

Reflection, Metacognition, and Self-Assessment as Strategies to Improve the Academic Performance and Transform Beliefs in English Language Learners

Reflexión, Metacognición y Autoevaluación como Estrategias para Mejorar el Desempeño Académico y Transformar Creencias en Estudiantes de Inglés

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Authors:

Marta Cecilia Álvarez Peña

Universidad Técnica de Babahoyo

ORCID ID: <https://orcid.org/0000-0001-7698-8965>

malvarez@utb.edu.ec

Yanina del Rocio Carbo Silva

Universidad Técnica de Babahoyo

ORCID ID: <https://orcid.org/0000-0002-1385-0659>

ycarbo@utb.edu.ec

María José Sandoval Pérez

Universidad Técnica de Babahoyo

ORCID ID: <https://orcid.org/0000-0003-1858-7121>

msandoval@utb.edu.ec

Vicente Javier Coello Vasquez

Universidad Técnica de Babahoyo

ORCID ID: <https://orcid.org/0000-0001-8544-1304>

vcoellov@utb.edu.ec

DIRECCIÓN PARA CORRESPONDENCIA: malvarez@utb.edu.ec

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ABSTRACT

In contexts of the technological era, Education 4.0 has been shaped into active, reflective, and authentic models. Learners are now required to master skills and competences that not only help them adapt and thrive in more demanding academic contexts, but also prepare them for professional and personal ones. In the same vein,

Reflective learning, integrated with metacognitive strategies and self-assessment constructs have been studied even more since its effectiveness and success in the educational setting. This article has addressed two research questions: a) To what extent do Metacognition and Self-assessment influence the improvement of students' English performance? and b) To what extent does Reflective learning transforms students' prior beliefs and conceptions about English learning, as well as the role that the students themselves play in this process? For this purpose, a mixed-method design was applied, with qualitative and quantitative instruments such as pre and posttests based on rubrics, and pre-post surveys. Findings have evidenced a statistically significant improvement in students' language performance ($MD=-2.14$), and how the incorporation of those strategies has presented a potential effect on these improvements (Cohen's $D=1.67$; $p<0.001$, highly significant). In addition, learners' beliefs and conceptions toward learning have been transformed positively into a more active and student-centered model orientation. Therefore, studies with control groups on the same topic are recommended to be considered to contribute to this field of study with more in-depth investigations. Finally, this study has implications for a higher-level education context, with a focus on its effects on teaching English.

Keywords: *Reflection, metacognition, self-assessment, academic performance, beliefs*

RESUMEN

En el contexto de la era tecnológica, la Educación 4.0 ha sido moldeada en modelos más activos, auténticos y reflexivos. Los estudiantes ahora deben dominar habilidades y competencias que no solo les permitan adaptarse y prosperar en nuevos demandantes modelos académicos, sino también prepararlos para contextos profesionales y personales. En la misma línea, el Aprendizaje reflexivo, junto a las estrategias metacognitivas y a constructos de la autoevaluación, han sido estudiados aún más, dada su efectividad y éxito en el mundo educativo. Este artículo ha conducido dos preguntas de investigación: a) ¿A qué extensión la metacognición y la autoevaluación influyen en el rendimiento de los estudiantes de inglés? y b) ¿A qué extensión el aprendizaje Reflexivo transforma las primeras creencias y concepciones de los estudiantes sobre el aprendizaje en inglés y al rol en el que los estudiantes mismos juegan en dicho proceso?

Para ello, se ha aplicado el diseño mixto, con instrumentos de tipo cualitativo y cuantitativo como el pre y posttest basado en rúbricas y en pre y post encuestas de percepción. Los hallazgos han evidenciado un incremento estadísticamente significativo en el desempeño de los estudiantes ($DM=-2,14$) y como la incorporación de estas estrategias ha presentado un potencial efecto en dichas mejoras (D de Cohen=1.67; $p<0.001$ altamente significativo). Además, las creencias y concepciones de los participantes sobre el aprendizaje de inglés se han transformado positivamente en orientaciones más activas y basadas en el estudiante. Por lo tanto, se recomiendan estudios con grupos de control, de tal forma que se contribuya de manera más profunda a este campo de estudio. Finalmente, el estudio presenta implicaciones en contextos de la educación superior, con un especial enfoque en la enseñanza de inglés.

Palabras clave: *Reflexión, metacognición, autoevaluación, rendimiento académico y creencias*

INTRODUCTION

In today's rapidly evolving world, where education has been reshaped into innovative pedagogical approaches, online learning has been widely applied in higher education context, demanding the process to not just be more personalized, technological-driven or globally connected, but also to apply pedagogical innovations, which advocates central core aspects such as reflective learning, metacognition and self-assessment. This means that digital literacy implied in the process has become a requirement for educators; however, more than just the skills to apply technology, it also involves a deep understanding on how to use these tools to facilitate, improve, and transform learners' experiences. According to the 2016 Annual Horizon Report developed by Johson, Adams and Haywood (2016), it was demonstrated the growing interest in the role of new technologies that enables the application of more in-depth learning approaches, with a special emphasis in redesigning deep reflective learning experiences and personalization.

Nevertheless, Roberts (2016) and Dewey's (1933) have pointed out how despite Reflection' potential, it is a complex construct to define, apply, scaffold, and develop in the higher education settings. In the same vein, in contexts where virtual education has been applied abruptly such as in Latin America, learners often demonstrate reluctance

toward innovative and active learning approaches, which focus on students rather than teachers. As a consequence, many students remain unaware of their own learning processes and do not reflect on their areas of weakness and strength, relying on teacher-driven criteria and struggling to conduct self-assessment, reflection and improvement (Almache & Ramirez, 2019). Similarly, Alger (2006) and Martin (2005), have pointed out that there exists an unarticulated prior knowledge and understanding of how learning and teaching processes unfold, based on learners' previous experiences, which influences their professional and academic dispositions and beliefs. These findings are consistent with the results of surveys conducted in an Ecuadorian University, in which more of the participants (83%) have pointed out that they are not aware of their reflective, metacognitive, and self-assessment mechanisms in their English learning process. In addition, participants (73%) have stated that the main factor of the poor awareness of those components is that they haven't been taught using these strategies in the previous levels of English. It implies few opportunities are provided to learners to develop reflective skills that transcend the traditional environment. This significant gap among students revealed the necessity of addressing this phenomenon by analyzing how reflective learning, the application of metacognitive strategies, and self-assessment are essential and effective for learners' improvement.

On the other hand, reflective learning is the process of becoming more self-aware of their learning process and taking ownership of it. It has been considered as a powerful tool that helps learners to be engaged in thinking and reflecting not just on the discipline, but also on their own goals, weaknesses, strengths, areas of improvement, effort, and learning strategies (Stefani et al. 2000; Bailie et al.2025). It implies thinking about what they have learned, how they have learned it, and how they can improve. Therefore, it conveys the mastery of some skills, such as critical thinking, time-management, autonomy, and the promotion of values as responsibility and commitment. As highlighted by Alger (2006) and Martin (2005), one reflective learning approach mainly centers on exploring and transforming students' prior misconceptions and beliefs about teaching and learning. This process leads to being aware of how their own values and facilitates changing their level of understanding. In other words, reflective learning is essential not just for assessment purposes, but for promoting personal learning, and improving teaching practices (Roberts, 2016).

In addition, Metacognition is a powerful technique that involves self-organized and regulated learning, considered as one of the most relevant learning outcomes (Marantika, 2021). As stated by Sahoo (2022), In the societal and technological era, directing toward metacognition strategies and outcomes in an innovative cross-discipline approach to the learning and teaching processes is required to prepare students with appropriate competencies, skills, and knowledge to live competently in the 5.0 society. Correspondingly, some studies have proved the effectiveness of metacognition in students' academic success in language learning contexts, with significant implications at macro, meso, and micro levels (Van & Habok, 2023).

Also, according to Yan (2018), self-assessment has become a topic of significant interest in research since it helps students to increase their level of motivation, autonomy, engagement, and metacognition in learning. Similarly, some studies have suggested that self-assessment contributes to enhancing learners' self-regulation and has notable implications for developing intensive metacognitive skills, since learners are required to monitor and evaluate their own learning process to come up with ideas and conclusions on what is required next (Panadero et al., 2014; Andrade & Valtcheva, 2009; Zimmerman, 2008).

Therefore, this study aims at analyzing the impact of reflective learning on transforming students' prior beliefs and conceptions about English learning as well as their role that the students themselves play in this process. In addition, this research analyzes how metacognition and self-assessment influence on the improvement of students' English performance.

In concordance, the study is aligned to respond to the following research questions:

1. To what extent do Metacognition and Self-assessment influence the improvement of students' English performance?
2. To what extent does Reflective learning transforms students' prior beliefs and conceptions about English learning, as well as the role that the students themselves play in this process?

Literature Review

Reflection

As defined by Dewey (1993), reflection is a thinking process of examining one's own actions, thoughts, or experiences. It involves clarifying a situation which has initially uncertain or incoherent. This evidences that reflective learning is triggered by unclear and uncomfortable conditions of uncertainty, confusion, doubts, challenges, or perplexity.

Reflective Learning

According to Brockbank and McGill (2007), reflective learning is “an intentional social process, where context and experience are acknowledged, in which learners are active individuals, wholly present, engaging with others, open to challenge, and the outcome involves transformation as well as improvement for both individuals and their environment” (p. 36).

Metacognition

Flavel (1979) has defined metacognition (MC) as “knowledge, regulation, and cognition about cognitive phenomena” (p. 906). Likely, Efklides (2008) has stated this concept as “a conscious process in the sense that the person is consciously aware of the monitoring and control processes”. In other words, Metacognition is the process of thinking about thinking (Schraw, 2001). Many researchers have concurred that MC is associated with students' learning process, because it involves being aware of how you learn and how you regulate your own cognitive process.

Self-assessment

The concept of self-assessment is defined by Andrade and Valtcheva (2009) as the core element of self-regulation since it implies understanding the task and its goal, and monitoring how you are doing in total relation to the achievement of those goals. Other authors have pointed out that it is an internal practice done by and within the students themselves, in which they apply their values, thoughts, aims, and competencies (Yan & Brown, 2014).

METHODOLOGY

This study adopts an action research methodology, which merges investigation cycles with practical actions to solve real-world issues. The research applies a mixed-methods research design by processing qualitative and quantitative data. Regarding the qualitative techniques and instruments, the diagnostic test, with a rubric was considered. On the other hand, qualitative techniques and instruments includes pre and post essay with their corresponding questionnaires.

Sample and Participants

In this mixed-methods study, the sampling was conducted by convenience. It means that participants with certain characteristics were chosen in concordance with the availability, practicability, and accessibility to collect data for the study (Creswell, 2012). The participants comprised 23 university students from different disciplines, who were enrolled to English online sessions, demonstrating an A2 level, according to The Common European Framework of References for Languages (CEFRL). Their ages ranged from 18 to 40 years.

Instruments

The instruments selected for this study were gathered into two groups: qualitative and quantitative. Regarding the qualitative data, a pre and post-diagnostic test, whose results were obtained with a rubric that assesses some criteria, such as 1. The use of passive voice, 2. Message, awareness, call to action, 3. Creativity & Multimedia, 4. Pronunciation & Fluency, and 5. Teamwork, time requirements. Those tests were collected in two different moments, pre-and post intervention of the pedagogical innovation: application of metacognition strategies and self-assessment.

Regarding the qualitative data, a survey questionnaire entitles *Reflective Learning and Metacognition in English language learning* was applied, which was adapted from the instrument developed by Nguyen & Habók (2021). It was conducted to obtain information regarding how reflective learning helps university learners of English identify and transform their prior conceptions and beliefs about the learning and teaching practices. It comprises two sections: 1. Quantitative Questions that include 12 Items analyzed with a Likert Scale: 1. *strongly disagree* to 5. *Strongly agree*. These were

subdivided into these constructs: A. beliefs and conceptions about Learning English and their role on the process. B. Awareness of Values in English Learning, and C. Impact on Future Learning Practices; and 2. Qualitative Section with four open questions regarding learners' awareness about how their own values and practices change their understanding of English learning. To assess the reliability and validity of this instrument, a panel of experts validated the scale, with a result of alpha values >0.9 , demonstrating to be highly reliable (Tavakol & Dennick, 2011). In addition, a pilot test was conducted before the implementation to the participants.

Data Analysis

Quantitative data obtained from the pre and posttests and the surveys, and applied before and after the innovation was codified in Excel and cleaned before transferring it to the SPSS program to analyze it and generate descriptive and inferential statistics. In Descriptive statistics, the mean, median, and frequency distributions were analyzed to understand the central tendency (average performance of learners), distributions of the scores, and frequency of certain performance levels. In Inferential Statistics T test for (Paired T test) since a subject's means is studied into different times to determine if there is a significant difference between them (Derrick, Toher & White, 2017). Finally, the effect size was applied to analyze the magnitude of the pedagogical innovation's impact on students' performance.

Qualitative data collected from the questionnaire was administered at the beginning and the end of the application of study. The data was gathered into different categories that centered on the same focus or alignment, to then codified and enter it in excel to transfer to the SPSS program. The main categories analyzed were: 1. learners' conceptions about how English is learned, 2. awareness and identification of misconceptions, 3. reflective experiences and learning transformation, 4. Values and attitudes toward learning, 5. Perceptions on the impact of Reflective Learning on their learning practice.

Ethical Considerations

The study has emphasized aspects such as confidentiality and anonymity to guarantee the protection of the participants' personal information. Both of these measures

ensure trust and integrity in the study. Therefore, to maintain anonymity, participants were coded with unique numerical identifiers.

RESULTS AND DISCUSSION

This section shows the results of the study in accordance with the responds of the two research questions.

1. To what extent do Metacognition and Self-assessment influence the improvement of students' English performance?

To address the first research question, the data obtained from the pre and posttests based on the rubrics was analyzed. These tests were conducted before and after the application of metacognition and self-assessment strategies of the conduction of an Awareness Video Project. The results are presented below in Tables 1 and 2.

Table 1

Pre and Post Awareness Project Assessment with Rubrics Result

		NMin	Max	Mean	Standard Deviation	Mean Difference	Cohen's D
Pretest	26	4.00	9.00	6.36	1.52		
Posttest	26	6,75	10.00	8.50	1.05	-2.14	1.67
N Valid	26						
(listwise)							

Note. Table 1 shows a clear difference between pre-and posttests score.

The mean difference (2.14) evidences a general improvement (6.36 – 8.50) after the implementation of self-assessment and metacognitive strategies in students' learning performance across various aspects, including pronunciation, fluency, grammar usage, creativity, use of multimedia resources, teamwork, time-management, and their ability to create a clear message, enhance awareness, and develop a strong call to action that motives people to help. Also, the large effect size results in Cohen's D=1.67 demonstrates a strong influence of these pedagogical strategies into the students' improvement.

To corroborate these results, the Paired t-test is presented below:

Table 2

Paired T-test results

		T test of paired sample					
		Paired differences				t	Sig. (2-tailed)
		Mean Difference	Standard Deviation	Standard Error Mean	95% confidence Interval of the difference		
					Lower	Higher	
Par 1	Pre Test-			0.18	-2.51	-12.10	
	Post Tests	-2.14	0.90		-1.77		25 .000

Note. As it is shown in Table 2, the paired t-test sample results indicated that the null hypothesis is rejected, which also demonstrated a statistically significant improvement of $p < .001$ (highly significant).

The paired-sample test was conducted to compare students ‘performance before and after the intervention (metacognitive and self-assessment strategies). The results suggest that students achieved higher scores in the post-test (mean difference of -2.14). In addition, the 95% confidence interval (-2,51, -1,77) demonstrated the consistency across participants.

These findings align with those found in a study conducted by Van and Habok (2023), where the participants’ academic performance in English learning also evidenced similar significant improvement after incorporating metacognition strategies. Likewise, as highlighted by Panadero et al. (2014), Andrade and Valtcheva (2009), and Zimmerman, (2008), this study has also proved that self-assessment is a powerful strategy that leads up to an increase in students’ level of engagement and to a notable improvement in metacognitive components, which in turn enhances their academic performance.

2. To what extent does Reflective learning transforms students’ prior beliefs and conceptions about English learning, as well as the role that the students themselves play in this process?

To consider the second research question, descriptive statistics were implemented to analyze learners’ responses to the Likert-scale-based questions in terms of beliefs,

conceptions, and learning agency. Five items were selected, which are described below in Table 3.

Table 3

Students' perspective change toward Reflective Learning

<i>Construct</i>	<i>Item</i>		<i>Mean (M)</i>	<i>Standard Deviation</i>
	I have clear beliefs about how English should be learned	Pre Survey	3.15	0.72
		Post Survey	4.70	0.46
Beliefs, conceptions & learners' role	Reflective learning helped me to identify misconceptions on my learning process.	Pre Survey	3.05	0.69
		Post Survey	4.38	0.55
	My role is central to my succeed in English language mastery	Pre Survey	3.35	0.66
		Post Survey	4.40	0.52
Awareness of values	I am aware of how my own values influence how I learn English	Pre Survey	3.02	0.74
		Post Survey	4.20	0.58
	Reflective learning helps me question my assumptions about English learning	Pre Survey	3.05	0.71
		Post Survey	4.40	0.54

Future Learning Practice	Reflective Learning improved the way I assess my English learning strategies	Pre Survey	3.10	0.68
	I plan to use reflection to improve my future English learning.	Pre Survey	3.10	0.65
		Post Survey	4.70	0.45
		Post Survey	4.49	0.50

Note. Table 3 shows the results of the pre and post-surveys, based on the qualitative data section: Descriptive statistics for Likert-scale items about students ‘beliefs and conceptions toward English learning.

These items were part of three constructs: A. beliefs and conceptions about Learning English and their role in the process. B. Awareness of Values in English Learning, and C. Impact on Future Learning Practices. Overall, the post survey mean scores are significantly higher than scores from the pre-test.

Regarding *Beliefs*, conceptions, and learners’ role; pre-survey means ranged from M=3.05, S.D.=0.69 to M=3.35, S.D.= 0.66, which indicates a moderate initial perspective and beliefs. On the other hand, post survey means increased to M=4.38, S.D.=0.46 to M=4.70, S.D.=0.55. The item with the largest increase was students’ clarity of beliefs about how english should be learned, suggesting a change in their perception toward more learners-centered approach conceptions (M=3,15, SD=0,72 to M=4.70, SD=0.46). Regarding *Awareness of Values*, pre surveys show a neutral perspective, with scores that varied from M=3.02, SD=0.74 to M=3.05, SD=0.71, while post surveys show an increase to M=4.20, S.D.=0.58 and M=4.40, S.D.=0.54. These results suggest a greater awareness of how personal values and beliefs influence the participants’ learning process. In addition, a stronger consistency in students’ responses is evident after the application of reflective learning strategies. Finally, about *Future Learning Practice*, the pre-survey means M=3.10, S.D.=0.68 and M=3.10, S.D.=0,65 have proved a moderate agreement prior to the intervention. On the other hand, post-surveys scores (M=4.70, S.D.=0.45; M=4.49, S.D.=0.50) shows the highest general means, which demonstrates that reflective learning had a strong perceived impact on learners’ skills to assess their own learning

mechanism and strategies, and their intention to continue applying Reflective learning in future English online sessions.

Table 4

Changes in Learners’ beliefs and conceptions identified through Reflective Learning: Qualitative Categories

Category	Evidence of Change	Representative Excerpt
Learners’ conceptions and misconceptions about how English is learned	Shift from structural grammar rules to communicative approach and practical-oriented conceptions.	<i>“Now, I understand that English is more than Grammar, clear communication is a key component in learning a language”</i>
Reflective experiences and learning transformation	Changes in learning strategies and approaches: learner agency.	<i>“I am aware now that I should notice my mistakes to improve, instead of just memorizing”</i>
Values and attitudes toward learning	Increased openness, motivation, confidence and positive attitudes toward making mistakes.	<i>“I know now that mistakes are part of learning, if I don’t practice, I will never learn”</i>

Note. Table 4 shows the qualitative analysis results from the open-ended questions. They have revealed a clear positive change into learners’ beliefs and conceptions toward learning; moving from a way of grammar-centered approach to a more active communication and reflective approach.

In addition, participants also demonstrated an awareness of their prior misconceptions about learning English. Also, reflective experiences contributed to increasing the level of learners’ responsibility and to a transformation in the application of learning strategies. Finally, participants stated they have changed some bad attitudes into positive ones, that includes: more confidence, motivation, and willingness to make and correct errors throughout their learning process.

This coincides with what other authors have highlighted of Reflective learning and its effectiveness on engaging learners in the process of their own learning practices,

in aspects such as strengths, weaknesses, and areas of improvement (Stefani et al. 2000; Bailie et al.2025). They have emphasized how Reflective Learning influences learners to think about strategies they can apply to improve. Similarly, this study's findings are aligned to what Alger (2006) and Martin (2005) have stated about the role of a reflective learning approach to foster a transformation on learners' initial conceptions and beliefs about learning, shifting to more students-centered learning approach orientation, in which learners are aware on that they should take more responsibility on their own process of learning.

CONCLUSIONS

In conclusion, within the context of Education 4.0, Society 5.0 is required to master the abilities and skills necessary to adapt on more deep and advanced pedagogical models, essential for thriving in an increasingly and accelerated technological era. In the same vein, the effectiveness of deeper learning strategies such as reflection, metacognition, and self-assessment in the English language learning context is high relevant nowadays. Therefore, this study has demonstrated the effects of reflection, metacognition, and self-assessment on learners' English improvement. The data revealed that learners who are engaged in reflective, metacognitive, and self-assessment strategies not only showed an improvement on their language skills (pronunciation, fluency, and the grammar usage), but also have developed a deeper understanding and awareness of their own learning path and how relevant their active role is in their learning success. Not less importantly, reflective learning has been proved to transform learners' prior conceptions and beliefs on English language learning, empowering them to take a more active role in the academic journey.

REFERENCES

- Alger, C. (2006). ‘What went well, what didn’t go so well’: Growth of reflection in pre-service teachers. *Reflective Practice*, 7(3), 287-301. <https://doi.org/10.1080/14623940600837327>
- Almache, G., & Ramírez, R. (2019). Classifying vocabulary to improve reading comprehension in EFL learning: an action research study. [Clasificación de vocabulario para mejorar la comprensión lectora en el aprendizaje de inglés como idioma extranjera: un estudio de investigación para la acción]. *AtoZ: Novas Práticas em Informação e Conhecimento* *AtoZ: Novas Práticas em Informacao e Conhecimento*, 9(2). <http://dx.doi.org/10.5380/atoz.v9i2.73526>
- Andrade, H., & Valtcheva, A. (2009). Promoting learning and achievement through self-assessment. *Theory into Practice*, 48(1), 12–19. <https://doi.org/10.1080/00405840802577544>
- Bailie, A. L., Gebre, E., & Chinnery, A. (2025). Reflective learning in education courses: Conceptualizations and instructional strategies. *The Canadian Journal for the Scholarship of teaching and learning*, 16 (1). <https://files.eric.ed.gov/fulltext/EJ1488978.pdf>
- Brockbank, A., & McGill, I. (2007). *Facilitating Reflective Learning in Higher Education* (2nd ed.). McGraw-Hill
- Brown, G. T. L., & Harris, L. R. (2014). The future of self-assessment in classroom practice: Reframing self- assessment as a core competency. *Frontline Learning Research*, 2(1), 22-30. <https://doi.org/10.14786/flr.v2i1.24>
- Dewey, J. (1933). *How we think: A restatement of the relation of reflective thinking to the educative process*. D. C. Heath.
- Derrick, B., Toher, D., & White, P. (2017). How to compare the means of two samples that include paired observations and independent observations. *The Quantitative Methods for Psychology*, 13(2), 120-126. doi:10.20982/tqmp.13.2.p120
-

- Efklides, A. (2006). Metacognition and affect: What can metacognitive experiences tell us about the learning process? *Educational Research Review*, 40, 3-14.
<https://doi.org/10.1016/j.edurev.2005.11.001>
- Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive developmental inquiry. *American Psychologist*, 34, 906-911.
<https://doi.org/10.1037/0003-066X.34.10.9066>
- Johnson, L., Adams Becker, S., Cummins, M., Estrada, V., Freeman, A., y Hall, C. (2016). *NMC Informe Horizon 2016 Edición Superior de Educación*. Austin, Texas: The New Media Consortium.
- Marantika, J. E. R. (2021). Metacognitive ability and autonomous learning strategy in improving learning outcomes. *Journal of Education and Learning (EduLearn)*, 15(1), 88–96. <https://doi.org/10.11591/edulearn.v15i1.17392>
- Martin, M. (2005). Reflection in teacher education: How can it be supported? *Educational Action Research*, 13(4), 525-541. <https://doi.org/10.1080/09650790500200303>
- Panadero, E., Brown, G., & Courtney, M. (2014). Teachers' reasons for using self-assessment: a survey self-report of Spanish teachers. *Assessment in Education: Principles, Policy and Practice*, 21(4), 365–383.
<https://doi.org/10.1080/0969594X.2014.919247>
- Roberts, P. (2016). Reflection: A renewed and practical focus for an existing problem in teacher education. *Australian Journal of Teacher Education*, 41(7), 19-35.
<https://doi.org/10.14221/ajte.2016v41n7.2>
- Sahoo, P. R. (2022). Reimagining the Role of Science Education in Development of 21st Century Learning Skills with Reference to NEP 2020 Reimagining the Role of Science Education in Development of 21 st Century Learning Skills with Reference to NEP 2020. 12(2), 161–168. <https://doi.org/10.30954/2230-7311.2.2021.14>
- Schraw, G. (2001). Promoting general metacognitive awareness. In H. J. Hartman (Ed), *Metacognition in Learning and Instruction: Theory, Research and Practice*, 19, 3-16. https://doi.org/10.1007/978-94-017-2243-8_1
-

Stefani, L., Clarke, J., & Littlejohn, A. (2000). Developing a student-centred approach to reflective learning. *Innovations in Education and Training International*, 37(2), 163-171. <https://doi.org/10.1080/13558000050034529>

Van, S., & Habok, A (2023). Metacognition in Language Learning among Non-English-major Tertiary Students. *MEXTENSOL Journal*, 47 (3). <https://files.eric.ed.gov/fulltext/EJ1408136.pdf>

Zimmerman, B. J. (2008). Investigating self-regulation and motivation: Historical background, methodological developments, and future prospects. *American Educational Research Journal*, 45(1), 166–183.
<https://doi.org/10.3102/0002831207312909>