IJoLTE 10 (1) (2026)
E-ISSN: 2598-2303
International Journal of Language Teaching and Education
https://online-journal.unja.ac.id/IJoLTE
DOI: 10.22437/ijolte.v10i1.55927

Neuro-Psycho Linguistic (NPL) Strategies in Relation to Writing Performance of ESL Learners at the Secondary Level

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Info Article
Received: 21 May 2026
Revised: 28 May 2026
Accepted: 29 May 2026
Online Version: 1 June 2026

Abstract
Developing an effective writing skill persists a significant challenge for many learners in English as a Second Language (ESL) contexts. The present study examined the influence of Neuro-Psycho-linguistic (NPL) strategies on the writing performance among secondary-level ESL learners in Tiruchirappalli, Tamil Nadu, India. A cross-sectional survey design was adopted in the present study. The data were collected from 182 ESL learners from secondary level by using a structured questionnaire consisting of 25 items in eight domains of NPL: Anchoring, Modeling, Mirroring, Real-Time Processing Activities (RTPA), Priming, Interactive Learning (IL), Dissociation and Swishing. Learners' mid-term formative writing performance were obtained from school academic records. The results revealed that anchoring, modeling and mirroring strategies were most frequently utilized by learners. Correlation analysis showed a strong positive relationship between writing performance and NPL strategies such as anchoring, modeling and mirroring. Furthermore, multiple linear regression analysis indicated that anchoring, mirroring, modeling and RTPA significantly predicted on writing performance. The results suggested that NPL-based strategies may support learners' active cognitive engagement and writing development in ESL contexts.

Keywords: Neuro-Psycho linguistic; learning strategies; ESL writing performance; secondary school

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INTRODUCTION

Writing is always considered one of the most difficult tasks among learners of English as a Second Language (ESL). Because it requires integrating linguistic competence, cognitive processing, and psychological engagement. Many ESL learners faced difficulties in idea generation, thought organization, and the expression of their ideas coherently in written form (Zakaria & Sulaiman, 2025). Lashkarian & Sayadian (2015); Pratama (2019), and Ginting & Hartati (2023) emphasized that Neuro-Linguistic Programming (NLP) ensured the relationship among cognitive processes, language usage, and behavioural patterns with the strategies of modeling, anchoring, and reframing. Meanwhile, Lewis (2024) and Shurovi et al. (2025) suggested that the development of learners' effective writing is interconnected with the psychological and cognitive dimensions. Hajizada (2021); Annisa and Gusnawaty (2024) and Ismail and Mustafa (2025) found that self-regulation, metacognitive awareness and structured feedback, remarkably improved learners' writing proficiency. These researchers recommended that, through multiple strategies, learners developed their reflective thinking and independent learning. Based on these

pedagogical perceptions, researchers understood that neurological, psychological and linguistic strategies facilitate a more holistic approach in their own way for ESL writing instruction. Therefore, the current study adopts a broader perception of Neuro-Psycho-Linguistic (NPL) and navigates to a new attempt. Hence, the present study does not implement a direct NPL intervention in the field; rather, it investigates learners' awareness and insights with selected neurological, psychological, and linguistic learning strategies and then examines their association with ESL writing performance among secondary level learners.

The following objectives guide the present study:

1. To identify Neurological Psychological Linguistic (NPL) strategies that are frequently utilized by ESL learners at the secondary level.
2. To examine the relationship between the utilization of NPL strategies and the English writing performance of learners at the secondary level.
3. To find out the extent to which NPL strategies predict the writing performance of ESL learners.

Concepts Of Neuro-Psycho-Linguistic (NPL) Strategies in SLI Writing

Neuro-Linguistic Programming (NLP) has drawn significant attention in education and language learning, emphasizing the relationship between cognition, language, and behavioural patterns. It was developed during the 1970s by Richard Bandler and John Grinder. Initially, NLP was formulated as a therapeutic and communication-focused framework that integrated neurological processes, language structures, and behavioural responses. Over the period, NLP principles gradually entered educational settings, especially in ESL learning environments. Hajizada (2021); Nek Rakami & Rokeman (2023), and Masita (2025) underpinned that NLP-based strategies (modeling, anchoring, mirroring, reframing, visualization, and meta-modeling) significantly enhanced learners' communicative competence, confidence, and classroom interaction. Nicolas-Conesa et al. (2014) stated that learners need to organize their mental representations effectively before language production. Likewise, Vlaeva & Dornyei (2021) noted that visualization strategies affect learners' motivation, comprehension, and creativity during language learning activities. Pratama (2019), Kotera & Vione (2020), and Passmore & Rowson (2019) reported that NLP-based instructional practices improved learners' cognitive flexibility, emotional regulation, and reduced anxiety about language learning. Ginting & Hartati (2023) emphasized that NLP applications in language learning significantly encouraged learner autonomy, motivation, and cognitive activities in ESL classrooms. Overall, previous studies have shown that NLP-oriented teaching practices improve ESL learners' classroom participation, communicative confidence, and language performance. Even NLP offers a theoretical foundation (the relationship between cognition, language, and behaviour). The current study sticks with a broader Neuro-Psycho-Linguistic (NPL) programming. Thoughts and emotions also contribute to language learning. In this vision, rather than implementing direct NLP intervention strategies, this study focused on investigating learners' awareness and familiarity with selected NLP strategies and on examining their associations with ESL writing performance. Thus, the term NPL is utilized to contextualize these interconnected dimensions within the field of classroom-based writing practices.

Difference Between NLP and NPL in the Present Study

Table 1 Difference Between NLP and NPL

Aspect	**Neuro-Linguistic Programming (NLP)**	**Neuro-Psycho-Linguistic (NPL) Perspective**
Conceptual Basis	A theoretical framework developed by Bandler and Grinder focuses on cognition, language and behavioural patterns	A combined educational perspective adapted for ESL writing instruction

Aspect	Neuro-Linguistic Programming (NLP)	Neuro-Psycho-Linguistic (NPL) Perspective
Primary Focus	Enhancement of behavioural modification and communication through NLP strategies	Learners' thoughts and emotions were given importance
Application(nature)	Often implemented as an intervention-oriented strategies	Used as a pedagogical and awareness-focused framework in ESL learning
Major Components	Anchoring, Modeling, Mirroring, Real-Time Processing Activities, Priming, Interactive Learning, visualization, Dissociation and Swishing	Cognitive readiness (by NLP), emotional regulation (Psychological approaches) and linguistic development.
Role in current Study	Acts as the theoretical foundation	Serves as the operational framework for examining ESL writing performance
Research (Orientation)	Intervention-based approach	Awareness and correlational approach

Neuro-Psycho-Linguistic strategies together contribute to English language skills. Psychological approaches primarily emphasize learners' self-regulatory processes, including cognitive, emotional, and motivational activities, during their writing practice. According to Flower and Hayes (1981) and Zakaria & Sulaiman (2025), the writing process includes planning, translation (ideas into text), and reviewing drafts. Likewise, Graham et al. (2005) and Panadero (2017) reported that learners who used goal-setting, self-monitoring, and compensatory strategies showed better writing performance. Similarly, Vygotsky (1978), Lou & Noels (2020), and Li & Liu (2022) found that activities such as collaborative learning, motivational regulation, and constructive feedback strengthened learners' engagement, consistency, and communicative competence in ESL writing contexts.

Grounded in the above theoretical and pedagogical views, the current study identified and selected several NPL strategies. Because they addressed the common challenges ESL learners face. Preferably, writing anxiety, idea generation, lack of confidence and sentence organization. Thus, strategies such as Anchoring, Modeling, Mirroring, Priming, Interactive Learning (IL), Real-Time Processing Activities (RTPA), Dissociation, and Swishing were utilised as predictive domains for ESL writing development in the present study. It has contributed to ESL writing development in the following ways:

1. Anchoring - Promote learners' emotional stability during the writing tasks.
2. Modeling and Mirroring - Helpful for observing and replicating writing patterns.
3. Priming and RTPA -Support in enhancing cognitive preparation & language processing.
4. Interactive Learning (IL) - Strengthen collaborative revision practices.
5. Dissociation and Swishing – Reduce anxiety and encourage positive attitudes towards ESL writing.

As a whole, the integration of Neuro-Psycho-Linguistic strategies facilitates a comprehensive approach towards ESL writing improvement.

Rationale Of The Study

Previous studies have independently underscored the contributions of Neuro-Psycho-Linguistic learning strategies to ESL learning contexts. Lashkarian & Sayadian (2015); Hedayat et al. (2020); Hajizada (2021); Revell & Norman (1997); Ginting & Hartati (2023), and Salazar Cantos & Flor Arias (2026) discussed that NLP- based strategies like modeling, visualization, anchoring, and reframing significantly influenced learners' active participation, cognitive engagement, and language performance. Zhang et al. (2023) and Wang et al. (2025) demonstrated that psychological and psycholinguistic perspectives focus on factors such as self-regulation, metacognitive awareness, emotional control, and motivation that support writing improvement and academic performance among ESL learners.

Even though these approaches have yielded positive outcomes independently, few studies have attempted to integrate neurological, psychological, and linguistic dimensions within a unified framework for ESL writing improvement. This gap aims to be addressed by combining Neuro-Psycho-Linguistic strategies in the current study, through which learners' awareness of cognitive preparation, emotional regulation, reflective learning, and language-processing strategies is examined, which are associated with ESL writing performance. Hence, the current study aims to adopt an integrated perspective to understand the relationship between NPL strategies and ESL writing performance among secondary-level learners.

RESEARCH METHODS

This study employed a quantitative cross-sectional survey design to investigate the relationship between learners' awareness of Neuro-Linguistic Programming (NLP) strategies and their ESL writing performance. The study focused on identifying the extent to which learners utilize NLP strategies in language learning and how such strategies contribute to writing achievement. Data were collected from secondary school learners in CBSE-affiliated schools in Tiruchirappalli, Tamil Nadu, India, using a structured questionnaire and learners' formative writing performance records. The collected data were analyzed to determine the association between NLP strategy awareness and ESL writing outcomes.

Research Design

This study adopted a cross-sectional survey design to examine the relationship between learners' awareness of Neuro-Linguistic Programming (NLP) strategies and their ESL writing performance. The study aimed to investigate how learners' utilization of NLP strategies relates to their writing achievement in ESL contexts.

Research Target/Subject

The participants of this study were secondary school learners from CBSE schools in Tiruchirappalli, Tamil Nadu, India. Initially, 207 students participated in the study. However, incomplete responses were excluded, resulting in a final sample of 182 learners selected via random sampling.

Research Procedure

Prior to data collection, the study's objectives were clearly explained to both the school administration and the learners. After obtaining informed consent, participants completed the NLP Utilization Questionnaire. The collected data were then analyzed to determine the relationship between learners' awareness of NLP strategies and their ESL writing performance.

Instruments and Data Collection Techniques

Data were collected using the NLP Utilization Questionnaire, consisting of 25 items. The questionnaire measured learners' frequency of using NLP strategies across eight domains: Anchoring, Modeling, Mirroring, Real-Time Processing Activities (RTPA), Priming, Interactive Learning (IL), Dissociation, and Swishing. A 5-point Likert scale ranging from 0 (Never) to 4 (Always) was used. The mirroring domain contained four items, while the other domains contained three items each. The questionnaire items were developed based on previous studies on NLP and psychology-based learning strategies in ESL contexts. Content validity was established through expert review by language education

researchers and teacher educators. The instrument demonstrated high internal consistency (Cronbach's alpha = .87). In addition, learners' midterm formative writing performance scores (out of 100) were obtained from school academic records.

Data analysis technique

The collected data were analyzed to examine the relationship between learners' awareness and utilization of NLP strategies and their ESL writing performance. Questionnaire responses and writing performance scores were used to determine the association between NLP strategy awareness and ESL writing achievement.

RESULTS AND DISCUSSION

Descriptive statistics (mean and standard deviation (SD)) were used to identify the utilization pattern of NPL strategies among ESL learners. Pearson's correlation analysis is well-suited to examining the bivariate relationship between NPL strategy scores and ESL writing performance. A multiple linear regression analysis indicated that the extended use of selected NPL strategies significantly predicted ESL learners' writing performance.

Table1. Mean and standard deviation of NPL strategies scores (N = 182)

Strategies	**Mean**	**SD**
Anchoring	4.41	2.10
Modeling	3.98	0.75
Mirroring (4)	3.85	0.73
RTPA	3.74	0.70
Priming	3.31	0.69
I L	3.26	0.65
Dissociation	2.94	0.66
Swishing	2.88	0.63

Source: Field Data

Table 1 presents the descriptive statistics for the NPL strategies used by secondary-level ESL learners (N=182). Among the strategies, anchoring had the highest mean score (m = 4.12, SD = 0.71), suggesting that learners frequently relied on anchoring during their writing activities. Modeling (m = 3.98, SD = 0.75) and mirroring (m = 3.85, SD = 0.73) also showed relatively high mean values, suggesting that learners might be inclined to apply them in their written texts. RTPA showed a moderate level of usage (m = 3.74, SD = 0.70). Priming (m = 3.31, SD = 0.69) and interactive learning (IL) (m = 3.26, SD = 0.65) showed comparatively lower usage. The least frequently used strategies were dissociation (m = 2.94, SD = 0.66) and swishing (m = 2.88, SD = 0.63) during learners' writing tasks.

Table 2. Correlation Analysis

Variables	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Writing score	-	.64**	.58**	.52**	.49**	.21	.18	.05	.07
Anch.	.64**	-	.47**	.42**	.39**	.24**	.19	.11	.14
Mod.	.58**	.47**	-	.44**	.41**	.22	.16	.09	.12
Mir.	.52**	.42**	.44**	-	.38**	.18	.12	.07	.10
RTPA	.49**	.39**	.41**	.38**	-	.20	.15	.12	.09
Prim.	.21	.24*	.22	.18	.20	-	.29**	.11	.13
IL	.18	.19	.16	.12	.15	.29**	-	.10	.09
Diss.	.05	.11	.09	.07	.12	.11	.10	-	.33**
Swis.	.07	.14	.12	.10	.09	.13	.09	.33**	-

*Note. *p < .05, **p < .01*

Note. Anchoring (Anch.); Modeling (Mod.); Mirroring (Mir.); Real-Time Processing Activities (RTPA); Priming (Prim.); Interactive Learning (IL); Dissociation (Diss.); Swishing (Swis.)

Table 2 presents the Pearson correlation matrix, which shows the relationship between ESL writing performance and the NPL strategies. The correlation reveals that there is a positive correlation between the writing performance and anchoring ($r = .64$, $p < .01$. This was followed by modeling ($r = .58$, $p < .01$) and mirroring ($r = .52$, $p < .01$), both of which demonstrated a positive relationship with writing performance. RTPA ($r = .49$, $p < .01$) shows a moderately significant relationship with writing performance. In contrast, priming ($r = .21$) and IL ($r = .18$) exhibit budding positive associations with learners' writing performance. Meanwhile, dissociation ($r = .05$) and swishing ($r = .07$) display a negligible relationship with learners' writing performance. The findings highlighted that anchoring, modeling, mirroring, and RTPA are comparatively stronger strategies associated with ESL learners' writing performance, whereas the remaining domains showed a weaker relationship.

Table 3. Multiple Linear Regression Analysis

R	R^2	Adjusted R^2	F	df1	df2	P
.678	.460	.425	15.63	8	173	< .001

Note. Dependent Variable: ESL Writing Score.

Strategies (predictors)	β	P
Anch.	.36	< .001
Mod.	.28	.004
Mir.	.31	< .001
RTPA	.22	.009
Prim.	.10	.158
IL	.08	.240
Diss.	.04	.536
Swis.	.05	.402

source: field data

Table 3 shows that the multiple regression analysis tested the predictive influence of NPL strategies on ESL writing performance. The overall regression model was statistically significant, explaining 46% of the variance in writing performance ($R^2 = .46$, Adjusted $R^2 = .425$), $F(8, 173) = 15.63$, $p < .001$, indicating that the strategies significantly estimate writing performance among secondary-level ESL learners. Among the predictors, anchoring was the strongest ($\beta = .36$, $p < .001$). This was followed by mirroring ($\beta = .31$, $p = .001$) and modeling ($\beta = .28$, $p = .004$), both of which displayed significant contributions to the writing performance. RTPA also significantly predicted writing performance ($\beta = .22$, $p = .009$), with a relatively small effect size. In contrast, priming ($\beta = .10$, $p = .158$), IL ($\beta = .08$, $p = .240$), dissociation ($\beta = .04$, $p = .536$) and swishing ($\beta = .05$, $p = .402$) showed less significance to the writing performance.

The present study ensured that selected Neuro-Psycho-Linguistic (NPL) strategies were positively connected with secondary-level learners' ESL writing performance. The findings suggested that Anchoring ($\beta = .36$), Mirroring ($\beta = .31$), Modeling ($\beta = .28$), and RTPA ($\beta = .22$) significantly aligned with ESL learners' writing performance, with the regression model shows 46% of the variance ($R^2 = .460$). These results revealed that cognitive, behavioural, and interaction-based strategies may enhance idea generation, organization, coherence, and language use during writing tasks. The Present results are aligned with previous studies, which have underpinned the role of cognitive, metacognitive, and interaction-based strategies in improving ESL writing performance (Pitenoee et al., 2017; Pratama, 2019; Hyland & Jiang, 2022; Wang et al.,2025; and Salazar Cantos & Flor Arias, 2026). Even though Priming, Interactive Learning, Dissociation, and Swishing showed initial predictive influence. They still reflected a positive relationship with learners' writing processes. On the whole, the results showed that NPL-oriented strategies

facilitate a supportive framework for understanding of ESL learners' cognitive engagement and writing performance.

On the basis of the findings, researchers proposed the following recommendations:

1. Attempts may be taken to explore the long-term impact of Neuro-Psycho linguistic (NPL) strategies on ESL learners' enhanced writing performance across different educational contexts.
2. Experimental and longitudinal studies may provide deeper insights into causal relationships.
3. It is paramount to identify how educators are encouraged to incorporate empirically supported strategies such as anchoring, modeling, mirroring, and Real-Time Processing Activities (RTPA) into ESL writing instruction to enhance learners' cognitive engagement, idea generation (organization), and writing performance.

CONCLUSION

The present study examined the association between Neuro-Psycho-Linguistic (NPL) strategies and ESL writing performance among secondary school learners. Results revealed that strategies, namely Anchoring, Modeling, Mirroring, and Real-Time Processing Activities (RTPA), showed comparatively stronger association with learners' writing achievement. Anchoring emerged as the strongest predictor. These results suggested that cognitive and observational- oriented learning strategies may significantly support learners' writing improvement. Meanwhile, some of the NPL strategies emphasized younger predictive influence. The overall regression model indicated that NPL strategies accounted for a substantial portion of the variance in ESL learners' writing performance. Furthermore, the findings highlighted that the potential value of combining strategy-oriented approaches within ESL writing instruction, in conjunction with learners' active participation, idea generation, and improvement of overall writing skills.

ACKNOWLEDGMENTS

The researchers would like to express their sincere gratitude to the school administration, subject experts, teachers, and learners who have participated in this study. Their co-operation and support played an inevitable role in the successful completion of the present study.

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