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The Impact of Writing Strategy Instruction: Undergraduate Students' Academic Writing Performance and Strategy Use

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Abstract

Many students, both at tertiary and secondary level, consider writing for academic purposes as a challenging task. It is of prime importance that students have sufficient content knowledge and basic understanding of different writing strategies to write coherent and cohesive texts. This study unveils the impact of writing strategy instruction on writing strategy use and performance of 40 undergraduates enrolled in an Academic and Professional Writing course. The design of the current study was experimental and data were collected using a questionnaire and students' essays. The results of the t-test present that writing strategies training could be imparted to the students to improve their overall writing. The treatment group showed a significant improvement in their writing performance and writing strategy use after receiving strategy instructions. The study recommends explicit writing strategy instruction be incorporated into English writing courses and learners be encouraged to use them in their writing tasks.

Keywords: writing strategy instruction, students' achievement level, L2 learners, writing task battery, writing performance

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1. Introduction

Writing serves as a pivotal point for students' success in the tertiary education context (De Silva, 2015; Fathi et al., 2020). However, achieving this academic excellence becomes a daunting task for learners when the medium of writing is in L2 (Myles, 2002). For many writers, using a second language (L2) as a medium of writing can obfuscate their writing (Angelova & Riazantseva, 1999; Braine, 2002; Bocanegra-Valle, 2014; Braxley, 2005). Literature has discussed the efficiency of using language learner strategies (LLS) to stimulate working memory to produce effective writing pieces (De Silva, 2015). For instance, Macaro (2006) discussed that if L2 writers proficiently learn and practice LLS strategies, this might improve their working memory function, which consequently help them improve their writing drafts. Echoing the same assertions, Cohen and Macro (2007) state that enabling learners to use their strategy repertoire can result in both short and long-term effects on their writing.

Strategy instruction also impacts the short and long-term memory support in a way that when these strategies are inculcated in normal writing practices, writers can enhance the episodes created in short and long-term memory (Cohen, 2014). Instructors may also use effective strategies to teach learners and create awareness-raising regarding the understanding of different strategies, and this may boost learners' confidence and motivation (Craige, 2007; Derakhshan & Shakki, 2019; Fahim & Khojasteh Khaleghizadeh, et al., 2020; Ferkany, 2008; Huong, 2018; Luftenegger et al., 2012; MacLellan, 2014; Rad, 2012; Shakki, 2022; Zimmerman, 2008). However, in a study conducted by Heeney (2015), it was established that strategy instruction could be context-dependent, that is, if these strategies are learned and applied for one rhetoric setting, the writer might not be able to transfer the strategies to a different setting. Although many studies have emphasized the positive effect of LLS strategies on the quality of written drafts, however the Academic and Professional Writing course, which is the only official writing course for undergraduate students in Pakistan to discover and practice English writing, does not include any reference to such strategies in writing.

Therefore, focusing on LLS in this course could enhance the learners' experience with English writing and aid them to incorporate LLS in other courses which require academic writing tasks. In the present context, this study is based on undergraduate L2 students who face difficulties in completing quality writing drafts. Therefore, the present study aims to check the effects of strategy

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instruction among L2 learners writing performance and strategy use in a setting where English for Academic Purpose (EAP) is taught. It is important to point out that to the best of the authors' knowledge, the effect of LLS on the Academic and Professional Writing course in Pakistan has not been studied before and the results could help not only the students, but also the instructors in enhancing quality education in academic writing in an ESL setting.

2. Literature Review

Language learner strategy research began with the pioneering works of Rubin (1975), Stern (1975), and Naiman, et al. (1996) and was well received by numerous researchers (e.g., Chamot & Harris, 2019; Derakhshan & Shakki, 2018; O'Malley & Chamot, 1990; Oxford, 1990; Wenden & Rubin, 1987). However, the field of language learning strategy has been deprecated on both the theoretical and practical fronts. Regarding the former, the overall theoretical foundation has been criticized, and concerning the later, not supplying a clear-cut definition of language learning strategy has been suggested which makes it difficult to tell what constitutes as strategy in the learning process (Chamot, 2004; Cohen, 2011; Cohen & Griffiths, 2015, Dornyei, 2005; Dornyei & Ryan, 2015; Dornyei & Skehan, 2003; Ellis, 2008; Plonsky, 2019). The field of language learning strategy has gone through a catalog of different models to explain what occurs with the use of strategies during the language learning process. Some of the salient models including McLaughlin's (1987) Information-processing Model, followed by Active Control of Thought presented by Anderson (1985), and the Self-regulation model. Several studies have used the models in different settings (Darling-Hammond et al., 2020; Kamyabi Gol & Royaei, 2018; Mashhady & Fallah, 2014; O'Malley & Chamot, 2001; Salahshour et al., 2013; Tabeti & Grazib, 2019; Tseng et al., 2006; Yilmaz, 2010). In the present study, the working definition used for learning strategy was "a conscious mental activity, employed in pursuit of a goal, often to solve a problem in writing within a learning situation and an activity that is transferable to other situations and tasks" (De Silva, 2015, p.2).

2.1 Research on Writing Strategies

Writing has been considered as one of the most difficult skills to master among

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learners, and this becomes even more difficult in EAP since it is directly incorporated into each course requirement. Focusing on EAP, Leki (1995) identified strategies which were used by English as second language (ESL) learners to assist them in meeting the writing requirements. Although recognizing learners' preferred strategies can aid teachers in their path of presenting materials, however, according to Canajagarah (2002), using strategies that learners find disagreeable can also promote skill learning in the long run.

Various studies have addressed diverse writing problems in English (Derakhshan & Karimian Shirenjini, 2020; such as syntactic errors (Afrin, 2016; Karim et al., 2018; Sultan, 2015), L1-L2 cultural differences (Kamyabi Gol, 2013; Lee, 2010; Rahimi & Noroozisiam, 2013; Yuen & Mussa, 2015), L1-L2 differences in writing styles (Davies, 2014; De Silva, 2015; Griffiths & Parr, 2001; Shahhoseiny, 2015; Silva, 1993), metacognitive knowledge (Baghbadorani & Roohani, 2014; Eivazi, & Khoshnevis, 2017; Modaberi, & Movafagh Ardestani, 2017; Nguyen & Gu, 2013; Torres, 2013), and language proficiency (De Silva & Graham, 2015; Leki, 2001, Macaro, 2001; Negari, 2011; Wu, 2008), and have emphasized the positive role that LLS can play in solving them.

2.2 Studies on Strategy Instruction in Writing

In early 2000, several scholars proposed ways in which strategy classifications could be consistent. De Silva's (2015) experimental study of teaching strategies for essay writing to 72 undergraduates in Sri Lanka, yielded positive results. The writing performance of the treatment group improved significantly in terms of cohesion, organization, and grammatical aspects. After self-regulated strategy development, Baghbadorani and Roohani (2014) conducted an experimental study in which the persuasive writing ability of EFL learners in terms of format and content, organization and consistency, sentence building, and writing vocabulary increased after the strategy instruction. Nguyen and Gu's (2013) study was conducted with the help of metacognitive regulation for writing comparison and contrast essay on 91 Vietnamese university EFL students who outperformed the control groups. Bai (2015) conducted a longitudinal intervention study on the effect of learning strategies in Singapore. He found that the participants' writing competence, their text production, feedback handling and revision, improved after 15 weeks. Alizadeh Salteh et al. (2013) studied 32 student writing pieces corrected by four university instructors and found that 97% of the comments were

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regarding surface level errors. They also stated that no strategy instructions were provided to students on revision and found this to be a problem.

2.3 Strategy Instruction and Language Proficiency

According to researchers, there are some key differences between qualified writers and writer development (Scardamalia & Bereiter, 1986). One of the classifications reveals that competent writers understand and spend considerable time planning for the whole writing process. Another key difference is that expert writers understand how to use strategies to edit, revise, and enhance the overall quality of the written text. To the best of the authors' knowledge, the effect of writing strategy in the L2 context based on language proficiency has been scarcely explored. In a study, Chamot and El-Dinary (1999) studied LLS in immersion programs. They divided the participants into two groups of high and low achievers and found that the high students relied more on their background knowledge such as prediction and elaboration. In another research by Sasaki (2002) studied the effect of writing lesson guidance on lower intermediate English students in Japan. The results revealed that although the six months' lesson plan influenced the students' writing and reduced the use of local planning by less skilled students before writing; however, it did not affect how often learners directly translated from L1 to L2. This study did not differentiate between expert and novice writers. Soodmand Afshar and Bayat (2021) used explicit LLS on a group of 40 less successful EFL students and found that the training positively affected the learners' language proficiency.

Research Question(s)

The three research questions formulated for this study are:

1. Does writing strategy instruction affect learners' writing performance?
2. Is there any significant difference between strategy use in the high and low language achievement levels?
3. Are the types of writing strategy instruction subject to different levels of language achievement (high vs. low)?

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3. Methodology

3.1 Participants

The participants of the current study included 40 undergraduate students who had registered for the Academic and Professional Writing course at a university in Pakistan. 24 of the participants were male and 16 were females. Their age ranged from 19-21 years (Mean = 20, SD = 1.23) and they had been studying English for 12 years. They all signed a written consent form at the beginning of the study. All participant names remained anonymous to the expert evaluators. The writing tasks were coded and the codes were only known by the researchers.

3.2 Instruments

3.2.1 Questionnaire

The present study adopted a writing strategy (pre and post) questionnaire from De Silva (2015). The questionnaire was used to check the effect of the intervention on the treatment group's performance. The questionnaire comprised of 32 statements and used a 6-point Likert scale (e.g., strongly agree = 6, strongly disagree = 1). Each item requires the learner to mark their personal writing experience and represents one writing strategy. The questionnaire contains 6 factors including planning, evaluation, resourcing, monitoring, revision, and formulating. The overall reliability of the questionnaire was found to be 0.79 which presents an acceptable internal consistency.

3.1.2 Writing tasks

The current study used two writing tasks (graph illustration and essay). Both tasks were adopted from IELTS writing task and were administered at the onset and end of the course to both treatment and control groups. The participants had one hour to finish the tasks and this was done as a regular class activity.

Two experts in ESL and EAP writing tests were asked to evaluate all written samples using detailed marking criteria used in IELTS. Both tests at the pre and the post-test stages were mixed-up and were given an identification code known only by the researchers. This was done to ensure that groupings and test orders did not affect the raters' overall scoring (Sasaki, 2002).

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Before the actual rating session, a meeting marking session was held, and three pilot scripts of each rater were checked for signage standardization by another ELT expert. The interrater reliability was 0.89 using Cohen's Kappa (1960).

3.3 Research Procedure

This research used an experimental design consisting of pre and post-tests. The intervention was planned in the treatment group with a four-month writing strategy instruction. All 40 participants were given an Oxford Placement test to ascertain their proficiency level. Learners who scored 50 or above, were considered as high achievers, while those who scored 49 or less were considered as low achievers. These two groups were numbered serially and two groups of 20 students were randomly selected from the high and low achievement groups through the use of a machine-generated random number list. Each group was then randomly grouped into two groups of 10 students using the same computer program. In the end, we had two groups of high and low achievers who were then divided into the treatment and control groups which totaled 10 participants in each of the four groups.

3.4 The Instruction Strategy Program

The intervention model was adopted from De Silva (2015) based on the research of Macaro (2001) and O'Malley and Chamot (1990) and L2 writing models (Badger & White, 2000; Hyland, 2003). Since approaches to the writing have their benefits and drawbacks, the present study considered an eclectic strategy that encompassed all three strategies to be effective.

The primary characteristics of the genre (i.e., design, joint construction, and independent design) and process approach (i.e., teacher planning, drafting, teacher input, parent and text) and some elements of the product approach (i.e., using model text) were incorporated (Hyland, 2007). In combination with the strategy training models, this eclectic approach to teaching writing was used to develop a writing strategy model for EAP students. A complete written strategy training program was presented to the treatment group (Figure 1), and the control group was equally scheduled and followed the same lesson content except for the strategy instruction. The researchers conducted the strategy instruction which lasted 24 weeks.

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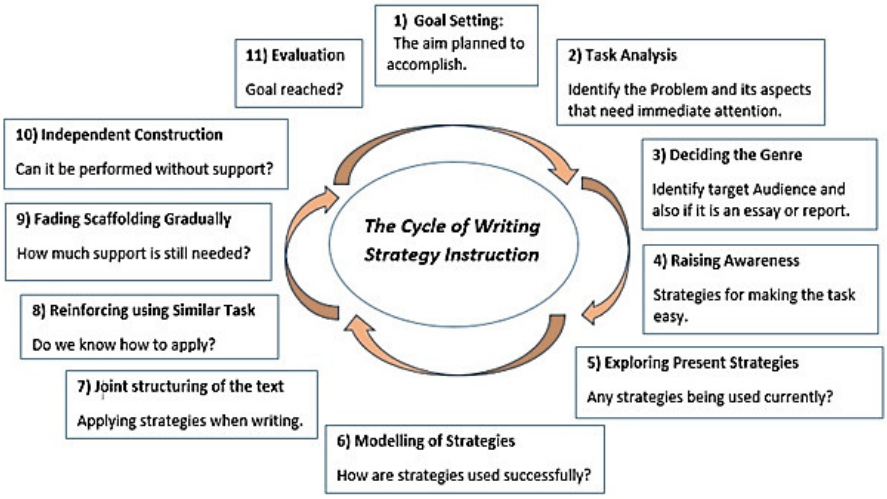
Figure 1

The Cycle of Writing Strategy Instructions



Note. Adopted from De Silva (2015)

The instructions were offered in the form of workshops and homework assignments during two 20-hour instruction time. The assignments were all task based and limited to 1000 words each to comply with academic writing assignment word length at the undergraduate level (Graves et al., 2010). During the first 8 workshops, the researchers provided explicit instruction on selected strategies and subsequently, the lesson was integrated into their daily writing. Through observing some of control group sessions, it was determined that they were not receiving training from the strategy training cycle.

3.5 The Cycle of Writing Strategy Instruction

This research adopted De Silva's (2015) strategic instructional cycle (figure 1) along with the drafting of the strategic instruction model and L2 writing (O'Malley & Chamot, 1990; Badger & White, 2000; Hyland, 2003; Macaro, 2001).

The cycle of strategic writing begins with setting goals. Different researchers have discussed the importance of achieving goals in language learning (Cumming, 2006; Tudor, 1996). In this study, objectives were set at a larger level first and then for every single task. For example, the goal of the lab report was to present a

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clear and concise laboratory report with appropriate sequence markers in a passive voice and to obtain the highest possible ratings from the subject specialist by using the format set by the university.

Task analysis is the second step of the cycle. Wenden (2002, p.47) asserted that the main aim of analysis was the "specific character of the problems that the task presents". The students were trained in this study to analyze the tasks. Task analysis helps students choose who the audience is going to be. The next stage was the joint construction of a text, where the teacher guided and explored the possibility of using orchestrated strategies to successfully perform the task during each level of writing (Anderson, 2002; Macaro, 2001).

The use of strategies by students was then strengthened with scaffolding as support sheets which comprised of vocabulary and sentence structures for a specific genre (see Hyland, 2007). The students were directed to reflect on their strategy use and collaborate with their peers. The teacher provided extensive feedback regarding the common problems such as vocabulary and structure faced by students (Graham & Macaro, 2007).

In the following phase, students built the text independently. The scaffolding was phased out before this stage (Macaro, 2001). If the students were able to complete the task effectively, they would be given a new task and asked to proceed through the writing cycle. If the students were unsuccessful in this stage, the steps would be repeated. Initial training strategies consisted of planning strategies (e.g., brainstorming, clustering, brain mapping, outlining), formulation (e.g., approximation, translation), monitoring (e.g., identification of problems, auditory supervision, visual surveillance), and assessing and revising strategies.

4. Results

4.1 Normal Distribution

To check whether the data were normally distributed, a Kolmogorov-Smirnov test was run. The result indicated that all four groups followed a normal distribution ($p > 0.05$); hence for the treatment high (TH) group, $p = .200$; treatment low (TL) group, $p = .161$; control high (CH) group, $p = .200$; control low (CL) group, $p = .143$. Similarly, the writing scores at the pre and post-tests showed normal distribution for TH and TL (Kolmogorov- Smirnov, $p = .200$) and CH and CL

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(Kolmogorov- Smirnov, p = .200). Based on the normality check, independent and dependent samples t-tests were run for comparisons (Keya & Rahmatullah Imon, 2016; Hanusz & Tarasińska, 2015).

4.2 Comparison of Pre-Post Total Strategy Use

An independent sample t-test was run on the pre-test data to ascertain whether the two groups were homogenous in terms of total strategy use (TS); the result reported there existed no significant difference between the treatment and control group (control group: *TS mean* = 130.85, *SD* = 9.17; treatment group: *TS mean* = 130, *SD* = 9.27) the 95 % CI for difference mean was -6.75, 5.05 (t = -.291, p = .772, *df* = 38). However, an independent samples t-test on the post-test presents a significant difference between the treatment and control groups in terms of TS use, with the treatment group exhibiting more TS use than the control group (control group: *TS mean* = 130.35, *SD* = 9.06; treatment group: *TS mean* = 146.8, *SD* = 10.14). The 95 % CI for the difference in mean was CI -22.61, -10.28 (t = -5.40, p = .000, *df* = 38, *Cohen's d* = 1.71).

4.3 Comparison of Pre-Post Total Strategy Use According to Achievement Level

An independent samples t-test was run on the pre-test score for the TS regarding TH and CH groups; the results revealed insignificant differences (control group: *TS mean* = 137, *SD* = 6.23; treatment group: *TS mean* = 137.5, *SD* = 6.60). The 95 % CI difference in mean was -6.53, 5.53 (t = -1.74, p = .864, *df* = 18). Similar results were obtained for the low groups (control and treatment) for pre-test (CL group: *TS mean* = 123, *SD* = 5.83; TL group: *TS mean* = 124.2, *SD* = 5.98). The 95 % CI difference in mean was -6.74, 4.34 (t = -.454, p = .655, *df* = 18).

An independent samples t-test was applied to the post-test scores of TS for TH and CH groups. The result reported significantly higher TS scores for TH group than CH group (CH group: *TS mean* = 137.20, *SD* = 6.28; TH group: *TS mean* = 154.30, *SD* = 7.76). The 95 % CI for the differences in mean was -23.73, -10.46 (t = -5.41, p = .000, *df* = 18, *Cohen's d effect* = 2.42). Similarly, an independent samples t-test for the TL and CL groups on the post-test scores for TS use reported significant high TS score for the TL group as compared to the CL group (CL group: *TS mean* = 123.50, *SD* = 5.46; TL group: *TS mean* = 139.30, *SD* =

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5.674). The 95 % CI for the differences in mean was -21.034, -10.56 (t = -6.34, p = .000, df = 18, *Cohen's d effect* = 2.90).

4.4 Comparison of the Use of Strategy Categories

Table 1 shows the comparison of the use of the different strategies by the treatment and control groups. According to Table 1, the treatment group gained more between the pre-test and the post-test as compared to the control group in terms of all the different writing strategy categories.

Table 1

Use of Strategy Categories by the Treatment Group, the Control Group, TH and Low and CH and Low Groups

Group	Max. Score	Treatment Group (Total)	Control Group (Total)	Treatment Group (High)	Control Group (High)	Treatment Group (Low)	Control Group (Low)
N		20	20	10	10	10	10
Planning Pre-M (SD)	30	21.4 (3.08)	20.3(2.21)	22.5(3.06)	22.6(2.54)	20.3(2.83)	20.3(2.21)
Planning Post M (SD)	30	24.25(3.50)	21.65(2.6)	25.4(3.71)	22.8(2.45)	23.1(3.03)	20.5(2.23)
M Gain Pre-Post		+2.85***	+1.35	+2.9***	+0.2	+2.8***	+0.2
Monitoring Pre-M (SD)	42	27.05(4.52)	25.5(4.32)	28.4(4.7)	28.6(4.78)	25.7(4.11)	25.5(4.35)
Monitoring Post M (SD)	42	30.45(5.02)	27.2(4.93)	32.2(4.98)	29.1(5.0)	28.7(4.64)	25.3(4.21)
M Gain Pre-Post		+3.4***	+1.7	+3.8***	+0.5*	+3***	-0.2
Evaluating Pre-M (SD)	12	8.45(1.87)	8.1(1.67)	8.9(1.96)	9(1.82)	8(1.76)	8.1(1.67)
Evaluating Post M (SD)	12	9.5(2.16)	8.45(1.58)	10.2(2.25)	8.9(1.59)	8.8(1.93)	8(1.49)
M Gain Pre-Post		+1.05***	+0.35	+1.3***	+0.9	+0.8***	+0.1
Formulating Pre-M (SD)	48	31.3(3.49)	29.2(2.78)	32.9(3.31)	32.4(2.95)	29.7(3.02)	29.2(2.78)
Formulating Post M (SD)	48	34.75(3.76)	31.1(3.21)	36.4(3.86)	32.8(2.7)	33.1(2.99)	29.4(2.83)
M Gain Pre-Post		+3.45***	+1.9*	+3.5***	+0.4	+3.4***	+0.2
Resourcing Pre-M(SD)	30	22.25(2.97)	20.9(2.51)	23.4(2.98)	23.2(2.82)	21.1(2.6)	20.9(2.51)
Resourcing Post M(SD)	30	24.95(3.5)	22(2.89)	26.3(3.4)	23.4(2.63)	23.6(3.23)	20.6(2.50)
M Gain Pre-Post		+2.7***	+1.1	+2.9***	+0.2	+2.5***	-0.3
Revision Pre-M (SD)	30	20.4(2.11)	19(1.70)	21.4(1.89)	21.2(1.68)	19.4(1.89)	19(1.69)

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Group	Max. Score	Treatment Group (Total)	Control Group (Total)	Treatment Group (High)	Control Group (High)	Treatment Group (Low)	Control Group (Low)
Revision Post M (SD)	30	22.9(2.29)	20.35(1.87)	23.8(2.14)	21.4(1.64)	+22(2.16)	19.3(1.49)
M Gain Pre-Post		+2.5***	+ 1.35*	+2.4***	+ 0.2	2.6***	+0.3

Notes: *, **, *** indicates sig. value of 0.1, 0.05, 0.01 respectively of paired t test between pre and post, M = Mean and SD = Standard Deviation

An independent samples t-test was applied on the pre-test score for the TS use categories and found insignificant difference between the treatment and control group for Planning (t = .055, p = .956, df = 18), Monitoring (t = -4.797, p = 0.789), Evaluating (t = .174, p = .863, df = 18), Formulating (t = -.469, p = .642, df = 18), Resourcing (t = -.217, p = .829) and Revision (t = -.461, p = .647, df = 18). Similarly, an independent samples t-test was run on the post-test scores of the TS categories use; the result reported that the treatment group significantly outperformed the control group in terms of all the strategy categories except the evaluating strategy, Planning (t = -2.670, p = .011, df = 38, *Cohen's d* = 0.843), Monitoring (t = -2.064, p = .046, df = 38, *Cohen's d* = 0.653), Evaluating (t = -1.755, p = .087, df = 38, *Cohen's d* = 0.48), Formulating (t = -3.298, p = .002, *Cohen's d* = 1.06), Resourcing (t = -2.901, p = .006, df = 38 *Cohen's d* = 0.931), and Revision (t = -3.854, p = .000, df = 38, *Cohen' d* = 1.26).

In order to address RQ3, independent samples t-tests were run on the pre and post-test data regarding the different strategy use by achievement levels (high and low). In the pre-test data, no significant differences were found between TL and CL groups for Planning (t = .000, p = 1.000, df = 18), Monitoring (t = -.1.06, p = .917, df = 18), Evaluation (t = .130, p = .898, df = 18), Formulation (t = -.385, p = .705, df = 18), Resourcing (t = -.175, p = .863, df =18), and Revision (t = -.497, p = .626, df = 18). Similarly, an independent samples t-test was applied to the post-test data for TL and CL groups concerning different strategies use. The results reported that the TL group outperformed the CL group on Planning (t = -2.185, p = .042, df = 18, *Cohen's d* = 0.760), Formulation (t = -2.835, p = .011, df =18, *Cohen's d* = 1.41), Resourcing (t = -2.318, p = .032, df = 18, *Cohen's d* = 1.044), Revision (t = -3.250, p = .004, df = 18, *Cohen's d* =1.45), while no effect was found for Monitoring (t = -1.714, p = .104, df = 18, *Cohen's d* = 0.767), and Evaluation (t = -1.037, p = .315, df = 18, *Cohen's d* = 0.414).

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Similarly, an independent samples t-test was applied on the pre- and post-test data concerning TH and CH groups for the different strategy use. No significant difference was found on the pre-test for different strategy use between TH and CH groups: Planning (t = .079, p = .938, df = 18), Monitoring (t = .094, p = .926, df = 18), Evaluation (t = .118, p = .908, df = 18), Formulating (t = -.356, p = .726, df = 18), Resourcing (t = -.154, p = .879, df = 18), and Revision (t = -.249, p = .806, df = 18). An independent sample t-test was applied on the post-test data of TH and CH groups for the different categories of strategy use. No significant difference was found for Planning (t = -1.838, p = .083, df = 18, *Cohen's d* = 0.760), Monitoring (t = -1.379, p = .185, df = 18, *Cohen's d* = 0.64), and Evaluation (t = -1.490, p = .154, df = 18, *Cohen' d* = 0.54), while a significant difference was found for Formulating (t = -2.415, p = .027, df = 18, *Cohen's d* = 0.87), Resourcing (t = -2.132, p = .047, df = 18, *Cohen's d* = 0.95), and Revision (t = -2.803, p = .012, df = 18, *Cohen's d* = 1.40) which shows that the TH group outperformed the CH group in formulating, resourcing, and revision.

4.5 Comparison of Pre-Post Writing Performance

To address RQ1, an independent samples t-test was applied to the total scores at the pre and post-test levels for the treatment and control groups. No significant difference was found on the pre-test writing score (t = .680, p = .501, df = 38). For the post-test, a significant difference was observed, where the treatment group outperformed the control group (t = -2.926, p = .006, df= 38, *Cohen's d* = 0.67). Table 2 shows the descriptive statistics.

Table 2
Descriptive Statistics for the Pre- and Post-Writing Task Battery Scores

Group	N		Max	M Pre-test	SD	M Post-test	SD	Mean Gain	P-value
Treatment Group	20	Relevance	10	4.5	2.8	5.6	1.09	1.1	0.000
		Cohesion	10	2.8	0.77	3.55	0.88	0.75	0.000
		Organization	10	2.7	0.86	3.65	1.08	0.95	0.000
		Vocabulary	10	3.4	0.82	4.4	1.04	1	0.000
		Grammar	10	3.15	0.87	4.15	1.03	1	0.000
		Total	50	16.55	6.12	21.35	5.12	4.8	
Control Group	2	Relevance	10	4.35	1.03	4.2	1.15	-0.15	0.379

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Group	N		Max	M Pre-test	SD	M Post-test	SD	Mean Gain	P-value
	0								
		Cohesion	10	3.5	2.85	3.6	1.35	0.1	0.493
		Organization	10	2.85	0.81	3.15	0.81	0.3	0.055
		Vocabulary	10	3.5	1.05	3.65	0.98	0.15	0.267
		Grammar	10	3.2	1.15	3.3	0.97	0.1	0.428
		Total	50	17.4	6.89	17.9	5.26	0.5	

Notes: M = Mean and SD = Standard Deviation

4.5.1 Comparison of pre-post writing performance of High and Low Achievement Groups

To answer RQ2, the total writing performance score at the pre- and post-stages for both the treatment and control groups were compared for the achievement levels (high and low). An independent samples t-test was applied to the pre-test writing scores of the TH and CH groups; no significant difference was found (t = -3.763, p = .001, df = 18). Since the group was significantly not different at the pre-test, the mean gain (post-pre) was calculated. An independent samples t-test showed significant difference (t = 7.757, p = .000, df = 18, *Cohen's d* = 3.30) with the TH group outperforming the CH group. Table 3 explains the descriptive statistics.

Table 3

Descriptive Statistics for the Scores of the Treatment and CH Achievement Groups at Pre-test and Post-test

Group	N		Max	M Pre-test	SD	M Post-test	SD	Mean Gain (Post-Pre)	P-Value
Treatment Group HA	10								
		Relevance	10	5.2	1.29	5.8	1.29	0.6	0.005
		Cohesion	10	3.1	0.87	3.9	0.87	0.8	0.000
		Organization	10	3.1	0.94	4.2	1.13	1.1	0.000
		Vocabulary	10	3.8	0.94	4.5	0.97	0.7	0.001
		Grammar	10	3.6	0.84	4.4	1.07	0.8	0.000
		Total	50	18.8	4.88	22.8	5.33	4	
Control Group HA	10								
		Relevance	10	5.1	0.87	5	0.81	-0.1	0.591
		Cohesion	10	4.7	0.82	4.8	0.63	0.1	0.678
		Organization	10	3.5	0.52	3.7	0.48	0.2	0.343

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Group	N		Max	M Pre-test	SD	M Post-test	SD	Mean Gain (Post-Pre)	P-Value
		Vocabulary	10	4.4	0.51	4.5	0.52	0.1	0.677
		Grammar	10	4.1	0.87	4	0.81	-0.1	0.59
		Total	50	21.8	3.59	22	3.25	0.2	

Notes: M = Mean and SD = Standard Deviation and HA= High Achievement

An independent samples t-test was applied to the pre-test total writing scores between TL and CL groups. No significant differences were found (t = 1.778, p = .092, df = 18). The results from the independent samples t-test on the post-test data showed a significant difference (t = 7.096, p = .000, df = 18, *Cohen's d* = 3.1). The TL group outperformed the CL group on all writing criteria. Table 4 includes Mean, SD, and N.

Table 4

Descriptive Statistics for the Scores of the Treatment and CL Achievement Groups at Pre-test and Post-test

Group	N		Max	M Pre-test	SD	M Post-test	SD	Mean Gain (Post-Pre)	P-value
Treatment Group LA	10								
		Relevance	10	3.8	0.78	5.4	0.96	1.6	0.000
		Cohesion	10	2.5	0.52	3.2	0.78	0.7	0.001
		Organization	10	2.3	0.48	3.1	0.73	0.8	0.000
		Vocabulary	10	3	0.81	4.3	1.15	1.3	0.000
		Grammar	10	2.7	0.67	3.9	0.94	1.2	0.000
		Total	50	14.3	3.26	19.9	4.56	5.6	
Control Group LA	10								
		Relevance	10	3.6	0.51	3.4	0.84	-0.2	0.508
		Cohesion	10	2.3	0.48	2.4	0.51	0.1	0.591
		Organization	10	2.2	0.42	2.6	0.69	0.4	0.103
		Vocabulary	10	2.6	0.51	2.8	0.42	0.2	0.167
		Grammar	10	2.3	0.48	2.6	0.51	0.3	0.081
		Total	50	13	2.4	13.8	2.97	0.8	

Notes: M = Mean and SD = Standard Deviation and LA= Low Achievement

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According to table 4, the respondents in the TL group performed better on the post-test as compared to the pre-test in terms of Relevance (*Mean Gain* = 1.6 p = .000) Cohesion (*Mean Gain* = 0.7, p = 0.001) Organization (*Mean Gain* = .8, p = 0.000), Vocabulary (*Mean Gain* = 1.3, p = 0.000) and Grammar (*Mean Gain* = 1.2, p = 0.000).

4.6 Questionnaire Results

The questionnaire used in this study reflected the participants' use of writing strategies before and after the strategy instruction intervention (Table 5). As can be seen in table 5, the mean gain in the treatment groups (high and low) shows an increase in the participants' use of writing strategies, with the TH group using slightly more strategies (*Mean Gain* = 17.1) than their low counterparts (*Mean Gain* = 15.8). This reveals the positive effect of the writing strategy intervention in the study. The control groups (high and low) also experienced a positive mean gain with the low (*Mean Gain* = 1.2) group outperforming the high group (*Mean Gain* = 0.5).

Table 5
Questionnaire Pre and Post Mean Scores

Group	M Pre-test	M Post-test	M Gain (Post-Pre)
Treatment Group High Achievement	137.2	154.3	17.1
Treatment Group Low Achievement	123.5	139.3	15.8
Control Group High Achievement	137	137.5	0.5
Control Group Low Achievement	123	124.2	1.2

Note: M = Mean

5. Discussion

Based on the first research question which set out to find out whether writing instructions could affect the learners' writing performance, initially a Kolmogorov-Smirnov test was run to check for normal distribution. After this

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confirmation, an independent samples t-test was used whether the instructions were affective. The present study has revealed the positive effects of writing strategy instruction on the writing of EAP students. The study reported that, after receiving strategy instructions, the treatment group showed a significant increase in the TS use and overall writing performance. The findings of the present study accord with past studies on L1 and L2 learning which emphasize writing strategies can be taught to learners and can be used to improve their writing scripts (De Silva, 2015; Graham & Macaro, 2006; Sasaki, 2002; Soodmand Afshar & Bayat, 2021). In order to address the third research question which analyzed the different strategy use by achievement levels (high and low), independent samples t-tests were run on the pre and post-test data. The participants in the treatment group showed improvement in the formulation at the post-test level (Cumming, 1989; Roca De Larios et al., 2002; De Silva, 2015); formulation holds a key position in writing models (Kellogg, 1999; Macaro, 2006). Similar results were yielded for resourcing as indicated by the participants' limited dependence on their teachers for problem-solving. This is in line with the results obtained from De Silva (2015), Macaro (2001), Bai (2015), Chamot and El-Dinary (1999) who found that their experimental groups did not rely as much on their teacher's help for answers during writing and in turn, substituted other resources such as dictionary use to resolving problems during tasks. Similarly, the treatment group exhibited more improvement in revision on the post-test than the control group and this result corroborates the findings of De Silva (2015) and Sengupta (2000) who also found that by explicitly focusing on revision strategies, learners displayed an awareness of the importance of reader needs and producing reader-friendly writing samples. Also, the outperformance of the treatment group in using resourcing and revision strategies on the post-test as compared to their control counterparts, are in line with the findings of Hayes (1996). Learning to revise is essential to writing since it helps writers to "reshape their thoughts, discover and reconstruct meaning, and improve their texts" (Barkaoui, 2007, p. 81) and that skilled writers are those who have developed a system of revision in their writing (Alizadeh Salteh et al., 2013; Kobayashi & Rinnert, 2001; Roca De Larios et al., 2002; Li, 2006; Truscott & Hsu, 2008).

In order to answer the second research question which focused on determining whether there was a significant difference between strategy use in the high and low language achievement levels, an independent samples t-test was applied.

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Significant differences were found in relevance, organization, vocabulary, and grammar subsections with the high achievement group outperforming their low achievement counterparts. However, differences were not observed in the use of three strategies (planning, monitoring, and evaluation) for the high achievement group. This result is in line with Sasaki (2000) and contradicts the findings of De Silva (2015). Sasaki (2000) unveiled that the participants did not show improvement in detailed planning. One reason for this might be that after the four months of strategy instruction and practice, the students may have been writing more automatically and with less planning. This was also observed in Sasaki (2000); and Cohen et al. (1998). Besides, the students' English proficiency level could have been a source of the problem as they were in fact at the intermediate level, based on the initial Oxford Placement Test. This shows that L2 language proficiency could play an important role in writing competence and performance of the students (Pennington & So, 1993; Sasaki, 2000; Sasaki & Hirose, 1996).

The participants in the treatment group (high and low) did not show improvement in monitoring and evaluation on the post-test. Planning, monitoring, and evaluation are all a part of metacognitive strategies (Wenden, 1991) which are a high-ordered executive skill (Panahandeh & Esfandiari Asl, 2014). Based on the obtained results, the participants outperformed their control group counterparts on the cognitive strategies (such as revision and formulating) which are more concrete in application; however, they found the more abstract metacognitive strategies difficult to use. As Tapinta (2006) points out metacognition is in fact "the regulation of cognition. That is, learners need to link this metacognitive awareness with their strategic knowledge about what they know (declarative), how they will use the knowledge (procedural), and when and why they can use the knowledge (conditional)" (p.14). Therefore, it seems that the participants used the strategies at the narrower scope level with the cognitive functions (Mayer, 1998) and so in turn, improved the overall quality of their writing. Also, the main type of editing used by participants in this study was self-editing, while maybe using peer-editing could have produced different results (Carson & Nelson, 1996; Topping et al., 2000; Cho et al., 2010; Liou, 2010). Another reason for the participants' weakness in using metacognitive strategy may be that most students still need more instruction regarding assessing the initial input on writing assignments. This is in line with Ramadhanti et al. (2019) who found through self-report questionnaires that the learners were facing three types of metacognitive weaknesses including too much reliance on feedback from instructors, not

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comprehending task instructions, and not being aware of learning strategies in writing.

6. Conclusion

The present study aimed to check the effects of strategy instruction among L2 learners writing performance and strategy use in the setting where English for Academic Purpose (EAP) is taught. The findings of this study report a significant improvement in the post-test writing scores. The treatment group's organization in writing and the overall writing quality were found to have improved. In the total score, the mean gain for the treatment group revealed 4.8 points improvement; while for the control group, showed only 0.5 point. When the results for the achievement groups were analyzed, it was found that for the high achievement group, the organization, cohesion, total scores, and grammar sub-scores were higher, while for the low achievement group relevance, vocabulary and grammar were higher as compared to the control group participants. The above-mentioned results support the use of writing strategy in the classroom for improving the learners' performance in producing writing scripts (Anderson, 2005).

Also, based on the questionnaire results, although both treatment and control groups experienced a positive mean gain, the treatment groups' mean gain was much higher than the control groups; which shows the positive effect of the writing instruction intervention on the performance of the treatment groups.

Hence, the current study conveys an important message to both the experts of LLS and researchers. For the experts of LLS, the results imply that there is a need to conduct more studies that focus on how strategy instruction can impact the learners' writing performance. This would need to be in both ESL and EFL contexts to provide a better picture for classroom use. Also, for the researchers who use longitudinal intervention-based studies, the results encourage them to conduct more studies with EAP participants. The present study results indicate using LLS in academic writing courses in the short-term can assist students to better plan, monitor, and evaluate their writings. Therefore, by encouraging instructors to use LLS and monitor its effects in the long-term, more comprehensible and practical study plans could be produced and employed in various academic writing courses around the world. Furthermore, most past studies include EAP students who are from heterogeneous populations (students

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enrolled in English- speaking countries as international students), whereas the current study studied a homogeneous sample for comparison. Also, it is important for curriculum designers in Pakistan to pay closer attention to LLS and try to incorporate these strategies into the Academic and Professional Writing course in order to enhance the students' writing experience. The results showed that both high and low achievers in writing could benefit from LLS and as Academic and Professional Writing course is the only course offered in academic writing, incorporating and focusing on LLS during the course could prove to be beneficial in the students' educational paths to success.

Although the current study demonstrated the positive side of LLS use on l2 learners' writing, the study is not without limitations. First, future studies should include a larger sample size to make the study findings more generalizable. Secondly, the current study recruited ESL learners from Pakistan. Future studies should recruit learners from EFL learners to see how well learners from EFL background respond to LLS and incorporate them into their writing. Third, future studies should employ a qualitative measure of data collection and data analysis to triangulate the research findings.

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