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Original Article

Autonomy in Action: Designing and Validating a Model of Student-Generated Vocabulary Testing to Enhance Learning

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Abstract

This study aimed to design and validate a pioneering student-generated vocabulary testing paradigm aimed at cultivating autonomy among TEFL Ph.D. candidates or holders in Iran, encompassing both male and female participants. Employing a sequential exploratory mixed-methods design, the research unfolded through a qualitative phase followed by a quantitative phase. In the qualitative phase, 30 Ph.D. candidates or holders in TEFL engaged in insightful semi-structured interviews. Subsequently, the quantitative phase saw the development of a comprehensive questionnaire based on the emergent themes from the qualitative inquiry. The questionnaire was piloted with a sample of 274 participants to capture the intricacies of the learners' experiences based on the insights gathered from the interviews. The pilot study substantiated the construct validity of the questionnaire through exploratory factor analysis, while Cronbach's alpha affirmed its reliability. The questionnaire was then given to a larger sample of 384 EFL learners. Further bolstering the study's robustness, Structural Equation Modeling analysis was executed through Smart PLS software. As a result, a validated model was created as a valuable asset for future research endeavors in the realm of student-generated vocabulary testing in the Iranian context. The student-generated vocabulary testing model advocated in this study not only encourages meaningful engagement with vocabulary learning tasks but also fosters a profound understanding and retention of vocabulary items.

Keywords: Autonomy, Learner Autonomy, Student-Generated Testing, Student-Generated Vocabulary Testing

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1. Introduction

The changing needs of today's society have redefined the goals of education in general and teacher and learner roles in particular. Learners are no longer viewed as individuals who passively receive knowledge from teachers. Instead, modern society has necessitated lifelong learning, that is, training learners by giving them the power to take responsibility for their learning. Baru et al. (2020) claimed that as the authority of the traditional classroom, the teacher is the source of knowledge and decides on the learning materials and the teaching method. They choose the activities the students will do and give feedback on how well they did. Tudor (1993) believed that the teacher should not be the one doing the activities with the students but should be the one giving the students feedback on how well they did.

Baghoussi (2021) noted that although student autonomy and the learner-centered approach are incorporated into English curricula, teachers continue to be reluctant to change and adhere to old teaching practices. However, teachers who support and promote learner autonomy perform their roles differently. Yu (2020) argued that teachers should function more as counselors and facilitators, assisting students in taking ownership of their education through goal-setting, practice scheduling, and progress evaluation.

Regarding learner autonomy in learning English as a foreign/second language, Muliyah et al. (2020) asserted that encouraging students to become autonomous in their language learning would assist them in successfully learning English because language acquisition (LA) is built on the notion that if students participate in the decision-making processes related to their language competency, it will lead to better learning. Furthermore, Ahundjanova (2022) mentioned that as language teachers, we should allow our pupils to be more self-reliant and autonomous rather than making them rely on us and other language instructors as role models.

As one of the basic knowledge areas in learning English as a foreign language, vocabulary plays a vital role in mastering the four skills of reading, writing, speaking, and listening, without which learners cannot convey their messages either orally or verbally. Hence, the importance of vocabulary learning is known to teachers and students. Wilkins (1972) famously said nothing can be conveyed without vocabulary, but little can be conveyed without grammar. Furthermore, Nan (2004) argued that learning new words is much work, and it happens in two stages. The first stage is when you learn the meaning of

a word. In Nan's (2004) framework, the second stage of learning new words occurs after you have learned the meaning of the word. This stage involves integrating the new word into your active vocabulary by using it in context, practicing it in speaking and writing, and being able to recall and apply it appropriately in various situations. This stage ensures that the word is not just recognized passively but is also actively utilized and reinforced through practical usage. This research tried to design and validate a model of Student-Generated Vocabulary Testing (SGVT) to enhance autonomy among Iranian EFL learners.

2. Literature Review

Fostering the independence of learners plays a significant role in language teaching, whether in theory or practice. Najeeb (2013) asserted that learning a foreign language is not limited to a specified time and place but is a lifelong progress, so it would not solely begin and stop in the educational milieu. According to Little (2020), the concept of 'language learner autonomy encompasses a dynamic teaching and learning paradigm wherein learners actively take charge of various facets of their language acquisition journey.

The notion of learner autonomy was initially introduced in the realm of teaching and learning foreign and second languages by Holec (1981). Stated differently, he was the first to include the concept of learner autonomy(LA) in the study of foreign or second languages. He defined LA as the capacity to direct one's learning. Little (1991) further expanded Holec's definition of LA, emphasizing the learners' psychology and capacity in the learning process. Learner autonomy, according to Little (1991), is essentially about a learner's psychological relationship to the process and content of learning.

According to Nguyen (2014), learner autonomy is the ability and willingness of students to take responsibility for their learning and to plan, carry out, supervise, and evaluate it through assignments that are created with guidance and support from their teachers. According to Xu (2015), the concept of LA is encapsulated by learners' capacity to assert control over their learning experiences. This involves not only the creation of personalized study plans but also the articulation of learning objectives, continuous monitoring of the learning process, and the evaluation of learning outcomes.

According to studies, students' independent learning can enhance their academic achievement (Zhou & Li, 2020), make learning more efficient, and foster the development

of lifetime learning skills (Guo, 2020). Chan (2001) conducted research using an interview concluding some autonomous learners' attributes according to learners' evaluation. In addition, Chen and Hwang (2022) focused on the learners' dependence on teachers' support and assistance when shifting from dependence to independence. Saeed (2021) contends that LA stands out as a critical determinant for university-level language learners, exerting a profound influence on their lifelong learning journey. The significance of LA at this academic level is underscored by its transformative impact on students' overall educational experiences.

Mastering vocabulary is of great importance in learning English. As Goundar (2019) stated, learners of English who know a great deal of vocabulary would be more easily able to become competent in English. Nevertheless, Graves (2016) pointed out that learners who have not mastered vocabulary would find it demanding to read texts. They do not know the notable vocabulary and frequently refer to the dictionary to find the meaning. That is why Zhu (2017) declared that when a learner only tries to learn grammar without vocabulary, s/he would encounter problems conveying the meaning or concept.

The focus of the current study revolves around the implementation of student-generated vocabulary testing as a means to enhance learners' autonomy. To comprehensively grasp the significance and advantages of employing student-generated tests, it is imperative to delve into the insights provided by Crawford (2020), who underscored the utility of this method in identifying patterns and issues in students' comprehension of textual material. Student-generated testing went beyond conventional assessment techniques by tapping into students' perspectives and insights, offering a unique avenue to gauge their understanding and interpretation of the content. Crawford highlighted an essential aspect of student-generated testing. This participatory approach is particularly significant, as it acknowledges the diverse perspectives and contributions of students, making the learning environment more inclusive and respectful of their thoughts.

Schmitt et al. (2020) pointed out that language teachers, testers, and researchers have recently had access to a vast array of vocabulary exams. Unfortunately, the majority of them were introduced with insufficient validation data. Although test developers of vocabulary tests have historically not paid enough attention to validation, the field of language testing has gotten more and more rigorous in this area. According to Nation and Meara (2010), vocabulary knowledge testing has four objectives: measuring what has just

been learned, measuring what has been learned in a course, measuring vocabulary size, and diagnosing strengths and weaknesses. According to Jankowska and Jankowski (2017), most vocabulary testing methods, regardless of their purpose, focus more on the breadth than the depth of a student's knowledge by measuring the quantity of their vocabulary.

Guay's (2022) study on self-determination theory (SDT) explores students' motivation in school settings and academic subjects. Key findings include autonomous extrinsic and intrinsic motivation, predicting academic outcomes, fulfilling psychological needs for competence, autonomy, and relatedness, and implementing intervention programs that focus on these needs. The study emphasizes the theory's implications for school psychologists and teaching.

Almusharraf (2021) researched the application of learner autonomy for vocabulary development. She explored how female EFL learners realize learner autonomy via vocabulary learning. The results demonstrated how different autonomous learning approaches enhanced the students' sense of self-possession, self-confidence, and learning outcomes. It also demonstrated how much the students valued the English language. This study highlights the need for more analysis of EFL learners' contributions to the acquisition of the language's necessary skills.

Yawiloeng (2020) used videos in class to teach new vocabulary. The researcher wanted the students to bring some clips and videos about some topics, and based on the videos, the other students could learn new vocabulary. The study's results showed that students could learn better and experience a new way of teaching and learning. The students claimed they could decrease their nervousness, answer the questions better, and get better scores.

Tseng et al. (2020) studied the impact of virtual environments on vocabulary acquisition in young EFL learners. The study found that virtual environments, including solo and paired autonomous uses, promoted deeper language recall and more profound vocabulary retention than teacher-directed use. Pairwork was found to be more effective than individual practice. The study suggests active engagement, close partner collaboration, and self-regulated behavior are key components for successful vocabulary learning.

Ghobain (2020) studied the impact of incidental vocabulary acquisition (IVA) on learner autonomy in medical and applied medical sciences students. The study found no

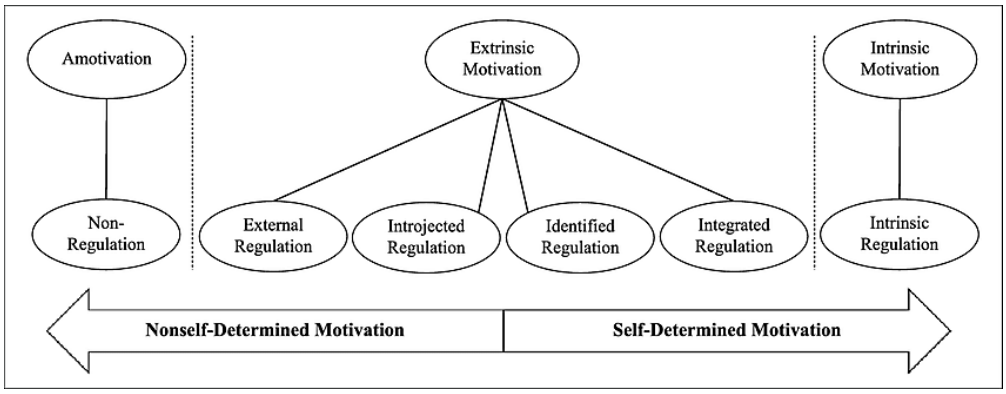
significant differences in autonomy levels between dependent and independent learning. However, there was an improvement in independence, suggesting that students need teacher assistance to understand specialist terminology. IVA can promote learners' autonomy, and IVA techniques in ESP should consider both explicit and implicit teaching approaches.

Baleghizadeh and Zarghami (2014) worked on student-generated tests and their impact on grammar. The results of their study demonstrated that the members of the experimental group performed noticeably better than their counterparts in the control group. This shows that test development throughout the treatment had a positive effect on students' grammar learning. According to the findings of this study, it appears that giving students the opportunity to create their exam items motivates them to study more and refocuses their attention on learning rather than merely getting good ratings. The present research is based on the SDT. As Tang et al. (2020) mentioned, SDT is a psychological framework that focuses on human motivation and the role of autonomy, competence, and relatedness in promoting optimal functioning and well-being. It proposes that individuals have three basic psychological needs: autonomy, competence, and relatedness. When these needs are satisfied, individuals experience greater intrinsic motivation, well-being, and optimal functioning. Conversely, when these needs are thwarted or not adequately met, individuals may experience decreased motivation, psychological distress, and maladaptive behaviors.

According to Knittle et al. (2023, as cited in Teixeira et al., 2020), SDT is a psychological framework that focuses on people's motivations and behaviors. According to this theory, humans have three fundamental psychological needs: relatedness, competence, and autonomy. Furthermore, Legault et al. (2007) said that SDT is a theory that explains how people internalize their values and ambitions, as according to SDT, one will act in accordance with a goal or value more consistently if it has been internalized or self-determined.

Figure 1.

Self-Determination Theory Continuum



This study outlined a summary of SDT-based education research, highlighting some noteworthy findings. First, the more autonomously motivated students are, the better their academic performance is, the longer they persist, the better they acquire, the more satisfied they are, and the more positive their feelings are in the classroom. Second, autonomous motivation can be fostered by parents and educators who support their children's autonomy as well as other psychological needs. Thirdly, it is important to note that some intervention strategies seem to work well at encouraging students' self-motivation. Hence, the researcher in this study formulated the aim of examining the subsequent research query:

1. What is the model of student-generated vocabulary testing to foster autonomy among Iranian Ph.D. candidates and holders in TEFL?

3. Methodology

The present study aimed to design and validate a model of student-generated vocabulary testing to foster autonomy among Iranian Ph.D. candidates and holders in TEFL. The methods utilized to attain this objective are elaborated upon extensively in the subsequent sections.

3.1. Design and Context of the Study

This study adopted a sequential exploratory mixed methods design, beginning with qualitatively gathering data and then confirming the data collected within the quantitative one. In other words, it included both qualitative and quantitative designs to examine the impact of student-generated vocabulary testing on Ph.D. candidates and holders in TEFL's

autonomy. It consisted of two phases: a qualitative phase comprising semi-structured interviews and a quantitative phase ensuring the qualitative phase through using a self-made questionnaire. In the end, it applied a structural equation modeling approach to build a model of student-generated vocabulary testing to foster Ph.D. candidates and holders in TEFL's autonomy.

3.2. Participants

In the qualitative phase, a cohort of 30 Ph.D. candidates and holders in TEFL actively participated, reflecting a balanced distribution of 15 males and 15 females. Seventeen of these individuals were currently pursuing their Ph.D. studies in TEFL. At the same time, the remaining thirteen had already graduated in this discipline, hailing from diverse institutions such as Qeshm Islamic Azad University in Hormozgan province, Shiraz Islamic Azad University in Fars province, and Bushehr Islamic Azad University in Bushehr province. These participants collectively brought a wealth of teaching experience across various age groups, encompassing children, teenagers, and adults. Furthermore, their teaching experiences extended across diverse educational settings, including language institutes, schools, and universities. All participants demonstrated a commendable dedication to learning English, with a minimum of ten years of language acquisition experience.

The participants in the pilot study were 274 Ph.D. candidates and holders of TEFL. One hundred and forty of them were Ph.D. candidates studying in TEFL. One hundred and thirty-four graduated at TEFL at the Islamic Azad University branches of Qeshm, Shiraz, Bushehr, Najaf Abad, Varamin, Meibod, Malayer, Kerman, Tehran, Ardebil, Tabriz, Chabahar Maritime University in Sistan and Baluchistan, Yazd, Rasht, Ilam, Arak, and Ahwaz. The sample includes 135 females and 139 males, with their ages ranging from 29 to 46 years.

In the main study, convenience sampling was employed, aiming to gather a large and diverse sample of participants. A total of 384 individuals, comprising Ph.D. candidates and holders in TEFL, were included in the sample. These participants were affiliated with various branches of Islamic Azad University, reflecting a broad geographical representation across multiple regions in Iran.

The participants encompassed both graduates (196) and Ph.D. candidates (188) in TEFL, offering a comprehensive view of individuals at different stages of their academic journey. The sample also featured a balanced distribution of male (200) and female (184) learners, contributing to gender diversity within the study.

Table 1.

The Frequency of the Participant's Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	184	47.91	47.91	47.91
Female	200	52.09	52.09	100
Total	384	100	100	

Table 2.

The Frequency of the Participant's Contexts

	Frequency	Percent	Valid Percent	Cumulative Percent
Ph.D. candidates	188	48.95	48.95	48.95
Ph.D. graduated	196	51.05	51.05	100
Total	384	100	100	

3.3. Instruments

Concerning the qualitative phase, semi-structured interviews covering student-generated testing and autonomy were designed and conducted with the participants in a comfortable environment. The interview included some open-ended questions related to the objectives of the interview. In an effort to enhance the rigor and reliability of the research process, the final interview and the quality of the questions were subjected to a thorough piloting phase involving not only interviewees but also colleagues knowledgeable about the subject matter. Consequently, various SGVT categories were identified and utilized them to develop a questionnaire. The final questionnaire consisted of two sections. The first section focused on gathering demographic information from the respondents, including age, gender, education, and other relevant details. The second section comprised 15 questions

that aimed to gauge the opinions of the participants. To ensure clarity, the researcher formulated the questionnaire items in the participants' native Persian language. The subsequent section presents the reliability and validity outcomes of the questionnaire. The obtained Cronbach's alpha coefficient demonstrates a satisfactory value of 0.91.

Table 3.

Item-Total Statistics for Total Factors

Items	N of Items	Cronbach's Alpha
Personal characteristic	4	.82
Positive Points of View	4	.71
Negative Points of View	3	.86
Teacher's role	4	.70
Cronbach's Alpha	15	.91

Pallent (2020) stated that the SPSS would generate two statistical measures to reach the factorability of the data: Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO), which the former should be significant ($p < 0.05$) and the latter ranges from 0 to 1 where the minimum value for a good factor analysis is suggested to be 0.6. The results of KMO and Bartlett's are presented in Table 4.

Table 4.

KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.815
Bartlett's Test of Sphericity	Approx. Chi-Square	2764.02
	df	101
	Sig.	.000

Based on the results shown in the table, the KMO measure and Bartlett's Test significance for the instrument of this study are acceptable. KMO was 0.815, which is greater than 0.6. Bartlett's Test significance was less than 0.5 (Sig = .000). Therefore, the

results agree upon the suitability of the data in the questionnaire. Moreover, the correlation is statistically significant and supports the matrix's factorability.

Table 5 shows that these four factors present 63.47 percent of the variance. The table displays the results of the Total Variance Explained, where item loading results reflect the correlation of all items (both positively and negatively worded items) and confirm a significant correlation among factors.

Table 5 displays the results of the Total Variance Explained. In general, the results reflect a sort of certainty among elicited responses that represents the commonality of perception among the respondents concerning the socially mediated testing questionnaire that displays a descending loading trajectory moving from the high end (4.709) to the low end (.099).

Table 5.

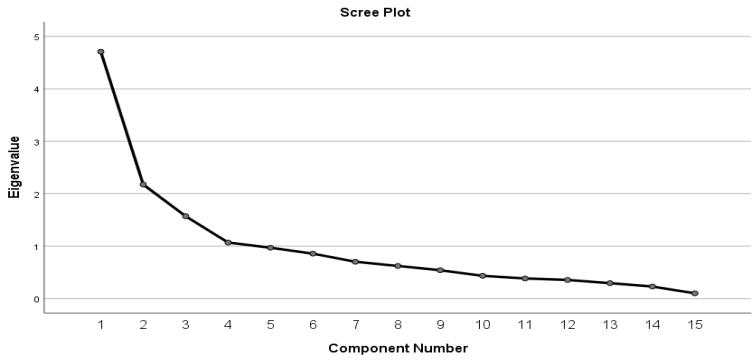
Total Variance Explained

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	4.709	31.395	31.395
2	2.175	14.498	45.893
3	1.570	10.467	56.360
4	1.068	7.119	63.479
5	.968	6.455	69.935
6	.856	5.705	75.639
7	.701	4.675	80.315
8	.621	4.142	84.457
9	.540	3.599	88.056
10	.433	2.890	90.946
11	.383	2.551	93.497
12	.355	2.364	95.861
13	.293	1.954	97.815
14	.229	1.524	99.339
15	.099	.661	100.000

The scree test is another way to extract a suitable number of factors (Catell, 1966). In this method, all eigenvalues of the factors are plotted by the SPSS, and by tracing the plot, we can find a change or break called "elbow." Figure 1 demonstrates the results of factor loading and reflects participants' high interest and positive perceptions of the student-generated testing questionnaire at the high end of the plot compared to their perceptions of the student-generated testing questionnaire at the low end.

Figure 2.

The Scree Plot of the Factors of the Study



Another way to assist in retaining the number of factors is Horn's parallel analysis (Horn, 1998). This study used a Monte Carlo software program to "compare the size of the eigenvalues with those obtained from a randomly generated data set of the sample size" (Pallant, 2020). The eigenvalues greater than those obtained from the random data set are retained. The results obtained from the Monte Carlo program are presented below.

Table 6.

Actual Eigenvalues and Their Corresponding Values from Parallel Analysis

Component Number	Eigenvalue from PCA	Criterion Value from Parallel Analysis
1	4.709	1.3480
2	2.175	1.2754
3	1.570	1.2072
4	1.068	1.0185

The results agreed with the findings in the first move regarding retaining two factors because, based on Table 6, the actual eigenvalues of these four factors were more significant than the criterion value from the parallel analysis. The third move in factor analysis is factor rotation and interpretation, where the loading patterns are presented. In other words, it reveals which items have high loadings on which factors. The results of the factor rotation and its loadings are presented in Table 7 as follows.

Table 7.

Rotated Component Matrix

Rotated Component Matrix[a]				
	1	2	3	4
Q11	.891			
Q10	.867			
Q9	.863			
Q8	.797			
Q7	.792			
Q6	.528			.507
Q14		.844		
Q15		.711		
Q13		.706		
Q2			.733	
Q3			.708	
Q1		.320	.654	
Q4			.621	
Q5	.333			.713
Q12		.357		.669

Note. a. Rotation converged in 5 iterations.

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

According to Table 7, all items had significant loadings only on one factor. Therefore, it is approved that the research questionnaire and its scales and items accurately

measure what they aim to measure. The findings of this research phase support the validity and reliability of the study instrument.

3.4. Data Collection Procedure

After finalizing the interview guide, the researcher proceeded to conduct the interviews. The participants were contacted, and the interviews were conducted online through the Skype app, with recordings made. Each interview began with the interviewer expressing gratitude to the volunteers. The purpose and various aspects of the study were then explained to the participants. Icebreaker questions were used to create a comfortable atmosphere. Conversations were held in Persian, the participants' native language, in a friendly and relaxed environment. The interviewer intervened only when necessary to keep the discussion on track. Non-verbal cues like nods and affirmations were used to show engagement. Notes were taken as needed. At the end of each session, participants were given the opportunity to share additional thoughts, with their contributions valued. The interviews were not time-constrained to ensure participants felt at ease.

The researcher developed the questionnaire after interviewing on a relevant topic. Subsequently, the researcher ensured the validity of the questionnaire. The primary objective of the research was to gather the perspectives of a sample size of 384 participants. This was achieved by distributing a verified online questionnaire to students enrolled in various English study programs at the university during the Fall and Winter semesters of the 2020-2021 academic year. Prior to commencing the study, the participants were provided with a guide to assist them in answering the questions. The researcher assured the participants that their responses would remain confidential and solely be utilized for educational purposes. It took about 15 minutes for each participant to complete the questionnaire, ensuring consistency in data collection.

3.5. Data Analysis Procedure

To analyze the data, the transcripts were read and reread several times to comprehend and be familiarized with them thoroughly. Next, the transcripts were transferred to the computer software MAXQDA. All transcripts were specifically labeled based on the site and the person with whom the interview had been conducted. After organizing the datasets, the next step was to code and modify the data, which consisted of open coding, axial

coding, and selective coding. Axial coding was used after open coding to reveal connections among the produced codes. Therefore, the extensive list of codes produced in the open coding was reduced into a smaller list of tentative categories (15 categories) by the constant comparative method. Finally, in selective coding, the researcher found relationships or patterns among categories and joined them into significant themes by consulting the related theories and the existing literature. This led to four themes, which included the model of student-generated vocabulary testing factors to foster autonomy among Ph.D. candidates or holders in TEFL.

All four items in this part were acceptable regarding their corrected item-total correlation and Cronbach's alpha if item deleted indices. The questionnaire and its scales gained the required reliability values: Cronbach's alpha (larger than 0.70). Moreover, it should be noted that since one of the items in the fourth scale was deleted due to failure to reach the required criterion value, the number of items in the final draft of the questionnaire was reduced to 15.

In pursuit of the overarching objective of developing a comprehensive model for enhancing autonomy among Iranian Ph.D. candidates or holders in TEFL through student-generated vocabulary testing, Structural Equation Modeling (SEM) was employed to validate this model. In essence, SEM, a sophisticated multivariate analysis technique, was utilized to measure and define the intricate relationships between latent and observed variables. In the data analysis procedure of this study, the researcher opted for the utilization of Smart PLS, version 4. This software is specifically designed for confirmatory factor analysis and SEM, providing a platform to explore intricate relationships within the proposed model.

4. Results

This study aimed to design and validate a model of student-generated vocabulary testing (SGVT) factors to foster autonomy among Iranian Ph.D. candidates or holders in TEFL. To achieve this, a mixed-methods technique was applied in an Iranian context. Thirty Ph.D. candidates or holders in TEFL were initially selected for an interview. For this study, semi-structured interviews were designed and conducted with the participants. The transcripts taken from the interviews were then transferred into the MAXQDA program.

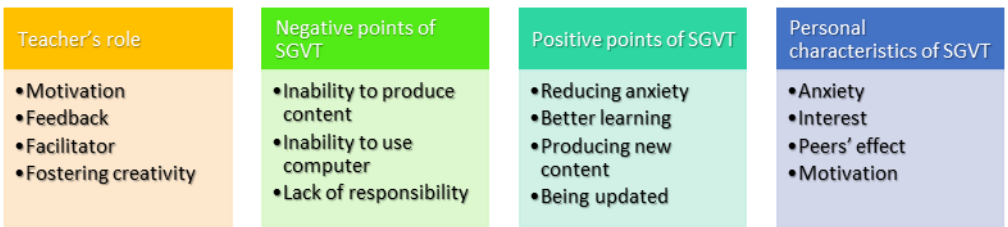
The software produced a huge amount of code. The constant comparative method was used to condense the lengthy list of codes that had been open-coded into a more manageable list of tentative categories (15). Then, using relevant ideas and previously published research, selective coding was used to identify connections or patterns between categories and combine them into important themes. This gave rise to four themes, including the model of student-generated vocabulary testing factors to foster autonomy among Ph.D. candidates or holders in TEFL.

The analysis of the interviews with 30 Ph.D. candidates or holders in TEFL revealed four main categories or themes and 15 subcategories. However, these categories contained 20 questions in the first draft of the questionnaire. After reviewing and scrutinizing the questionnaire, five categories that failed to meet the strict criteria were eliminated after a thorough exploratory factor analysis, leaving 15 categories as the foundation for the questionnaire, including 1-positive points of student-generated vocabulary testing, 2-negative points of student-generated testing, 3-personal characteristics, and 4-teacher's role.

Cronbach's alpha was used to assess the overall questionnaire's reliability, and exploratory factor analysis using SPSS (version 26) was used to assess the questionnaire's construct validity. Cronbach's alpha was used to assess the overall questionnaire's reliability, and exploratory factor analysis using SPSS was used to assess the questionnaire's construct validity.

Figure 3.

The themes of SGVT



The findings from the survey data illuminate crucial insights into the perceptions and experiences of Iranian Ph.D. candidates or holders in TEFL regarding student-generated vocabulary testing (SGVT). The three major factors influencing participants' views—

personal characteristics, positive aspects of SGVT, and teachers' roles—underscore the intricate dynamics involved in implementing this innovative testing approach. Additionally, the identification of negative points sheds light on potential challenges that warrant attention for the effective integration of SGVT in language education.

Table 8

The Descriptive Statistics of All the Measured Variables

	N	Minimum	Maximum	Mean	Std. Deviation
Personal Characteristics	384	1.50	5.00	3.9674	.67758
Positive Points of View	384	1.00	5.00	3.8047	.83705
Negative Points of View	384	1.00	5.00	3.2891	.97074
Teacher Roles	384	1.00	5.00	3.4049	.84702
Valid N (listwise)	384				

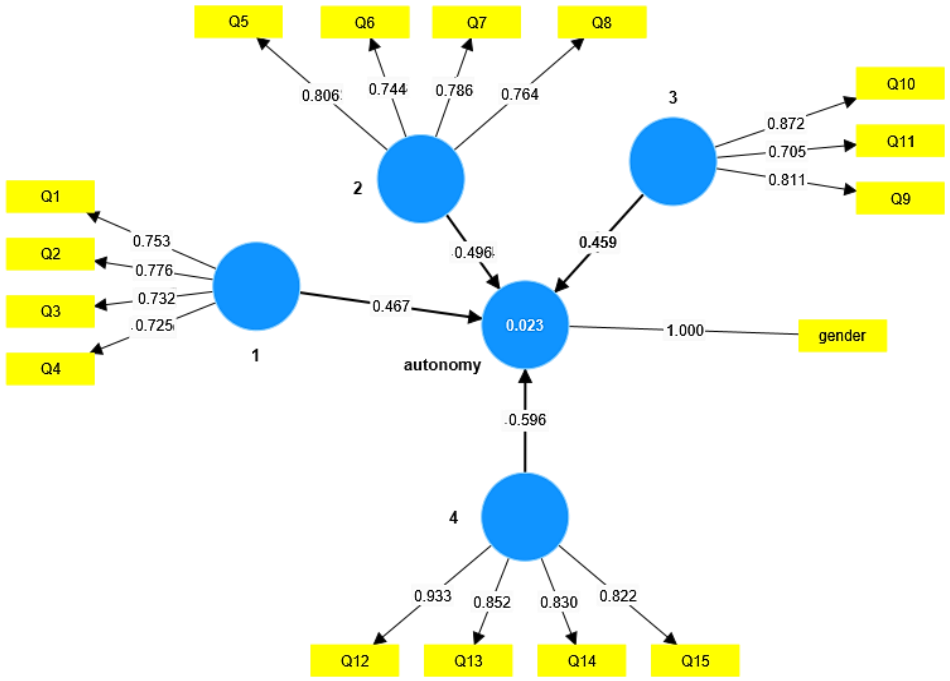
The dominance of personal characteristics (3.96) as the most influential factor underscores the paramount role of individual traits in shaping learners' acceptance and engagement with SGVT. The breakdown into subcategories—Anxiety, Interest, Peer Effect, and Motivation—provides a nuanced understanding. The recognition of SGVT's positive points of view (3.80) emphasizes its potential benefits in enhancing the learning experience. The subcategories—Reducing Anxiety, Better Learning, Producing New Content, and Being Updated—shed light on the multifaceted advantages. Teachers' roles as the third most influential factor (M=3.40), signifying their pivotal role in facilitating SGVT. The subcategories—Motivation, Feedback, Facilitator, and Fostering Creativity—highlight the multifaceted responsibilities of educators in implementing SGVT effectively. The identification of negative points (M=3.28) sheds light on challenges that may impede the successful implementation of SGVT. The subcategories—inability to produce content, inability to use a computer, and lack of responsibility—highlight areas that demand attention.

SEM was used to reach the ultimate goal of this research, which was to develop a model of student-generated testing to foster autonomy among Iranian Ph.D. candidates or holders in TEFL. In other words, SEM, as a multivariate analysis technique, was used to

measure and define the relationship between latent and observed variables, thus introducing a structural model that imputes the relationship between latent variables. To perform SEM analysis, a statistical package called Smart PLS 4 was used. In this research, Smart PLS 4 was employed for both constructing and analyzing the model. The outcomes of the research model are illustrated in Figure 4.

Figure 4

Initial Path Model



In order to guarantee the robustness and reliability of the model under examination in explaining the subtleties of student-generated vocabulary testing factors influencing learners' autonomy among Iranian Ph.D. candidates or holders in TEFL, validation of the model is essential. In this part, a thorough approach to model validation is explained, including convergent, discriminant, and content validity assessments. When students get motivated, they try their best, prepare a good atmosphere for themselves in class, and make it enjoyable (Rahman, 2020; Johnson, 2017; Kalelioğlu, 2015).

Table 9.

AVE, CR, and Cronbach's Alpha

	Items	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
1	4	0.766	0.709	0.733	0.67
2	4	0.719	0.732	0.739	0.651
3	3	0.74	0.779	0.84	0.638
4	4	0.905	1.196	0.919	0.74

Table 9 demonstrates that the Average Variance Extracted (AVE) values exceed the recommended threshold of 0.5, indicating strong convergent validity. This suggests that the measurement model effectively captures shared variation among observed variables. Additionally, Cronbach's Alpha and Composite reliability scores above 0.7 validate the questionnaire's reliability, accuracy, and consistency. Fornell-Larcker Discriminant Validity analysis in Table 10 confirms distinctiveness among latent constructs, ensuring each contributes uniquely to the model.

Table 10.

Fornell-Larcker Discriminant Validity

	1	2	3	4
1	0.818			
2	0.183	0.806		
3	0.086	0.387	0.799	
4	0.072	0.273	0.742	0.86

The evaluation of the inner model, sometimes referred to as the structural model, is a crucial phase in the validation of a model. A number of critical analyses are included in the investigation of the Inner Model, which includes the structural links between latent constructs.

The strong discriminant validity was confirmed by cross-loading values, showing distinctiveness among latent constructs. The uniqueness of each construct was supported

by stronger factor loadings with their respective variables compared to cross-factor loadings.

Table 11.

Cross-loading

	1	2	3	4
Q1	0.753	0.482	0.119	0.08
Q2	0.776	0.218	0.179	0.177
Q3	0.732	0.219	0.187	0.143
Q4	0.725	0.292	0.24	0.213
Q5	0.053	0.806	0.22	0.2
Q6	0.042	0.744	0.261	0.279
Q7	0.328	0.718	0.211	0.203
Q8	0.076	0.786	0.495	0.352
Q9	0.054	0.391	0.811	0.493
Q10	0.08	0.262	0.872	0.675
Q11	0.088	0.285	0.705	0.757
Q12	0.143	0.243	0.698	0.933
Q13	-0.088	0.233	0.684	0.852
Q14	0.003	0.251	0.684	0.83
Q15	0.027	0.246	0.549	0.822

All Heterotrait-Monotrait (HTMT) values are below the threshold of 0.85, indicating that the constructs exhibit adequate discriminant validity. This supports the notion that the constructs measured in the study are distinct from one another, enhancing the validity of the model.

Table 12.

HTMT

	1	2	3
2	0.561		
3	0.362	0.558	
4	0.271	0.444	0.32

A key aspect of guaranteeing the stability and dependability of the research model is a careful analysis of multicollinearity. This indicator has the potential to affect the precision of model estimates significantly. The Variance Inflation Factor (VIF) evaluation, as presented in Table 13, is a crucial metric for determining the degree of multicollinearity in the model. The findings shown in Table 13 provide a thorough understanding of the study model's VIF values. Upon careful inspection, all of these values show that the estimated VIFs are below the crucial limit of 5. This remarkable consistency confirms the stability and dependability of the study's findings by highlighting the lack of multicollinearity problems in the model. The collective adherence to the VIF threshold demonstrates the research model's resilience to the unwarranted effects of multicollinearity. For the model to be applicable and generalizable, the results must be stable, particularly when considering the impact of SGVT factors on Ph.D. candidates or holders in TEFL s' autonomy.

Finally, careful inspection of VIF values, as shown in Table 13, confirms that the model is immune to multicollinearity. The study's methodological robustness is strengthened by the persistent adherence to the set threshold, assuring the stability and reliability of the model's results. This careful evaluation enhances the academic credibility of the research, ensuring the model effectively captures the complex dynamics of SGVT influences on learners' autonomy.

Table 13.

Path Coefficient Results

	VIF
1 -> autonomy	1.035
2 -> autonomy	1.209
3 -> autonomy	2.424
4 -> autonomy	2.226

The Path Coefficient Results (Table 14) of the Inner Model shed light on the relationships between the constructs and how those relationships affect learning objectives. T-statistics are used to test hypotheses, and significant values indicate the direction and strength of the correlations. Positive and meaningful relationships are observed in all paths,

suggesting that factors such as personal characteristics, aspects both positive and negative, and the teacher's role all have an impact on learners' autonomy.

Table 14.

Path Coefficient Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Results
1 -> autonomy	0.133	0.134	0.054	1.913	0.000	Positive and significant
2 -> autonomy	0.104	0.104	0.04	2.107	0.000	Positive and significant
3 -> autonomy	0.08	0.08	0.042	3.895	0.000	Positive and significant
4 -> autonomy	0. 21	0.24	0.048	4.412	0.000	Positive and significant

An extensive summary of results from the PLS-SEM model fit analysis is shown in Table 15. All of these results support the model's suitability for describing the complex interactions between SGVT factors and Iranian Ph.D. candidates or holders in TEFLs' autonomy. Regarding Model Fit Evaluation, it was concluded that the overall fit of the model is confirmed by the Standardized Root Mean Square Residual (SRMR) value of 0.018, which is less than the critical threshold of 0.08. Furthermore, other fit indices (Table 15), including d_ULS, d_G, Chi-square, NFI, and R^2, support the flexibility and explanatory abilities of the model.

Table 15.

Model Fit of PLS-SEM

	Saturated model	Standard model
SRMR	0.018	≤0.08
d_ULS	5.335	---
d_G	1.165	---
Chi-square	2.816	≤ 5

NFI	0.942	≥ 0.9
R^2	0.810	≥0.1
Q^2	0.414	≥0

5. Discussion

The validation of the model examining the factors influencing learner autonomy among Iranian Ph.D. candidates or holders in TEFL reveals several critical insights, demonstrating robustness, reliability, and significant findings that align with and extend the literature.

The results from Table 9 indicate that all AVE values exceed the recommended threshold of 0.5, confirming strong convergent validity. This suggests that the latent constructs effectively capture the shared variance among their respective observed variables. Cronbach's Alpha and Composite Reliability (rho_c) scores are above 0.7 for all constructs, validating the questionnaire's reliability, accuracy, and consistency.

Table 10 confirms the discriminant validity through the Fornell-Larcker criterion, with each construct's square root of AVE being higher than its correlations with other constructs. Furthermore, the Heterotrait-Monotrait values presented in Table 12 are all below the threshold of 0.85, reinforcing adequate discriminant validity and indicating that the constructs are distinct from one another.

These findings are consistent with previous studies by Rahman (2020), Johnson (2017), and Kalelioğlu (2015), which emphasize the importance of motivational factors in enhancing learner autonomy. However, the present study extends this by empirically validating the distinctiveness of constructs specifically within the context of Iranian Ph.D. candidates or holders in TEFL.

The cross-loading values in Table 11 further support the discriminant validity, showing that each item loads more strongly on its respective construct than on any other. This indicates that the constructs are unique and well-defined.

The VIF values presented in Table 13 are all below the critical limit of 5, indicating that multicollinearity is not a concern in this model. This consistency highlights the stability and dependability of the findings, ensuring that the model's estimates are not adversely affected by multicollinearity issues.

The path coefficient results in Table 14 demonstrate significant and positive relationships between the constructs and learner autonomy. Specifically, the following relationships were observed:

- Personal characteristics ($\beta = 0.133$, $p < 0.001$)
- Motivational factors ($\beta = 0.104$, $p < 0.001$)
- Teacher's role ($\beta = 0.080$, $p < 0.001$)
- Classroom environment ($\beta = 0.210$, $p < 0.001$)

These results align with the findings of previous research, which underscores the impact of motivational and personal factors on learner autonomy. For instance, Johnson (2017) highlighted the importance of teacher support in fostering learner autonomy, while Kalelioğlu (2015) emphasized the role of a positive classroom environment.

The overall model fit, as shown in Table 915, confirms the model's suitability in explaining the complex interactions between SGVT factors and learner autonomy. The SRMR value of 0.018 is well below the critical threshold of 0.08, indicating an excellent fit. Other fit indices, such as d_ULS, d_G, Chi-square, NFI, and R^2, further support the model's robustness and explanatory power.

The current study's findings are consistent with previous research that highlights the significance of motivational and environmental factors in learner autonomy. However, it extends the understanding by providing empirical evidence from the specific context of Iranian Ph.D. candidates or holders in TEFL. This adds a new dimension to the existing body of literature by highlighting the unique factors that influence learner autonomy in this specific cultural and educational context.

Rahman (2020) and Johnson (2017) both found that motivated students are more likely to create a conducive learning environment and engage actively in the learning process. The present study corroborates these findings by demonstrating significant positive relationships between motivation and learner autonomy.

Kalelioğlu (2015) emphasized the importance of a positive classroom atmosphere in promoting learner autonomy. This study confirms that a supportive classroom environment, influenced by the teacher's role, significantly impacts learner autonomy among Iranian Ph.D. candidates or holders in TEFL.

6. Conclusion

Whether in theory or reality, encouraging learners' independence is important in the teaching of languages. Learning a foreign language is a lifelong process that does not only start and end in the educational environment.

In this study, the researcher aimed to design and validate a model of socially mediated testing to foster the learning of English as a Foreign Language (EFL) among Iranian learners. Socially mediated testing refers to integrating social interaction and collaboration into the testing process to enhance language learning outcomes. The goal of this study was to create and authenticate a model outlining the factors influencing student-generated vocabulary testing (SGVT) with the goal of enhancing autonomy among Iranian Ph.D. candidates or holders in TEFL.

In accordance with the findings of the study, it was concluded that the information acquired from the questionnaire and quantitative interviews consistently fit the proposed model after looking at the four measurement models using confirmatory factor analysis and structural equation modeling. As a result, the hypothesized model of how student-generated vocabulary testing factors affect Iranian students may serve as a solid foundation for further investigation. Several research works have investigated the impact of student-generated tests on their learning. The investigations mentioned above have furnished significant perspectives regarding the possible advantages and efficacy of integrating student-generated tests. Moreover, many studies have been conducted to examine students' autonomy. The findings of these researches can help develop and validate a student-generated vocabulary testing model, especially for Iranian Ph.D. candidates or holders in TEFL.

The validation of the student-generated vocabulary testing model significantly contributes to language assessment literature and offers insights for educators and policymakers. It opens avenues for further exploration and application in diverse language learning contexts, deepening understanding of assessment practices and language acquisition. The study confirms the model's validity, positioning it as a valuable tool for future research and practical use in SGVT. The outcomes highlight the potential benefits of SGVT in fostering autonomy among Iranian Ph.D. candidates or holders in TEFL, emphasizing active learner involvement, anxiety reduction, enhanced creativity, and improved self-confidence during testing.

These findings underscore the importance of developing and accessing a student-generated vocabulary testing framework specifically tailored for Iranian Ph.D. candidates or holders in TEFL. Such a paradigm could incorporate various strategies to promote SGVT, such as peer-to-peer collaboration, leveraging technology like computers for content creation and test design, and fostering teamwork. Integrating these elements into testing has the potential to enhance motivation, engagement, anxiety reduction, creativity, and overall learning outcomes for Iranian Ph.D. candidates or holders in TEFL. However, developing and evaluating an effective model that considers the unique linguistic and multifaceted characteristics of Iranian Ph.D. candidates or holders in TEFL will require further investigation.

In conclusion, by promoting learner autonomy, vocabulary acquisition, constructivist learning theory, student-centered approaches, formative assessment, collaborative learning, and critical thinking skills, the study offers valuable insights for educators and researchers in the field of EFL teaching and learning. Implementing the student-generated vocabulary testing model in language classrooms has the potential to empower learners, improve vocabulary learning outcomes, and enhance overall language proficiency. Below are some recommendations for future studies:

The study "Designing and Validating a Model of Student-Generated Vocabulary Testing to Foster Autonomy among Iranian EFL Learners" suggests further research to expand its findings, explore its effectiveness in diverse contexts and age groups, and investigate its impact on learners at different language acquisition stages.

Further research could involve a longitudinal study to assess the long-term impact of a student-generated vocabulary testing model on Iranian EFL learners' autonomy and vocabulary acquisition, and comparative studies to compare its effectiveness with other methods, providing insights into their strengths and weaknesses.

Researchers can use a mixed-methods approach to gather quantitative and qualitative data on the impact of a student-generated vocabulary testing model on learning English. Surveys and interviews can provide deeper understanding. Cross-cultural studies can explore the model's generalizability to diverse EFL contexts, determining if its benefits are specific to Iranian learners.

Future research should explore the use of technology in student-generated vocabulary testing, focusing on digital tools and platforms for support and engagement.

Understanding teachers' perspectives and challenges can inform best practices for implementing this approach in technologically mediated learning environments.

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