A

•Each group was assigned a real-world problem related to regression techniques Each group presented their findings to the class, explaining their approach, challenges faced, and practical applications of regression in solving the assigned problem.

Images / Screenshot of the practice:

Figure 1: Flipped Classroom activity by Students

Figure 2:. Each group presented their findings to the class, explaining their approach,

CO – PO / PSO mapping:

CO	PO1	PO2	PO3	PO4	PO9	PO10
CO 1	2	2	1	1	1	1

(1 – Low 2 – Moderate 3 – High)

PO / PSO mapped:

Innovative practice	PO1	PO2	PO3	PO4	PO9	PO10
	2	2	1	1	1	1
Justification for correlation	Students were able to apply knowledge of regression techniques to analyze and predict trends effectively in real-world datasets.	Students were able to analyze regression results and identify relationships between variables to solve data-driven problems.	Students were able to develop regression models to make accurate predictions and support decision-making processes.	Students were able to investigate complex data relationships using regression analysis and recommend innovative data solutions.	Students were able to collaborate with teams to design and implement regression models for solving organizational challenges.	Students were able to communicate regression results, insights, and their implications clearly to stakeholders for effective decision-making.

- **Reflective Critique:**
  - ❖ ***Feedback of practice from students and other stakeholders:***
    - Students reported that the flipped classroom allowed them to take charge of their learning, helping them engage more deeply with the content.
    - Students appreciated the opportunity to come prepared for discussions, making the in-class sessions more interactive and meaningful.
  - ❖ ***Benefit of the practice:*** (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)
    - The flipped classroom encouraged active participation from students, making learning more engaging and interactive.
    - The combination of pre-class preparation and in-class discussions helped students retain and internalize the material more effectively.
  - ❖ ***Challenges faced in implementation:***
    - Some students did not thoroughly review the pre-class materials, such as videos and reading content, which resulted in a lack of foundational understanding during the in-class activities.
    - Differences in learning paces and skill levels within the groups created challenges in effective collaboration, with advanced learners progressing faster than others.

References:

1. https://www.ritrjpm.ac.in/images/computer-science/2023-2024/IP/FC-RV-IV-CSE_CNS_23-24.pdf
2. https://flippedclass.com/tools/
3. https://sites.google.com/site/blendclass/flipped-classroom