


Metacognitive Awareness in Colombian Engineering Students: A Comparative Analysis

Conciencia metacognitiva en estudiantes colombianos de ingeniería: un análisis comparativo


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Abstract. *Objective.* This study investigates metacognitive awareness among food engineering and systems engineering students using the Metacognitive Awareness Inventory (MAI) to identify their strengths and areas for improvement. It also compares these results with findings from other academic disciplines reported in previous research. *Method.* The MAI was administered to 194 engineering students across different specializations. Statistical analysis included mean, standard deviation, and MANOVA to examine differences in metacognitive skills. *Results.* The results indicate significant variances in metacognitive skills between engineering subfields, and they suggest that engineering students may show different profiles compared to other disciplines such as psychology and education.

Keywords. Metacognition, engineering education, cognitive skills, educational assessment, Colombian students

Resumen. *Objetivo.* Este estudio evalúa la Conciencia metacognitiva en estudiantes de Ingeniería de Alimentos e Ingeniería de Sistemas mediante el Inventario de Conciencia Metacognitiva (MAI) para identificar fortalezas y aspectos a mejorar en el conocimiento y la regulación metacognitiva. También compara los resultados con otros reportados en investigaciones previas de otras disciplinas académicas. *Método.* El MAI se aplicó a 194 estudiantes de ingeniería de diferentes especializaciones. El análisis estadístico incluyó media, desviación estándar y MANOVA para examinar las diferencias en las habilidades metacognitivas. *Resultados.* Los resultados indican variaciones significativas en las habilidades metacognitivas entre los subcampos de la ingeniería y sugieren que los estudiantes de ingeniería pueden presentar perfiles diferentes en comparación con aquellos de otras disciplinas como la psicología y la educación.

Palabras clave. Metacognición, educación en ingeniería, habilidades metacognitivas, evaluación educativa, estudiantes colombianos



Introduction

In the perspective of [Fleur et al. \(2021\)](#), metacognition encompasses the knowledge and regulation of one's own cognitive processes. It is understood as a reflective process about one's thinking and the mechanisms underlying learning. This ability to monitor and control cognitive processes plays a crucial role in learning ([Pintrich, 2002](#); [Zimmerman, 1990](#)). Most theoretical perspectives agree that metacognition is an essential component of students' capacity to self-regulate their learning processes, foster conditions that encourage reflection, support foresight, monitor performance, and self-assess their academic progress ([Nussbaumer et al., 2015](#); [Panadero, 2017](#)). High-performing students, for example, tend to demonstrate more advanced metacognitive abilities, particularly in the monitoring and control of cognitive processes, compared with their lower-performing peers across various educational contexts.

Metacognition has been defined not only as a set of cognitive monitoring processes, but also as a key component of Self-regulated Learning (SRL). According to [Flavell \(1979\)](#), metacognition involves both the knowledge about one's own cognition and the regulation of that cognition. [Schraw and Moshman \(1995\)](#) further refined this by proposing two main components of metacognition: knowledge of cognition (declarative, procedural, and conditional knowledge) and regulation of cognition (planning, monitoring, evaluation, debugging, and information management). These frameworks provide the basis for the MAI and are widely accepted in the literature to evaluate how learners control and optimize their learning strategies.

The explicit teaching of self-regulation and learning strategies is more common in undergraduate programs within the Social Sciences and Humanities, particularly in fields such as Psychology and Education. However, this approach appears to receive relatively less attention in engineering programs. Engineering students, who face rapidly evolving professional challenges, are primarily trained in fields

associated with the exact or hard sciences, where reflection on learning processes, leveraging errors as opportunities, and explicitly teaching learning strategies are often undervalued. This oversight may neglect opportunities to enhance students' capacity to learn efficiently and adaptively ([Hadgraft & Kolmos, 2020](#); [Wallin & Adawi, 2018](#); [Zheng et al., 2020](#)).

Given the critical importance of developing Self-directed Learning (SDL) skills to support lifelong learning in engineering education, prior research offers valuable insights. For instance, a qualitative study conducted at Iron Range Engineering (IRE), an innovative Problem-based Learning (PBL) program, investigated changes in students' learning trajectories across different semesters, focusing on their metacognitive skills development. The study employed think-aloud problem-solving activities and interviews to measure metacognitive outcomes. Results indicated that nearly half of the students' verbalizations during think-aloud sessions demonstrated increased use of metacognitive strategies, such as discussing problem-solving approaches and leveraging metacognitive knowledge. These gains were particularly evident in students during the latter semesters of their program. Furthermore, interview data revealed that approximately half of the participants showed a more complex understanding of their learning processes based on their metacognitive skills ([Marra et al., 2022](#)).

Another relevant study by [Cervin-Ellqvist et al. \(2021\)](#) examined the effects of metacognitive illusions on the use of learning strategies in four traditional on-campus engineering courses in Scandinavia. The study adopted a concurrent mixed-methods design ([Driscoll et al., 2007](#)) that combined a qualitative and a quantitative data collection through questionnaires. Students were asked to list and rank their learning strategies by frequency of use, to provide motivations for their choices, and to evaluate the perceived effectiveness of these strategies. The findings highlighted that students frequently employed cognitive strategies such as studying difficult material, repetiti-

ve review, and using flashcards or quizzes. Among the metacognitive strategies, studying old exams emerged as the most common approach, primarily serving as a planning and forecasting tool. This latter strategy allowed students to identify task goals, understand exam structures, and prioritize topics for focused study. By reflecting on past exams, students could anticipate frequently asked questions and adapt their study approaches accordingly.

The present research contributes to the broader discourse on higher education by exploring how students in engineering contexts reflect, evaluate, and take control of their learning. These findings underscore the importance of integrating metacognitive skills development into engineering education to better prepare students for the complexities of lifelong learning.

In engineering education, where students face unique challenges that require technical knowledge, analytical skills, and problem-solving abilities, metacognitive skills are essential. These skills help students manage their learning processes, identify and correct errors, and apply effective problem-solving strategies.

Studies on metacognitive skills in different domains are useful as they allow to compare students' performance and determine the improvements in the curricula of various programs, thereby leading to more assertive teaching and learning processes. The literature on metacognition highlights two perspectives: the first supports the idea that metacognitive skills are general across all domains (Schraw, 2002; Dunlosky & Tauber, 2012), while the second argues that such skills are exclusive to each domain. Thus, the way these skills are taught and applied in different educational contexts is relevant (Gutierrez de Blume & Montoya, 2021).

Scales such as the Metacognitive Awareness Inventory (MAI), developed originally in English by Schraw & Dennison in 1994, can be used to measure students' metacognitive skills. The MAI is grounded in a two-factor model proposed by Schraw and Dennison (1994). It distinguishes between knowled-

ge of cognition (declarative, procedural, and conditional knowledge) and regulation of cognition (including planning, monitoring, and evaluation). This model has been widely used to understand how learners plan, monitor, and evaluate their own thinking processes. Its application in this study is particularly relevant for engineering students, whose learning processes often emphasize problem-solving strategies, while overlooking explicit reflection on cognitive ones. This scale has been applied in different languages due to its high internal consistet reliability. Studies such as Gutierrez de Blume and Montoya (2021) and Huertas Bustos et al. (2014) have demonstrated the practical use of the MAI in Spanish contexts.

Gutierrez de Blume and Montoya (2021) presented the differences in the use of metacognitive skills among students of medicine, education, and psychology. This study showed that education and psychology students perform better on the MAI scale compared to medicine students. These results are explained by understanding factors associated with medical training such as high academic demand, stress and burnout, lack of explicit metacognitive instruction, and the unique culture of medical education teaching.

Although metacognitive skills have been widely studied in disciplines such as psychology, education, and medicine, limited research has explored how these skills are manifested in engineering students. In Colombia, engineering programs tend to emphasize technical content and procedural knowledge, with less focus on metacognitive processes such as planning, monitoring, and self-evaluation. This raises important questions about whether current engineering curricula effectively support the development of metacognitive skills essential for lifelong learning and professional adaptability.

Despite its importance, research on metacognition within the engineering domain remains limited. In this work, the Metacognitive Awareness Inventory (MAI) was employed to assess the metacognitive capabilities of engineering students, particularly

focusing on differences between food engineering and systems engineering disciplines. The latter includes students from both the Systems and Computation Engineering program at Universidad de Caldas and the Systems Engineering program at Universidad Autónoma de Manizales, which share similar curricular structures. This study seeks to answer the following questions:

- Are there significant differences in metacognitive skills between food engineering and systems engineering students?
- How do their metacognitive profiles compare with findings in other academic disciplines?

Additionally, based on the findings of the study by [Gutierrez de Blume and Montoya \(2021\)](#), comparisons were made with other domains such as medicine, psychology, and education.

Method

Participants, research design, and sampling

The study employed a convenient sampling method within a non-experimental, cross-sectional research design. The study sampled 194 undergraduate engineering students, of whom 188 were from Universidad de Caldas and 6 from Universidad Autónoma de Manizales. A post-hoc power analysis revealed sufficient statistical power (i. e., $> .80$) for the omnibus analysis and follow up analyses for majority of dependent variables. Students from the Universidad de Caldas included those from the majors of Food Engineering and Systems and Computation Engineering, while the Universidad Autónoma de Manizales contributed students from System Engineering. The ages of the participants ranged from 18 to 36 years. This relatively wide age range reflects the diverse academic trajectories in the Colombian context, where students may enter university at different stages in life due to economic, social, or institutional factors. The sample comprised 103 men and 91 women. Regarding the engineering programs, 131 students were from Food Enginee-

ring, and the remainder were from Systems Engineering. For this study, students from both systems and computation engineering at Universidad de Caldas and system engineering at Universidad Autónoma de Manizales were considered in the same group due to their similar curricula.

Instrument

The Metacognitive Awareness Inventory (MAI), comprising 52 items across two categories—knowledge of cognition and regulation of cognition—was utilized. This instrument measures various aspects synthesized in eight scales: Declarative Knowledge, Procedural Knowledge, Conditional Knowledge, Planning, Organization, Monitoring, Debugging, and Evaluation. Participants responded on a continuous scale from 0 to 100 in which 0 corresponded to “Not at all true of me” and 100 coincided with “Completely true of me”. Participants were instructed that any value, including 0 and 100 were valid responses. This instrument was selected not only due to its high reliability (as reported in multiple validation studies), but also because it provides a comprehensive profile of metacognitive dimensions relevant for academic performance in disciplines like engineering. The conceptual framework underlying the MAI aligns with self-regulated learning theories, making it an appropriate tool to assess skills that are often underrepresented in engineering curricula.

Applying this model to engineering students is particularly relevant, given that their training often emphasizes technical mastery and procedural learning, but may lack explicit instruction in reflective or regulatory learning strategies. The use of the MAI in this context allows the identification of specific metacognitive strengths and gaps that could inform curriculum development in engineering education.

Procedures

The study was conducted along 2024, using an online protocol administered to students from the engineering school at a public university in Manizales, Colombia.

This instrument was administered using the Qualtrics platform, considering the following ethical and procedural considerations.

First, students who voluntarily wished to participate in the study were invited. Some of the participating researchers shared the research objectives in different classes. Once some groups expressed interest in participating in the study and signed informed consent, a subsequent virtual meeting was scheduled with these students. The protocol was sent and administered. It was completed in different academic spaces where some of the researchers were present and ready to address questions and concerns from the students evaluated.

For each student, filling out the protocol took approximately 20 to 30 minutes of individual work.

Ethical considerations

In administering the instrument for this research, the ethical guidelines established in the Article 11 of the Resolution 008430 of 1993, for studies considered to be of minimal risk involving human subjects in the country ([Ministry of Health of the Republic of Colombia, 1993](#)), and in the Ley Estatutaria 1581 de 2012, for the protection of anonymity and research data established, ([Ley Estatutaria 1581 de 2012, 2012](#)) were taken into account. Finally, it is important to note that the students did not receive payment or any other form of incentive for participating in the study. They were also informed that they could withdraw from the research at any time without any consequences.

Data Analysis

To address the research objectives of the present study, data were analyzed employing both descriptive and inferential analysis. Descriptive statistics included means and standard deviations. Inferential analyses involved a Pearson correlation (r) and a multivariate analysis of variance (MANOVA) in which the type of engineering program (food, systems) served as the between-subjects factor. The eight subscales of the MAI served as dependent measures.

Results

The data obtained first was analyzed using descriptive statistics to know the general behavior for the whole group of students. In [Table 1](#), mean, standard deviation and Cronbach's alpha coefficients were presented for both food and systems engineering students.

In [Table 2](#), the results for both programs are compared. Regarding the Knowledge of Cognition category, Systems Engineering students scored slightly higher on average in Declarative Knowledge than food engineering students, indicating a marginally better grasp of factual and theoretical understanding. Both disciplines show similar scores with a very slight edge in Systems Engineering, suggesting comparable skills in procedures and processes. Food Engineering students demonstrate slightly higher scores in Conditional Knowledge, which involves knowing when and why to apply various cognitive processes.

Regarding the Regulation of Cognition category, it is possible to observe that food engineering students exhibit better planning skills, as indicated by higher mean scores compared to Systems Engineering students. They score, as well, higher in Organization, suggesting more effective structuring and arrangement of their learning resources or strategies. Monitoring scores are close; however, food engineering students still maintain a slight lead, potentially indicating better self-awareness during learning tasks. They also significantly outperform Systems Engineering students in debugging skills, which involve problem-solving and error correction. This suggests that they may be more adept at reviewing and assessing their own learning and outcomes.

Food engineering students tend to score higher through most cognitive and regulatory skills compared to systems engineering students. These differences might influence how effectively students can apply these skills in problem-solving and learning situations. Besides, they are specifically noticeable in the Planning and Debugging scales, where stu-

Table 1. Metacognitive Skills Assessment Scores Among Students

| Scale | <i>M</i> | <i>SD</i> | α |
|-------------------------|----------|-----------|----------|
| Knowledge of Cognition | | | |
| Declarative Knowledge | 64.07 | 22.55 | .80 |
| Procedural Knowledge | 62.30 | 23.66 | .76 |
| Conditional Knowledge | 66.84 | 23.01 | .81 |
| Regulation of Cognition | | | |
| Planning | 55.96 | 24.12 | .78 |
| Organization | 59.94 | 24.87 | .84 |
| Monitoring | 63.14 | 23.29 | .74 |
| Debugging | 72.08 | 22.15 | .82 |
| Evaluation | 59.45 | 26.63 | .71 |

Table 2. Comparative Metacognitive Assessment Scores Between Food Engineering and Systems Engineering Students

| Scale | Food Engineering | | Systems Engineering | |
|-------------------------|------------------|-----------|---------------------|-----------|
| | <i>M</i> | <i>SD</i> | <i>M</i> | <i>SD</i> |
| Knowledge of Cognition | | | | |
| Declarative Knowledge | 63.66 | 21.96 | 64.93 | 23.30 |
| Procedural Knowledge | 62.21 | 22.34 | 62.48 | 23.62 |
| Conditional Knowledge | 67.01 | 22.24 | 66.47 | 23.85 |
| Regulation of Cognition | | | | |
| Planning | 57.10 | 24.43 | 53.60 | 24.12 |
| Organization | 61.00 | 23.98 | 57.73 | 25.17 |
| Monitoring | 63.47 | 22.34 | 62.44 | 24.08 |
| Debugging | 74.96 | 20.08 | 66.10 | 24.67 |
| Evaluation | 60.07 | 25.05 | 58.16 | 26.40 |

dents from food engineering score several points higher than those in systems engineering.

In Figure 1 the correlation heatmap of metacognitive skills among food engineering students is presented. In this heatmap, it is possible to see moderate correlations between the skills such as:

- **Organization and Monitoring:** The correlation is 0.41, indicating that students who are

good at organizing their tasks and materials also tend to be effective in monitoring their progress and strategies.

- **Monitoring and Debugging:** The correlation is 0.41, suggesting that students who frequently monitor their work effectively are likely better at identifying and correcting errors.

Figure 1. Correlation Heatmap of Metacognitive Skills Among Food Engineering Students

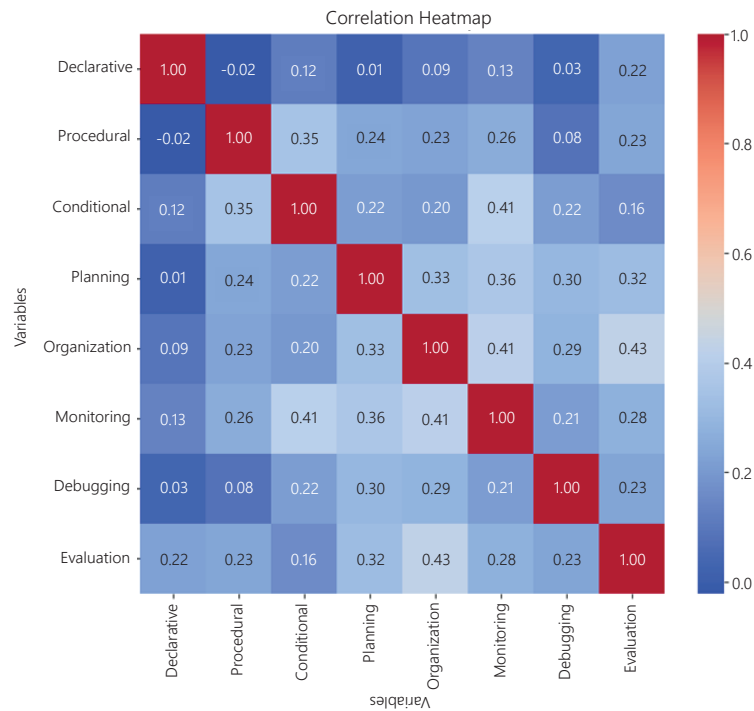
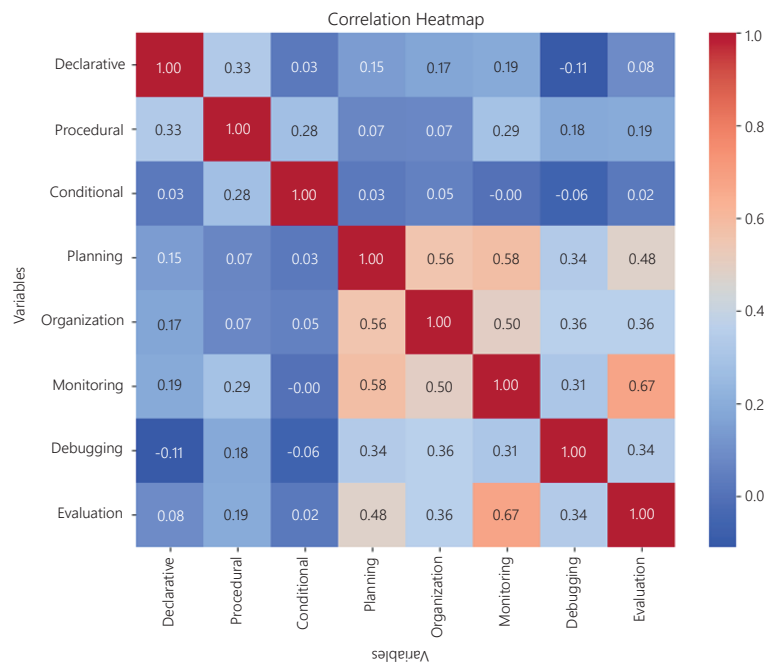


Figure 2. Correlation Heatmap of Metacognitive Skills Among Systems Engineering Students



Nonetheless, the correlations for food engineering students are not strong or very strong, which suggests that the curriculum from this field does not specifically integrate nor emphasize the interconnected development of different metacognitive skills.

On the other hand, in the case of systems engineering students, the heatmap presented in Figure 2 shows moderate and strong correlations between the metacognitive skills such as:

Moderate

- **Planning and Evaluation:** A moderate correlation of 0.48 suggests that these planning skills contribute significantly to effective evaluation.
- **Planning and Organization:** A moderate correlation of 0.56 shows that planning abilities in systems engineering students are closely linked to how well they organize.
- **Monitoring and Organization:** A moderate correlation of 0.58 suggests a significant overlap in skills between organizing and continuously monitoring tasks.

Strong

- **Evaluation and Monitoring:** A correlation of 0.67 is quite high, indicating that students who evaluate their work critically tend to monitor their progress more diligently.

Systems engineering students show stronger correlations in Organization, Monitoring, and Planning skills. This could indicate a curriculum or pedagogical emphasis that integrates these skills in systems engineering.

The differences in correlation patterns may reflect the distinct educational frameworks and professional requirements of each engineering discipline. Systems engineering students might benefit from curricula that integrate Planning, Monitoring, and Evaluation more closely, while food engineering programs might need to focus more on bridging the gaps between knowledge types and practical debugging skills.

Additionally, a MANOVA analysis was conducted to compare the data from food engineering students with that from systems engineering students. The results presented in Table 3 and Table 4 suggest

Table 3. MANOVA Test Results for Intercept Across Metacognitive Skills

| Test | Intercept Value | Intercept F Value | Intercept Pr > F |
|------------------------|-----------------|-------------------|------------------|
| Wilks' lambda | 0.0219 | 1183558 | 0.0000 |
| Pillai's trace | 0.9781 | 1183558 | 0.0000 |
| Hotelling-Lawley trace | 44.5978 | 1183558 | 0.0000 |
| Roy's greatest root | 44.5978 | 1183558 | 0.0000 |

Table 4. MANOVA Test Results for Career Impact on Metacognitive Skills

| Test | Career Value | Career F Value | Career Pr > F |
|------------------------|--------------|----------------|---------------|
| Wilks' lambda | 0.5475 | 2 | 0.0002 |
| Pillai's trace | 0.4525 | 2 | 0.0002 |
| Hotelling-Lawley trace | 0.8265 | 2 | 0.0002 |
| Roy's greatest root | 0.8265 | 2 | 0.0002 |

that metacognitive skills are integrated differently in each career path.

Analysis revealed significant differences in metacognitive awareness between the students of both engineering disciplines. Specific differences were noted in Planning and Monitoring skills, with system engineering students showing higher proficiency compared to food engineering students.

Comparative analysis with other disciplines

Additional insights were gained by comparing this study with others conducted in the same field. Specifically, in their study, [Gutierrez de Blume and Montoya \(2021\)](#) compared metacognitive skills among students in medicine, psychology, and education programs. According to their findings, engineering students scored lower than their counterparts in disciplines such as psychology and education. These findings, also supported by our data, reinforce the importance of domain-specific approaches to develop metacognitive skills. Besides, they underscore the importance of integrating metacognitive skills training into engineering curricula. The differences found underline the idea that metacognitive development is influenced by disciplinary context, and that engineering students may benefit from more explicit instruction in metacognitive strategies, just as the cases of psychology and education programs.

Discussion

This study examined metacognitive awareness in Colombian engineering students, focusing on the differences between food engineering and systems engineering students. The findings highlight both opportunities and challenges in integrating metacognitive skills development into engineering curricula, especially regarding metacognitive training to enhance students' learning and adaptability to complex problems. The variations in metacognitive skills across disciplines suggest that customized educational interventions could be beneficial. A more nuanced discussion of the findings follows.

The results revealed significant differences in metacognitive awareness across engineering disciplines. Food engineering students generally scored higher in most categories of metacognitive skills, particularly in Planning, Organization, and Debugging. These skills are crucial for effective learning and problem-solving in engineering contexts, indicating potential differences in curricular or pedagogical approaches between the disciplines. Together, these findings suggest that the differences in curricular structure and cognitive demands may play a role in shaping students' metacognitive profiles across engineering disciplines.

The heatmaps of metacognitive skill correlations also provided valuable insights. On one side, systems engineering students demonstrated stronger associations between Planning, Monitoring, and Evaluation, suggesting a more integrated approach to developing these skills. In contrast, food engineering students showed moderate correlations, indicating room for improvement in fostering interconnected skill development.

These findings align with the model of metacognitive knowledge and regulation of [Schraw and Moshman \(1995\)](#), particularly in how declarative and procedural skills differ across domains. The stronger integration of Planning and Evaluation observed in systems engineering students reflects the regulatory component of SRL models described by [Pintrich \(2002\)](#).

An alternative explanation for these disciplinary differences could be related to the nature of cognitive challenges within each field. Systems engineering, for example, often demands abstract and logical reasoning, which might foster different types of metacognitive engagement compared to the practical and procedural focus of food engineering.

Implications for Engineering Education

The study underscores the need for curricula that explicitly integrate metacognitive skills training. For systems engineering, fostering stronger connections between Debugging and Evaluation

could further enhance learning outcomes. For food engineering, increasing emphasis on interconnections between metacognitive skills may yield better outcomes. The findings suggest that incorporating teaching methods that emphasize self-reflection, strategic planning, and error correction (i.e., Monitoring and Debugging) could be beneficial for engineering educators seeking to strengthen metacognitive development. Examples include think-aloud protocols, reflective diaries, and structured problem-solving activities.

The differences observed between disciplines suggest the need for tailored interventions. For instance, systems engineering curricula might benefit from activities that improve debugging skills, while food engineering programs could prioritize enhancing the planning-monitoring relationship.

Institutional efforts to integrate metacognitive training should go beyond isolated activities and aim to embed reflective practices across the curriculum, fostering a culture of self-regulated learning in engineering education.

Several limitations of this study should be acknowledged. First, the sample was limited to two universities, potentially reducing the generalizability of the findings. Future research should include a broader and more diverse sample to validate these results. Furthermore, the use of the Metacognitive Awareness Inventory (MAI) relies on self-reported data, which may be subjected to biases such as social desirability or inaccurate self-assessment. Incorporating behavioral assessments of metacognitive skills could provide a more comprehensive understanding. Finally, the study's cross-sectional nature limits insights into the development of metacognitive skills over time. Longitudinal studies are recommended to examine how these skills evolve throughout students' academic journeys.

This study did not include a content analysis of engineering curricula or direct input from faculty, which limits the extent to which pedagogical recommendations can be generalized. Future research should examine how metacognitive strate-

gies are (or are not) currently embedded in engineering course design.

Considering this, future research should investigate how metacognitive skills develop across semesters and identify critical periods for intervention. This would fill the critical gap of an in-depth understanding of the developmental trajectory of domain-specific metacognition. Moreover, researchers should extend the comparison to include other engineering disciplines and fields such as medicine or psychology to better understand domain-specific differences.

It is of special significance for future work to evaluate the effectiveness of specific instructional strategies, such as problem-based learning or metacognitive training modules, in improving students' skills. Finally, studies ought to employ qualitative methods such as interviews or focus groups to gain deeper insights into students' experiences and perceptions of metacognitive skill development.

To conclude, this study underscores the critical role of metacognitive skills in food engineering and systems engineering education. By fostering these skills, educational institutions can better prepare students for the demands of their professional careers. It also provides valuable insights into metacognitive awareness among food and systems engineering students, emphasizing the importance of tailored educational interventions to enhance learning outcomes. By addressing the limitations and exploring the suggested avenues for future research, we can advance our understanding of metacognitive skills and their critical role in engineering education.

If the curriculum or instructional methods do not specifically integrate and emphasize the interconnected development of different metacognitive skills, students may not have sufficient opportunities to practice and refine these skills in a manner that reveals strong intercorrelations.

In Education and Psychology programs, there is a tendency for students to have opportunities for self-reflection and introspection, unlike in engineering programs where students typically base their

training on problem-solving as discussed in Gutierrez de Blume and Montoya (2021).

The MANOVA analysis has shown that there are significant differences in metacognitive skills between students in Systems Engineering and Food Engineering programs. This suggests that the group a student belongs to is associated with differences in their multivariate profile of metacognitive skills.

Significant differences are observed between the Systems Engineering and Food Engineering groups. This suggests that there may even be differences in the level of metacognitive monitoring within programs of the same field of knowledge.

Future research will also include an expansion of the sample to other engineering disciplines. At Universidad de Caldas, new programs such as Artificial Intelligence Engineering and Environmental and Sanitary Engineering will be launched in the upcoming academic year, alongside the special program in Informatics Engineering. At Universidad Autónoma de Manizales, further studies will include mechanical, electronic, and industrial engineering students. These additions will allow for a broader comparison of metacognitive profiles across engineering subfields.

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