

V3SK Model Implementation and Iranian High School Students' Grammar Achievement: An Explanatory Mixed-Methods Investigation

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Abstract

The tripartite V3SK model, integrating values, skills, and knowledge, has been explored in various educational contexts but remains underutilized in English language teaching. This study aimed to investigate the effect of the V3SK model on Iranian high school students' grammar achievement using an explanatory mixed-methods design. Participants included 43 high school teachers and 452 pre-intermediate level students, selected based on standardized placement tests. Teachers were randomly divided into groups of experimental (N = 22) and control (N = 21). The experimental group participated in 15 training sessions on the V3SK model dimensions. Subsequently, students from both groups completed a researcher-designed grammar pretest and received 20 instruction sessions over three months, followed by a posttest. Quantitative data were analyzed using Mann-Whitney U tests, revealing significantly higher grammar achievement in the experimental group. Qualitative thematic analysis of interviews with 15 experimental group teachers identified 11 themes that explain the model's contributions, including enhanced motivation, innovative teaching, and differentiated instruction. These findings underscore the V3SK model's potential for improving grammar instruction in English as a Foreign Language (EFL) settings, offering valuable insights for teacher education and curriculum development.

Keywords: V3SK model, values, skills, knowledge, grammar achievement, EFL, teacher education

مدل سه‌گانه V3SK که شامل ارزش‌ها، مهارت‌ها و دانش است، در حوزه‌های آموزشی مختلف مورد بررسی قرار گرفته، اما در تدریس زبان انگلیسی به‌طور مؤثری به کار نرفته است. این تحقیق به تحلیل تأثیر مدل V3SK بر دستاوردهای دستور زبان انگلیسی دانش‌آموزان دبیرستانی ایرانی با استفاده از روش تحقیق ترکیبی- توضیحی پرداخته است. شرکت‌کنندگان شامل 43 معلم دبیرستان و 452 دانش‌آموز در سطح پیش‌متوسط بودند که بر اساس آزمون‌های استاندارد انتخاب شدند. معلمان به‌طور تصادفی به دو گروه آزمایشی (N = 22) و کنترل (N = 21) تقسیم شدند. گروه آزمایشی در 15 جلسه آموزشی متمرکز بر ابعاد مدل V3SK شرکت کردند. پس از آن، دانش‌آموزان هر دو گروه یک پیش‌آزمون دستور زبان طراحی‌شده توسط محقق را انجام دادند و در طی سه ماه 20 جلسه آموزش دریافت کردند و سپس یک پس‌آزمون برگزار شد. داده‌های کمی با استفاده از آزمون‌های U مان-ویتنی تحلیل شدند که نشان‌دهنده افزایش معنادار در دستاورد دانش دستوری گروه آزمایشی بود. تحلیل تم کیفی مصاحبه‌ها با 15 معلم گروه آزمایشی 11 تم را شناسایی کرد که به توضیح مشارکت‌های مدل پرداخته و شامل افزایش انگیزه، تدریس نوآورانه و آموزش متمایز می‌شود. این یافته‌ها پتانسیل مدل V3SK برای بهبود آموزش دستور زبان انگلیسی آشکار می‌نماید.

کلید واژه‌ها: مدل V3SK، ارزشها، مهارتها، دست آوردهای دانش دستوری، یادگیری زبان انگلیسی به عنوان زبان خارجه، تربیت معلم

Introduction

The V3SK model of teacher education, encompassing the three interrelated dimensions of values, skills, and knowledge, was introduced as part of educational reforms in Singapore in the early 21st century. This model represents a holistic framework aimed at equipping teachers with the necessary competencies to meet the demands of contemporary educational contexts. By integrating pedagogical knowledge, values-driven principles, and practical skills, the V3SK model seeks to improve teaching quality and student learning outcomes (Li, 2023; Tan & Chua, 2023). Since its implementation, the model has attracted considerable scholarly attention, particularly in mainstream educational contexts, due to its demonstrated effectiveness in fostering active learning, catering to diverse learner needs, and promoting critical thinking (Lim & Tay, 2016; Tan et al., 2017).

The value dimension of the V3SK model emphasizes the cultivation of beliefs and attitudes that support inclusive education, innovation, and professional commitment. Teachers are encouraged to reflect on their practices and adapt their approaches to accommodate individual differences among learners (Low, 2021; Nisperos, 2022). The skills dimension focuses on equipping teachers with classroom management techniques, assessment strategies, and the ability to foster collaborative learning environments (Chong & Cheah, 2009). Finally, the knowledge dimension underscores the importance of subject matter expertise, pedagogical strategies, and the effective use of educational technologies to meet students' needs (Liu et al., 2014; Tan & Chua, 2023).

Given the model's success in improving educational outcomes in countries such as Singapore and its growing application in other regions, including Thailand and Vietnam (Bui et al., 2017; Faikhamta et al., 2018), there is a compelling need to explore its potential in less-studied contexts, particularly within English as a Foreign Language (EFL) education. Despite the importance of teacher training in shaping instructional practices and enhancing student achievement (Darling-Hammond, 2006), the implementation of the V3SK model in EFL settings has remained largely unexplored. This gap in the literature is particularly notable in contexts like Iran, where grammar instruction often relies on traditional, teacher-centered methods and students face limited exposure to English outside the classroom (Derakhshan & Karimian Shirejini, 2020).

Grammar instruction is a cornerstone of second language acquisition, enabling learners to communicate accurately and fluently (Ellis, 2016; Larsen-Freeman, 2003). However, Iranian EFL learners often struggle with mastering grammar due to insufficient practice and limited access to innovative teaching approaches (Izadpanah et al., 2023; Mirosław et al., 2023). Similarly, EFL teachers encounter challenges in effectively teaching grammar, which underscores the need for systematic teacher education programs to address these issues (Kumayas & Lengkoan, 2023; Sato & Oyanedel, 2019).

To address this gap, the present study adopts an explanatory mixed-methods design to investigate the impact of the V3SK model on Iranian high school students' grammar achievement. Additionally, the study examines EFL teachers' perceptions of the model's effectiveness in enhancing grammar instruction. Bridging theoretical insights with empirical evidence, this research aims to contribute to the growing body of literature on innovative teacher education frameworks and their practical applications in EFL contexts.

The following research questions guide the study:

RQ1: Does the implementation of the V3SK model significantly affect Iranian EFL students' grammar achievement?

RQ2: What are Iranian EFL teachers' perceptions regarding the effectiveness of the V3SK model in improving grammar instruction?

By addressing these questions, this study aims to provide actionable recommendations for teacher educators, curriculum developers, and policymakers who seek to improve EFL instruction through evidence-based teacher training models.

Literature Review

The V3SK model, which integrates values, skills, and knowledge, has been recognized as a transformative framework for teacher education. Originally developed within Singapore's educational system, the model aimed to prepare teachers for the challenges of 21st-century classrooms by fostering holistic professional competencies (Tan & Chua, 2023). Since its inception, the V3SK model has gained widespread recognition for its capacity to enhance teaching effectiveness and student outcomes. The values dimension encompasses tenets such as the belief in students' potential to learn, commitment to continuous professional growth, and a reflective approach to teaching practices (Boutrid & Martin, 2023; Chong & Cheah, 2009). Research has highlighted the importance of values in fostering inclusive and learner-centered environments, which are crucial for addressing diverse educational needs (Darrow et al., 1998; Hilferty, 2008).

The skills dimension emphasizes practical competencies essential for effective classroom management and instructional delivery. These include motivating students, facilitating critical thinking, and managing co-curricular activities (Lim & Tay, 2016; Seng, 2019). Studies have shown that equipping teachers with these skills can significantly improve their ability to design engaging lessons and foster positive learning environments (Li, 2023; Liu et al., 2014). Furthermore, the knowledge dimension underscores the importance of subject matter expertise and pedagogical strategies tailored to students' needs. Teachers are encouraged to use diverse assessment methods, integrate technology into instruction, and adapt lessons to accommodate individual learning styles (Chong & Cheah, 2009; Low, 2023; Tan, 2012).

Empirical evidence supports the efficacy of the V3SK model in mainstream educational contexts. For instance, Low (2021) reported that the model promotes active learning and critical thinking by engaging students in meaningful, problem-based tasks. Similarly, Nisperos (2022) found that the model's emphasis on teacher reflection and innovation leads to improved instructional practices. However, while the V3SK model has been extensively studied in general education settings, its potential in English Language Teaching (ELT) contexts remains underexplored, particularly in countries like Iran.

Grammar Teaching and Learning in EFL Contexts

Grammar is a fundamental component of language teaching and learning, providing learners with the structural tools for effective communication (Christison et al., 2015; Ellis, 2006). Research has consistently highlighted the pivotal role of grammar in second language acquisition (SLA), as it influences proficiency in other language domains such as writing and speaking (Celce-Murcia et al., 2007; Larsen-Freeman, 2003). Despite its importance, grammar instruction presents challenges for both learners and teachers. Learners often struggle with mastering grammatical rules, particularly in contexts where exposure to the target language is limited (Izadpanah et al., 2023; Mirosław et al., 2023). In Iran, for example, students' exposure to English is primarily confined to classroom settings, where traditional, teacher-centered approaches dominate (Derakhshan & Karimian Shirejini, 2020).

Teachers, on the other hand, face difficulties in making grammar instruction engaging and effective. Studies have identified various factors contributing to these challenges, including limited professional training, reliance on outdated pedagogical methods, and insufficient resources access (Andrews et al., 2006; Kumayas & Lengkoan, 2023). To address these issues,

researchers have explored a range of instructional strategies, such as metalinguistic feedback (Izadpanah et al., 2023), scaffolding techniques (Khatib & Chalak, 2022), and the flipped classroom model (Kheirābādi, 2017). These approaches have shown promise in improving grammar teaching and learning outcomes.

The Intersection of V3SK Model and Grammar Instruction

While the V3SK model has demonstrated its value in mainstream education, its application in ELT and grammar instruction is relatively novel. The model's emphasis on values aligns with the need for a supportive and inclusive environment, which can mitigate learners' anxiety and foster confidence in using grammatical structures. The skills dimension offers strategies for designing interactive, learner-centered grammar activities, while the knowledge dimension provides a foundation for selecting appropriate materials and assessment methods tailored to students' proficiency levels (Low, 2023; Nisperos, 2022).

Recent studies have begun to explore the integration of the V3SK model in language education. For example, Tan and Chua (2023) highlighted its potential for promoting differentiated instruction, which is particularly relevant in EFL classrooms with diverse learner profiles. Additionally, the model's focus on reflective practices encourages teachers to continuously refine their approaches, addressing both student needs and contextual challenges (Boutrid & Martin, 2023). However, empirical investigations into the model's effectiveness in EFL grammar instruction remain limited, underscoring the need for further research.

Research Gap and Rationale

Although the V3SK model has been widely studied in mainstream education, its potential for addressing persistent challenges in EFL grammar instruction is under-researched. This gap is particularly significant in contexts like Iran, where traditional pedagogies often fail to meet the demands of modern language education. By investigating the impact of the V3SK model on Iranian EFL learners' grammar achievement, this study aims to fill this void and contribute to developing evidence-based teacher training programs. Furthermore, by examining teachers' perceptions of the model, the research seeks to provide actionable insights for improving professional development initiatives in ELT.

Methodology

Research Design

This study utilized an explanatory mixed-methods design to investigate the impact of the V3SK model implementation on Iranian high school students' grammar proficiency. By integrating quantitative and qualitative methodologies, the research provided a comprehensive analysis of the research questions. Quantitative data were collected through pretests and posttests to measure students' grammar performance, while qualitative data were obtained from semi-structured interviews to explore teachers' perceptions regarding the model's effectiveness.

Participants

The participants comprised 43 Iranian EFL teachers and 452 Iranian EFL learners. The teachers were within the age range of 24 to 40 and their teaching experience ranged from 3 to 15 years. From among the 43 teachers, 22 were female and 21 were male. The teachers were selected based on purposive sampling procedures. In so doing, only teachers with ELT-related bachelor's degrees and more than three years of teaching experience were chosen. The rationale for selecting such teachers was to control for the possible influences of teaching experience and academic degrees on the outcomes of the study. The 43 teachers were teaching at 10 high schools in Tehran province. From among the 452 learners, 233 were female and 219 were male and they were studying at the 10th grade of high school. It should be noted

that the initial learner participants consisted of 587. However, since it was necessary to homogenize the learners in terms of language proficiency, the 587 learners were given an Oxford Quick Placement Test, and only those who scored within the range of 28 to 36 (pre-intermediate level) were selected.

Instruments

Oxford Quick Placement Test (OQPT). The OQPT is recognized as a reliable and valid tool for evaluating the language proficiency of non-native speakers. Comprising 60 items, it assesses language abilities in grammar, vocabulary, and reading comprehension. Examinees' performance is determined by their scores, which categorize their proficiency levels as follows: 1–17 (Beginner), 18–27 (Elementary), 28–36 (Pre-Intermediate), 37–47 (Intermediate), 48–55 (Upper-Intermediate), and 56–60 (Advanced). To confirm the test's internal consistency, Cronbach's Alpha was calculated based on a pilot study involving 30 learners with similar characteristics to the main study participants. The resulting Alpha coefficient was 0.83, indicating a desirable level of reliability.

Grammar Pretest and Posttest. A researcher-designed grammar test comprising 30 multiple-choice items was developed and administered as both a pretest and posttest. The tests were identical in content and item count, with the sole difference being that the order of the items and their stems was rearranged. To ensure content validity, the test was reviewed by TEFL experts, including two MA and two PhD holders with a minimum of 15 years of teaching experience, who provided feedback on the items. Evidence for the test's construct validity was established through a differential experiment based on Brown (2007). The test was piloted on pre-intermediate and intermediate-level learners, and an independent samples t-test was conducted on their scores. The results demonstrated that the intermediate group significantly outperformed the pre-intermediate group, confirming the test's ability to distinguish between the two proficiency levels and establishing its construct validity. Additionally, the test's reliability was assessed using Cronbach's Alpha, which yielded a coefficient of 0.78, considered satisfactory.

Semi-structured Interviews. A set of semi-structured interview questions was designed to explore teachers' perceptions of the effectiveness of implementing the V3SK model in enhancing EFL students' grammar achievement. Initially, nine questions were developed based on a review of relevant literature on the V3SK model (e.g., Boutrid & Martin, 2023; Li, 2023; Low, 2021, 2023; Nisperos, 2022; Seng, 2019; Tan & Chua, 2023) and on studies addressing teachers' beliefs and perceptions regarding grammar instruction (e.g., Kumayas & Lengkoan, 2023; Mansouri & Jami, 2022; Nazari et al., 2022; Sato & Oyanedel, 2019). To ensure content validity, the initial questions were reviewed by a panel of experts, comprising four PhD holders in TEFL with over 20 years of experience in teaching English and teacher education. The questions were subsequently revised and refined based on their feedback. Three questions were removed due to overlapping content, resulting in a final set of six questions (see Appendix). These six questions were piloted with five EFL high school teachers to enhance their clarity and readability.

Data Collection Procedure

A total of 43 Iranian EFL teachers were initially selected using purposive sampling and were later categorized into two distinct groups: an experimental group comprising 22 teachers and a control group consisting of 21 teachers. At the time of the study, these educators were engaged in teaching 587 students across 28 different classes. To ensure uniformity in language proficiency among the learners, the OQPT was administered, and only those students who achieved scores between 28 and 36, indicative of a pre-intermediate level, were included in the research. Out of the 587 students evaluated, 452 met the established criteria, while the remaining 135 students, whose scores fell outside the designated range, were excluded from the analysis but continued to attend classes with the selected participants.

Among the 452 qualifying students, 228 were taught by teachers from the experimental group, while 224 received instruction from those in the control group.

Following this selection process, the 22 teachers in the experimental group engaged in 15 treatment sessions, with each of the three components of the V3SK model receiving five dedicated sessions. The first five sessions concentrated on the "value" aspect of the model, and the treatment for these sessions was organized in a specific manner.

Session 1 emphasized the conviction that every student possesses the potential to learn, alongside the importance of self-reflection in teaching practices. In this session, educators were prompted to examine their personal beliefs regarding their students' capabilities in mastering grammar. They shared their teaching experiences and the obstacles they encountered in this area. Additionally, the session involved an exploration of various methodologies for grammar instruction, particularly focusing on recognizing frequent mistakes made by English as a Foreign Language (EFL) learners. Subsequently, teachers were equipped with effective strategies to address these common errors within their instructional frameworks.

Session 2 aimed to cultivate a culture of innovation, initiative, and commitment to the teaching profession. During this session, educators were introduced to cutting-edge techniques for grammar instruction, including the use of technology and the implementation of interactive activities. They were encouraged to adopt a creative mindset to enhance the engagement and effectiveness of their grammar lessons. Furthermore, the session underscored the importance of a steadfast dedication to teaching and the continuous improvement of pedagogical skills. Educators were provided with a range of professional development resources, such as access to online courses and workshops, to support their growth in this area.

Session 3 focused on the critical role of parental involvement in the educational journey of students, particularly in the context of grammar learning. Educators were reminded of the necessity to engage parents in discussions regarding their children's academic progress and were provided with practical strategies for facilitating these conversations. Additionally, the session highlighted the significance of recognizing and valuing the diverse backgrounds and learning styles of students. Teachers were equipped with methods to tailor their grammar instruction to accommodate the varied needs of their learners, thereby fostering an inclusive learning environment.

Session 4 centered on the imperative of delivering high-quality subject instruction and maintaining a strong commitment to the educational framework. During this session, educators received a comprehensive overview of the grammar topics slated for their forthcoming lessons, prompting them to critically assess their lesson plans to ensure the accurate and effective teaching of grammar rules. The importance of adhering to best practices within the educational system was underscored, alongside the necessity for teachers to remain informed about contemporary research and developments in grammar pedagogy. Resources were provided to assist educators in this ongoing professional growth.

Session 5: The continuous enhancement of knowledge and skills, alongside a commitment to community service, was the focal point of the final session dedicated to the value dimension. Educators were urged to persist in their professional growth, particularly in the area of grammar instruction. To facilitate this development, various resources were provided, including opportunities to attend conferences and participate in online professional communities. Additionally, the session highlighted the significance of contributing to the community and serving others. Educators were presented with suggestions for integrating community service initiatives into their grammar curricula, such as composing letters to local enterprises or developing public service announcements.

During sessions six to 10, the treatment focused on the skills facet of the model. The treatment for the second five sessions unfolded as follows:

Session 6 focused on the delivery of effective lessons and the motivation of students. In this session, educators were introduced to various strategies aimed at enhancing the teaching of grammar. They received guidance on how to develop engaging lesson plans and integrate interactive activities that would inspire student participation. Additionally, the session provided a review of fundamental grammar rules that would be addressed in future lessons. Teachers were prompted to reflect on their instructional methods and pinpoint areas where they could enhance their effectiveness.

Session 7: Facilitate thinking and manage classroom discipline. In this session, teachers were given strategies for facilitating critical thinking and problem-solving skills in their grammar lessons. They were encouraged to use open-ended questions and group discussions to promote higher-order thinking. The session also included tips for managing classroom discipline and creating a positive learning environment. Teachers were given resources for addressing disruptive behaviour and maintaining classroom routines.

In *Session 8*, educators were familiarized with various assessment techniques aimed at evaluating students' comprehension of grammatical concepts. The session provided practical advice on designing effective assessments and utilizing the resulting data to enhance instructional strategies. Additionally, it highlighted the critical role of collaboration with parents and other stakeholders in fostering student learning. Educators received materials to facilitate communication with parents regarding their children's progress in grammar and to encourage parental involvement in the educational process.

Session 9 focused on the application of theoretical frameworks to enhance teaching practices and articulate personal philosophies regarding education. Participants explored diverse theories of language acquisition and their potential to refine grammar instruction. They were prompted to contemplate their own educational beliefs and the impact these beliefs have on their teaching methodologies. The session also revisited previously discussed grammar topics, and educators were provided with resources to keep abreast of contemporary research and developments in grammar education.

Session 10 focused on the management of work, time, and co-curricular activities. In this concluding session dedicated to skill development, educators were provided with effective strategies to handle their workload and optimize their time management. They were urged to prioritize their responsibilities and develop a structured schedule that would facilitate sufficient time for both preparation and grading. Additionally, the session highlighted the significance of integrating co-curricular activities into grammar instruction, thereby enhancing the relevance and meaningfulness of the learning experience. Educators received various resources aimed at designing engaging projects and activities that connect grammar principles with real-life contexts.

During sessions 11 to 15, the treatment focused on the knowledge aspect of the model. The treatment for the third five sessions unfolded as follows:

Session 11: Content knowledge of subject and select content material. During this session, teachers were introduced to the importance of having a strong content knowledge of grammar and selecting appropriate content material for their lessons. They were given a review of the basic grammar rules and how to effectively teach them. The session also included tips for creating engaging lesson plans that incorporate real-life examples and interactive activities to motivate students.

Session 12: Types of teaching strategies and use of technologies. In this session, teachers were given strategies for teaching grammar using various teaching strategies such as cooperative learning, direct instruction, and inquiry-based learning. They were also introduced to different technologies that could be used to enhance grammar instruction, such as interactive whiteboards, online grammar games, and grammar apps. Teachers were

encouraged to integrate technology into their lessons to make learning more engaging and relevant.

Session 13: Modes of assessment and seek and use feedback. During this session, teachers were introduced to different modes of assessment that could be used to measure students' understanding of grammar concepts. They were given tips for creating effective assessments and using data to inform their teaching practices. The session also emphasized the importance of seeking and using feedback from students to improve their teaching practices.

Session 14: Guide pupils in projects and adapt lessons to pupils' needs. In this session, teachers were given strategies for guiding students in grammar projects that integrated real-world situations with grammar concepts. They were encouraged to adapt their lessons to meet the diverse needs of their students, including English language learners and students with learning disabilities. Teachers were given resources for differentiating instruction and providing additional support for struggling students.

Session 15: Develop and use assessments appropriately and manage work and time. During the final session, teachers were given tips for developing and using appropriate assessments that aligned with their grammar instruction goals. They were encouraged to prioritize their tasks and create a schedule that allowed for adequate preparation and grading time. The session also emphasized the importance of incorporating co-curricular activities into grammar lessons to make learning more meaningful and relevant. Teachers were given resources for creating engaging projects and activities that integrated grammar concepts with real-world situations.

Upon finishing the treatment sessions, the 452 selected learners including 228 students for the teachers who took part in the V3SK model implementation and the 224 students whose teachers did not receive such treatment were given the researcher-made grammar test as a pretest. Following that, the teachers in both groups taught their classes for 20 sessions in three months. Afterward, the students in both groups were given the grammar posttest. Moreover, 15 teachers in the experimental group were interviewed to uncover their perceptions concerning the effectiveness of V3SK model implementation for improving EFL students' grammar achievement.

Data Analysis

In the analysis of the quantitative data, an independent samples t-test was initially chosen as the main statistical approach. However, the notable differences in grammar pretest scores between the two groups required these scores to be treated as a covariate for a One-way ANCOVA. Unfortunately, the necessary assumptions for ANCOVA were not met, leading to the computation of gain scores for both groups, which were subsequently analyzed using the Mann-Whitney U test.

The qualitative data underwent thematic analysis following the framework proposed by Braun and Clarke (2006). This analysis adhered to the six stages outlined by the authors, which included becoming familiar with the data, generating initial codes, identifying themes, reviewing those themes, defining and naming them, and finally composing the report. To improve the reliability of the thematic analysis, a research assistant participated in the process, and inter-rater agreement was evaluated using Holsti's (1969) methodology, resulting in a satisfactory value of 0.87. Additionally, to enhance the credibility of the findings, member checking was conducted, involving discussions of the results with seven interviewees to confirm accurate interpretations.

Results

Quantitative Results

To find the answer to the first research question, the descriptive statistics and normality of grammar pretest and posttest scores of the two groups were computed. Table 1 displays the respective results.

Table 1.

Descriptive Statistics for the Grammar Pretest and Posttest Scores of the Two Groups

	N	Minimum	Maximum	Mean	SD	Variance	Skewness	Kurtosis		
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Std. Error
Pre-exp.	228	6.00	15.00	9.94	2.11	4.49	.16	.16	-.31	.32
Pre-cont.	224	5.00	16.00	10.65	2.40	5.78	-.12	.16	-.30	.32
Post-exp.	228	12.00	28.00	20.32	3.90	15.28	-.06	.16	-.35	.32
Post-cont.	224	11.00	27.00	16.99	3.68	13.60	.17	.16	-.32	.32
Valid N (listwise)	224									

**Pre-exp. (pre-experimental group)

Pre-cont. (pre-control group)

Post-exp. (post-experimental group)

Post-cont. (post-control group)

As indicated in the above table, the skewness and kurtosis ratios for the four sets of scores fell within the range of ± 1.96 indicating that the normality assumption was met (Pallant, 2010). Therefore, an independent samples t-test was used to make sure that the two groups were not statistically different in terms of grammar pretest scores. Table 2 shows the results of the independent samples t-test.

Table 2.

Independent Samples t-test Results between the Pretest Scores of the two groups

	Levene's Test for Equality of Variances	t-test for Equality of Means								
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower Upper	
Pre-both Groups	Equal variances assumed	6.20	.01	-3.30	450	.03	-.70	.21	-1.12	-.28
	Equal variances not assumed			-3.30	440.87	.03	-.70	.21	-1.12	-.28

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As noticed in the above table, with $t(-3.30)$, $df(440.87)$, $p=0.03<.05$ (two-tailed), it can be inferred that the mean difference between the pretest grammar scores for the two groups was statistically significant. Thus, the pretest scores were regarded as covariate, and one-way ANCOVA was run to address the first research question. The first assumption of ANCOVA is the normality of the covariate (pretest) and the dependent variable (posttest). Table 3 shows the results of descriptive statistics for the covariate (pretest) and dependent variable (posttest scores).

Table 3.

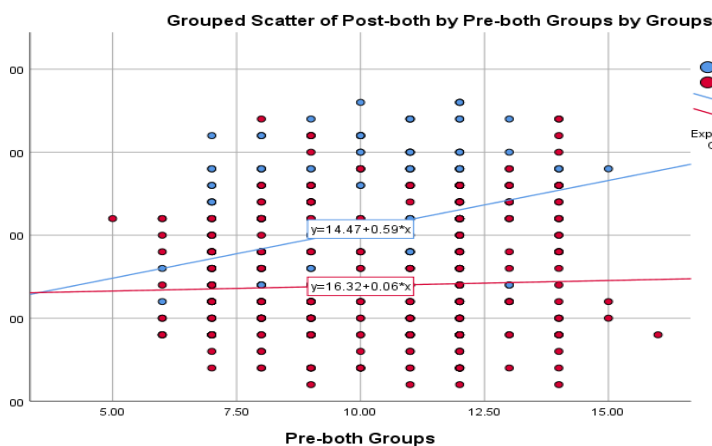
Descriptive Statistics for the Covariate (Pretest) and Dependent Variable (Posttest Scores)

	N	Minimum	Maximum	Mean	SD	Variance	Skewness	Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic
both	452	5.00	16.00	10.29	2.29	5.24	-.06	.11	-.99
	452	11.00	28.00	18.67	4.14	17.19	.12	.11	-.93
1 N (wise)	452								

As seen in the above table, the skewness and kurtosis ratios for the pretest and posttest grammar scores fell within the range of ± 1.96 . Thus, the normality assumption was met (Pallant, 2010). The next assumption of ANCOVA is the linearity assumption which was checked by inspecting the scatterplot of the variables (Figure 1).

Figure 1.

Scatterplot of Grammar Pretest and Posttest Scores



As seen in Figure 1, the relationship between the dependent variable (posttest) and covariate (pretest) was not in the form of a straight diagonal line, indicating that the relationships were not linear, hence, the linearity assumption was violated (Tabachnick & Fidell, 2007). Since the linearity assumption was not met, running ANCOVA was not warranted. Accordingly, the gain scores of the two groups were computed by subtracting the

posttest scores from the pretest scores and the non-parametric test of Mann-Whitney U was run (Pallant, 2010). Table 4 presents the descriptive statistics for the gain scores of the experimental and control groups.

Table 4.

Descriptive Statistics of the Gain Scores for the Experimental and Control Groups

	N	Minimum	Maximum	Mean	Sd	Variance	Skewness	Std. Error	Kurtosis	Std. Error
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic		Statistic	Statistic
Experimental	228	1.00	19.00	10.37	3.80	14.49	-2.14	.161	-3.47	.33
Control	224	3.00	19.00	6.34	4.31	18.65	2.20	.163	-2.49	.33
(d N wise)	224									

As seen in the above table, the means of the gain scores for the experimental and control groups were 10.37 and 6.34, respectively. Figure 2 graphically exhibits the frequency of the gain scores for the experimental and control groups.

Figure 2.

Frequency of the scores for the Experimental and Control Groups

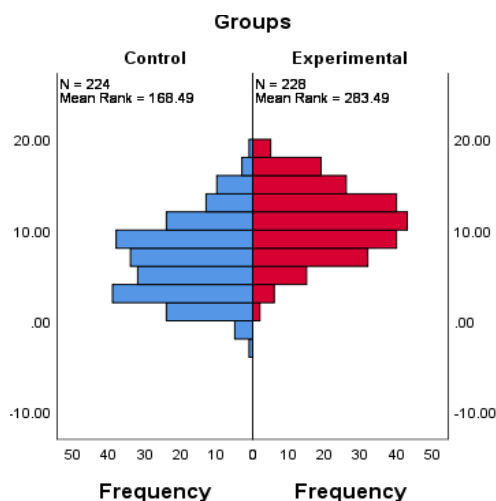


Table 5 portrays the results of Mann-Whitney U test.

Table 5.

Results of Mann-Whitney U Test between the Gain Scores of the Experimental and Control Group

Total N	452
Mann-Whitney U	12542.00
Wilcoxon W	37742.00
Test Statistic	12542.00
Standard Error	1385.57
Standardized Test Statistic (Z)	-9.37
Asymptotic Sig. (2-sided test)	.000

As shown in Table 6, there is a significant difference between the gain scores of the two groups ($z=-9.37$, $p=.00<.001$). Therefore, it can be inferred that the implementation of V3SK model has significantly affected Iranian EFL students' grammar achievement.

Qualitative Results

The results of the thematic analysis of the interview contents generated 11 themes. Table 6 portrays the 11 extracted themes along with their frequency and percentage.

Table 6.

The extracted themes along with their frequency and percentage

No	Themes	Frequency	Percentage
1	Promoting the belief that all students have the ability to learn grammar	14 out of 15	93.33%
2	Enhancing innovative grammar teaching	14 out of 15	93.33%
3	Cultivating the appreciation of individual differences	14 out of 15	93.33%
4	Fostering continuous professional development	13 out of 15	86.66%
5	Improving instructional practices	13 out of 15	86.66%
6	Enhanced student motivation and engagement	13 out of 15	86.66%
7	Increased collaboration with parents and stakeholders	12 out of 15	80.00%
8	Improved content knowledge and selection	12 out of 15	80.00%
9	Enhanced student understanding	11 out of 15	73.33%
10	Better assessment and feedback practices	10 out of 15	66.66%
11	Increased adaptability and differentiation	10 out of 15	66.66%

As for the first theme, *promoting the belief that all students have the ability to learn grammar*, mentioned by 14 out of 15 teachers (93.33%), one of the interviewees commented that:

"I used to think that some students are just not good at grammar, but after implementing the value aspect of the V3SK model, I realized that every student can learn if I provide them with the right support and resources."

Regarding the second theme, *enhancing innovative grammar teaching*, mentioned by 14 out of 15 teachers (93.33%), an interviewee said:

"The innovation dimension encouraged me to try new teaching strategies and incorporate technology into my lessons, which made grammar learning more engaging for my students."

With respect to the third theme, *cultivating the appreciation of individual differences*, expressed by 14 out of 15 teachers (93.33%), an interviewee stated:

“Appreciating individual differences helped me to recognize that each student has their own unique learning style and needs. By adjusting my instruction to meet these needs, I was able to better support their grammar learning.”

Regarding the fourth theme, *fostering continuous professional development*, mentioned by 13 out of 15 participants (86.66%), an interviewee noted:

“The continuous professional development dimension of the model encouraged me to seek out new resources and attend workshops to improve my grammar instruction. This allowed me to stay up-to-date with best practices and provide my students with the best possible learning experience. I have attended two workshops after the implementation of this model so far.”

As for the fifth theme, *improving instructional practices*, voiced by 13 out of 15 participants (86.66%), one of the interviewees held that:

“The skills dimension of the V3SK model helped me to deliver more effective grammar lessons by providing me with a framework for planning and delivering instruction that was tailored to my students' needs.”

Regarding the sixth theme, *enhanced student motivation and engagement*, expressed by 13 out of 15 participants (86.66%), an interviewee stated:

“The skills dimension of the V3SK model helped me to motivate my students by incorporating more interactive and engaging activities into my grammar lessons. This made the learning process more enjoyable for them.”

As for the seventh theme, *increased collaboration with parents and stakeholders*, stated by 12 out of the 15 teachers (80%), an interviewee commented:

“The skills dimension of the V3SK model helped me to collaborate more effectively with parents and other stakeholders by providing me with strategies for communicating with them and involving them in the students' learning.”

Concerning the eighth theme, *improved content knowledge and selection*, mentioned by 12 out of the 15 teachers (80%), one of the interviewees maintained that:

“The implementation of the knowledge dimension of the V3SK model helped me to improve my content knowledge and selection. I was able to choose more appropriate materials and activities that were aligned with my students' needs and abilities.”

Regarding the ninth theme, *enhanced student understanding*, mentioned by 11 out of the 15 teachers (73.33%), an interviewee stated:

“The knowledge dimension of the V3SK model assisted my students in learning grammar by making the lessons more engaging and understandable. I was able to use a variety of teaching strategies and technologies that catered to different learning styles.”

For the tenth theme, *better assessment and feedback practices*, mentioned by 10 out of the 15 teachers (66.66%), an interviewee shared:

“The knowledge dimension of the V3SK model helped me to develop better assessment and feedback practices. I was able to design assessments that were more aligned with the learning objectives and provide more meaningful feedback to my students.”

Regarding the eleventh theme, *increased adaptability and differentiation*, mentioned by 10 out of the 15 teachers (66.66%), an interviewee commented:

“The knowledge dimension of the V3SK model helped me to be more adaptable and differentiate instruction based on my students' needs. I was able to modify lessons and activities to better meet the needs of individual students or groups.”

Discussion

This study aimed to investigate the effect of the implementation of the V3SK model on Iranian EFL students' grammar achievement. Moreover, the study probed into teachers' perceptions regarding the effectiveness of V3SK model implementation for improving EFL students' grammar achievement. The results of statistical analysis revealed that the implementation of the V3SK model significantly impacted Iranian EFL students' grammar achievement. Moreover, the results of qualitative thematic analysis revealed 11 themes including promoting the belief that all students can learn grammar, enhancing innovative grammar teaching, cultivating the appreciation of individual differences, fostering continuous professional development, improving instructional practices, enhancing student motivation and engagement, increasing collaboration with parents and stakeholders, improving content knowledge and selection, enhancing student understanding, improving assessment and feedback practices, and increasing adaptability and differentiation, as the factors explaining the contribution of V3SK model implementation to students' improvement in grammar achievement.

The results of the present study confirm the arguments put forth by Darling-Hammond (2000) for the influential role of systematic teacher education on students' learning outcomes. Darling-Hammond highlights the importance of teachers' knowledge in problem solving, invention, and application of that knowledge to represent ideas in powerful ways to create a productive learning process for students to enhance learning outcomes. Moreover, the results of the current study substantiate the potential benefits of V3SK model as an innovative teacher education model on learning outcomes as stipulated by several scholars (e.g., Low, 2021; Nisperos, 2022; Rajandiran, 2021; Seng, 2019; Tan et al., 2017; Tan, 2012; Tan & Chua, 2023). One of the benefits of the V3SK model is that it promotes active learning. By visualizing and verbalizing concepts, students are more engaged in the learning process and are better able to retain information (Nisperos, 2022). Moreover, this model ensures that students are exposed to different types of problems and scenarios, which helps them develop a deeper understanding of the subject matter (Low, 2021). Another benefit of the V3SK model is that it caters to different learning styles and differences (Seng, 2019). Some students may be visual learners, while others may prefer verbal explanations. The model allows for different types of learners to be accommodated, which can lead to better learning outcomes for all students. The V3SK model also encourages students to check their work and ensure that they have understood the concepts correctly. This helps to prevent misconceptions from forming and ensures that students have a solid foundation for future learning (Tan & Chua, 2023).

The results of the current study can be explained based on the effective attributes of the V3SK model. The V3SK model is a comprehensive framework that guides teachers in designing effective and engaging language lessons. One of the key components of the model is the value dimension, which emphasizes the importance of creating a positive and supportive learning environment (Boutrid & Martin, 2023; Nisperos, 2022). In the context of the study, this dimension may have contributed to the significant improvement in EFL learners' grammar by fostering a sense of motivation and engagement. When students feel valued and supported, they are more likely to be invested in their learning and willing to take risks. This can lead to increased participation and a deeper understanding of the material. Additionally, a positive

classroom culture can help to reduce anxiety and stress, which can be major barriers to language learning. The skills dimension of the V3SK model focuses on developing students' learning outcomes through a variety of strategies and techniques (Liu et al., 2014; Seng, 2019; Xia & Radio, 2020). In the context of the study, this dimension may have played a significant role in enhancing EFL learners' grammar by providing them with multiple opportunities to practice and apply their knowledge. By using a range of activities and exercises, teachers were able to cater to different learning styles and help students develop a more comprehensive understanding of grammar concepts.

Finally, the knowledge dimension of the V3SK model emphasizes the importance of selecting appropriate materials and designing assessments that align with learning objectives (Li, 2023; Low, 2023; Tan, 2012). In the context of the study, this dimension may have contributed to the significant improvement in EFL learners' grammar by ensuring that teachers were using materials that were relevant and engaging. By selecting materials that were appropriate for their students' needs and abilities, teachers were able to create more meaningful and relevant learning experiences. Additionally, the knowledge dimension emphasizes the importance of providing feedback to students, which can be crucial for language learners who need regular guidance and support. By designing assessments that aligned with learning objectives and providing feedback that was specific and actionable, teachers were able to help EFL learners identify areas for improvement and make progress toward their language goals.

Conclusion

The results of this study indicated the positive effectiveness of the V3SK model implementation on Iranian high school students' grammar achievement. Moreover, the results of the thematic analysis revealed 11 themes explaining how the implementation of the V3SK model contributed to the enhancement of students' grammar achievement. Such findings suggest that teacher educators and EFL teachers should consider incorporating the V3SK model into their teacher education and teaching, respectively, to enhance EFL students' grammar achievement. More specifically, teacher educators are encouraged to provide EFL teachers with awareness concerning the positive benefits of the V3SK model. EFL teachers are encouraged to consider the tenets of V3SK model in their teaching to enhance EFL students' learning outcomes in general and grammar achievement in particular.

Although the results of the current study showed the effectiveness of the V3SK model, the findings of this study cannot be taken as conclusive and further investigations are required to provide a more comprehensive picture of the contributions of V3SK model in the realm of language teaching and learning. Future studies may delve into students' perceptions of their teachers' practices after the implementation of the V3SK model. Moreover, since contextual and cultural factors are highly important in the realm of education, further investigations may comparatively study the effectiveness of the V3SK model in different cultural contexts. Some learners' factors such as engagement and motivation are vitally important especially when a new model is being implemented. Thus, further research can probe into the effect of the V3SK model on EFL learners' motivation and engagement. Moreover, researchers are encouraged to comparatively explore the potentials, challenges, and limitations of implementing the V3SK model in different EFL contexts such as state schools and private language schools.

Biodata

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