

Impact of Reflective Journal for Improving Teaching Practices Through Faculty Self-Assessment – A Case Study

¹K. S. Praveena, ²Bhargavi K, ³Pradeep Kumar B P, ⁴Mahalingegowda H R

^{1,2}Vidyavardhaka College of Engineering, Mysore

³Atria Institute of Technology, Bengaluru

⁴B G S Institute of Technology, Adichunchanagiri University, Mandya

¹praveenaks@vvce.ac.in, ²bhargavik@vvce.ac.in, ³pradi14cta@gmail.com, ⁴mahalingegowdah@bgsit.ac.in

Abstract—This paper presents a case study on how Gibbs' Reflective Cycle can be used as a tool for faculty self-assessment in engineering education. The study offers insights into the benefits of incorporating reflective journaling for teachers as regular practice, to reflect on and understand what went well in their classrooms, what didn't, and how to enhance future teaching practices. In the engineering disciplines, faculty members recorded and reflected on their teaching practice using Gibbs' six stage description, feelings, evaluation, analysis, conclusion, and action plan. Self-reported surveys and reflective journals were used to gather data. The results indicate that faculty perceives improvement in lesson planning, confidence to address classroom issues, and increased engagement of students. The study also pinpoints some social constraints that may hinder regular practice, such as the lack of institutional support, non-availability of trainers, or the scarcity of time. Most of the findings come from self-perceptions of the learners, but the case study shows the usefulness of reflective journals as a simple and inexpensive technical education faculty development technique. Student feedback, peer observations and longer-term studies are recommended for future research to enhance evidence of impact.

Keywords— Faculty Self-Assessment, Reflective Teaching, Gibbs' Reflective Cycle, Teaching Improvement, Professional Growth, Classroom Reflection

I. INTRODUCTION

Higher education teaching, especially engineering teaching, is an ongoing process of change and development, which requires continuous improvement. Today, faculty members are expected to catch up to the latest in technology and deal with an increasingly diverse classroom, all while preparing students to meet jobs that require a high level of complexity. Supporting growth in this way is through reflective practice. Through reflection on their own experiences, faculty will be able to understand the strengths and weaknesses of their practices and

will learn how to make improvements to better enhance their teaching practices as well as their own professional growth. Theoretical perspectives such as Knowles' theory of adult learning and models of self-regulated learning suggest that professionals learn most effectively when they critically review their experiences and take responsibility for their growth. From this perspective, reflective journaling is a useful, systematic method to document classroom experiences and then apply them to practice improvement. While reflective practice has been well studied in general education, there is less research in the context of engineering education. Engineering faculties are especially challenged to "Walk the Talk" in terms of explaining abstract concepts, linking theory with practice and assisting students in problem solving. Support for this can be provided by using structured approaches such as Gibbs Reflective Cycle that guide the teacher to analyze the classroom experiences and to identify emotional reactions and the assessment of the outcomes in the classroom. While earlier work has demonstrated the benefits of reflective journals to enhance teaching skills and self-knowledge, previous studies have tended to focus on students or trainee teachers. Work focusing on faculty in engineering is still limited, especially on how reflection influences their ability to adapt pedagogy, engage learners, and improve delivery of technical content. Furthermore, prior research has tended to focus primarily on self-perceptions with limited attention to factors like time constraints, training, and institutional support. The purpose of this paper is to fill these gaps as it will present a case study solution of how Gibbs' cycle of self-assessment was used by the engineering faculty. It examines how reflective journals assisted teachers when planning lessons, addressing classroom issues and encouraging classroom participation. The study not only identifies the strengths of reflection as an activity in practice but also identifies the limitations in reflection and recommends the possibility of using a reflective journaling as a

K. S. Praveena

Vidyavardhaka College of Engineering, Mysore, Karnataka, India
195, Vani Vilas Layout, Stage 2, Vijayanagar, Mysuru, Karnataka – 57017
praveenaks@vvce.ac.in

simple, low-cost, and continual tool that can foster ongoing faculty development for engineering education.

A. Contribution of this study

Although reflective practice has been widely discussed in higher education, its use as a structured faculty self-assessment tool in engineering education has received limited attention. Most earlier studies have focused on student teachers, pre-service teachers, or general faculty development programs, with relatively few examining how engineering faculty use reflective journaling in their day-to-day teaching. In this study, we used Gibbs' Reflective Cycle to understand how engineering faculty reflected on their classroom experiences and how these reflections influenced their teaching practices. By combining faculty feedback with thematic analysis of reflective journals, we identified both the benefits of reflective journaling and the practical challenges faced by faculty, including workload, time constraints, and institutional support. We also discuss how simple digital tools can help make reflective practice easier to adopt and sustain in engineering education.

II. LITERATURE REVIEW

Reflective journals have been widely recognized as an effective tool for enhancing teaching practice through self-assessment. They allow teachers to step back, recall, and consider actions taken and what went well or what didn't. Reflective diaries have been found to enhance teacher reflections and beliefs about teaching strategies and ways in which students react to various strategies in the past. In doing so, the process aids a student's self-reflection as well as instructors to evaluate and modify their method of teaching based on the actual classroom situation and the learning feedback. Meanwhile, reflection may be not a standalone. Some scholars believe that it can be complemented with other professional development practices like collaborative observation or reflective. Overall, journaling is still an effective and simple way for faculty to think about engaging in continuous self-assessment and professional learning. Through persistent reflection, teachers often report developing greater awareness of themselves and are more able to handle classroom interactions and/or adapt to teaching pedagogy under specific circumstances. Reflective Journaling also is used in practice as a metacognitive activity. It facilitates faculty to monitor the learning progress of students, as well as reframe and modify their academic choices as appropriate [10]. More importantly, this way of thinking critically assists educators to recognize their strengths and weaknesses in teaching [11]. Clear continuity of reflective practice over time has proven to help enhance the effectiveness of the classroom to ensure the progressive development of effective teaching abilities [13]. However, time constraints and the resistance to the change can impede reflective practice being a complete part of education [12]. Up to now, however, there has been only a few attempts in engineering education to describe how teachers make decisions while reflecting on their courses and the teachers' practices in the classroom. In recent years, however, an increasing number of attempts have been made in engineering

education to describe how the teacher reflects during course design and while making classroom decisions. In reflective engineering, we explored reflective practices in various engineering courses, revealing that faculty and TAs adopted a structured approach to reflection that was used for adjusting activities, clarifying learning goals, and addressing problems with student participation; we found that reflection persisted only when there were some practical limitations, such as time and alignment with assessment, to be addressed [14]. Akcayir et al. examined a professional learning program for engineering educators and graduate teaching assistants, noting that communities of practice combined with coached reflection encouraged a shift toward more student-centered teaching [15]. The study also found the struggles that participants had and the stressors of the workload, or issues with identity, that impacted using these changes in their daily routines over time. Domínguez et al. [16] reported on a program of faculty development within an engineering school, which aimed at enabling collective reflection through World Café style sessions. What they found was that this type of conversation allowed teachers to surface opportunities for success – such as having a peer support community and access to advanced professional learning – and the obstacles – like having limited resources or protection of time to create new ideas. Notably, the study revealed that reflective dialogue between administrators and faculty is a critical part of this process to make sustainable changes, as such dialogue connects individual teachers with the broader policy and institutional frameworks that support them. These studies place reflective practice in the context of daily life in engineering programs; that is, reflective practice is best supported (i) by faculty development constructs, (ii) through peer communities and coaching, and (iii) with institutional commitments (time, resources, recognition). The findings of these studies directly influence the focus of the present study, namely reflective journaling in engineering faculty, and in turn, underscore the importance of discussion on both the pedagogical advantages and organizational challenges.

B. Gibbs' Reflective Cycle

The Gibbs' Reflective Cycle is a structured way of thinking about one's experiences. It breaks down the process of reflection into six easy steps, making it easier to learn from both positive and negative experiences as shown in figure 1. Often teachers, students and professionals use this cycle to enhance their skills and to better understand their actions. This is a brief overview of each step:

According to Gibbs' Reflective Cycle, the first step is Description in which the teacher records what occurred in the classroom. This may be the subject taught, sequence of activities, who was involved and any significant events. In an engineering context, this might mean noting how a concept was explained during a lecture or how a lab session unfolded. Feelings are the second step, in which the teacher focuses on how he or she felt about the experience. It is important to recognize responses to the lesson such as feeling confident or confused and frustrated, as these responses have an impact on

how a lesson is delivered. In the third stage, Evaluation, teacher is supposed to reflect on the elements that were successful and not successful. For instance, maybe encouraging the students to share ideas in a discussion was good but maybe the pace of the technical explanation was too quick! Lastly, Analysis asks more questions about why the things have happened as they did. Successes and challenges could be attributed to factors like material complexity; clarity of instructions, or student readiness.



Fig. 1. The Gibbs' Reflective Cycle

In this stage, less emphasis is on events, more on why. After analyzing the situation, you come to conclusions about what you learned. You consider how you need to change things next time. You could then reflect: What did I learn from this experience? What did I do wrong/differently? This step enables you to complete your learning from reflecting. Lastly, you draw a conclusion on how you will grow and change in the future. Based on what you have learned, what do you think you'll do differently or what actions you will take next time you are in a similar situation? So, you may reflect on the question: What will my different approach be next time? How can I get better? This step turns your reflection into a concrete plan for future growth.

Gibbs' Reflective Cycle was selected because it provides a clear step-by-step structure that is easy for faculty members who are new to reflective practice. Unlike Schön's reflective practice, which mainly distinguishes between reflection during and after an activity, Gibbs' model guides participants through a complete sequence of describing the experience, evaluating it, analyzing the reasons, drawing conclusions, and planning future actions. Compared with Kolb's Experiential Learning Cycle, which is primarily intended to explain learning through experience, Gibbs' model places greater emphasis on systematic reflection and practical improvement of professional practice. Since the aim of this study was to support faculty self-assessment and continuous teaching improvement, Gibbs' Reflective Cycle was considered the most suitable framework.

III. METHODOLOGY

Table I provides a structured approach to integrating Gibbs' Reflective Cycle into faculty self-assessment, outlining each step of the cycle, along with corresponding reflective questions. This guide aims to help faculty members systematically reflect on their teaching experiences to enhance their professional growth and improve their teaching methods. Below is a detailed description of each element in the table.

A. Participants

The participant faculty members were selected through purposive sampling because the study demands the active involvement of faculty members in teaching at the undergraduate level and their readiness to embrace reflective practice. The study involved 30 faculty members of the Department of Electronics and Communication Engineering (ECE) of a private engineering institute in Mysuru, India. During the study period, all the participants were Assistant Professors teaching undergraduate courses. The faculty members were approached by departmental communication, and participation was voluntary.

The inclusion criteria were that participants had to (i) engage in regular classroom teaching, (ii) complete reflective journal entries using Gibbs' Reflective Cycle, and (iii) give permission for their anonymous reflection to be used for research purposes. The analysis excluded faculty members who were not in the classroom during the semester, and those who do not follow the reflective journal process. The final sample consisted of early-to mid-career faculty members with an average teaching experience of approximately nine years and a typical teaching workload of 11–16 hours per week. About one-third of the participants had taken part in faculty development sessions before that were focused on reflective teaching and about 30% of the participants had heard of Gibbs' Reflective Cycle (GRC) before. All reflective journals were anonymized and given a unique identification code prior to analysis to ensure confidentiality.

In the preparation stage, faculty members are introduced to the concept of reflective practice and specifically to Gibbs' Reflective Cycle. The focus during this stage is to ensure that faculty understand the importance of reflection in teaching and are comfortable with the steps involved in the cycle. Teachers are also guided in selecting a specific teaching experience they would like to reflect on—this could be a recent lesson, a challenging classroom situation, or any teaching event they wish to analyze.

The first step in the cycle is the description stage. Here, teachers write down a detailed account of what happened during the chosen lesson. This includes everything from the sequence of events to who was involved. The aim is to clearly capture the situation so that it can be analyzed later.

Next, teachers reflect on their feelings during the experience. They think about how they felt before, during, and after the lesson, and why they felt that way. Understanding these emotions is important because they can affect how teachers handle situations in the classroom.

After considering their emotions, teachers move on to the evaluation stage, where they assess what went well and what didn't during the lesson. They think about both the positive aspects, like successful activities, and the challenges they faced,

such as a lack of student engagement or unexpected technical issues.

In the analysis stage, teachers dig deeper into why things happened the way they did. They explore the factors that contributed to the outcomes of the lesson, whether they were successful or problematic. This step is about understanding the causes behind what happened, which is essential for making improvements.

Once they have analyzed the situation, teachers draw conclusions about what they have learned from the experience. They think about what they could do differently in the future to improve their teaching. This leads to the final step, which is creating an action plan. Based on what they've learned, teachers decide on specific steps they will take in their future lessons. This might include trying new teaching strategies or adjusting their lesson plans.

TABLE I
FACULTY SELF-REFLECTION PROCESS

Step	Description	Reflective Questions
Preparation	Introduce faculty to reflective practice and Gibbs Reflective Cycle. Help them select a specific teaching experience to reflect on.	- What teaching experience will I reflect on? - How familiar am I with Gibbs Reflective Cycle?
Description	Faculty describe the chosen teaching experience in detail, focusing on what happened, who was involved, and the sequence of events.	- What exactly happened during the lesson? - Who was involved? What were the key events?
Feelings	Faculty reflect on their emotions during the experience, considering how they felt before, during, and after the lesson.	- How did I feel before, during, and after the lesson? - Why did I feel that way?
Evaluation	Faculty evaluate the experience by identifying what went well and what didn't, focusing on both positive and negative aspects.	- What went well in the lesson? What didn't go as planned? - What feedback did I receive?
Analysis	Faculty analyze the reasons behind the outcomes, exploring factors that contributed to success or challenges.	- Why did things go the way they did? What factors influenced the outcomes? - How do these relate to my teaching methods?
Conclusion	Faculty draw conclusions about what they learned from the experience and consider what they could do differently in the future.	- What have I learned from this experience? - What could I have done differently?
Action Plan	Faculty create a detailed action plan for future teaching based on the insights gained during reflection.	- What specific steps will I take to improve my teaching in the future? - How can I apply what I've learned?
Implementation and Support	Encourage regular use of the Reflective Cycle and provide support through tools, group discussions, and mentorship.	- How will I continue to reflect on my teaching? - What support do I need to maintain this practice?
Evaluation of the Process	Collect feedback to assess the impact of the Reflective Cycle on teaching practices and adjust the process as needed.	- What feedback have I received on the effectiveness of my reflections? - How can I improve my reflective practice?

B. Data Analysis

We analyzed all reflective journal entries written by faculty after their classes. Each journal followed the six prompts in Gibbs' Reflective Cycle (Description, Feelings, Evaluation, Analysis, Conclusion, Action Plan). Before analysis, we removed any names and gave each journal an ID (e.g., J001, J002) so no one could be identified. We treated each paragraph (or short idea) as one unit of text. If a paragraph covered more than one idea (for example, both a feeling and an action plan), we split it into two units and coded them separately.

Coding approach. We used a simple two-step approach:

1. Top-down (by Gibbs' stages): First, we grouped text under the six Gibbs' stages.
2. Bottom-up (themes): Within each stage, we looked for common ideas that appeared again (themes), such as student engagement, lesson planning/pacing, classroom management, use of technology, assessment tweaks, and time/workload barriers.

We made a short rulebook in a spreadsheet. For each code, we wrote:

1. A name (e.g., Evaluation—low participation),
 2. A plain definition ("few students joined the discussion"),
 3. When to use it (a one-line rule), and
 4. A quick example from the journals.
- We linked each code to the relevant Gibbs stage. We

tested this rulebook on a small sample and refined wording where needed.

Two people coded the journals using the same rulebook. We first coded a small set (10–15 units), compared our coding in simple terms ("What did you see here?"), and adjusted the rulebook to remove confusion. Then we coded the rest. To check consistency, a second coder double-coded about 15% of the units. We calculated simple percent agreement:

$$\text{Percent agreement} = \frac{\text{Number of matching codes}}{\text{Total double-coded units}} \times 100\% \quad (1)$$

Any differences were discussed and resolved together.

We only used a shared spreadsheet (Excel/Google Sheets) to store: Journal ID, Unit ID, Gibbs stage, Code, Theme, a short excerpt (1–2 lines), Notes, and Coder name. We used Word/Google Docs to highlight text and keep paragraph numbers. Simple counts (how many times a code/theme appeared) were done in the spreadsheet.

From codes to themes (how we made sense of it). After coding, we grouped similar codes into broader themes. For example:

1. Under Evaluation, many notes mentioned low participation and pacing issues.
2. Under Analysis, teachers often explained why (e.g., not enough wait time, topic difficulty, large group hesitation).

3. Under Action Plan, common steps were think–pair–share, small-group discussions, quick polls/exit tickets, and short videos/demos.

TABLE II
THEMATIC ANALYSIS PROCESS

Stage	Activity	Output
Data Familiarization	Repeated reading of reflective journals	Initial observations and notes
Initial Coding	Assignment of descriptive codes to meaningful text segments	Code list
Code Refinement	Review and consolidation of similar codes	Coding framework
Category Development	Grouping related codes into categories	Higher-level categories
Theme Generation	Identification of recurring patterns across journals	Preliminary themes
Theme Review	Comparison of themes against original journal entries	Refined themes
Theme Definition	Naming and interpretation of themes	Final thematic structure

We wrote a one-line summary for each theme in the spreadsheet and themes were developed in an iterative manner to ensure a systematic analysis. The sample of adopted process is given in table II. Once the coding process was completed, codes that shared similar experiences and/or reflections were compared and categorized into larger groups. For instance, codes referring to low participation, little discussion and hesitation by students were clustered under student engagement, and codes referring to lesson pacing, content organization, and adjustments to the lesson were clustered under lesson planning. The researchers repeatedly coded the excerpts and category definitions to ensure that each theme was a consistent and meaningful pattern in multiple faculty reflections. Final themes were considered with the original journal entries to see that they captured the experiences of participants and were very similar to the study objectives. Themes were only included when they were found in several journal entries and when they was of some value to the faculty's self-assessment and teaching improvement. Seven overall themes emerged from this process: Improved Lesson Planning, Student Engagement Strategies, Greater Self-Awareness, Professional Growth, Institutional Barriers and Support, Time Management and Workload Pressure, and Adoption of New Pedagogical Strategies.

Example : Excerpt: "Students were quiet during discussion. I felt uneasy and moved to the next slide. Next time, I'll try think–pair–share and give one minute of silent thinking."
Codes: Feelings—uneasy; Evaluation—low participation; Analysis—insufficient wait time; Action Plan—think–pair–share. Theme: Student engagement & pacing.

TABLE III
CODING RELIABILITY SUMMARY

Item	Description
Data Source	Faculty reflective journals
Number of Participants	30
Coding Approach	Hybrid deductive–inductive thematic analysis

Deductive Framework	Gibbs' Reflective Cycle (6 stages)
Inductive Coding	Emerging themes identified from journal entries
Coding Framework	Codebook containing code names, definitions, coding rules, and examples
Reliability Procedure	Independent review of a subset of coded units by a second coder
Double-Coded Sample	15% of coded units
Reliability Measure	Percent Agreement
Discrepancy Resolution	Discussion and consensus between coders
Outcome	Coding framework refined and finalized before theme generation

15% of the coded units were randomly selected for coding reliability check by a second coder who coded independently using the same coding framework. The double-coded sample achieved an agreement of 85%, indicating good consistency between coders. Any disagreements were discussed and resolved through consensus before finalizing the coding framework and theme definitions. A summary is shown in table 3.

IV. RESULTS AND DISCUSSION

Faculty members were asked to record their experiences as reflective journals for the teaching method that have been implemented in classroom. Through structured reflection, teachers gained valuable insights into their teaching methods, leading to improved lesson planning, increased confidence in addressing classroom challenges, and better student engagement. The discussion highlights the effectiveness of regular reflection in fostering continuous professional growth, while also identifying areas where additional support might be needed to help faculty consistently integrate reflective practices into their routines.

C. Reflective journal

A reflective journal is a personal record where individuals document their thoughts, feelings, and experiences related to specific events or activities, often following a structured approach like Gibbs' Reflective Cycle. By regularly writing in a reflective journal, teachers can critically analyze their teaching practices, explore the emotions they experienced during lessons, evaluate what went well and what didn't, and develop strategies for improvement. This ongoing process not only enhances self-awareness but also fosters continuous professional growth, allowing educators to refine their methods and better meet the needs of their students. One such example is explained below.

Lesson Topic: Introduction to Wireless Communication

Class: Third-year Engineering Students

A. Description

What happened?

I conducted a lecture on the basics of wireless communication. The lesson included a PowerPoint presentation, a short video, and a class discussion. The

students seemed engaged during the video, but participation in the discussion was lower than expected. Some students asked questions, but the majority remained quiet.

Observation:

The lesson started with a 15-minute presentation, followed by a 5-minute video illustrating real-world applications of wireless communication. After the video, I opened the floor for discussion, asking students to share their thoughts or questions. While a few students participated, most of the class stayed silent. I noticed that some students seemed unsure about the material, and the energy in the room dropped during the discussion part of the lesson.

B. Feelings

How did you feel during and after the experience?

I felt confident during the presentation but became slightly uneasy when the students didn't engage much in the discussion. After the class, I was a bit disappointed that more students didn't participate and started questioning whether they understood the material.

Observation:

During the presentation, I felt well-prepared and clear in my delivery. However, when the students didn't respond as actively as I hoped during the discussion, I felt a bit frustrated and concerned. I was worried that I hadn't explained the concepts well enough, which might have made students hesitant to speak up.

C. Evaluation

What was good and bad about the experience?

The visual aids (PowerPoint and video) worked well to maintain student interest initially. However, the discussion didn't go as planned, and student participation was lower than I expected.

Observation:

The PowerPoint presentation was effective in conveying the key points, and the video seemed to capture the students' attention. On the downside, the discussion fell flat. I expected more interaction, but it seemed like the students either didn't understand the material fully or didn't feel comfortable sharing their thoughts in a large group.

D. Analysis

Why did things happen this way?

The lack of participation might have been due to the complexity of the material or because the students weren't prepared to discuss the topic. It's also possible that the discussion format wasn't engaging enough or that I didn't give enough time for students to think before expecting responses.

Observation:

I think the material might have been a bit too challenging for some students, leading to hesitation in participating. Additionally, I may not have provided enough time for students to process the information before asking them to discuss it. The large group setting might have intimidated some students, preventing them from speaking up.

E. Conclusion

- *What have you learned from this experience?*

I've learned that I need to be more aware of how students are responding during the lesson and be ready to adapt if things aren't going as planned. I also realized that giving students more time to reflect before starting a discussion could help increase participation.

Observation:

I learned that simply presenting information isn't enough; I need to ensure students have fully grasped the material before moving on to a discussion. It's important to create a comfortable environment for sharing, possibly by starting with smaller group discussions before opening up to the entire class.

F. Action Plan

What will you do differently in the future?

In future lessons, I'll incorporate more interactive elements, like small group discussions or think-pair-share activities, to encourage more student participation. I'll also check for understanding more frequently throughout the lesson to ensure that students are keeping up with the material.

Observation:

Next time, I'll break the class into smaller groups for discussion before asking for feedback from the whole class. I'll also use quick formative assessments, like asking students to summarize key points or answer a poll question, to gauge their understanding before moving into a discussion. Additionally, I'll make sure to give students a moment to think and prepare their responses before asking them to share with the class.

Reflection Summary: This reflection helped me realize the importance of pacing and creating a more engaging environment for discussions. By incorporating more interactive strategies and checking for understanding throughout the

lesson, I can help ensure that students are both comprehending the material and feeling confident enough to participate in discussions.

TABLE IV
FACULTY FEEDBACK ON REFLECTIVE JOURNAL

Feedback Question	1 (Strongly Disagree)	2 (Disagree)	3 (Neutral)	4 (Agree)	5 (Strongly Agree)	Mean	SD
The reflective process helped me improve my lesson planning.	1	2	5	16	6	3.80	0.96
I feel more confident in addressing classroom challenges after using the reflective cycle.	1	1	0	27	1	3.87	0.68
The reflective cycle has enhanced my ability to engage students.	1	1	0	26	2	3.90	0.71
I find it easy to integrate reflection into my regular teaching routine.	1	3	4	22	0	3.57	0.82
The reflective cycle has increased my self-awareness as a teacher.	1	3	1	22	3	3.77	0.90
Using the reflective cycle has improved my student feedback practices.	1	1	1	23	4	3.93	0.78
I am more mindful of my teaching strategies after reflecting on them.	1	1	1	26	1	3.83	0.70
The reflective process helps me identify areas for professional development.	0	2	4	21	3	3.83	0.70
I can adapt my teaching methods more effectively after reflection.	1	2	3	24	0	3.67	0.76
Reflecting on my lessons has made me more effective in managing classroom dynamics.	1	1	3	23	2	3.80	0.76
The reflective cycle has improved my communication with students.	1	1	4	20	4	3.83	0.83
I am more confident in experimenting with new teaching techniques after reflection.	1	3	3	23	0	3.60	0.81
The reflective process has helped me better understand my students' learning needs.	1	2	8	17	2	3.57	0.86
Reflecting on my teaching has led to better student outcomes.	1	1	1	25	2	3.87	0.73
The time invested in reflection is worthwhile for my teaching improvement.	0	2	4	22	2	3.80	0.66

The feedback data collected from faculty members on the use of Reflective Journal provides valuable insights into its impact on various aspects of teaching practice. Table IV presents the mean scores for each question, providing a general overview of the participants' perceptions about the reflective process, with some areas showing greater agreement than others. While the feedback in Table IV is based on a Likert scale, we have reported means and standard deviations in line with established practices in educational research. Even though Likert responses are Ordinal, treating it as intervals will help the identification of trends in faculty perceptions. This methodological choice is commonplace, and known to be limited, whilst future research could strengthen the analysis by also including a non-parametric measure. The reflective cycle is noted as most effective with practical areas that directly relate to interaction and engagement with students, such as improved student feedback practices, and enhanced ability to engage students as shown with the highest mean scores (3.93 and 3.90 respectively). The findings indicated that reflecting positively enables the teacher to refine communication strategies as well as their teaching approach in order to better engage students in learning and to provide a more responsive type of teaching environment. The lower mean scores (e.g., 3.74 for incorporating reflection in regular teaching activities and the perception of students' learning needs) indicate faculty struggles in these dimensions. The lack of reflective practice

may have been due to time constraints or workload as well as the difficulty of being consistently reflective in a busy teaching program. The data indicates that although faculty understand the need for students' reflection, faculty might not always can engage students in reflective practices or have challenges in how they incorporate the reflections into practice in understanding and meeting student needs. Across most of the questions, the mean scores are quite high, including support of reflective process as a means for professional growth across the board (mean score of 3.87 in just answering classroom challenges, mean score of 3.80 in helping to improve classroom dynamics during reflection), indicating a high level of agreement that they are helpful for professional growth. For faculty, reflection not only helps to improve their techniques but also increases confidence in the abilities of teachers to address situations in the classroom. Although the degree and share of neutral and slightly disagreeing responses were rather small, they suggest that there is still a need to provide additional support for faculty to gain the maximum benefit from engaging in reflective practice. These responses can also suggest ways in which some teachers may not benefit from the process or ways that they need to be led to implement what they have learned from reflection. The data showed a sign that Reflective journal is a very potent tool in improving some aspects of teaching, specifically student engagement and feedback. The overall view of the reflective practice is positive, meaning that most

faculty members understand its importance, but there is a need to be able to integrate the reflective practice more easily into the faculty members' everyday work. Targeted support and resources could have a further impact upon these and help bring the benefits of reflective practice to benefit all faculty within this process.

In addition to the quantitative findings, thematic analysis of faculty reflective journals was conducted to capture qualitative insights. Fig. 2 shows the distribution of the themes by relative frequency, that is the percentage of faculty mentioning each of the seven themes. This study found seven themes in the 30 engineering faculty members reflective journals from one institution at Mysuru. Of these, the most prevalent was lesson planning. Through their observation of how it benefited them, faculty explained that reflection assisted them with planning lessons to run more smoothly, better identified areas that students might need assistance with, and offered them a more logical flow for the concepts. Student engagement strategies were also frequently mentioned, such as small group conversations, think-pair-share, and using multimedia, which all helped to motivate students to take an active role in the classroom. A third theme of increased self-awareness arose when faculty noted the increased awareness of strengths and weaknesses and the feelings that they brought into the classroom. The awareness of some volunteers resulted in a deliberate and mindful approach to teaching.

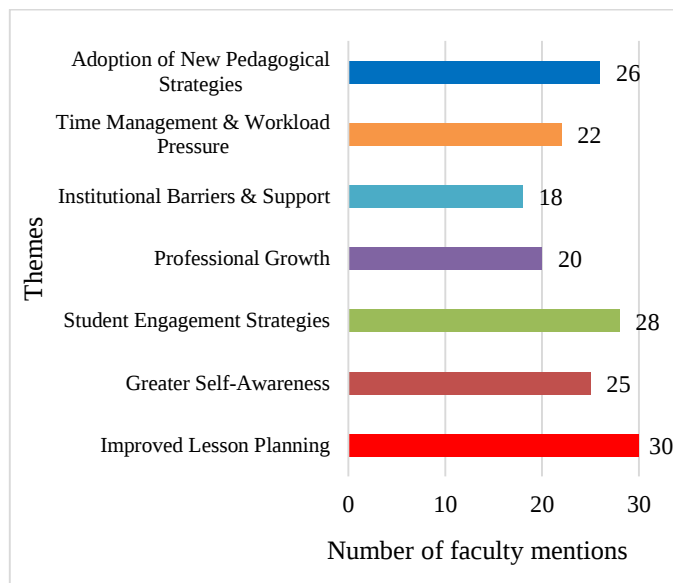


Fig. 2. Frequency of themes in faculty reflective journals

Another common thread was professional development. Increased self-confidence and acted as (a source of) motivation to try out new teaching strategies, teachers reported. However, there were also several systemic issues noted. The lack of formal training, limited mentoring and lack of recognition for developing reflection in job evaluations were often cited as institutional barriers. Time and workload pressures also were problems, and many indicated that they were unable to complete a reflective journal when under an examination schedule or when they had lots of students and high workloads. Finally, reflection was attributed to the use of new pedagogical practices. Faculty shared that it encouraged them to introduce

flipped classrooms, integrate formative assessments, and make use of technology-supported teaching tools.

When we looked deeper into the faculty reflections, three main discussion points stood out.

1. *Barriers:* Several teachers said reflective journaling is not formally valued in their institutions. Without proper training or mentoring, they often struggled to keep the practice going. On top of that, extra responsibilities such as exam duty and heavy teaching loads left little time to write reflections regularly.
2. *Time and integration:* Many faculty agreed that reflection is useful, but they also admitted it was often skipped when time was short. For some, journaling felt like an “extra task” competing with lecture preparation, grading, and research work. A few suggested that short prompts or guided exercises could make it easier, while others felt institutions should give some dedicated time for reflection.
3. *Use of digital tools:* Some faculty pointed out that technology might make reflection more practical. They mentioned that prompts could be built into the Learning Management System (LMS), mobile apps could send reminders, and online platforms might allow sharing reflections with peers. A couple even spoke about AI-based tools that could quickly scan journal entries and give feedback. These digital supports were seen as ways to save time, keep the practice consistent, and make it a regular habit.

G. Discussion

The findings of this study are similar to those reported by Akcayir et al. (2024). They found that reflection, together with professional learning activities, encouraged engineering educators to use more student-centred teaching methods. In the present study, faculty members also reported that reflective journaling helped them rethink their classroom practices and try different teaching approaches such as think-pair-share activities, formative assessments, and multimedia-based learning. These changes helped them improve student participation and classroom interaction.

The study also showed that many faculty members found it difficult to practise reflection regularly because of heavy teaching workload, lack of time, limited mentoring, and insufficient institutional support. Similar observations were reported by Dominguez et al. (2025), who highlighted that reflective practice becomes more effective when institutions provide time, training, and opportunities for faculty to learn from each other. The findings of the present study also suggest that support from the institution plays an important role in helping teachers continue reflective practice.

Some faculty members suggested using digital tools to make reflective journaling easier. They mentioned simple ideas such as reminders through mobile applications, prompts in the Learning Management System (LMS), and tools that can provide quick feedback on journal entries. These observations are similar to the work of Novoa-Echaurren et al. (2025), who reported that digital technologies can support reflective practice in higher education. Although the present study did not evaluate such tools, faculty members felt that they could make reflection

easier to maintain, especially when teaching responsibilities are high.

Unlike many earlier studies that focused mainly on student teachers or faculty from different disciplines, this study examined reflective practice among engineering faculty using Gibbs' Reflective Cycle. The combination of faculty feedback and reflective journal analysis provided a better understanding of how reflection influences lesson planning, classroom interaction, and professional development in an engineering education setting. The findings of this study suggest that reflective journaling is a simple and practical way to help engineering faculty improve their teaching. At the same time, regular reflective practice depends not only on individual interest but also on support from the institution. Providing time, mentoring, and simple digital support can encourage more faculty members to continue reflective practice as part of their regular teaching activities.

H. Limitations

The results from this study are preliminary and should be used with caution since the data came largely from faculty self-perception and reflective journal writing. The outcomes are thus not a direct reflection of the effectiveness of the teaching or of student learning, but rather perceived changes to the participants' teaching practices. Reflections need to be confirmed with other evidence of impact such as peer observation, classroom observation and learning outcome data as experienced by faculty and student feedback, and further research is needed to validate these reflections. Second, a single institution and small sample of faculty was studied. This has reduced the generalizability of these results to other settings. A larger and more diverse sample across institutions would provide stronger insights. Third, the study examined reflection only in the short term. There was no follow-up to see how teaching practices changed over a longer period. A longitudinal study could show whether reflective journaling leads to sustained improvement. This work focused on Gibbs' Reflective Cycle, other frameworks such as Kolb's Experiential Learning Cycle were not tested. Future research could compare different reflective models to understand their relative strengths in engineering education.

CONCLUSION

In this study, Gibbs' Reflective Cycle was adopted as a case study with the engineering faculty to examine reflection as a way to enhance teaching. The results indicated that journaling enabled teachers to be more systematic when planning lessons, being more aware of own strengths and weaknesses, and to experiment with different teaching strategies for involving students. Many faculty also shared their own experiences about confidence and seeing reflection on their professional growth. In addition to these gains, there were also several specific issues identified. Faculty faced challenges within heavy teaching loads, few or no training opportunities, and little formal recognition from an institution to regularly reflect. The other major hurdle was time pressure, in the form of examinations times or workload pressure. Additionally, teachers highlighted

the kind of possibilities related to digital tools, such as prompts on the LMS, reminders through mobile devices or even feedback from an AI. Peer reflection and mentoring were recommended as other supports that will be useful for faculty to keep the habit. The study demonstrates that reflective journal practice does not have to be complicated and is a valuable tool for continuous improvement in the process of teaching. Future validation efforts might focus on significant comparisons between the various reflective models, including student outcomes, and investigate the effect of faculty development over extended training periods to see how well it continued to meet the needs of their students.

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