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Research and Analysis on Virtual Classroom Teaching Models and Their Effectiveness—A Case Study of Basic Spanish Language Instruction in Chinese Universities

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Abstract: ***With the increasing prevalence of virtual classrooms in education, scholars have conducted a series of comparative studies on traditional face-to-face instruction and virtual classroom teaching. Due to factors such as internet connectivity and teaching platforms, virtual classroom instruction encompasses various models. Currently, there is relatively limited research on the specific teaching formats within virtual classrooms. Given the distinct characteristics of foreign language learning—which requires learners to engage in interaction and practice rather than mere theoretical study—it is crucial for language educators to understand and select the most suitable virtual classroom teaching model based on instructional content and objectives. Furthermore, to achieve optimal teaching outcomes, instructors must thoroughly assess students' feedback and evaluations of different teaching modules (e.g., reading, vocabulary, or grammar) to enhance instructional effectiveness. Therefore, this study focuses on first-year Spanish majors in Chinese universities to investigate virtual classroom teaching models. Specifically, it compares learners' perceptions of pre-recorded and live-streamed classes across four modules—vocabulary, grammar, reading, and exercises—to explore their preferences for different instructional formats. The findings aim to assist teachers in tailoring classroom organization to the unique demands of each module.***

Keywords: Virtual classroom, Live-streamed class, Spanish language, Teaching.

1. Introduction

In recent years, the rise of digital education has spurred growing interest in studying virtual teaching modalities compared to traditional face-to-face instruction [1,2,5]. Within the framework of virtual education, specific teaching methods vary depending on factors such as internet connectivity, platforms used, and applied pedagogical strategies. However, studies providing detailed analyses of these specific modalities remain limited.

Some research has explored student preferences regarding different virtual class configurations. For example, Muthuprasad et al. found that undergraduate agriculture students in India favored pre-recorded classes due to the flexibility they offer in the learning process [3]. However, in the context of foreign language learning, classroom interaction and practice play a fundamental role alongside theoretical instruction. Therefore, teachers of Spanish as a foreign language (SFL) must select the most suitable teaching modality based on didactic objectives and content delivery. Additionally, it is essential to understand students' perceptions and evaluations of different teaching modules—such as reading, vocabulary, or grammar—across available options.

This study focuses on basic Spanish courses for first-year students with no prior language training. In Chinese universities, basic Spanish constitutes a core subject during the first two academic years for Hispanic Philology majors. The most widely used textbook in this context is *Modern Spanish* (2014), published by the Foreign Language Teaching and Research Press. This teaching material is structured into four modules: vocabulary, grammar, reading, and exercises. In each unit, vocabulary is presented alongside its Chinese translation; grammatical rules are explained in Chinese, with Spanish examples provided when necessary. The reading section, written in Spanish, incorporates new vocabulary and grammatical structures covered in the unit, while the exercises module allows students to reinforce content from the preceding three sections.

The objective of our study is to conduct a comparative evaluation of Chinese-speaking Spanish learners' perceptions of pre-recorded classes (PRC) and live classes (LC) regarding the instruction of the four aforementioned modules. Through this analysis, we aim to provide valuable insights into student preferences for different virtual teaching formats, which could assist instructors in tailoring their classroom organization according to the specific characteristics of each module.

2. Theoretical Framework

In recent years, technology-assisted language learning has emerged as a cornerstone methodology in second language (L2) teaching and acquisition, witnessing exponential growth in both implementation and scholarly attention. This pedagogical approach encompasses a comprehensive spectrum of digital resources, including but not limited to educational videos hosted on platforms such as YouTube, massive open online courses (MOOCs) offered by prestigious educational institutions, and both synchronous and asynchronous virtual classroom environments meticulously designed by instructors within specialized digital ecosystems. The integration of sophisticated artificial intelligence systems and advanced natural language processing tools has revolutionized the field by introducing unprecedented

opportunities for personalization, adaptive learning pathways, and optimized instructional interventions tailored to individual learner profiles and developmental trajectories in L2 acquisition.

The accelerating adoption of these technologically-enhanced methodologies has catalyzed a substantial body of empirical research dedicated to examining their efficacy, pedagogical value, and learner perceptions across diverse linguistic and cultural contexts. For instance, contemporary investigations have systematically explored the complex dynamics of self-regulated learning within virtual environments. Li and Zhou conducted a rigorous analysis of self-regulated learning behaviors exhibited by Chinese-speaking English learners engaged in online educational settings, reaching the significant conclusion that this multifaceted process is influenced by a complex interplay of individual internal factors—including motivation, meta-cognitive awareness, and strategic competence—and external contextual elements encompassing instructional design principles, pedagogical scaffolding, and meaningful teacher-student interactions [4]. Their findings underscore the critical importance of developing comprehensive instructional frameworks that address both cognitive and socio-affective dimensions of virtual language learning.

Contrastingly, several empirical studies, including the notable works of Damayanti and Rachmah and Wright, present compelling evidence suggesting that foreign language learners frequently express preference for traditional face-to-face instructional modalities [2,5]. This preference stems primarily from the perception that physical classroom environments provide optimal conditions for material comprehension through immediate clarification opportunities and facilitate authentic social interaction—elements that significantly enhance motivational persistence and accelerate language acquisition processes. These studies highlight the importance of replicating key features of face-to-face interaction within virtual environments to maximize learner engagement and achievement.

Further scholarly investigations have methodically examined the inherent limitations and potential barriers associated with virtual teaching methodologies. Romero et al. identified critical challenges related to the digital divide and psychological stress experienced by learners confronting technological obstacles, including inadequate device access, technical proficiency deficits, or unreliable internet connectivity—factors that can substantially impede learning progress and diminish educational outcomes [6]. Building upon this foundational understanding, researchers have emphasized the paramount importance of thoughtful virtual teaching platform selection as a determinant of instructional effectiveness. The influential works of Zhou and Li and Huang et al. articulate a comprehensive set of criteria for platform evaluation, asserting that optimal selection should prioritize intuitive usability for both instructors and students, robust technological reliability, and sophisticated features that facilitate meaningful communicative interaction and authentic learning experiences [7-8].

In summary, while a substantial corpus of research has addressed face-to-face and virtual teaching as two distinct instructional paradigms, there remains a critical need to conduct granular examinations of the variations and modalities within virtual learning environments themselves. A particularly significant distinction warranting focused investigation is the fundamental difference between pre-recorded classes (PRC), which offer flexibility and repeatability, and live classes (LC), which provide immediate interaction and spontaneous communication opportunities. For instructors utilizing the *Modern Spanish* textbook as their primary instructional resource, the strategic decision between these complementary formats depends not solely on instructor preferences or student learning styles, but critically on the specific nature and pedagogical requirements of the content being presented. Therefore, this study establishes two primary research objectives: (1) to conduct a comprehensive evaluation of Chinese-speaking Spanish learners' perceptions, experiences, and assessments of both pre-recorded and live class formats in virtual environments; and (2) to perform a detailed analysis of learner preferences regarding optimal instructional modalities for different pedagogical modules contained within the *Modern Spanish* textbook (vocabulary acquisition, grammatical competence development, reading comprehension enhancement, and practical application exercises), with the ultimate goal of informing evidence-based instructional design decisions.

3. Methodology

This study implemented two virtual classroom modalities for two groups of SFL students to analyze their effectiveness: pre-recorded classes (PRC) and live classes (LC). We subsequently designed a survey to collect student feedback on the teaching of four modules through both modalities, compared to face-to-face instruction. Thus, face-to-face classes served as the control group, while PRC and LC represented the two experimental conditions.

3.1 Participants and Platforms

Over a two-month period, the first group (PRC) received pre-recorded lectures, while the second group (LC) participated in synchronous live sessions. The PRC group comprised 32 students, and the LC group included 26 students. All participants were native Mandarin Chinese speakers with a B1 proficiency level in Spanish according to the *Common European Framework of Reference for Languages* (CEFR).

The same instructors taught both the prior face-to-face courses and the virtual classes, covering identical basic Spanish curriculum content.

For the PRC group, instruction combined pre-recorded lectures with supplementary materials, whereas the LC group received exclusively real-time instruction. The pre-recorded classes were delivered via the Pedagogy Square platform, where instructors prepared and uploaded lessons prior to scheduled sessions. After platform registration, students could access module-organized videos and complete complementary assessment tasks.

We conducted the live classes through Tencent Meeting, enabling real-time teacher-student interaction, and this modality replicated face-to-face classroom dynamics, with the

distinction of occurring in a virtual environment.

3.2 Survey Design

The survey was designed in three main sections. The first part focused on analyzing the learning strategies employed by students to work with the content of the four modules: vocabulary, grammar, reading, and exercises. Students were asked about their preferred strategy for learning each module, with four options provided: a) memorizing the content; b) understanding it through context; c) doing additional exercises; d) seeking support from teachers (see Example 1). This design allowed for an analysis of whether there were differences in learning preferences between the PRC and LC groups, providing insights into the internal factors influencing these choices.

Example 1

Based on your experience, which of the following methods do you consider most effective for vocabulary learning?

- Memorizing new vocabulary and its usage rules.
- Understanding the meaning and use of vocabulary in context.
- Practicing vocabulary through additional oral and written exercises.
- Seeking help from teachers.

The second part of the survey focused on students' evaluation of virtual and in-person classes in relation to each of the four modules. Participants were asked to select the option that best described their perception of both teaching modalities. Responses were structured on a Likert scale from -2 to 2, where:

- **-2** indicates "very bad"
- **-1** indicates "bad"
- **0** indicates "neutral"
- **1** indicates "good"
- **2** indicates "very good"

This section allowed for an assessment of whether students showed a preference for a specific modality depending on the module taught, based on the hypothesis that students' opinions would vary according to the content and the didactic goal of each module.

The third part of the survey aimed to identify the specific advantages of each teaching modality. Based on the responses obtained in the second part, students were asked to reflect on the benefits and limitations of both class formats. To this end, each question contained eleven statements about potential advantages of virtual and in-person teaching (see Examples 2 and 3). These statements were grouped into three categories:

1) **Teacher-related dimension (statements 1-5):** This category evaluated aspects such as lesson organization, clarity of explanations, use of digital resources, teacher-student interaction, and monitoring of learning progress.

2) **Student-related dimension (statements 6-10):** This category analyzed factors such as ease of knowledge acquisition, flexibility of the curriculum, use of digital resources, language practice, and student interaction.

3) **Learning environment (statement 11):** This category assessed which of the two class formats provided a more conducive learning environment.

Participants could select one or more options that described the advantages they perceived in the teaching of the four analyzed modules.

Example 2

In your opinion, which of the following options are advantages of virtual classes for vocabulary teaching? (You may choose more than one option)

- The teacher's explanation is more organized.
- Teachers can provide more supplementary explanations.
- The use of digital resources is optimized.
- Interactive activities between teachers and students increase.
- Teachers can monitor students' progress more closely.
- It facilitates knowledge acquisition.
- It offers greater curriculum flexibility.
- It allows for better utilization of digital resources.
- It increases opportunities for language practice.
- It improves student interaction.
- It provides a more favorable study environment.

Example 3

In your opinion, which of the following options are advantages of in-person classes for vocabulary teaching? (You may choose more than one option)

- The teacher's explanation is more organized.
- Teachers can provide more supplementary explanations.
- The use of digital resources is optimized.
- Interactive activities between teachers and students increase.
- Teachers can monitor students' progress more closely.
- It facilitates knowledge acquisition.
- It offers greater curriculum flexibility.
- It allows for better utilization of digital resources.
- It increases opportunities for language practice.
- It improves student interaction.
- It provides a more favorable study environment.

4. Results

According to the results regarding the preferred learning strategy for each of the four modules, we found the PRC group shows a clear preference for the "comprehension" option in the vocabulary, grammar, and reading modules. Comprehension is also the most popular strategy for the LC group in the vocabulary and reading modules; however, in the grammar module, this group prefers the option of doing additional exercises. In the exercises module, the responses from both groups follow a similar pattern: both favor the option of doing additional exercises, followed by the comprehension option. Therefore, the most notable difference between these two groups lies in their responses for the

grammar module.

The findings derived from the secondary component of the survey reveal distinct preferences in instructional modalities. In the vocabulary module, no significant predilection for either virtual or in-person classes is exhibited by the PRC group, whereas in-person classes are valued more favorably by the LC group. When grammar instruction is considered, virtual classes are preferred by the PRC group over their in-person counterparts, while a consistent preference for in-person instruction is maintained by the LC group. Both cohorts demonstrate a marked inclination toward in-person classes for reading comprehension and practical exercises, with virtual alternatives being less favored in these domains. These differential response patterns suggest that instructional preferences may be mediated by both content type and student demographic factors.

In summary, the results of this part of the survey reveal that the PRC group selects one or another class modality depending on the module: in vocabulary, the results are balanced; in grammar, they prefer virtual classes; and in reading and exercises, they opt for in-person classes. In contrast, the LC group consistently prefers in-person classes, regardless of the module.

The third component of the survey was designed to examine the specific advantages associated with both virtual and in-person instructional modalities. As previously delineated, this section comprised eleven descriptive items addressing the relative merits of virtual and traditional classroom environments across the four instructional modules. Participants were afforded the opportunity to select multiple descriptors that aligned with their perceptions of each teaching modality's effectiveness within the respective modules. The data collected through this methodological approach enables a more nuanced understanding of how different instructional formats are perceived by students. A comprehensive analysis of these responses is conducted to identify which specific attributes of each teaching modality are valued by learners. We believe the findings derived from this analysis are particularly valuable for educational practitioners, as they can be utilized to inform pedagogical decisions regarding the implementation of virtual and in-person learning environments across diverse instructional contexts.

To determine whether an item was considered an advantage of virtual classes, the following calculation was performed: the total number of responses for a given item in the virtual class minus the number of responses for the in-person class. If the result was less than zero, it meant that more students considered virtual classes to be a disadvantage compared to in-person classes for that item. If the result was greater than zero, it meant that more students considered virtual classes to be advantageous in that aspect.

We have analyzed the computational results, which reveal several noteworthy patterns regarding the perceived advantages of virtual and in-person educational modalities across both participant groups. First, a significant consensus between the groups was observed on the majority of the eleven evaluative items. Items 3, 7, and 8 were consistently rated with positive values exceeding zero across all four instructional modules by both cohorts, indicating that virtual classes are perceived to offer distinct advantages in these specific dimensions. Conversely, items 4, 5, 6, 9, 10, and 11 were assigned values below zero by participants from both groups. This finding suggests that students do not recognize virtual instruction as providing advantages relative to in-person learning environments in these particular aspects. A comprehensive assessment of all eleven items leads us to conclude that both groups acknowledge specific benefits inherent to virtual classes, which include enhanced flexibility, the capacity for study plan adjustment, and improved access to internet-based resources. Nevertheless, it should be emphasized that both groups identify several limitations associated with virtual instruction. The quality of teacher-student interaction is perceived to be compromised in virtual settings, as are opportunities for authentic language practice. Moreover, the study environment itself is evaluated less favorably in virtual contexts. These findings are particularly significant as they highlight the nuanced perspectives held by students regarding different instructional modalities, which can be leveraged to inform pedagogical approaches that maximize learning outcomes.

In addition, differences are identified in items 1 and 2. In item 1, the PRC group considers virtual classes to be advantageous in all modules, as they believe that explanations in recorded classes are better organized than in in-person classes. In contrast, the LC group's results for this item show values lower than zero in all modules, indicating that they prefer the organization of explanations in in-person classes. In item 2, the PRC group shows positive values in vocabulary and grammar, suggesting that, in their opinion, recorded classes allow teachers to provide more supplementary explanations. However, the LC group presents negative results in all modules, indicating that they believe in-person classes offer greater advantages in this aspect.

In conclusion, the analysis of the third part of the survey reveals that, for the PRC group, virtual classes offer advantages in the teaching of grammar, particularly in terms of the organization of explanations and the inclusion of supplementary content.

5. Conclusions and Didactic Implications

The objective of this study was to analyze the perceptions of Chinese-speaking students of Spanish as a foreign language regarding in-person classes compared to two types of virtual classes: recorded lessons and live online classes. The results obtained allow for the identification of advantages and disadvantages in each modality. First, both students who participated in in-person classes and those in virtual classes agree that the virtual modality offers greater flexibility in adjusting their study plans and facilitates access to online resources for both students and teachers. However, it is also recognized that interaction among students, and between students and teachers is less effective in virtual environments, reducing opportunities for practicing the target language.

Our comparative analysis of virtual instructional modalities reveals that students attribute superior organization of explanations to recorded lessons in grammar modules, with

this format being evaluated more favorably than even traditional in-person instruction. This preference, however, is not extended to other learning modules where different pedagogical dynamics are at play. Grammar instruction's structured nature likely explains this differential assessment, while other modules demand greater interactive engagement between instructors and learners. In virtual teaching environments, several factors are identified as impediments to the effective organization of interactive learning activities. These include the physical separation between educational stakeholders and technical challenges such as connectivity disruptions, which collectively position virtual instruction at a disadvantage when compared to face-to-face educational settings. Additionally, students perceive that recorded lessons offer more supplementary content than in-person classes, and the expanded availability of which represents a significant advantage that may partially offset the aforementioned limitations in interactive capabilities. These findings enhance our understanding of the relationship between instructional modality and learning domains, suggesting optimal educational approaches require thoughtful integration of delivery formats tailored to specific instructional objectives.

To understand the didactic implications of these findings, it is important to consider the teaching methodology employed in each module. In the vocabulary and grammar modules, students typically play a more passive role, as they primarily follow explanations and examples provided by the teacher. In these cases, the teacher assumes the role of content organizer or narrator. Conversely, in the reading and exercises modules, students participate more actively, as they must demonstrate their comprehension and language production through activities such as answering questions, translating, paraphrasing, or summarizing texts.

This difference in teaching dynamics may explain students' preference for certain class modalities. When teachers adopt a narrator role, as in the vocabulary and grammar modules, students tend to prefer recorded lessons, as they allow them to pause, rewind, and review the content as many times as necessary for better understanding. In contrast, in the reading and exercises modules, where interaction and immediate feedback are essential, students find greater benefits in in-person classes, as they facilitate face-to-face communication with teachers and classmates. Live online classes, on the other hand, face limitations in both the quality of interaction and the inability to revisit sessions multiple times, making them less advantageous according to the results of this study.

In summary, SFL instructors should carefully select the teaching approach that best corresponds to the distinct characteristics of each course module and the didactic objectives. Frequently, a single course comprises modules with diverse methodological demands, thereby requiring educators to employ a flexible and multifaceted teaching strategy. To this end, an effective approach might involve structuring the course into discrete modular units, each designed with a teaching method tailored to its specific needs, rather than applying a uniform framework across the entire curriculum. Thus, within a single session, different teaching formats could be integrated, adjusting each learning unit to the modality that best enhances students' knowledge acquisition. Looking ahead, future studies could examine the application of these strategies across varied educational contexts to validate their effectiveness and further refine the design of SFL classes in both in-person and virtual environments.

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