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Using Online Video Simulation to Teach Consultation Skills: A Professional Development Approach for Student Teachers

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ABSTRACT

As student needs in schools become increasingly complex, the ability to engage in effective consultation with colleagues, counselors, and support staff has become an essential competency for student teachers. This study explores the use of online video-based simulation training as an innovative method to enhance consultation skills in teacher education. A structured simulation-based learning program was developed and implemented with 44 student teachers enrolled in counseling-related programs at universities in Taiwan. The training incorporated realistic case videos, interactive decision-making tasks, and guided debriefing sessions designed to bridge the gap between theoretical coursework and professional practice. Findings from both qualitative and quantitative analyses indicated that the training significantly improved participants' self-efficacy in consultation, particularly in areas such as identifying core problems, using appropriate communication strategies, and engaging in collaborative problem-solving. Participants also reported increased confidence and valued the contextualized, reflective nature of the learning experience. The online format allowed for flexible and repeated practice, enabling iterative skill development in a low-risk environment. These findings highlight the potential of video-based simulation as an effective tool for supporting professional growth in teacher education, especially in preparing

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future educators for consultation roles within school settings. Recommendations for further refinement and application are discussed.

Keywords: Teacher Professional Development; Teacher Consultation; Online Video-Based Simulation; Clinical Simulation

1. Introduction

1.1. The Feasibility of Clinical Simulation Teaching for Teacher Professional Development

The COVID-19 pandemic, which emerged at the end of 2019, has brought significant disruptions to the world. However, it has also prompted the education sector to explore and develop adaptive strategies. To prevent the spread of the virus, many professional training programs transitioned to online formats, ensuring the continuity of teaching and student learning[1, 2]. Teachers, as the primary facilitators of learning and knowledge transmission, have played an indispensable role throughout this process. The ability to provide up-to-date learning content and ensure effective student comprehension heavily depends on teachers' investment in their own professional development. Teacher professional development refers to any activity undertaken to enhance teaching skills and maintain professional competence[3]. Studies have shown that despite the challenges posed by the pandemic, teachers continued to express a need for professional development and sought relevant learning opportunities[4].

The rapid advancement of technology in recent years, particularly the widespread availability of internet connectivity, has facilitated remote learning and global knowledge exchange. This has significantly contributed to teacher professional development in the post-pandemic era, offering opportunities for continued learning through online teaching formats[1, 2].

When discussing the enhancement of teacher professional development, one persistent challenge in the field cannot be overlooked: the gap between theory and practice[5]. This discrepancy stems from learners' limited opportunities to integrate theoretical knowledge with real-world experiences[6, 7]. Therefore, establishing a safe yet realistic learning environment that facilitates the application of theoretical knowledge to problem-solving in authentic contexts is crucial[7]. Against this backdrop, clinical simulation training has demonstrated its potential in addressing this issue[8].

The development of clinical simulation teaching is grounded in multiple learning theories, including cognitive learning theory, social learning theory, and experiential learning theory[9]. This approach involves creating simulated scenarios that closely resemble real-world environments, allowing learners to engage with and practice their knowledge to solve situational problems or tasks, thereby fostering the development of both knowledge and skills[8]. Due to its authenticity[7] and the notion that competencies should be developed within concrete situational contexts[10], clinical simulation teaching has gained increasing attention in the field of teacher professional training in recent years[11–14].

In particular, online video-based simulation has emerged as an innovative approach garnering growing interest[12, 15, 16]. Videos are regarded as a forward-looking tool that virtualizes and concretizes authentic elements within instructional scenarios[17, 18]. This method builds upon the framework of face-to-face clinical simulation by replacing traditional live simulation actors with video vignettes, depicting realistic conflicts, emergencies, interactions, and situational tasks that may arise in school settings. Conducted on online platforms, learners engage with the video scenarios, applying their acquired knowledge to enhance specific skills[8, 19].

Moreover, online video-based simulation offers several advantages in addressing the limitations of face-to-face clinical simulations. These include enhancing learner engagement and motivation through audiovisual effects, providing flexible learning opportunities anytime and anywhere, reducing resource costs, accommodating different learner types (e.g., introverts and extroverts), and supporting personalized learning experiences[11, 20]. As such, this approach serves as an effective response to the professional development needs of teachers in the post-pandemic era, particularly by leveraging online networks to sustain learning and facilitate the integration of theory and practice.

1.2. Application Experiences and Effectiveness of Clinical Simulation Teaching

Current research suggests that online video-based simulation may be beneficial in enhancing the clinical practice skills of pre-service teachers. For instance, Thompson et al.[21] found that online video-based simulation helped pre-service teachers improve their parent-teacher communication skills. In this study, pre-service teachers assumed the role of a teacher, engaged in simulated exercises, and learned how to interact effectively with parents. The findings indicated that participants generally perceived online video-based simulation as realistic and helpful in maintaining composure and clearly articulating their concerns about students' needs during parent-teacher interactions.

Another study by Sung[11] examined the effectiveness of online video-based simulation in enhancing teachers' ability to handle bullying incidents. The results revealed that pre-service teachers in Taiwanese universities who participated in online video-based simulation outperformed those who received traditional face-to-face instruction in recognizing and responding to bullying situations. According to Sung[11], this could be attributed to the rich audiovisual effects of video simulations, which increased learners' engagement and motivation. Additionally, the realistic and vivid scenario presentations enhanced their sense of presence in the situation. Furthermore, the online teaching environment provided more opportunities for practical exercises, real-time assessments, and reflective feedback, facilitating the integration of theoretical knowledge with practical application and ultimately improving professional competence.

However, Sung[11] did not conduct an in-depth exploration of pre-service teachers' engagement experiences, learning processes, perceptions, or specific needs regarding online video-based simulation. As a result, the precise effectiveness of this teaching method remains partially unexplored.

In summary, given that the application of this method in teacher training is still relatively limited, and its specific impact and implementation strategies require further clarification[11, 12, 14, 16], this paper aims to contribute by sharing how the researcher has designed and implemented this teaching method to enhance pre-service teachers' consultation skills. Additionally, this study provides a preliminary investigation into its effectiveness, offering further insights into its potential benefits in promoting teacher professional development. The following section will elaborate on the nature of teacher consultation.

1.3. The Essence and Urgency of Teacher Consultation Training

School teachers have long played a crucial role in supporting students' adaptation to school life and addressing their challenges[22]. However, as society evolves and family structures undergo significant changes, student behavioral issues have become increasingly complex and severe. When teachers are unable to respond effectively, they may experience substantial work-related stress, which can negatively impact their physical and mental well-being[23]. Consequently, there is an urgent need for teachers to receive more professional support in this area[24]. School counselors play a vital role in providing consultation services to address these challenges[25, 26].

Consultation is a structured professional process based on a triadic relationship. In the context of school consultation, this involves the consultant (typically the school counselor), the consultee (often teachers or parents), and the client (usually the student). In this process, the consultant provides direct services and collaborates with the consultee to develop their support strategies and skills, ultimately enabling them to address the client's issues effectively and facilitate positive changes. This process can also be regarded as an indirect yet valuable intervention for the client[27]. Although school counselors generally acknowledge the importance of teacher consultation, many report a lack of confidence in their consultation abilities, highlighting the urgent need to enhance their competence in this area[25, 28, 29].

Contemporary research has extensively explored the essential competencies required for effective consultation. The National Association of School Psychologists[30] emphasizes that effective consultation services should incorporate various consultation, collaboration, and communication strategies, along with skills in designing, implementing, and evaluating interventions. Furthermore, Rosenfield et al.[31] highlight core competencies essential for school consultation, including relationship-building, problem assessment, and consultation in multicultural contexts. These competencies are fundamental to the successful implementation of consultation models. Additionally, the cultural relevance of a consultation model and the clarity of its

procedural steps are critical factors in ensuring its effectiveness [25, 32].

Building on this foundation, Sung [33] developed a collaborative consultation model based on competence expansion and support, tailored to the cultural context of Taiwan. This model was constructed based on insights from 89 Taiwanese scholars and practitioners and integrates theoretical perspectives such as the multicultural school consultation framework [32]. The model emphasizes context-sensitive strategy development, interprofessional collaboration and respect, and positive reinforcement and support. It consists of four key phases: (1) Structuring and Relationship Building; (2) Exploration and Insight; (3) Action and Follow-up; (4) Reflection and Growth. This process begins with clarifying consultation goals and establishing relationships, followed by data collection and goal setting, progressing to the implementation of diverse strategies and effectiveness monitoring, and culminating in professional and experiential growth (see **Figure 1**). To align with the research context and enhance its practical applicability, this study adopts this consultation model as the primary instructional content for the online video-based simulation course.

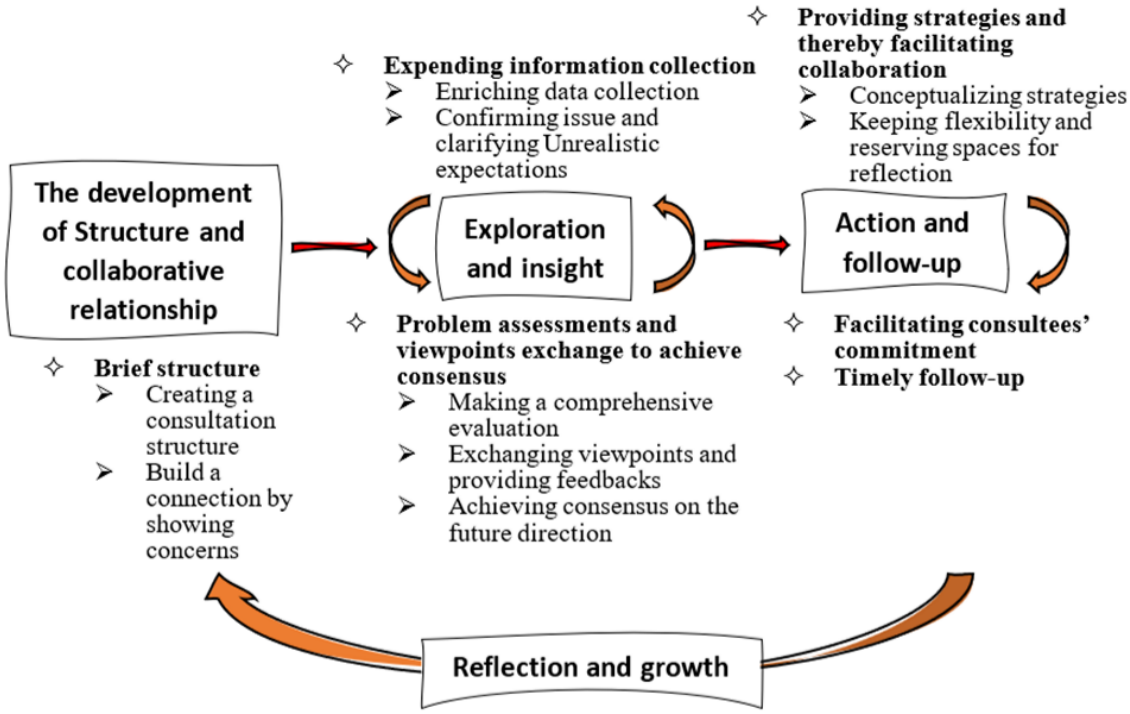


Figure 1. Collaborative Consultation Process Based on Competence Expansion and Support.

1.4. Development of the Online Video-Based Simulation Teaching Program Framework for the Development of Simulation-Based Teaching

The development of the online video-based simulation teaching program was informed by previous discussions on the nature of clinical simulation teaching [12, 34, 35]. By integrating relevant learning theories, the researcher proposed a framework for developing online video-based simulation teaching [11], which is outlined as follows.

First, simulation-based teaching aims to enhance teachers' professional competencies. Blömeke et al. [36] developed the Competence Continuum Model, which conceptualizes competence as a process that extends from individual dispositions—including cognitive, affective, and motivational aspects—to situation-specific skills and behavioral performance. These situation-specific skills encompass: (1) Perception—the ability to recognize problems in the environment based on one's cognition, emotions, and motivation; (2) Interpretation—the ability to make reasonable sense of the problem, drawing on cognitive, affective, and motivational factors; (3) Decision-making—the ability to choose an appropriate response strategy based on one's interpretation.

Research has shown that improving these situation-specific skills is crucial for strengthening an individual's competencies, as it facilitates the effective transformation of personal dispositions into concrete actions [11, 12, 18, 37]. Thus, incorporating the Competence Continuum Model into the design of clinical simulation teaching is of significant value in achieving instructional goals [11, 12, 14].

Furthermore, the core structure of clinical simulation teaching comprises four key elements [11, 12]. To enhance its effectiveness, the design also draws on key factors identified through meta-analytic research by Issenberg et al. [35], which are incorporated into the following components:

1. Framework of Theoretical Foundations: Before the simulation-based teaching process begins, clear learning objectives and instructional procedures must be established [34], providing learners with a well-defined direction for self-assessment. Additionally, for the competencies being cultivated, detailed theoretical concepts and technical training should be provided, helping students build a cognitive framework related to those competencies. This serves as a foundation to guide students' responses in specific scenarios [36, 38, 39]. Issenberg et al. [35] also emphasized that these elements are essential for effective clinical simulation teaching, enabling learners to refer to established guidelines for skill development and knowledge enhancement.
2. Promotion of Authentic Learning Experiences: According to experiential learning theory [40], knowledge construction occurs when learners immerse themselves in authentic experiences, fostering reflection and skill acquisition. Social cognitive theory [41] further highlights that observing and imitating real-world interactions can facilitate knowledge and skill development, while self-regulation mechanisms support goal attainment. Therefore, the design of clinical simulation teaching should incorporate realistic and contextually relevant tasks and scenarios (Dotger, 2013) [8]. Issenberg et al. [35] outlined several key elements for effective clinical simulation design:
    (1) Controlled Environment: Simulations should be conducted in a controlled setting, allowing instructors to effectively observe and assess learners' progress while ensuring safety and sustained focus.
    (2) Task Difficulty Levels: The simulation tasks should vary in complexity, enabling learners to gradually enhance their specific skills and build confidence.
    (3) Diverse Simulation Cases: A broad range of simulation cases should be designed. For instance, in consultation simulations, teachers' backgrounds and the issues they address should be varied to ensure comprehensive training.
3. Development of Learning Cycles: Dieker et al. [34] emphasized that clinical simulation teaching should include three critical steps:
    (1) Action: Engaging in the simulation exercises.
    (2) Feedback and Reflection: Recognizing and reflecting on one's own experience while receiving feedback and suggestions for improvement.
    (3) Adjustment and Reapplication: Implementing revised concepts and strategies in subsequent practice to reinforce learning outcomes.

These elements align with Issenberg et al.'s findings [35] on effective clinical simulation teaching, which highlight the importance of repetitive practice opportunities and ongoing feedback. Additionally, they stress the need for individualized learning, allowing learners to plan their own progress based on their unique learning needs.

4. Facilitation of Collaborative Learning: Based on social cognitive theory [41] and scaffolding learning theory [42], collaborative learning environments encourage learners to share experiences, receive peer feedback, and develop skills through guided interaction. This process enhances observational learning and instructional scaffolding, which are crucial for skill acquisition. Issenberg et al. [35] further emphasized that integrating multiple learning strategies—such as discussions and reflections—into clinical simulation teaching enhances its overall effectiveness.

By synthesizing these key elements, the researcher has proposed a framework for the design of clinical simulation teaching [11]. The detailed structure is illustrated in **Figure 2**.

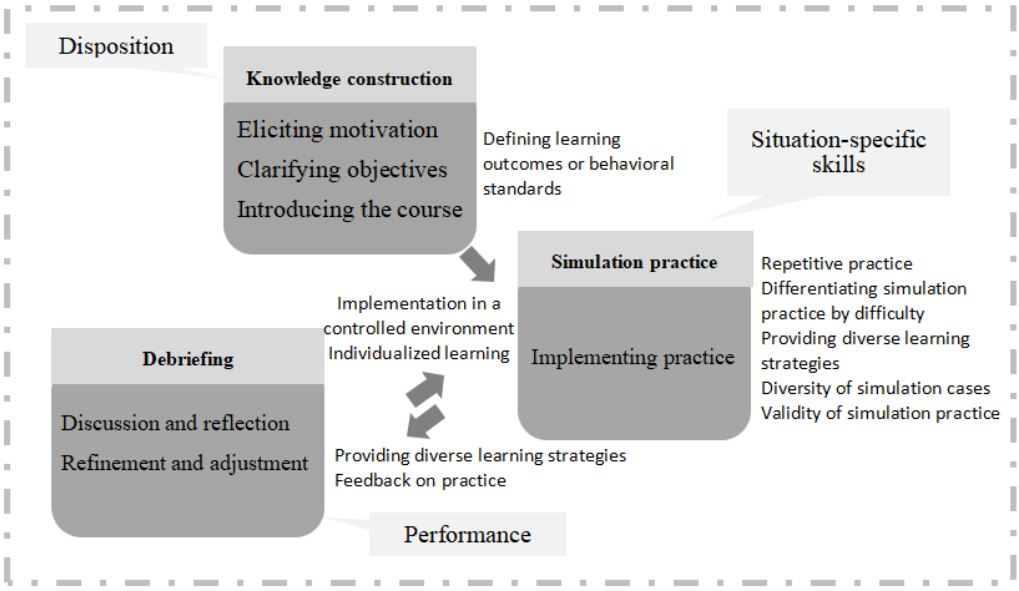


Figure 2. Framework for Effective Clinical Simulation Teaching Design.

This framework is structured into three phases:

1. Introduction—This phase aims to enhance learners' motivation through course planning. It involves clarifying course objectives and expected learning outcomes, providing learners with clear guidance and a basis for subsequent assessment. Additionally, this phase introduces key concepts and knowledge to be developed, fostering professional competency learning. This corresponds to the competence foundation in Blömeke et al.'s [36] Competence Continuum Model, which emphasizes the construction of specific cognitive, affective, and motivational components (i.e., dispositions).
2. Simulation—In this phase, learners engage in simulated exercises that allow them to interact with realistic tasks in a controlled environment. By utilizing perception, interpretation, and decision-making—key situation-specific skills in Blömeke et al.'s model [36]—learners transform acquired knowledge into action to address challenges presented in the simulated scenarios. This phase aims to enhance specific competencies and skills. To ensure the effectiveness of the simulation experience, key design elements of simulation-based teaching [35] must be incorporated, such as repetitive practice, varying levels of task difficulty, multiple learning strategies, diverse clinical simulation cases, and the validity of simulation exercises.
3. Debriefing—This final phase aligns with the performance stage in Blömeke et al.'s [36] Competence Continuum Model. Educators guide learners in analyzing and reflecting on their performance in the simulation exercises, consolidating learning outcomes, identifying areas for improvement, and re-engaging in practice. This iterative process follows the learning cycle framework, allowing learners to refine their specific skills and competencies.

It is important to note that clinical simulation teaching should be conducted in a controlled environment, incorporate personalized learning experiences, and be structured into a series of well-designed instructional activities. This structured approach optimizes learners' competency development. The framework proposed in this study serves as the foundation for designing the online video-based simulation course aimed at enhancing teachers' consultation skills.

Taken together, existing studies provide promising evidence regarding the potential of simulation-based approaches in teacher education. However, this body of literature also reveals several notable limitations that constrain our understanding of how such approaches function in consultation training contexts. Methodologically, many studies rely on outcome-based evaluations, with relatively limited attention to learners' engagement processes, decision-making trajectories, and reflective meaning-making during simulation activities. Substantively, consultation-related competencies are

often embedded within broader instructional or behavioral training, rather than examined as a distinct and complex professional practice. Moreover, although cultural context has been acknowledged as an important factor in consultation effectiveness, few simulation-based studies have explicitly integrated culturally grounded consultation models into their instructional design. As a result, our understanding of how simulation-based training supports consultation competence development within specific cultural and educational contexts remains incomplete.

1.5. Research Objectives

This study aims to explore the application and feasibility of online video-based simulation training in teacher professional development, particularly in enhancing teacher consultation skills. By developing and implementing a structured simulation-based teaching framework, this research seeks to:

1. Evaluate the effectiveness of online video-based simulation training in improving pre-service teachers' consultation competencies.
2. Clarify pre-service teachers' engagement experiences, learning processes, and perceptions of the online simulation training.
3. Examine the pedagogical benefits and challenges of integrating online video-based simulation into teacher training programs.

2. Methods

2.1. Participants

During August and September 2023, the researcher implemented a three-week, ten-hour educational training program at two national universities in Taiwan. Participants were recruited using a course-based convenience sampling strategy. Specifically, the researcher contacted two instructors of counseling-related courses, and students enrolled in these courses were invited to participate in the training program on a voluntary basis. Participation was not linked to course grades or evaluation. A total of 44 pre-service teachers participated in the study (9 males, 35 females; 34 undergraduate students and 10 master's students). All participants were enrolled in counseling-related academic programs and had not received prior consultation-specific training or engaged in formal teacher consultation practice. This sample was therefore considered appropriate for examining the feasibility and learning experiences of consultation training among pre-service teachers at an early stage of professional development, although it was not intended to be statistically representative of all pre-service teachers in Taiwan.

2.2. Instruments

This study primarily employed an embedded experimental design within a mixed-methods research framework, where qualitative research (i.e., interviews) was integrated into a predominantly quantitative approach (i.e., survey-based assessment of training effectiveness) to provide a more comprehensive understanding of the research findings.

2.2.1. Semi-Structured Interview

To assess participant engagement and effectiveness, this study employed two data collection methods: focus group interviews with open-ended online responses and the Chinese version of the Consultation Self-Efficacy Assessment Scale. The primary data collection method involved focus group interviews and open-ended online responses, aiming to explore participants' learning experiences, including course characteristics, practical applications, and perceived benefits. Discussions focused on four main themes: perceptions of the intervention and its impact on their understanding of teacher consultation, the practical applicability of acquired knowledge and skills in real-world settings, the most memorable aspects of the intervention, and participants' needs, expectations, and suggestions for improving the course.

2.2.2. Consultation Self-Efficacy Assessment Scale

In addition to qualitative data collection, this study employed the Consultation Self-Efficacy Assessment Scale developed by Fan et al.[43] to quantify improvements in participants' consultation skills. The scale consists of 44 items measured on a nine-point Likert scale and assesses four core dimensions: process and awareness, cultural sensitivity, intervention, and facilitation. The scale has demonstrated strong reliability and validity and has been widely applied in re-

lated research, receiving positive evaluations [43, 44]. It also exhibits cross-process and cross-cultural applicability in measuring consultation self-efficacy [43, 44].

2.3. Procedures

The research procedures of this study were reviewed and approved by an institutional review board (approval No. CCUREC110111001). This study primarily underwent the following process: (1) developing an online video-based simulation teaching approach; (2) implementing the intervention and collecting data; and (3) conducting data analysis.

2.3.1. Development Process of the Online Video-Based Simulation Teaching for Teacher Consultation Competency

Building upon the previously established instructional framework, the researcher also outlines the concrete development process of this course. The following discussion is divided into two major phases:

Design of Simulation Videos. The core component of this course lies in the design of simulation videos and their integration into an online teaching platform. Therefore, the first step was the development of simulation videos. The researcher followed the three-stage high-quality simulation video construction model proposed by Dieker et al. [34], which includes: (1) selecting practice-based content grounded in empirical data, (2) developing simulation video scripts, and (3) filming and evaluating the videos.

Stage 1: Selection of Practice-Based Content Grounded in Empirical Data. To create authentic and contextually relevant simulation videos that illustrate both appropriate and inappropriate consultation practices by school counselors, three key data collection methods were employed: 1. Reviewing relevant literature; 2. Conducting interviews with in-service teachers to gather real-world cases; 3. Analyzing the researcher's prior consultation experiences. These data sources provided rich contextual information regarding the consultant (school counselor), consultee (teacher), and student cases, as well as potential consultation intervention processes and strategies [19]. Based on this information, an initial set of simulation video scripts was constructed.

Stage 2: Development of Simulation Video Scripts. Building upon the data collected in Stage 1, two practice-oriented simulation videos were developed, reflecting inappropriate consultation practices based on the proposed consultation model [33]. These videos were carefully designed to capture diverse consultation contexts, including: (1) A variety of consultees and student cases; (2) Different types of student issues and teacher concerns; (3) Various possible reactions within the consultation process. This approach ensured that the simulation videos were diverse and realistic, providing learners with exposure to multiple consultation scenarios. Additionally, a teaching-oriented simulation video was developed, demonstrating an appropriate consultation process aligned with the teacher consultation model [33]. To enhance the quality of the scripts, two simulation video design experts and four in-service teachers participated in the script development process, contributing their insights to refine the content.

Stage 3: Filming of Simulation Videos. Following the completion of the script development phase, six actors were recruited to portray characters that aligned with the roles outlined in the scripts. A total of three simulation videos were filmed in realistic consultation settings, including: (1) School offices in junior high and high schools; (2) Classroom hallways; (3) Counseling rooms. After filming, the previously mentioned experts were invited to evaluate the quality of the videos based on standardized criteria. The evaluation focused on: (1) Authenticity and representativeness of the consultation scenarios; (2) Accuracy of script execution; (3) Resemblance to real-world consultation settings; (4) Alignment with the consultation process [12, 18]. Once the simulation videos were finalized, they were uploaded to Edpuzzle, a free online teaching platform. Edpuzzle allows instructors to create interactive online classrooms, upload instructional videos, and design embedded assessment questions to collect learner responses, track performance, and provide feedback [11].

Development of the Intervention Course

With the simulation videos completed, the researcher proceeded to design the full intervention course based on the clinical simulation teaching framework and the developed video materials. The intervention course consists of the following stages:

Motivation Enhancement. Participants are invited to register on the Edpuzzle platform and watch an introductory presentation explaining the course objectives, content,

structure, and instructional methods.

Introduction to Teacher Consultation. Participants watched a video-based lecture introducing the purpose and significance of teacher consultation, key consultation competencies, the consultation process model, and essential considerations for effective consultation practice. In addition, participants viewed a teaching-oriented demonstration video illustrating a complete and effective consultation process based on the teacher consultation model [33]. This demonstration video was approximately 2 h in length and was designed to provide learners with a comprehensive overview of the consultation process, including relationship building, problem exploration, strategy development, and follow-up. This stage aimed to establish a foundational understanding of consultation practice before learners engaged in simulation exercises (see **Figure 3**).

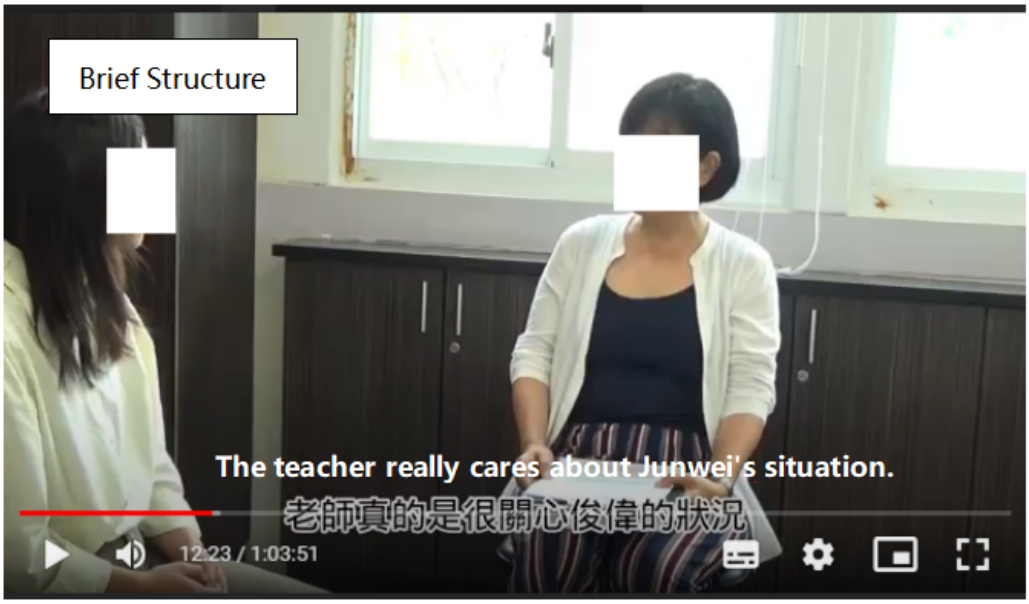


Figure 3. Demonstration Video of Appropriate Teacher Consultation Simulation.

Simulation Practice. Before engaging in simulation practice, participants were provided with background information for each case, including the student context, the consultee's (teacher's) background and concerns, the consultation setting, and a brief outline of the consultation process. Participants then engaged in simulation-based learning activities using short video cases delivered through the Edpuzzle platform. Each simulation video was approximately 7–8 min in length and followed a standardized structure, including comparable consultation phases and predetermined decision points, to ensure consistency across cases.

To support progressive learning, the simulation cases were intentionally sequenced with increasing levels of complexity. The first simulation video presented a consultation scenario in which a teacher's inappropriate handling of a classroom situation led to student resistance and subsequent parental dissatisfaction. This case primarily focused on foundational consultation competencies, such as identifying ineffective teacher responses, clarifying misunderstandings, and facilitating communication among teachers, students, and parents. By emphasizing core consultation structures and basic relational dynamics, this initial case allowed learners to practice essential situation-specific skills in a relatively straightforward context.

The second simulation video introduced a more complex consultation scenario involving a gender-diverse student, issues related to the student's emotional development, and tensions arising from the teacher's personal values. Compared with the first case, this scenario required learners to integrate consultation strategies with greater ethical sensitivity, cultural awareness, and value-based reflection. Given the increased relational, emotional, and contextual complexity of this case, it was intentionally positioned later in the course to allow learners to build upon the consultation framework established through the first simulation before engaging with more nuanced and challenging consultation

dynamics.

During each simulation video, interactive open-ended questions appeared at predetermined points to prompt learners' reflection and analysis. These questions encouraged learners to attend to salient contextual cues, interpret consultation-related challenges, and make reasoned decisions, such as identifying critical issues in the interaction and proposing appropriate consultation responses. The prompts were explicitly aligned with the Competence Continuum Model [36] and were designed to elicit situation-specific skills related to perception, interpretation, and decision-making. The inappropriate consultation practices depicted in the videos were grounded in the teacher consultation model [33] and served as structured learning stimuli for analysis and reflection. All participant responses were automatically collected through the Edpuzzle platform to support subsequent feedback, debriefing, and analytic procedures, as illustrated in **Figure 4**, which provides an overview of the simulation workflow, embedded prompts, and response collection process.

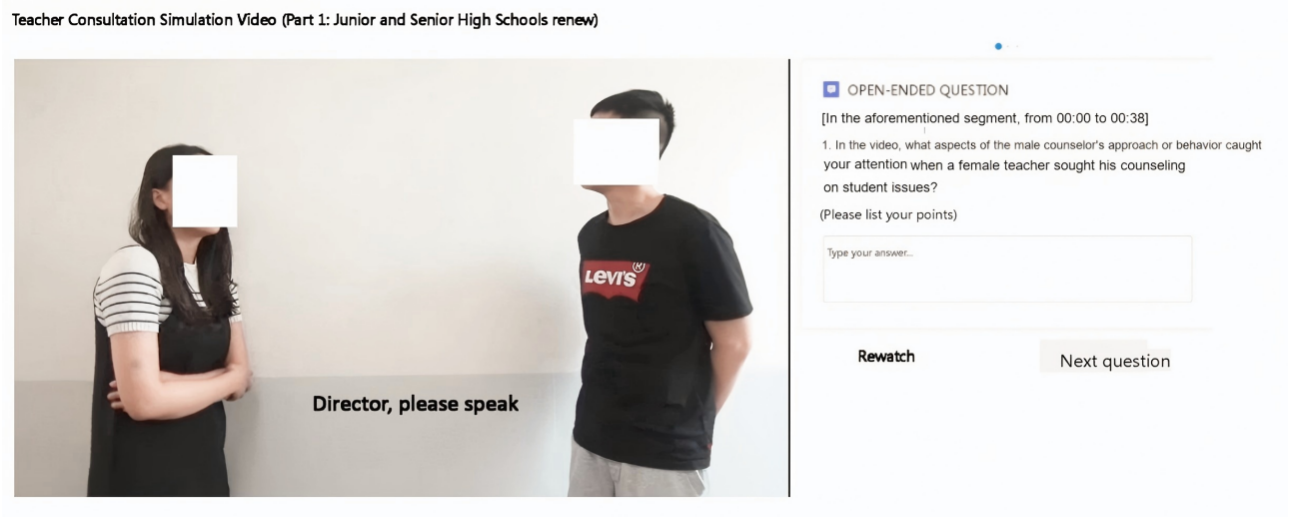


Figure 4. Simulation Practice Framework on the Edpuzzle Teaching Platform.

Debriefing. After completing a simulation exercise, the typical simulation debriefing model is implemented. The researcher analyzes participants' responses, providing structured feedback through the platform. The debriefing process focuses on: (1) Identifying appropriate responses that should be retained; (2) Suggesting modifications for less effective responses; (3) Connecting participant reflections to the effective teacher consultation model; (4) Encouraging participants to reflect on how consultation should be conducted appropriately. After the first debriefing session, participants are invited to engage in a second round of simulation practice and debriefing to reinforce learning.

Course Integration and Evaluation. In the final stage, the instructor provides a summary of key concepts, discusses participants' learning progress, and shares feedback on their performance. The course concludes with reflections and evaluations, ensuring that learners have a comprehensive understanding of teacher consultation processes.

2.3.2. Implementation of the Intervention and Data Collection

The procedure began with an introduction to the study, after which the pre-service teachers signed the informed consent form. Subsequently, before the intervention commenced, the Consultation Self-Efficacy Assessment Scale was administered as a pre-test to establish a baseline understanding of their perceived competence in teacher consultation. Following this, the intervention was implemented. Upon completion of the intervention, the same assessment scale was administered as a post-test to evaluate the effectiveness of the simulation training. Additionally, three focus group sessions were conducted, each involving 10 to 15 students, to explore their experiences and perspectives on the simulation training. Notably, this training lasted a total of 10 instructional hours. This duration was considered appropriate given the course-based nature of the study and the characteristics of the participants. The pre-service teachers involved in this

study had not received formal training specifically focused on consultation. However, they had completed foundational coursework related to school guidance and counseling. As a result, they already possessed basic conceptual knowledge of counseling principles and communication skills, which are central to effective consultation practice. The training, therefore, aimed to support the activation, reorganization, and application of existing competencies within consultation-specific contexts rather than introducing entirely new skill sets. In addition, the instructional design emphasized intensive and iterative learning through three complete cycles of simulation practice, feedback, and reflection. Simulation-based education research has suggested that structured and repeated practice cycles can meaningfully support the development of situation-specific skills, even within a relatively limited instructional time frame, particularly when learners are actively engaged in decision making and guided reflection. Accordingly, the present intervention was designed to maximize learning intensity and engagement within constrained course hours, supporting meaningful initial growth in consultation-related competencies. At the same time, it is acknowledged that longer-term or more advanced training would be necessary for sustained professional development and mastery.

2.3.3. Data Analysis

For the quantitative data obtained from the self-efficacy assessment scale, a paired-samples *t*-test was conducted to examine participants' pre- and post-training consultation competence. The qualitative data, including focus group interview recordings and open-ended written responses, were transcribed verbatim prior to analysis. To ensure participant anonymity, all transcripts were anonymized using identification codes.

A thematic analysis approach [44] was employed to analyze the qualitative data. Two trained coders independently conducted the initial coding process. First, both coders familiarized themselves with the data through repeated readings. An initial coding framework was then developed inductively based on 20% of the dataset. Intercoder reliability was assessed using Cohen's kappa, which ranged from 0.66 to 0.81 at this stage, indicating acceptable to good agreement [45]. Following discussion and refinement of the coding scheme, the finalized framework was applied to the remaining data.

Throughout the analysis, the two coders met regularly to compare coding decisions, discuss discrepancies, and reach consensus on emerging themes. The average Cohen's kappa across the full dataset ranged from 0.73 to 0.88, reflecting good to very good intercoder reliability [45]. To enhance the trustworthiness of the findings, several triangulation strategies were employed. Methodological triangulation was achieved by integrating qualitative findings with quantitative results from the consultation self-efficacy scale. Analyst triangulation was ensured through independent coding and consensus discussions between the two coders. In addition, emerging themes were continuously compared with relevant theoretical frameworks and existing literature to support analytic rigor and interpretive credibility.

Regarding data analysis through thematic analysis, it followed the six-phase procedure proposed by Squires [44], with iterative movement between phases to ensure analytic rigor and coherence.

Phase 1: Familiarization with the Data. Both coders repeatedly read the interview transcripts and open-ended responses to gain an overall understanding of participants' learning experiences. During this phase, preliminary notes were taken to capture initial impressions related to participants' perceptions of course structure, simulation practice, feedback, and applicability to future professional roles.

Phase 2: Generating Initial Codes. Initial codes were generated inductively from the data, focusing on meaningful units relevant to the research objectives. Examples of initial codes included *"bridging theory and practice," "learning from inappropriate consultation examples," "safe environment for practice," "repeated viewing and self-paced learning,"* and *"feedback supports reflection."* Coding was conducted independently by the two coders to capture diverse analytic perspectives.

Phase 3: Searching for Themes. Related codes were then grouped into broader candidate themes that reflected recurring patterns across participants. For instance, codes related to structured instruction, integration of theory and practice, and clarity of learning progression were clustered into a preliminary theme concerning instructional structure. Similarly, codes associated with observation of simulated cases, reflection on inappropriate responses, and guided feedback were grouped into a theme related to simulated practice and reflective learning.

Phase 4: Reviewing Themes. Candidate themes were reviewed against the original data to ensure internal coherence and distinctiveness between themes. At this stage, some themes were refined, merged, or redefined. For example, themes initially labeled as *"video usefulness"* and *"practice realism"* were integrated into a higher-order theme emphasizing realistic and contextualized learning experiences.

Phase 5: Defining and Naming Themes. Final themes were clearly defined to capture their core meanings and relevance to teacher consultation training. Themes were named to reflect both participants' experiences and their pedagogical significance, such as *"Teaching structure enhances theory–practice integration," "Simulated practice and feedback facilitate reflective learning,"* and *"Realistic and safe environments support individualized skill development."*

Phase 6: Producing the Report. In the final phase, representative excerpts were selected to illustrate each theme, and analytic narratives were developed to explain how these themes contributed to participants' perceived learning outcomes and engagement experiences. Throughout this process, the themes were continuously interpreted in relation to the study's instructional framework and relevant theoretical perspectives.

3. Results

The following section presents a preliminary analysis of the outcomes from the implementation of this course.

3.1. Quantitative Results

The study administered a scale to students before and after their participation in the course to preliminarily assess the effectiveness of the course in enhancing their teacher consultation competencies. First, the mean scores for each dimension—Process and Awareness, Facilitation, Cultural Sensitivity, Intervention, and the Total Scale—were calculated. In the pre-test, students' average scores for these dimensions were 6.06, 5.73, 5.83, 5.60, and 5.80, respectively. In the post-test, the corresponding scores increased to 7.04, 6.96, 6.87, 6.90, and 6.95. These results are presented in **Table 1**.

Table 1. Descriptive Statistics of Consultation Self-Efficacy.

Dimensions	Pre-Test			Post-Test	
	N	*M*	*SD*	*M*	*SD*
Process and Awareness	44	6.06	1.20	7.04	1.04
Facilitation	44	5.73	1.30	6.96	1.16
Cultural Sensitivity	44	5.83	1.44	6.87	1.33
Intervention	44	5.60	1.30	6.90	1.13
Total	44	5.80	1.28	6.95	1.10

Furthermore, a paired-sample *t*-test was conducted to analyze whether there were significant differences between the pre-test and post-test scores for each dimension and the total score. The results indicated that students' post-test scores for all dimensions and the total score were significantly higher than their pre-test scores (Process and Awareness: $t = 6.06$, $p < 0.001$; Facilitation: $t = 8.24$, $p < 0.001$; Cultural Sensitivity: $t = 6.32$, $p < 0.001$; Intervention: $t = 7.85$, $p < 0.001$; Total Score: $t = 8.04$, $p < 0.001$) (see **Table 2**).

Table 2. Paired Sample *t*-Test of Consultation Self-Efficacy.

Dimensions	*M*	*SE*	*t*	95% Confidence Interval	
				Lower Bound	Upper Bound
Process and Awareness	0.98	0.16	6.07***	0.65	1.30
Facilitation	1.23	0.15	8.24***	0.93	1.53
Cultural Sensitivity	1.03	0.16	6.32***	0.70	1.36
Intervention	1.30	0.17	7.85***	0.96	1.63
Total	1.15	0.14	8.04***	0.86	1.43

Note: *** $p < 0.001$.

In other words, after participating in this course, students demonstrated a significant increase in confidence regarding their teacher consultation competencies. Specifically, they showed greater confidence in understanding and implementing teacher consultation processes and details, demonstrating cultural sensitivity and collaboration with clients from diverse backgrounds, formulating and executing intervention plans based on presenting issues, and effectively communicating and coordinating with clients to facilitate their engagement in the teacher consultation process and exploration of personal issues and solutions. These findings provide preliminary evidence that this course intervention is effective in supporting teachers' professional development.

3.2. Qualitative Results

To gain a more in-depth understanding of students' perspectives on this instructional approach, a qualitative content analysis was conducted. This analysis provides insight into why the course was effective. The results are presented in two key areas: students' overall participation experience and the effective elements of the course.

3.2.1. Overall Course Experience—Teaching Structure Enhances Learning Outcomes and Practical Knowledge Acquisition

Students generally recognized the value of the course's structured instructional design, which involved conceptual explanations alongside simulated demonstration videos, followed by practice exercises and reflective feedback. This structured approach helped consolidate their learning outcomes. As Student C04 noted, *"The online simulated teaching method, which involves learning theoretical concepts, watching videos, and then engaging in practice exercises to test understanding, facilitates learning. It allows for the immediate integration of theory and application, verifying the acquired skills and competencies."* Similarly, Student C03 stated, *"Having demonstration videos after learning counseling theories provides a great opportunity to bridge theory with practical learning."*

Overall, this instructional approach effectively integrates theory and practice, enabling students to apply what they have learned in real-world settings, thereby strengthening their practical skills, conceptual understanding, and mastery of techniques. Furthermore, the knowledge and skills taught in the course were perceived as highly practical, as they aligned with students' professional development needs and the demands of their future careers. For example, Student A05 highlighted the necessity of this professional development: *"I find this course highly practical. As a full-time school counselor, I am one of the few individuals in the school considered to have a counseling background, so I am often consulted on related issues by other teachers. Recently, during my internship, I observed that teachers frequently visit the counseling office for consultations."* Likewise, Student B06 mentioned, *"I think this course is very useful for my future work because it provides a clear understanding of the overall consultation process and allows me to apply the learned skills in a school setting."*

3.2.2. Effective Elements of the Course

Simulated demonstration videos enhance visual understanding of consultation scenarios and procedures, deepening learning. Students generally agreed that the combination of instructional explanations with simulated demonstration videos significantly contributed to their learning of clinical consultation skills and techniques. The primary reason for this effectiveness was that these videos concretely illustrated the details of consultation sessions, allowing students to observe and grasp the consultation process and its possible variations. For instance, Student B12 remarked, *"I found the videos helpful in understanding the reasons why teachers might seek consultation. The videos clearly depicted different situations and locations where consultation might take place, helping me anticipate what could happen during actual consultation sessions."* Similarly, Student B13 emphasized the value of these videos for new counselors: *"For novice full-time school counselors, these videos provide a clearer picture of what they might encounter in the workplace."*

Moreover, the demonstration videos not only modeled appropriate consultation techniques but also provided a step-by-step visualization of effective consultation processes. This approach facilitated students' understanding of consultation strategies and procedures beyond mere theoretical imagination. As Student Chen Ziling noted, *"Providing real-life case studies for analysis offers a concrete explanation... It is much more relevant than merely explaining theories or reading from textbooks."* Student A03 echoed this sentiment, stating, *"The live-action demonstration videos help me better*

understand what should be said during consultation sessions rather than just learning theories."

Beyond technical skill acquisition, these videos also enhanced observational learning by capturing implicit aspects of consultation, such as professional attitudes and values. This holistic approach to learning contributed to students' overall comprehension of consultation principles. For example, Student A04 reflected, *"Patience and critical thinking are essential life skills that help me avoid making premature judgments, which is valuable not just in consultation but in everyday interactions."*

Simulated practice and feedback facilitate strategy review, application, and self-reflection. Students generally identified simulated practice as a crucial component of the course. They found it beneficial because it allowed them to observe inappropriate consultation approaches depicted in the videos, learn from these mistakes, and reflect on how to avoid similar errors in their own practice. Student A09 articulated this learning process clearly: *"Learning involves breaking down existing perceptions and incorporating new knowledge. The videos exposed us to many inappropriate responses, making us aware of these potential mistakes, which was very helpful for learning."* Similarly, Student B11 emphasized the value of reflection: *"This practice enhances my consultation skills. For example, when writing down how I would respond, I could reflect on others' behaviors and learn from them. In one of the first practice videos, a male counselor imposed many incorrect values regarding same-sex issues. This helped me realize the importance of maintaining an objective stance in consultation."*

Additionally, simulated practice provided an opportunity to apply learned knowledge in practical scenarios. By observing the video content and considering how to respond to the presented situations, students were able to connect their consultation knowledge and skills to real-life applications, selecting appropriate responses and implementing them accordingly. Furthermore, the specific feedback provided by the instructor after the practice sessions helped students assess their own performance, refine their skills, and make necessary improvements, reinforcing their practical learning experience.

For example, Student B09 described the benefits of these exercises: *"After completing two videos, I gained a deeper understanding of consultation techniques for teachers. The exercises also prompted self-reflection, such as how to quickly identify the core issues that teachers seek consultation for and how to communicate effectively to ensure they feel comfortable and supported."* Student C08 similarly highlighted the importance of feedback: *"Post-practice feedback is crucial. It helps me understand which aspects of my performance were strong and which areas need improvement. The feedback also connects to previously learned concepts, allowing me to build on this foundation when considering how to respond. Compared to merely learning theories, this approach is much more concrete and practice-oriented."*

Simulated practice provides a safe and realistic environment for individualized learning. Students mentioned that simulated video exercises offer a safe and realistic environment to strengthen their practical consultation skills. As Student C02 stated, *"I think this kind of practice is very helpful because, in real-life settings, many factors, such as ethical concerns, make it difficult to directly practice handling sensitive issues. You can't expect a teacher to come to you with a real student-related problem and then use them as a practice case to test your response skills. If handled poorly, the situation could become even more serious. Therefore, simulated practice serves as a good alternative, allowing us to engage with real-world cases in a controlled setting."* Similarly, Student A01 noted, *"Reality isn't like a video that can be replayed; you have to respond immediately in the moment. Having this kind of practice is great."*

Moreover, the accessibility and flexibility of these materials contribute to individualized learning. Since the videos can be revisited and reviewed multiple times, students can pace their learning according to their own needs. This allows them to focus on unfamiliar aspects, repeatedly observe key sections, and refine their understanding. As Student A15 pointed out, *"Using videos makes it easier to review. If I don't understand something, I can just watch it again."*

Realistic case scenarios facilitate contextual engagement and deepen learning outcomes. Students identified the realism of the simulated demonstration and practice cases as a key factor in effective learning. They emphasized that cases should be close to real-life situations, with believable characters and realistic scenarios that reflect actual professional challenges. The closer the cases were to real-world contexts, the easier it was for students to engage in the learning process, reflect on their own experiences, and stay fo-

cused without being distracted by unrealistic portrayals.

For instance, Student A08 remarked, *"The scenarios presented in this course are all highly plausible and realistic... Not only are the issues authentic, but even the roles of teachers, principals, and school counselors are convincingly portrayed. This makes the learning experience particularly valuable."* Similarly, Student C05 noted how the authenticity of the cases prompted reflection: *"The last case was especially realistic. In educational settings, it's common for teachers' efforts to be disproportionate to students' responses. Watching this case made me reflect on whether I have truly understood my students' needs."*

Context-specific techniques provide a structured learning framework and support self-assessment. Students reported that the simulated practice exercises incorporated three context-specific techniques, each accompanied by targeted questions that provided an effective learning structure. The first technique, *awareness*, encouraged students to pay closer attention to the simulated scenario. The second technique, *interpretation and reflection*, offered students space to analyze the problem, explore its potential causes, and relate it to prior learning experiences. Finally, the third technique, *decision-making and action*, guided students in identifying appropriate responses based on their experiences and formulating effective actions to address the problem. This structured approach was seen as beneficial for deepening learning outcomes.

As Student C03 explained, *"I usually notice what I consider inappropriate behaviors or responses. My attention is drawn to them based on my personal experiences or how they align with the theoretical framework taught in class. Thinking about how I would react allows me to reflect on the best course of action, and I often recall examples or responses that the instructor has demonstrated. These three questions help guide me toward a more structured way of thinking."* Similarly, Student A15 emphasized the value of this approach: *"This helps us think more critically about the scenarios presented in the videos and how we should respond."*

Additionally, these context-specific techniques serve as a self-assessment tool, enabling students to evaluate their understanding of consultation skills and concepts. By identifying areas where their performance was lacking, they could focus on relearning and refining their competencies. As Student A12 observed, *"Answering these questions allows me to test whether I have truly understood the information provided by the instructor in the first lesson."*

4. Discussion

This study primarily provides a framework for developing online simulated video-based instruction and illustrates its application in fostering student teachers' consultation competencies. The preliminary findings suggest that this instructional approach is effective in enhancing professional knowledge and skills. The following discussion examines the results in detail and provides recommendations.

4.1. Online Simulated Video-Based Instruction as a Potential Tool for Teacher Professional Development

The preliminary quantitative and qualitative analyses indicate that the developed instructional framework effectively enhances learners' consultation competencies. These findings support the efficacy and practicality of the instructional framework, suggesting its potential as a tool for facilitating teacher professional development [11, 12].

A closer examination of the qualitative data reveals that the effectiveness of this instructional model stems, in part, from the structured introduction of competency development concepts, followed by the visual representation of these concepts through simulated videos. This approach positively impacts learning outcomes by helping students construct relevant cognitive schemas and mental models, enabling them to respond appropriately to specific consultation scenarios [36]. Furthermore, the use of simulated videos enriches the learning experience by contextualizing skills and knowledge, allowing students to engage in immersive learning. This aligns with experiential learning theory [40] and situated cognition theory (Brown et al., 1989), both of which emphasize that effective learning occurs when knowledge is integrated with real-world contexts and applied in practical situations. Lastly, well-designed case demonstrations, based on social cognitive theory [41], facilitate observational learning, leading to improved learning outcomes through self-regulation mechanisms.

Additionally, the qualitative data suggest that the success of this instructional model is partially attributed to the

reinforcement of situation-specific skills through simulated practice. Research indicates that situation-specific skills are critical in transforming cognitive, affective, and motivational factors into actual professional performance [11, 12, 18, 39]. This involves individuals' ability to attend to, perceive, and accurately interpret specific contextual cues [36], which is considered a key aspect of teacher professional development—often referred to as professional vision [39]. The instructional model implemented in this study integrates these elements into simulated practice, enabling learners to repeatedly observe contextualized videos, interpret the scenarios, and reflect on appropriate responses. This process fosters the development of professional vision in consultation-related contexts, allowing learners to link theoretical knowledge with practical application.

Moreover, according to Bloom's taxonomy of learning [46], these exercises align with higher-order cognitive learning, including evaluation, analysis, and application of problem-solving strategies. This explains why learners perceived situation-specific skills and simulated practice as key factors in deepening learning effectiveness.

The findings also preliminarily validate the effectiveness of the learning loop in simulation-based teaching, as proposed by Dieker et al. [34] As discussed, simulated practice enables learners to repeatedly engage with consultation situations, integrating knowledge with practice. Furthermore, by presenting inappropriate consultation responses and their potential consequences, the simulated cases stimulate observational learning, self-reflection, and self-regulation [41]. The effectiveness of this process is particularly evident during the feedback stage, where learners reflect on and share their learning experiences, while instructors provide feedback by identifying strengths and areas for improvement and even offering appropriate demonstrations.

This process not only fosters modeling-based learning [41] but also aligns with scaffolding theory [42]. In this context, instructors act as scaffolds, guiding learners within their zone of proximal development (ZPD) to achieve higher levels of performance. Specifically, by analyzing and providing feedback on learners' responses, instructors help strengthen their understanding of key concepts, offering additional practice and challenges that facilitate professional competency development.

Besides, the cultural adaptation of the consultation model may also help explain the observed learning effectiveness of the simulation-based approach. Consultation practices in school settings are inherently shaped by cultural norms, relational expectations, and institutional hierarchies, particularly in educational contexts influenced by collectivist values and role-based relationships [33]. In Taiwanese school settings, consultation often involves indirect communication, sensitivity to role boundaries, and careful management of interpersonal relationships [25], which influence not only how consultation is enacted in practice but also how consultation responses are interpreted and evaluated by practitioners. By adopting a consultation framework developed within the Taiwanese educational context, the simulated cases reflected interaction patterns and decision-making logics that were familiar to participants. This cultural grounding likely reduced the cognitive and relational demands associated with navigating unfamiliar consultation norms, allowing learners to focus more directly on professional judgment and strategy selection during simulation activities. Prior research has suggested that culturally responsive professional training enhances learner engagement, perceived relevance, and depth of reflection, particularly in professional learning contexts [31, 47]. Consistent with this perspective, the alignment between the simulation scenarios and participants' lived educational experiences may have contributed to more meaningful learning and reflective engagement in the present study.

Taken together, the observed improvements can be understood as the result of a close alignment between the instructional design, the development of situation-specific consultation competencies, and the cultural grounding of the consultation framework. By engaging learners in repeated cycles of perceiving contextual cues, interpreting consultation problems, and making reasoned decisions within simulated scenarios that reflected familiar school interactions and role relationships, the training directly targeted core components of professional competence as conceptualized in prior research. The iterative structure of simulation, feedback, and reflection further enabled learners to refine their decision-making processes over time, supporting more deliberate and context-sensitive consultation responses. Importantly, the cultural alignment of the simulated cases may have reduced cognitive and relational demands associated with navigating unfamiliar consultation norms, allowing learners to focus more fully on professional judgment and strategy selection.

Rather than relying on abstract instruction alone, this approach provided opportunities for learners to practice authentic decision-making in realistic yet low-risk environments, which may help explain the perceived growth in consultation-related awareness and confidence.

4.2. Online Simulated Video-Based Instruction as a Feasible Approach to Teacher Professional Development in the Post-Pandemic Era

In the wake of the COVID-19 pandemic, the education sector has undergone significant reflection, particularly on how to provide learners with effective professional development resources in a safe and accessible environment. Online learning has emerged as a viable alternative and has become a dominant trend in education. Research suggests that adapting to digital learning environments and utilizing technology effectively is essential for continuous professional growth. Teachers, in particular, have recognized that post-pandemic professional development can be effectively conducted in virtual settings, facilitating ongoing communication and peer support[1, 2].

The online simulated video-based instructional model developed in this study aligns with these demands and offers several advantages. First, by leveraging various technological tools, such as online learning platforms, this model enables educators to engage with digital technologies throughout the learning process, a crucial skill for teacher professional development in the post-pandemic era. Second, through case-based simulations, this approach allows learners to engage with diverse consultation scenarios without requiring physical participation, thereby sustaining their professional competency development in an adaptive and flexible manner.

According to participants' experiences, this instructional model also promotes personalized learning, offering a high degree of flexibility and accessibility. Given the convenience of online learning, participants can engage with training materials anytime and anywhere, structuring their learning according to their own pace and needs. The opportunity for self-directed learning and repeated practice accommodates the professional development needs of learners from various backgrounds. Additionally, the model fosters opportunities for feedback and discussion, enabling participants to engage in online reflective learning and collaborative exchanges, further enhancing their professional growth.

It is important to note that the aim of the present study was not to determine whether online video-based simulation is more effective than other instructional approaches. Rather, this study focuses on examining the feasibility, instructional design, and learning experiences associated with this specific training approach. Accordingly, while the findings are reported transparently, they should not be interpreted as demonstrating causal effects attributable solely to the simulation-based format, given the absence of a comparison group. Nevertheless, by drawing on prior empirical findings and participants' reflective accounts, the findings indicate that online video-based simulation may offer distinctive pedagogical affordances for consultation training, particularly in supporting theory–practice integration, situational decision-making, and reflective learning. Future research employing comparative or experimental designs is therefore needed to further examine the relative effectiveness of this approach in relation to alternative training methods.

4.3. Implications

This study serves as an initial exploration into the implementation of online simulated teaching for the professional competency development of pre-service teachers. It presents preliminary findings on the effectiveness of this instructional approach and its potential impact on teacher professional development. The study offers the following practical and theoretical contributions:

1. This study develops a structured online simulated teaching framework and provides a concrete demonstration of how to implement it step by step to enhance pre-service teachers' professional growth, particularly in consultation competencies. Moreover, the findings highlight the importance of simulated practice and feedback in consolidating the targeted knowledge and skills. The instructional framework designed in this study also demonstrates high flexibility and accessibility, allowing learners to progress at their own pace and within their own contextual needs. These insights provide valuable references for future instructional design and broader applications in teacher professional develop-

ment.

2. The study provides preliminary evidence for the feasibility and effectiveness of online simulated teaching in teacher professional development, particularly in addressing the evolving needs of professional learning in the post-pandemic era. This suggests that online simulated teaching could serve as an innovative approach for supporting teacher professional development in the future.
3. By exploring learners' experiences and perspectives on online simulated teaching, this study contributes to a relatively underexplored research area. Understanding the first-hand experiences of participants offers valuable insights into the effectiveness of this instructional method for teacher professional development and provides critical feedback for refining and optimizing future implementations.

4.4. Limitations and Future Research

Given that this study represents an initial implementation of online simulated teaching, there remain certain limitations and areas for improvement, as identified through participant experiences and researcher reflections. The following recommendations address instructional design and research methodology:

4.4.1. Recommendations for Instructional Design

Enhancing the Diversity of Simulated Case Scenarios

While the simulated case scenarios in this study were developed based on broad perspectives and empirical data, there is still room for improvement. Participants noted that real-world situations are often more complex and diverse, suggesting that expanding the range of cases to include a wider variety of topics and contextual factors would enhance learning effectiveness. Future research should explore this further and consider implementing debriefing mechanisms to facilitate peer learning and knowledge sharing, thereby maximizing observational learning outcomes. Additionally, learners could be given the option to select specific cases based on their own needs, further strengthening their professional skills and contextual understanding.

Clearly Differentiating Difficulty Levels in Simulated Practice

The limited number of simulated exercises in this study may have affected the progression of difficulty levels. Participants indicated that gradually increasing the complexity of practice tasks would help boost confidence and engagement among beginners. Therefore, future instructional design should start with foundational cases and progressively introduce more complex scenarios, allowing for a more structured learning process.

Providing Appropriate Demonstration Videos for Simulated Practice

Some participants reported that, while instructor guidance and feedback were helpful, the lack of demonstration videos showcasing appropriate consultation interventions made it difficult to visualize effective responses. Providing video demonstrations of best practices could enhance visual learning and improve students' ability to refine their techniques. Future instructional design should consider the value of incorporating such demonstrations to optimize the learning experience.

4.4.2. Recommendations for Research Design

Enhancing Research Design to Assess Effectiveness

While this study primarily focused on developing and implementing the online simulated teaching framework and conducting an initial evaluation of its effectiveness, future research should adopt more rigorous experimental designs. For example, introducing a control group or implementing longitudinal assessments over extended periods would provide more precise measurements of instructional impact. Such methodological improvements would help in understanding the long-term effects of online simulated teaching on teacher professional development.

Expanding the Study Population to Explore Broader Applicability

This study focused on pre-service teachers, demonstrating the effectiveness of simulated teaching in developing professional competencies. However, whether these benefits extend to in-service teachers remains unclear. Future research should include more in-service teachers as

participants to investigate their learning experiences, engagement levels, and feedback. This would further refine the application of online simulated teaching in professional development programs for educators at different career stages.

5. Conclusions

This study explored the use of online video-based simulation as a training approach for developing pre-service teachers' consultation competencies. The findings indicate that a structured simulation design combining conceptual input, realistic video cases, and guided reflection can effectively support learners' confidence and perceived competence in consultation-related practice. Participants reported that observing contextualized consultation scenarios and engaging in simulated decision making helped them better understand consultation processes and apply relevant strategies in a reflective and low risk environment. The online format further allowed for flexible engagement and repeated practice, which supported individualized learning and deeper professional reflection. Overall, the results suggest that online video-based simulation is a feasible and meaningful approach for consultation training in teacher education, particularly in contexts where opportunities for authentic practice are limited. This study provides an initial foundation for the continued development and examination of simulation-based consultation training in teacher professional development.

Author Contributions

Conceptualization, C.-H.S.; methodology, C.-H.S.; formal analysis, C.-H.S., H.-M.L. and C.-C.W.; data curation, C.-H.S., H.-M.L. and C.-C.W.; writing—original draft preparation, C.-H.S. and H.-M.L.; writing—review and editing, T.-H.L. and C.-C.W. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The research procedures of this study were reviewed and approved by an institutional review board of the Human Research Ethics Center in National Chung Cheng University (approval No. CCUREC110111001).

Informed Consent Statement

Written informed consent has been obtained from the participants to publish this paper.

Data Availability Statement

The data supporting this study's findings are not publicly available due to ethical considerations and participant confidentiality. Data may be made available from the corresponding author upon reasonable request.

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Conflicts of Interest

The authors declare no potential conflict of interest.

AI Use Statement

The authors used artificial intelligence-assisted tools to support language-related tasks during manuscript preparation. Specifically, AI tools were used for parts of English translation, language polishing, and formatting checks of references. No AI tools were used to generate research content, data analysis, interpretations, or conclusions. All substantive academic content and intellectual contributions were produced by the authors.

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