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Comparative Effects of Different Situated-Learning Translation Training Practices on Students' Legal Translation Quality, Critical Thinking, and Problem-solving Strategies*

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Abstract
Situated-learning translation training approach has been proven to be efficacious in cultivating translators' long-life learning, translation competence as well as translator competence. However, previous studies have mainly delved into the effect of simply one single trend of this modern translation training model on student translators' competencies and sub-competencies and have not compared the effects of different situated-learning trends. To fill this gap, this mixed-methods study was set out to explore the comparative effects of cognitive-apprenticeship (CA), simulated project-based (SPB), and integrative (I) training methods on students' legal translation quality (TQ), their critical thinking ability (CTA), as well as employed problem-solving strategies (PSS). To this end, 71 undergraduate translation students were assigned to three experimental groups of CA, SPB, and I. The quantitative phase involved a quasi-experimental, pretest-treatment-posttest design and the qualitative phase was established on the grounded theory method. Data analysis results indicated that CA and I groups outperformed their counterparts in most subscales of TQ and CTA. The results of the thematic analysis of TAP data also showed that the largest variety of problem-solving strategies with highest frequency of use was employed by the cognitive-apprenticeship group.

Keyword: *Cognitive-apprenticeship training, Critical thinking, Integrative training, Legal translation quality, Problem-solving strategies, Simulated project-based training.*

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Introduction

The technological breakthroughs in communication technologies have increased both personal and commercial communication among the speakers of different languages, and the need for proficient translators to facilitate these interactions has turned this field into a prolific industry (Valtchauk & Class, 2021), and an increasing number of people from different linguistic backgrounds are joining the translation industry to become proficient translators (Fernandez & Russo, 2020). However, training proficient translators who can translate documents with the minimum number of errors is a demanding task, and because of the growing emphasis on new trends in translation training programs, the translator's role has changed from a bilingual expert to a fully-fledged, multi-skilled professional (Way, 2016). As a result, modern translation training methods are required to meet the needs of the translation field. One of the modern translation teaching approachs which has become popular in formal translation training contexts is situated-learning (Gonzalez-Davies & Enriquez-Raido, 2016). The present study aimed to fill a gap in the literature and investigate the efficacy of three different situated-learning translation training methods regarding their effects on students' translation quality, critical thinking, and problem-solving strategies.

Situated-learning in Translation Training

Situated-learning has roots in sociocultural theory of learning, in which learning is believed to be formed through communication with peers and more knowledgeable agents. To this theory, learners move from other-regulation to self-regulation using mediational tools (Storch, 2017). To sociocultural theory, complex skills have origins in and are shaped by individual's social interaction. In other words, learning is not the effect of social interactions, but it is originated in social interactions (Hoomanfard & Rahimi, 2020; Villamil & de Guerrero, 2006). In situated-learning, students' learning is scaffolded by the feedback that an expert provides when the learner requires external help. In the realm of translation, the situated-learning approach has been practiced with different labels and procedures. Kiraly's (2000) emphasis on the

significance of doing a translation task through collaboration in an authentic, professional context is one of the first documented attempts to integrate situated-learning tenets into translation training courses.

In translation training studies, situated-learning has been actualized in different forms. One of them is cognitive-apprenticeship, in which newcomers' participation in a community of practice is peripheral at first; however, in most cases, it increases gradually in the level of engagement and complexity by the support of more experienced participants until they become full participants (Wenger, McDermott, & Snyder, 2002). In translation training literature, cognitive-apprenticeship approach refers to a condition in which learners are asked to do authentic, real-life exercises which involve social communications among learners and an educator, then learners gradually become autonomous to the extent that they can evaluate their translation tasks and compare them with those of professionals (Kiraly, 2000). In one of the few studies conducted in this area, Lisowska (2019) examined the efficacy of this approach and found the students' positive perceptions of the instructional approach and the improvement in their self-confidence and translation quality.

Another situated-based approach employed in translation training studies is simulated project-based approach. Massey and Brandli's (2016) study showed that simulated projects were just as powerful as authentic projects, but offered a laboratory environment for immediate problem solving which, unlike a true, authentic, real-time project, can be paused at any occasion. Konttinen, Veivo, Holopainen, and Salmi (2017) also found that this approach improved students' abilities they required to translate texts. Hasturkoglu (2019), who investigated the effects of simulated project-based approach, found that students' metacognitive knowledge improved significantly, and they gained the abilities that could help them in their long-life translation career. In an Iranian context, the findings of the study conducted by Moghaddas and Khoshsaligheh (2019) indicated that project-based learning condition improved students' critical thinking ability and their attitudes toward this practice. Finally, in the most recent study, Konttinen, Veivo, and

Salo (2020) found that this condition could improve students' adopted roles in the simulated condition and strengthen their tendencies to work toward one of the roles in their career.

Critical Thinking

Critical thinking is a higher order thinking skill which helps students solve complicated educational and real-life tasks (Schendel & Tolmie, 2017). Prior studies (Alves, 2003; Rodríguez-Castro, 2018) have shown that translation as a cognitively-demanding task requires critical thinking abilities. Professional translators are usually assigned to translate complicated texts from a language to another, and the decisions that should be taken along the process of translation requires high levels of analysis, inference, inductive and deductive reasoning, and evaluation (Biel, 2017). Deciding on the general meaning of a text, appropriate terms, appropriate structures, quality of the product, etc. require different components of critical thinking ability. Some previous studies have investigated the role of critical thinking in translation and have found that expert translators are of high levels of analysis, inference, and evaluation (Hurtado Albir, 2015). In addition, prior studies (Jahromi & Suzani, 2016; Naghipoor & Boloori, 2013; Way, 2014) have found that translation students' high level of critical thinking ability can increase the successful use of problem-solving strategies and translation quality. These studies, among many others, have informed us about the role of critical thinking in translation; however, to the best of the researchers' knowledge, none of prior studies has investigated the effect of different situated-learning methods on students' critical thinking ability.

Problem-solving Strategies

Translation does not simply involve a decision-making process, but it includes problem-solving procedures (Nitzke, 2019). Due to the demanding nature of translation, translators need to adopt a wide range of strategies to solve their problems (grammatical, content knowledge, lexical gaps, cultural issues, etc.) while translating a text from a language into another. Scott-Tennent, Gonzalez-Daives, and Rodriguez (2001) state that the translation problem-solving process includes a

general approach, problem-identification, brainstorming and selection, and adopting the final solution for the problems. Problem-solving solutions have been categorized differently in the literature (e.g., Harvey, 2000; Haryanto, 2003; Jaaskelainen, 1993; Newmark, 1988), but a well-established categorization is provided by Nida (1975), which includes "addition of information, loss of information, and skewing of information" (p. 27). As Newmark (1988) states, since a noticeable part of texts are cultural or technical, translators are usually required to employ strategies to convey the meaning carefully. Although these strategies have been enshrined in translation literature (Newmark, 1988), scant attention has paid to them. Most of prior studies have compared the strategies employed by expert and novice translators (see Nunez & Bolanos-Medina, 2018), and to the best of the researchers' knowledge, the examination of the effect of different situated-learning methods to translation training on translation trainees' problem-solving strategy use is a niche in the literature.

Legal Translation

Regarding the significance of legal translation in today's world, Kockaert et al. (2017) state that legal translation has always been ranked as the basic cornerstone of professional translation, a multifaceted task and considered as the most challenging and daunting type. Way (2016) also asserts that due to the outstanding role of legal translation in today's life, the crucial role of legal translation and legal translator for establishing effective communication among a large number of people have been felt more than ever before. Despite this significance, to the best of the researchers' knowledge, the issue of translator training in the field of legal translation has not been addressed to date. There are few studies (e.g., Borja Albi, 2017; Burukina, 2007; Cheng & Gong, 2014; Duraner, 2012; Griebel, 2017; Matijasevic, 2013; Prieto Ramos, 2011; Scarpa & Orlando, 2017) that have been conducted in the field of legal translation teaching with an emphasis on different theory-based approaches, models, frameworks, and practices; however, none has focused on legal translator training.

The Present Study

The examination of the relevant literature revealed that some prior studies have been conducted to investigate the effect of one of the variants of situated-learning translation training practices on different abilities of trainee translators (Hasturkoglu, 2019; Lisowska, 2019; Madkour, 2016; Moghaddas & Khoshsaligheh, 2019). Further, in the previous studies (Hasturkoglu, 2019; Khoshsaligheh et al., 2011; Li et al., 2015; Moghaddas & Khoshsaligheh, 2019), the attention has been mostly paid to the effectiveness of this approach on general text translation with a paucity of inquiries in the scope of legal translation. The present study, however, compared three different variants of situated-based translation training in a legal translation context. Furthermore, unlike previous studies which examined the effect of different treatments on translation quality and critical thinking as monolithic entities, this study scrutinized the effects on the sub-classes of translation quality and critical thinking. Finally, the problem-solving strategies that the participants employ in different situated-learning conditions are investigated in this study for the first time. To be more specific, three research questions guided the present study.

RQ1: Is there any significant difference between the effects of simulated project-based translation training, cognitive-apprenticeship translation training, and integrative translation training practices on participants' quality of legal translation sub-scales?

RQ2: Is there any significant difference between the effects of simulated project-based translation training, cognitive-apprenticeship translation training, and integrative translation training practices on the participants' critical thinking ability sub-levels?

RQ3: What are the differences in problem-solving strategies adopted by the participants of three experimental groups for solving problems while translating a legal text?

Methods

Participants

The participants included 71 (52 female and 19 male) junior undergraduate students majoring in English language translation at

Parand and Sciences and Technology branches of Islamic Azad University. All of them were Iranian EFL learners whose age ranged between 21 and 36 (M=23.0, SD= 3.0). These participants were selected through convenience sampling from three intact classes. The researchers administered a paper-based version of TOEFL to examine the participants' English language ability of the three groups. The findings showed that the mean scores of the three groups were not significantly different (F= 1.35, p> .05), and all of the scores were within ± one standard deviation from the mean score, which represents the homogeneity of the participants regarding their English language ability. All participants were native speakers of Persian and did not have any professional legal translation experience.

From the same sample, 30 students (18 Female and 12 male) were selected through purposive sampling to take part in the qualitative phase of the study. Ten students from each experimental group were selected based on the maximum variation design of purposive sampling. The participants' scores in the legal translation post-test were employed to select the target cases.

Instruments

TOEFL. To examine the participants' English language ability, a paper-based version of the TOEFL test (practice test) which was developed and released by ETS website (Educational Testing Service) in 2019 was employed by the researchers. This test included structure and written expression, vocabulary, and writing sections. The reliability of the structure and vocabulary sections, calculated using Kurder-Richardson, was .89. The writing section was rated (based on the TOEFL scoring rubric) by two independent raters, and the inter-rater reliability of this section was .86.

Legal translation tests. The tests were developed by one of the researchers and were validated adopting the Delphi method. The essay-type translation tests were scrutinized by two certified translators who were also university lecturers, and their comments were applied. The final draft of each test included six questions, and each question consisted of a full paragraph which was an excerpt of a legal document

that needed to be translated from Persian to English in 70 minutes. The test materials were extracted from both taught legal documents within pre-treatment and main treatment phases along with the unseen materials with the same difficulty and readability levels.

Critical thinking questionnaire. The 30-item Honey's (2004) critical thinking questionnaire, validated by Naieni (2005) was employed to examine the critical thinking ability of the participants at different sub-scales of analysis, inferences, evaluation, inductive reasoning, and deductive reasoning. Previous studies have reported high reliability values for this 5-point Likert Scale measure (Khabiri & Zarrinsadaf, 2013).

Treatments

Due to the participants' lack of prior legal content knowledge and knowledge regarding legal translation rules and formalities, the students in the three groups received four sessions of teacher-centered legal translation treatment before undergoing the main treatment phase. During these sessions, the participants translated Persian texts into English and received feedback on their performance.

The first group including twenty-four students received an eight-session simulated project-based translation training. Five different legal documents were assigned by the instructor. Then, the participants were randomly divided into three groups of 8 members with different imagined, simulated professional roles (e.g., translator, reviser, proofreader). The students took different roles during the treatment. The simulated projects were fully accomplished just like professional ones. The instructor assisted the students as a facilitator who provided sporadic feedback on the participants' texts. To simulate the training environment of the classroom to the real professional one, the training sessions were held in Parand Azad University language lab with some facilities such as CaLabo digital software version 6.5.

The second experimental group included twenty-two students who received an eight-session training based on the cognitive-apprenticeship model in an official translation bureau. All legal

documents which were translated by the certified translator and trainee students were authentic with real deadlines and real customers. The six steps in the cognitive-apprenticeship training model (Brown et al., 1989) were practiced in this group. During the early three sessions (modelling step), the official/certified translator as an expert explained the processes of translating different legal documents from Persian to English. During the fourth treatment session (the coaching step), the trainee students practiced those legal documents translation procedures individually, and the certified translator just provided them with feedback. During the fifth session (scaffolding), the certified translator helped the students manage tasks with a higher level of complexities until they could accomplish the translation tasks independently. In the sixth session (articulation step), the trainee translators were asked to articulate their way of thinking within the completion of their legal translation tasks. In the seventh session (reflection step), the trainee translators compared their thoughts and ways of thinking within completion of their tasks with those of the official translator and peers. Finally, the eighth session (exploration step) of treatment included the learners' manipulation and discovery of learned knowledge and skills to promote their understanding of legal document translation. During their eight-session treatment in the official translation bureau, the students had a chance to be in communication with legal translation professionals and experts such as official/certified translator and official freelance translators.

The third experimental group included 25 students received an eight-session legal translation training based on the same pedagogical materials. The training method was a combination of cognitive-apprenticeship and simulated project-based translation training. Simulated project-based translation training (four sessions) was held in digital language lab (CHIeru). Further, within a four-session treatment, the participants were divided into small groups of five members to implement the translation projects, and the four sessions were held in the official translation bureau, and the CA training model was administered.

Data Collection and Analysis

Regarding the data collection procedure, first, the researchers examined the participants' English language ability using a training version TOEFL test. Then, the participants responded the critical thinking questionnaire, which was sent to them as an email attachment. In the fifth session, the students took the legal translation pre-test, and one week after receiving the eight-session treatments, the students sat for the post-test and critical thinking questionnaire. Two weeks after the post-test, the 30 cases that were selected to participate in the qualitative stage were asked to take the delayed post-test. Before taking the test, they were instructed to focus on legal translation task while concurrently verbalizing their thoughts and feelings while translating a legal text.

To answer the first research questions, the researchers employed essay-type translation tests. The texts were scored based on the analytical rubric provided by Goff-Kfauri (2005) by two independent graders, and the inter-rater reliability values of .86, .92, and .88 were found for the pre-, post, and delayed post-tests, respectively. The scores were compared using MANCOVA and non-parametric ANCOVA (see Appendix I for details). The data collected to answer the second research question was analyzed employing MANCOVA (see Appendix I for details). In the current study, Cronbach's alpha was employed to examine the reliability of the questionnaire, and the results showed high values of .835 and .897 for the pre- and post-test administrations. To answer the last research question, think-aloud protocol was administered. The researchers transcribed the data and imported transcript of participants into Nvivo 11.4. After defining the nodes (themes) and child nodes (subthemes) by the first author and another independent coder (the third author), the final categories were extracted. In other words, an inductive category formation process was employed in this study. The whole process was supervised by another researcher (the second author), and his comments were applied to control the quality of data collection and data analysis. The labels employed to

categorize the strategies were taken from prior studies (Harvey, 2000; Haryanto, 2003; Jaaskelainen, 1993; Newmark, 1988).

Results

To answer the first research question, multivariate analysis of covariances (MANCOVA) was employed. Table 1 and Figure 1 present the group-specific statistics on the translation quality of the students in pre-test and post-test.

Table 1

Group-specific Statistics on the Translation Quality of the Students in Pre-test and Post-test

			Post-test	
		Pre-test Mean (SD)	Mean (SD)	Adjusted Mean
Fluency	Simulated project-based	2.750 (1.17)	3.2292 (1.38)	3.863
	Cognitive-Apprenticeship	4.0455 (.98)	4.3409 (.74)	4.004
	Integrative	3.2600 (1.09)	3.8600 (1.08)	3.909
Grammar	Simulated project-based	2.7917 (1.39)	2.9583 (1.35)	3.120
	Cognitive-Apprenticeship	3.4318 (.91)	3.8864 (.89)	3.449
	Integrative	2.9600 (1.28)	3.4000 (1.25)	3.629
Terminology	Simulated project-based	2.9583 (1.34)	3.0625 (1.33)	3.223
	Cognitive-Apprenticeship	3.7727 (.86)	4.1364 (.78)	3.724
	Integrative	2.8800 (1.17)	3.7600 (1.20)	3.969
General content	Simulated project-based	3.3542 (1.28)	3.7292 (1.14)	3.820
	Cognitive-Apprenticeship	3.5227 (.96)	4.4318 (.72)	4.109

	Integrative	3.0000 (1.13)	3.8800 (.90)	4.077
Mechanics	Simulated project-based	2.2917 (.75)	1.9583 (.76)	2.046
	Cognitive-Apprenticeship	2.6136 (.46)	2.6591 (.44)	2.460
	Integrative	2.1200 (.66)	2.1600 (.70)	2.250

Based on the examination of the mean scores provided in Table 1, the researchers ran MANCOVA, and the findings ($F(8.124) = 2.60$, $p < .05$, Partial $\eta 2 = .144$ representing a large effect size) showed that there were significant differences between the grammar, terminology, general content and mechanics mean scores of the three groups. The results of between-subjects effects indicated that there were some significant differences (grammar ($F(2.64) = 4.43$, $p< .05$, Partial $\eta 2 = .122$), terminology (F (2.64) = 8.33, $p< .05$, Partial $\eta 2 = .207$, and mechanics ($F(2.64) = 3.55$, $p< .05$, Partial $\eta 2 = .100$). However, there were not any significant differences between the three groups' means on posttest of general content (F (2.64) = 2.36, $p > .05$, Partial $\eta 2 = .065$). To have a more profound understanding of the results, the researchers employed post hoc pairwise comparisons (Table 2).

Table 2

Post Hoc Pairwise Comparison Tests for Grammar, Terminology, General Content, and Mechanics: Significance (Mean Difference)

Grammar				Terminology			
	Project-Based	Cognitive	Integrative		Project-Based	Cognitive	Integrative
Project-Based				Project-Based			
Cognitive	.077 (.329)			Cognitive	.013 (.502)*		

Integrative	.005 (.509)*	.338 (.180)		Integrative	.001 (.746)*	.226 (.245)	

General Content				Mechanics			
	Project-Based	Cognitive	Integrative		Project-Based	Cognitive	Integrative
Project-Based				Project-Based			
Cognitive	.061 (.289)			Cognitive	.010 (.414)*		
Integrative	.078 (.257)	.836 (.032)		Integrative	.171 (.204)	.189 (.210)	

Note. *The difference is significant at .05 levels.

As provided in Table 2, the results of the post-hoc comparison tests showed that (a) IG had a significantly higher mean than the simulated project-based on grammar, (b) CAG and the IG had significantly higher means than the SPB group on terminology, (c) CAG had a significantly higher mean than the simulated project-based on mechanics. The other differences were non-significant.

The last translation quality measure was fluency, which was examined across different groups. Since the data did not meet the assumptions of homogeneity of regression slopes, non-parametric ANCOVA was employed to examine possible differences. The results of non-parametric ANCOVA ($F(2, 38)= .542$, $p> .05$) indicated that there was not any significant difference between the fluency mean scores of the three groups in the post-test (Figure 1).

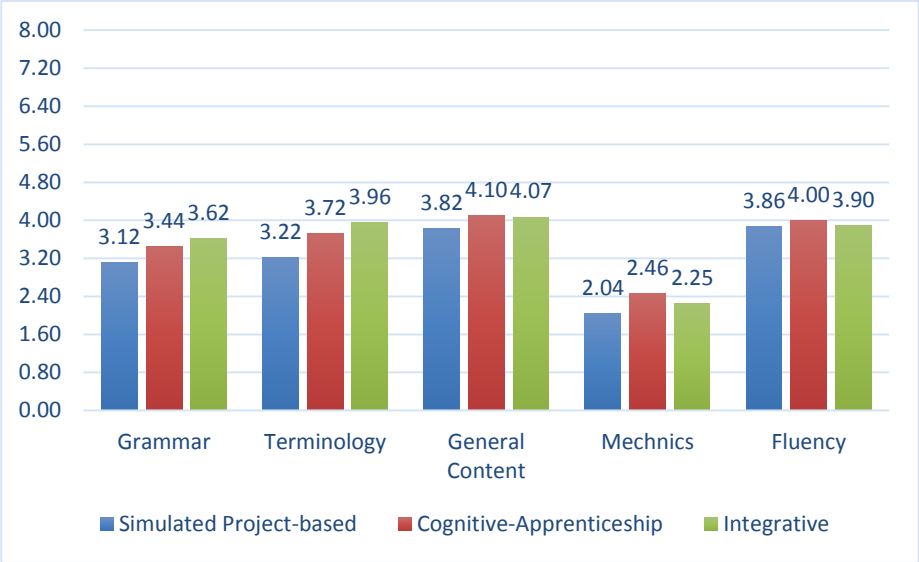

Figure 1. Means on Posttests of Sub-Scales of Translation Quality by Groups

To examine the effect of different situated-learning condition on students' critical thinking ability**,** MANCOVA was run to compare the critical thinking sub-classes mean scores of the three participating groups (Table 3).

Table 3

Group-specific Statistics on the Critical Thinking of the Students in Pre-test and Post-test

			Post-test	
		Pre-test Mean (SD)	Mean (SD)	Adjusted Mean
Analysis	Simulated project-based	22.62 (6.95)	23.5 (6.4)	25.380
	Cognitive-Apprenticeship	25.72 (3.29)	27.2 (3.05)	25.901
	Integrative	25.52 (4.43)	26.0 (3.82)	25.362
Inferences	Simulated project-based	22.66 (5.81)	23.50 (5.57)	24.956
	Cognitive-Apprenticeship	26.45 (3.17)	26.86 (3.54)	25.910

	Integrative	24.92 (4.11)	24.32 (4.59)	23.761
Evaluation	Simulated project-based	23.20 (6.73)	23.70 (5.85)	24.021
	Cognitive-Apprenticeship	25.95 (5.16)	26.13 (4.36)	24.885
	Integrative	24.60 (5.18)	24.72 (4.79)	24.561
Inductive reasoning	Simulated project-based	21.04 (6.82)	22.33 (6.30)	23.533
	Cognitive-Apprenticeship	21.36 (7.82)	22.40 (7.39)	23.603
	Integrative	23.32 (5.22)	24.92 (4.86)	23.598
Deductive reasoning	Simulated project-based	20.41 (7.31)	21.29 (6.62)	22.899
	Cognitive-Apprenticeship	21.50 (7.99)	23.95 (7.56)	24.167
	Integrative	24.64 (4.4)	26.08 (4.69)	24.350

Table 3 indicates the descriptive statistics for the critical thinking pre-test and post-test scores (Figure 2). Based on the MANCOVA results ($F(10.120)= 2.46$, $p< .05$, Partial $\eta 2 = .170$), there were significant differences between the three groups' overall means on posttests of analysis, inferences, evaluation, inductive reasoning, and deductive reasoning after controlling for the effects of pretests.

The results of between-subjects effects indicated that there were some non-significant differences (analysis ($F(2.63) = 1.36$, $p> .05$, Partial $\eta 2= .042$), evaluation ($F(2.63)= .524$, $p> .05$, Partial $\eta 2= .016$), and inductive reasoning ($F(2.63)= 2.28$, $p< .05$, Partial $\eta 2= .068$). However, there were significant differences between the three groups' means on posttest of deductive reasoning ($F(2.63)= 3.52$, $p< .05$, Partial $\eta 2= .101$). The results also showed a non-significant difference between the inference mean scores ($F(2.63)= 6.07$, $p> .01$, Partial $\eta 2= .162$). To have a deeper understanding of the data, post hoc pairwise comparisons were employed (Table 4).

Table 4

Post Hoc Pairwise Comparison Tests for Analysis, Inferences, Evaluation, Inductive Reasoning, and Deductive Reasoning: Significance (Mean Difference)

Analysis			Inferences		
	Project-Based	Cognitive		Project-Based	Cognitive
Project-Based			Project-Based		
Cognitive	.154 (.521)		Cognitive	.131 (.954)	
Integrative	.954 (.131)	.539 (.141)	Integrative	.042 (1.19)*	.001 (2.15)*

Evaluation			Inductive Reasoning		
	Project-Based	Cognitive		Project-Based	Cognitive
Project-Based			Project-Based		
Cognitive	.785 (.137)		Cognitive	.072 (.930)	
Integrative	.320 (.461)	.519 (.324)	Integrative	.899 (.66)	.055 (.996)

Deductive Reasoning		
	Project-Based	Cognitive
Project-Based		
Cognitive	.051 (1.26)	
Integrative	.016 (1.45)*	.776 (.182)

Table 4 illustrates the results of the post hoc comparison tests. The results indicated that; (a) SPBG had a significantly higher mean than the IG on inferences, (b) CAG had a significantly higher mean than the integrative group on inferences, and (c) IG had a significantly higher mean than the SPBG on deductive reasoning. There were not any significant differences between other pairs of means.

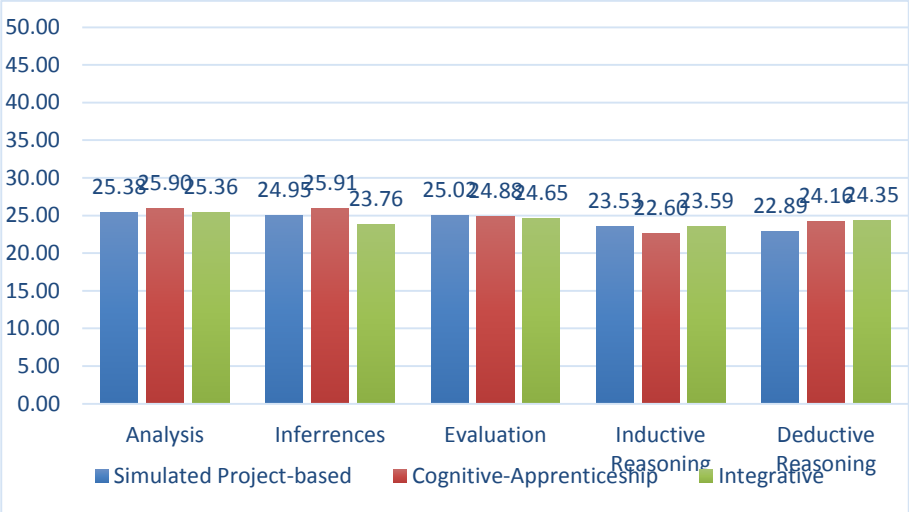

Figure 2. Means on Posttests of Sub-Scales of Critical Thinking by Groups

To answer the third research questions, the researcher recorded, transcribed, translated, and coded the participants' voices which were collected through the TAP technique and within taking the delayed legal translation posttest as free nodes. Then, the researcher employed the axial coding and eventually came to the tree themes (nodes) of the translation problem-solving strategies that were adopted by the participants to overcome the linguistic and non-linguistic problems of legal translation.

Table 5

Problem-solving Strategies Adopted by the Students in CAG, SPBG, and IG

Problem-solving Strategies	**CAG**	**SPBG**	**IG**
Transposition	9	6	6

Expansion	6	3	6
Paraphrase	15	8	8
Using TL Generic Word	6	9	5
Reduction	7	16	9
Omission	21	28	19
Transference	14	6	9
Couplets (Transference & Transposition)	5	1	2
Recognized Translation	8	8	8
Cultural Equivalents	12	2	9
Borrow (Loan) with its Explanation	3	1	1
Couplets (Componential Analysis & Transference)	2	5	5
Notes & Glosses	1	X	X
Componential Analysis	4	X	3
Couplet (Transference & Recognized Translation)	4	X	X
Total	117	93	90

Table 5 provides the frequencies of different problem-solving strategies. In order to have a better understanding of the data, the strategies were classified into three categories of Skewing of information (N_{SPB}=32, N_{CA}=58, N_I=39) including transposition, couplets (transference & recognized translation), cultural equivalent, transference (borrowing), recognized translation, couplets (transference & transposition), and using TL generic word, information deletion (N_{SPB}=44, N_{CA}=28, N_I=28) including reduction and omission, and information addition (N_{SPB}=17, N_{CA}=31, N_I=23) including expansion, notes & glosses, componential analysis, borrow (loan) with its explanation, couplets (componential analysis & transference), paraphrase). Based on Table 5, the most common strategy category employed in the cognitive-apprenticeship was skewing of information, followed by information addition and information deletion. On the

other hand, the most frequent strategy category used in the simulated project-based group was deletion, followed by skewing information and addition. The integrative group had the features of both simulated and cognitive-apprenticeship conditions: the highest frequency belonged to skewing information, followed by deletion, and addition. In addition, while both the total frequency and variety of strategies were so close in simulated project-based and integrative groups, the students in the cognitive-apprenticeship group used a higher variety of strategies with a higher frequency to solve their translation problems.

Discussion

The present mixed-methods study had three main goals. The first was to compare the effects of different situated-learning translation training methods (i.e., simulated project-based, cognitive-apprenticeship, and integrative) on undergraduate translation students' translation quality. Unlike previous studies which analyzed translation quality as a single entity, the researchers examined the effects on different subscales of translation quality. The findings of the study showed that the post-test general content and fluency scores of the three participant groups were not significantly different. This finding was not surprising since as prior researchers (Harvey, 2000; Ramos, 2015) have stated, in those translation cases where the accuracy of the product is significantly more important than the readability of the text, fluency will be of minimal importance. In legal translation cases, both translators and clients prefer to receive accurately-translated rather than easy-to-read texts, and as found in this study, the absence of significant difference might be attributed to the low currency given to fluency in legal translation training conditions.

Terminologies and general content are both related to the meaning aspect of translation quality assessment The general content mean scores of the three groups were non-significantly different. Although the students in all groups improved their general content knowledge during the course, their post-test scores were not different. On the other hand, the findings showed that the students in the cognitive-apprentice and integrative conditions outperformed those in the simulated project-

based group. These findings suggested that the focused attention of legal translation courses did not provide any specific affordance to differentially improve learners' general content knowledge, but in two conditions, the instructional designs were successful in boosting learners' terminologies. The nature of legal translation requires trainee translators to (learn and) use several difficult culturally-bound terms to accomplish their translation courses, and narrowing down the scope of the instructional content seemed to be effective in improving learners' terminologies. Prior studies (e.g., Lisowska, 2019; Mahasneh, 2013) have also argued that in those cases when a specific area is emphasized, the other more general areas will be overshadowed by both instructors and learners.

In addition to terminologies, the students in the simulated project-based group had the lowest scores in grammar and mechanics. This finding is in line with those of prior studies (Gonzalez-Davies, & Enriquez-Raido, 2016; Ramos, 2015) which revealed that authentic translation training schemes could significantly improve learners' translation quality. One of the reasons that might have formed the inferiority of simulated project-based approach can be its unreal condition. A recent concept in educational studies is engagement (Tian & Zhou, 2020), which is of three related aspects (attitudinal, behavioral, and cognitive), seems relevant here. When students attitudinally are not engaged with the activities, they do not work carefully and hard; as a result, their cognitive engagement, which deals with learning, is deterred (Zhang & Hyland, 2018). One of the advantages of cognitive-apprenticeship approach has been reported to be its positive perceptional effects on learners, which can facilitate their learning (Mitchell-Schuitevoerder, 2014). The findings of this study suggest that in those areas which were fundamental to legal translation (terminologies, grammar, and punctuation), those who were involved in real-life activities and worked with real customers were more successful in improving their knowledge. These higher scores might have been the result of learners' serious behavioral engagement with

activities, which was initiated by their perceptions of authentic activities.

Another related reason that have made the authentic condition superior can be the nature of feedback participants received. While in the simulated project-based condition, the majority of comments were mainly provided by peers, those in the integrative and cognitive-apprenticeship groups received expert comments on their texts. Prior studies have shown that students take expert feedback significantly more credible and engage with them more assiduously to both revise their texts and modify their knowledge base (Hoomanfard, 2017; Ryan & Henderson, 2018).

Unlike the previous research question which dealt with the translation quality, the focus of the second research question was on translator competence. The findings of this section showed that although in almost all subclasses the mean scores of the cognitive-apprenticeship and integrative conditions were higher than those of the simulated project-based condition, the mean differences were significant in deductive reasoning and inferences subclasses. However, overall, the findings suggest that cognitive-apprenticeship approach was more successful in improving students' critical thinking ability. A possible reason for this finding can be the nature of the cognitive-apprenticeship approach which requires learners to have a deeper cognitive processing of the items provided during the training. While learners in the simulated project-based condition are mainly busy accomplishing their tasks in an unconscious manner, those in the cognitive-apprenticeship condition had to go through different steps (modelling, coaching, scaffolding, articulation, reflection, and exploration), which could significantly affect their critical thinking abilities since these steps engage learners in a deep cognitive processing level for several tasks.

Another factor that could have positively affected cognitive-apprenticeship students' translation quality and critical thinking ability was the languaging involved in the training. In some steps, learners were asked to articulate their way of thinking while completing their

tasks. Knouzi, Swain, Lapkin, and Brooks (2010) have argued that learners "through the use of language to intentionally organize and control their mental processes during the performance of cognitively complex tasks, discover meanings and connections that were unknown to them prior to the act of languaging" (p. 24). The articulation step in the cognitive-apprenticeship condition might have provided the chance for trainees to both improve their critical thinking and terminologies, punctuation, and grammar, which are noticeably difficult and important in legal translation.

Finally, the third research question addressed the possible effects of situated-based approaches on translators' problem-solving strategies. The findings showed that the students in the cognitive-apprenticeship approach employed a wider range of strategies, with a higher frequency than the other two groups. Furthermore, while the most frequent strategy in the cognitive-apprenticeship group was skewing of information, those in the simulated project-based group used information deletion more than any other category. Considering the legal nature of the tasks used in this study, the high frequency of information deletion in the simulated project-based approach is daunting. The convey of information in the translation of legal texts is a significant criterion (Griebel, 2017; Way, 2016), which seems to be overlooked in many cases in all groups, especially in the simulated project-based condition. The findings suggest that those students who were trained in an authentic condition were more cognizant of this issue and tried to translate the statements with the least amount of deletion; on the other hand, those who were in the simulated project-based approach and did not feel the pressure of precise translation used less frequent and less varied strategies to solve the problems. Another factor that might have resulted in these findings can be the cognitive-apprenticeship group students' higher levels of critical thinking. As prior studies (Jahromi & Suzani, 2016; Naghipoor & Boloori, 2013; Way, 2016) have shown, translators' critical thinking ability can affect their problem-solving strategy use, and there was a positive relationship between students' critical thinking ability scores and their non-deletion

strategy use. However, this explanation should be regarded cautiously since the participants experienced the treatments for a limited number of sessions.

Conclusion

In conclusion, based on the findings of this study, the instructional condition affected the translation students' translation quality, critical thinking and problem-solving strategy use. The findings of this study, in line with those of prior ones (e.g., Behizadeh, 2014; Li et al., 2015; Moghaddas & Khoshsaligheh, 2019) showed that although simulated project-based condition helped students improve their translation quality, critical thinking, and strategy use, cognitive-apprenticeship condition was significantly more successful in most subclasses. Another conclusion of the present study is superiority of cognitive-apprenticeship approach over the integrative approach. It seems that by decreasing the number of authentic translation practice in a real-life condition, the learning opportunities were curbed. Although simulated project-based condition might be beneficial in other contexts, the findings suggest that in legal translation atmosphere, which is laden with strict rules and conventions, the authentic condition is superior.

Regarding the pedagogical implications, the findings of this study suggest that adopting the single cognitive-apprenticeship method in legal translation training classroom yields the most promising results for improving the students' translation quality, critical thinking, and strategy use. As a result, university policy-makers are highly recommended to incorporate authentic internship courses into the curriculum of translation students to provide them with the chance to familiarize with the knots and bolts of legal translation and improve their basic linguistic and critical thinking abilities by understanding the requirements of the tasks in the fierce real-life atmosphere.

The current study had some limitations. First, a limited number of students participated in this study. Second, the limited number of treatment sessions is another limitation of this study, which could have affected the findings. Thus, other researchers are invited to conduct studies with a higher number of students and in a longer period of time.

This way, they can also examine the relationship between students' critical thinking development and strategy use and their effects on their translation quality. On the other hand, case studies can be conducted to qualitatively scrutinize the way these variables are interconnected in legal translation contexts. In addition, exploring the comparative effects of three methods on other translator factors such as self-regulation, decision-making ability, perception, reception, and motivation, problem-solving ability, and meta-cognitive awareness can spur illuminative points. Finally, other researchers are suggested to compare the effects of teacher-centered traditional condition with those of situated learning conditions to find the optimum condition to improve undergraduate translation trainees.

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Appendix I

Assumptions for MANCOVA and Non-parametric ANCOVA for Translation Quality and Translators' Critical Thinking

Before conducting MANCOVA, the researchers performed a series of tests to confirm that the data satisfied the assumptions. MANCOVA has four more assumptions; i.e., linearity of the relationship between the dependent variables (post-tests) and covariate (pre-tests), homogeneity of regression slopes, homogeneity of variances, and homogeneity of covariance matrices. The preliminary assumptions (i.e. univariate and multivariate outliers) were checked and it was concluded that the translation quality data did not suffer from any univariate and multivariate outliers. The assumption of normality was also probed and it was revealed that assumption of normality was fulfilled on the quality of translation data. The results indicated that the assumption of homogeneity of regression slopes was retained on grammar, terminology, general content, and mechanics. However, the assumption of homogeneity of regression slopes was not met in fluency (F (2, 65) = 5.98, p< .05, partial $\eta 2$ = .156 representing a large effect size). The assumption of homogeneity of variances, as probed through the Levene's test revealed that the groups enjoyed homogeneous variances on posttests of grammar, terminology, general content, and mechanics. And finally, the assumption of homogeneity of covariance matrices was also retained. The results of the Box's test unraveled that the assumption of homogeneity of covariance matrices was met. As a result, the sub-scale of fluency was analyzed through non-parametric ANCOVA because it violated the assumption of homogeneity of regression slopes; therefore, fluency was examined separately.

The assumption of homogeneity of regression slopes was also retained on sub-scales of critical thinking (i.e., analysis, inferences, evaluation, inductive reasoning), all representing weak effect sizes, excluded deductive reasoning representing a moderate effect size. The assumption of homogeneity of variances, as probed through the Levene's test showed that the groups had homogeneous variances on posttests of analysis, evaluation, inductive reasoning, and deductive

reasoning. However, the assumption of homogeneity of variances was not met on inferences (F (2, 68) = 3.67, p < .05). To compensate for the violation of this assumption, the results of between-subjects effects were reported at .01 levels for inferences (Tabachnick & Fidell, 2014). And finally, it was revealed that the assumption of homogeneity of covariance matrices was not fulfilled. The significant results of the Box's test (Box's M= 85.38, p < .001) indicated that the assumption of homogeneity of covariance matrices was not met. To compensate for the violation of these assumptions, the results of Pillai's Trace of MANCOVA were reported.