

# Factors Influencing the Use of the Tuning Protocol Reflection Among Agriculture Teachers

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## Abstract

The professional development of teachers is essential, particularly for those encountering various challenges in classroom management. This study aims to determine the key predictive factors influencing the adoption of the Tuning Protocol reflection method among novice teachers. Employing a correlational research design, data were collected through a questionnaire. The sample consisted of novice teachers specializing in agricultural subjects (n=145). Findings reveal a significant relationship ( $p < 0.01$ ) between all three predictive factors and the selection of the Tuning Protocol reflection method. Among these, the ability to conduct teaching reflection emerged as the most influential factor, demonstrating a correlation value of  $r = 0.250$  (25%). This study underscores the importance of reflective teaching practices in fostering the professional development of agricultural subject teachers. Furthermore, the findings provide valuable insights for schools in implementing the Tuning Protocol reflection method to support the continuous growth of novice educators.

**Keywords:** Professional Development, Agriculture Education, AGED, Reflective Practice, Tuning Protocol reflection, Workload

## 1. Introduction

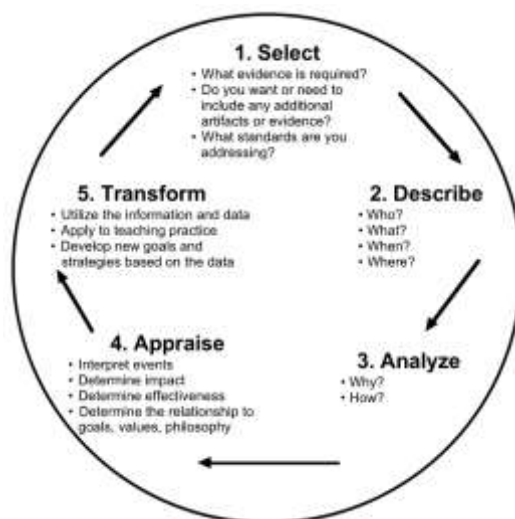
Teaching reflection is widely recognized as a fundamental tool for teacher professional development, contributing significantly to improved educational outcomes, enhanced student satisfaction, increased academic achievement, and overall teaching effectiveness (Afshar &

Farahani, 2018; Boateng et al., 2021). However, some studies suggest that the direct impact of reflective teaching on student achievement may be limited (Lindsey, 2020). Additionally, theoretical perspectives on reflective practice highlight considerable variation in teachers' skills and knowledge throughout the reflection process, which may influence its effectiveness (Pal, 2022).

### *1.1 Conceptual Framework*

The Situational Leadership Theory developed by Hersey and Blanchard (1988) supports the integration of new skills into teachers' instructional practices by emphasizing adaptive leadership based on individual readiness and competence. Building on this foundation, Sparks and Loucks-Horsley proposed five professional development models—Individually Guided Development, Observation and Assessment, Systematic School Improvement, Training, and Inquiry—which promote collaboration, continuous improvement, contextualized learning, and research-based strategies to enhance teaching effectiveness (Allas et al., 2020).

Reflective practice, a cornerstone of professional development, involves critical self-analysis of teaching methods to refine instructional strategies and improve student outcomes (Pal, 2020). These professional development models incorporate reflection through a cyclical process of observation, analysis, action, and evaluation, enabling teachers to assess classroom practices, strengthen instructional effectiveness, and respond to evolving educational needs (Sitto et al., 2018). Ultimately, reflective practice fosters ongoing professional growth, empowering educators to continuously improve and adapt within dynamic learning environments (Galli & New, 2022).



Model 1. Gibbs (1998) Teaching reflection cycle

However, there is a tool of reflection that involve peers and colleagues in discussing and sharing the problem with each other. (Paulsen & Clark, 2016). Tuning Protocol Reflection is a structured process for evaluating and refining instructional strategies, guidelines, and

protocols (Schön, 1983). It involves systematically analyzing their effectiveness, identifying strengths and weaknesses, and determining areas for improvement (Paulsen & Clark, 2016). In education, this reflection process enables teachers to assess curricula, assessments, and teaching methods collaboratively (Sitto et al., 2018). Through reflective discussions, educators analyze evidence, share insights, and refine instructional strategies to enhance student learning (Strong & Soni, 2021). This approach fosters professional dialogue and problem-solving, ultimately improving teaching effectiveness (Paulsen & Clark, 2016). Reflective teaching enhances educators' understanding of student learning and supports instructional adjustments based on past experiences (Boateng et al., 2023). Additionally, administrative oversight strengthens teachers' competencies, particularly in addressing complex teaching methodologies (Strong & Soni, 2021). Fordham (2016) emphasized that reflective practice bridges theory and practice, encouraging teachers to explore diverse instructional strategies informed by research and experience. Engaging in reflection also helps educators examine their beliefs, fostering effective solutions to classroom challenges (Pal, 2022). Through this continuous process, teachers refine lesson planning, integrate new insights, and enhance their instructional effectiveness (Botke & Woerkom, 2023).

### *1.2 Skills in Conducting Teaching Reflection*

Reflective skills enable teachers to analyse and synthesize instructional challenges, enhancing their problem-solving abilities (Bowling et al., 2022). Educators who possess robust self-analysis skills are better equipped to identify, define, and address classroom difficulties through reflection, using prior knowledge to inform improved teaching strategies (Greiman & Covington, 2007; Bell et al., 2022). These competencies also support school-related challenges, improving lesson planning and pedagogical expertise (Schön, 1983; Bell et al., 2022). Awareness of classroom social, cognitive, and cultural dynamics further enhances reflective decision-making and instructional refinement (Eck & Ramsey, 2019; Deorukhkar, 2018). Reflective practice encourages open-mindedness, fostering critical thinking in lesson design and promoting deeper student engagement (Deorukhkar, 2018).

Collecting and evaluating diverse data—such as student feedback, self-observations, and reflective journals—is integral to the reflection process (Izadinia, 2016; Rashid et al., 2020). Reflection is not merely about acquiring new knowledge but also about reinterpreting existing understanding through new frames (Schön, 1983; Afshar & Farahani, 2017). Experiential learning theory emphasizes that classroom experiences play a pivotal role in shaping teachers' reflective capacities, leading to progressively refined instructional delivery (Dewey, 1918; Pal, 2022). Teachers' perceptions of reflective teaching—shaped by cognitive, emotional, and neural processing—significantly influence their engagement with and adaptability to instructional environments (Lindsey, 2020; Shea, 2020; Hareesol & Puteri, 2019). Educators who appreciate diverse student learning styles are more likely to embrace effective reflection, improving their teaching strategies (Allas & Toom, 2020; Schön, 1983). However, some studies report that reflective engagement among EFL instructors may be limited, due to lower emotional involvement or partial awareness of reflectivity's importance (Hassan & Mojtaba, 2017).

### 1.3 Research question

This research is guided by the following research questions: Is there a significant relationship between teachers' perceptions, teaching experience, reflective teaching skills, workload, and occupational stress in their engagement with reflective teaching and the selection of Tuning Protocol reflection? What are the predictive factors contributing to the adoption of Tuning Protocol reflection in teaching practices?

## 2. Methodology

This study employed a quantitative research design to examine the relationship between reflective teaching skills and Tuning Protocol reflection while identifying the factors influencing teachers' selection of Tuning Protocol reflection as a practice. A survey-based research method was chosen as it allows for the collection of standardized data from a large sample, ensuring generalizability and statistical validity (Creswell, 2008). The study targeted agriculture teachers as participants due to their involvement in reflective teaching practices. A stratified random sampling method was employed due to the unequal distribution of teachers across Perak, Negeri Sembilan, Selangor, Putrajaya, Kuala Lumpur, and Johor. A total of 145 teachers participated in the study. Inclusion criteria required that teachers had prior experience with reflective teaching and familiarity with the Tuning Protocol reflection approach.

Table 1. Demographic Data of Novice Agriculture Teacher

Variable		Total	%
Gender	Male	4	40
	Female	6	60
Area Taught	Perak	1	10
	Negeri Sembilan	2	20
	Kuala Lumpur	1	10
	Putrajaya	1	10
	Melaka	1	10
	Johor	2	20
	Selangor	2	20
Teaching experience	Less than 1 year	69	47.58
	1 year	44	30.34
	2 years	21	14.48
	3 years	11	7.54

Data were collected using a structured questionnaire survey, a widely used instrument for measuring perceptions, attitudes, and behaviours in educational research. The questionnaire consisted of three sections. The first section, *Demographic Information*, included items on gender, teaching area, and years of experience. The second section, *Reflective Teaching Skills*, assessed participants' self-perceived reflective teaching abilities using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree) (Bell et al., 2023). The third section, *Tuning Protocol Reflection Factors*, explored various factors influencing teachers' adoption of the Tuning Protocol reflection method, such as administrative support, access to

professional development opportunities, and perceived effectiveness (Paulsen et al., 2016).

The research instruments employed in this study were adapted from established and validated sources to ensure the reliability and validity of the data collected. The constructs of *perception*, *experience*, and *competency* in reflective teaching were assessed using an instrument developed by Anbrasi et al., (2019), which evaluates professional competencies and perceptions related to reflective practice to determine individual performance levels. The original items were modified and refined to suit the specific objectives of the present study. To evaluate novice Agricultural Science teachers' reflections on teaching, this study adapted an instrument by Daud et al., (2018), which includes components such as *Teaching and Learning Supervision*, *Teachers' Attitude towards Classroom Supervision*, and *Students' Participation*. These items were selected and adjusted to align with the study's aim of assessing novice teachers' reflective practices in classroom instruction.

The *workload* construct was adapted from Schaufeli et al. (2006), utilizing the measurement of work engagement with a short questionnaire to assess teachers' engagement levels in relation to their teaching responsibilities. The *occupational stress* construct was derived from Huberty and Huebner (1988), who developed a national survey on burnout among school psychologists. This instrument was employed to identify stress factors experienced by novice agricultural science teachers, particularly those stemming from excessive workload. Furthermore, the construct assessing the selection of *Tuning Protocol reflection* as a reflective teaching approach was adapted from Barnett and O'Mahony (2006), who developed the framework *Developing a Culture of Reflection: Implications for School Improvement*. The adapted items were tailored to measure teachers' reflective practices, perceived school improvement outcomes, and instructional decision-making processes.

### 3. Results

The study's findings suggest that most novice have limited experience in managing the teaching and learning process. It examined teachers' perceptions, experiences, and skills related to teaching reflection. The Cronbach's Alpha coefficient for the variable *perception of teaching* reflection was 0.85. For the variable experience with teaching reflection, it was 0.78. Meanwhile, the variable skills in teaching reflection recorded a coefficient of 0.95. The results indicated that teachers' perceptions of teaching reflection had a mean (M) of 3.993 and a standard deviation (SD) of 0.256 ( $n = 145$ ), while their experience recorded a mean of 3.753 with an SD of 0.781 ( $n = 145$ ). Reflective teaching skills were relatively high, with a mean of 4.071 and an SD of 0.720 ( $n = 145$ ). Additionally, the study found a significant relationship between all predictive factors and the adoption of Tuning Protocol reflection as a teaching practice ( $p < .05$ ). This suggests that reflective skills in teaching experience, and perception significantly influence teachers' decisions to implement Tuning Protocol reflection. Among these, reflective teaching skills were the strongest predictor, indicating that teachers with higher reflective abilities are more likely to adopt this approach for professional development. These findings highlight the critical role of reflective skills in shaping instructional practices, underscoring the need for targeted professional development programs to support novice agricultural science teachers in improving their reflective teaching

practices.

Table 2. Relationship of factor in making lesson plan and choosing Tuning Protocol Reflection

Factor of making lesson plan	R	Significant value
Perception towards teaching reflection	.650	.001
Experience in teaching reflection	.434	.001
Skills in teaching reflection	.536	.001

$P = >0.001$

Table 3. Multiple Regression Analysis

Variable	B	$\beta$	t	p
Constant	-.944		3.798	.000
Skill in teaching reflection	.435	.275	3.274	.000
Perception towards teaching reflection	.300	.418	3.412	.000

$r^2 = 0.066$   
 $r = 0.250$   
 $F = 10.541,$   
 $p < 0.005$

B = Unstandardized coefficient,  $\beta$  = Standardized coefficient.

#### 4. Discussion

The findings of this study highlight several areas requiring improvement among novice Agricultural Science teachers. These findings are consistent with the research of Eck et al. (2020), who emphasized the importance of continuous improvement in teaching and learning quality. Among the predictors examined, reflective teaching skills appeared to be the most influential. However, this finding has several limitations. The sample size was relatively small and context-specific, which may affect the generalizability of the findings. While the results indicate a possible link between reflective skills and instructional practices, further research involving larger and more diverse populations is necessary to validate this relationship. Nonetheless, the findings suggest the potential value of professional development initiatives that support novice Agricultural Science teachers in cultivating reflective teaching practices. Overall, the discussion addresses the following key aspects:

##### 4.1 Factor That Influences the Choosing Tuning Protocol Reflection

The Tuning Protocol provides a structured environment in which teachers receive feedback from their peers, facilitating professional growth (Paulsen et al., 2016). Teachers with strong self-analysis skills are more inclined to adopt this method, as it enables them to assess the extent to which learning objectives are achieved and identify areas for improvement (Schön,

1983). Additionally, the ability to listen constructively to feedback plays a crucial role in the reflective process. Within the Tuning Protocol, teachers are expected to receive feedback without defensiveness—actively listening and embracing constructive criticism to refine their teaching strategies (Sellick, 2017). Educators who engage in critical and reflective thinking are particularly likely to appreciate the Tuning Protocol, as it allows them to evaluate instructional approaches from multiple perspectives and explore alternative solutions (Schön, 1983). Collaboration among colleagues is another key factor supporting the use of this method, as it allows teachers to gain new insights and adopt best practices based on their peers' experiences (Prosser et al., 2008). Moreover, teachers who can effectively adapt and enhance their teaching practices based on peer feedback tend to show greater improvement in instructional effectiveness (Roberts et al., 2020). Overall, the Tuning Protocol serves as a valuable reflective platform that helps educators identify weaknesses in their teaching and implement targeted improvements (Paulsen et al., 2016).

Overall, reflective teaching skills are a primary determinant in teachers' adoption of the Tuning Protocol as a pedagogical reflection tool. Skills such as instructional analysis, constructive feedback reception, critical thinking, collaboration, and flexibility in adapting teaching strategies are among the key reasons why this method is widely employed in educational settings (Schön, 1983; Paulsen et al., 2016; Sellick, 2017). A study by Eck et al. (2020) suggests that novice teachers with limited experience should document their teaching processes and revisit their practices for future improvement. However, Wosnitza et al. (2018) propose that teachers should first engage in self-directed learning before reflecting on their teaching practices. Nevertheless, the present study reveals that a significant predictor of teachers' preference for the Tuning Protocol is their consistent solicitation of student feedback after instructional sessions. This practice underscores teachers' ability to engage in self-reflective teaching. The findings indicate a strong positive relationship between reflective teaching skills and the selection of the Tuning Protocol as a reflective tool.

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