# Enhancing Procedural Understanding of Group Counseling Practices Through Video-Based Learning: An Experimental Study With Counseling Students

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**Abstract**: *Developing procedural understanding of group counseling practices is a critical objective in counselor education, as effective counseling requires not only conceptual knowledge but also the ability to implement counseling procedures accurately and systematically. However, many counseling students experience difficulties translating theoretical knowledge into procedural practice. This study aimed to examine the effectiveness of video-based learning in enhancing counseling students' procedural understanding of group counseling practices. Using a quantitative experimental approach with a one-group pretest–posttest design, the study involved 36 undergraduate counseling students enrolled in a guidance and counseling program at a public university. Students' procedural understanding was measured before and after the implementation of a video-based learning intervention that demonstrated the stages and procedures of group counseling. Descriptive analyses indicated substantial increases in mean scores and positive shifts in procedural understanding categories following the intervention. Inferential analysis using the Wilcoxon Signed-Rank Test revealed a statistically significant difference between pretest and posttest scores (Z = −3.48, p < .001). The findings indicate that video-based learning effectively enhances counseling students' procedural understanding of group counseling practices. This study contributes to the counselor education literature by providing empirical evidence supporting video-based learning as a pedagogical strategy for teaching procedural aspects of group counseling and highlights its potential to bridge the gap between theory and practice in counselor training.*

**Keywords**: *Video-Based Learning; Procedural Understanding; Group Counseling; Counselor Education; Experimental Study.*

## INTRODUCTION

Group counseling represents a core professional competency within counselor education programs, as it prepares future counselors to facilitate interpersonal processes, manage group dynamics, and implement structured therapeutic interventions effectively. Successful group counseling practice requires more than conceptual knowledge of counseling theories; it necessitates a strong procedural understanding of how counseling stages are implemented in practice, including group formation, transition, working, and termination phases. Procedural competence enables counselors to maintain therapeutic structure while responding adaptively to group dynamics. However, evidence from counseling and related professional education fields indicates that students frequently experience difficulties translating conceptual knowledge into procedural execution, particularly when instructional approaches rely predominantly on lecture-based or text-centered methods (Gold et al., 2021; Henry & Manning, 2019).

Procedural understanding refers to knowledge of how to perform task sequences, apply intervention protocols, and execute professional practices systematically and contextually. In clinical and counseling settings, procedural knowledge has been identified as a critical determinant of treatment fidelity, intervention consistency, and effectiveness (Gold et al., 2021; Lupu et al., 2024). Research on counseling and clinical protocols demonstrates that practitioners with well-developed procedural knowledge are better equipped to implement structured interventions while appropriately adapting to client needs (Dooren et al., 2020). Within group counseling contexts, procedural understanding is particularly essential, as counselors must simultaneously manage multiple participants, adhere to structured stages, and navigate complex interpersonal interactions. Consequently, strengthening counseling students' procedural understanding constitutes a central objective of counselor education programs.

The acquisition of procedural understanding is theoretically grounded in experiential learning theory and social learning theory, which emphasize learning through observation, modeling, and reflective engagement. Procedural learning is enhanced when learners are exposed to observable demonstrations that integrate both conceptual explanations and step-by-step procedural execution. Research across professional education contexts has consistently shown that integrating conceptual knowledge with procedural demonstrations improves learning transfer and application (Cheung et al., 2019, 2021). These principles are especially relevant to counselor education, where counseling procedures involve nuanced interpersonal behaviors that are difficult to communicate effectively through abstract verbal explanations alone.

Video-based learning (VBL) has emerged as a pedagogical approach that closely aligns with these theoretical foundations. Video-based learning enables students to observe authentic or simulated professional practices, visualize procedural sequences, and engage in self-paced, repeated learning experiences. Empirical evidence from professional education consistently indicates that video-based instructional approaches enhance procedural understanding and skill acquisition compared to traditional instructional methods (Lehmann et al., 2019; Natarajan et al., 2022). Video-based learning facilitates observational learning, supports the integration of conceptual and procedural knowledge, and reduces cognitive load by presenting information in a structured and sequential manner (Cheung et al., 2019; Luginbuehl et al., 2023). These affordances suggest that VBL is particularly suitable for counselor education, where professional competence depends on the accurate implementation of counseling procedures.

Despite the growing body of research supporting video-based learning, most existing studies have focused on medical, nursing, and allied health education contexts. Although

these studies provide valuable insights into procedural learning, empirical investigations specifically examining video-based learning in counselor education—particularly in relation to group counseling practices—remain limited (Evi-Colombo et al., 2022; Luginbuehl et al., 2023). Moreover, prior research within counseling-related fields has frequently emphasized general counseling competence or learner satisfaction, rather than explicitly examining procedural understanding as a distinct learning outcome (Mwenge et al., 2022; Huang et al., 2023). This gap highlights the need for experimental research that systematically investigates the effectiveness of video-based learning in enhancing counseling students' procedural understanding of group counseling implementation.

In response to this gap, the present study aims to examine the effectiveness of video-based learning in enhancing counseling students' procedural understanding of group counseling practices using an experimental design. Specifically, this study investigates whether counseling students who receive video-based learning demonstrate higher levels of procedural understanding compared to students who receive conventional instructional approaches. By focusing on procedural understanding as a core learning outcome, this study seeks to contribute to the counselor education literature by clarifying the pedagogical value of video-based learning for teaching group counseling procedures and informing evidence-based instructional design in counselor education programs. Based on the theoretical framework and empirical evidence reviewed, the following research question guides this study: Is there a significant difference in procedural understanding of group counseling practices between counseling students who receive video-based learning and those who receive conventional instruction?

## METHOD

This study employed a quantitative experimental design using a one-group pretest–posttest design to examine the effectiveness of video-based learning in enhancing counseling students' procedural understanding of group counseling practices. In this design, participants' procedural understanding was measured before the intervention (pretest), followed by the implementation of the video-based learning intervention, and subsequently measured again after the intervention (posttest). This design was selected to evaluate changes in procedural understanding attributable to the instructional intervention within the same group of participants, consistent with experimental approaches commonly used in counselor education research.

The participants consisted of 36 undergraduate counseling students enrolled in the Guidance and Counseling (Bimbingan dan Konseling) program at Universitas Negeri Medan, Indonesia. All participants were third-semester students, indicating that they had received foundational coursework in counseling theories but were still in the early stages of developing applied counseling skills. The participants were selected using a total sampling technique, as all students enrolled in the relevant course agreed to participate in the study. Participation was voluntary, and all respondents completed both the pretest and posttest measures, resulting in no missing data.

The instructional intervention involved the use of Video-Based Learning (VBL) as the primary instructional medium for teaching group counseling practices. The video-based learning materials were designed to demonstrate the procedural stages of group counseling, including preparation, group formation, transition processes, working stages, and termination. The videos presented structured demonstrations of counseling procedures, allowing students to observe step-by-step implementation of group counseling practices.

The intervention was delivered during scheduled instructional sessions. Students were provided opportunities to watch the instructional videos, review the procedural content

multiple times, and discuss key procedural elements facilitated by the instructor. This approach was intended to support observational learning and repeated exposure to procedural demonstrations, thereby strengthening students' procedural understanding of group counseling implementation.

Students' procedural understanding of group counseling practices was measured using a procedural understanding test developed to assess knowledge of counseling procedures and stages. The instrument consisted of structured items designed to evaluate students' understanding of the sequential steps, implementation strategies, and procedural decision-making involved in group counseling practice. The same instrument was administered as both the pretest and posttest to ensure consistency in measurement.

Scores obtained from the instrument were used to categorize students' levels of procedural understanding into low, moderate, and high categories based on predetermined scoring criteria. Higher scores indicated stronger procedural understanding of group counseling practices.

Data collection was conducted in three stages. First, participants completed the pretest to assess their initial level of procedural understanding prior to exposure to video-based learning. Second, the video-based learning intervention was implemented during the instructional period. Finally, participants completed the posttest to assess changes in procedural understanding following the intervention. All data were collected in a controlled classroom setting to ensure uniform administration procedures.

Descriptive statistics were used to summarize pretest and posttest scores, including minimum scores, maximum scores, means, and overall score distributions. To test the study hypothesis regarding the effectiveness of video-based learning, a Wilcoxon Signed-Rank Test was conducted using SPSS version 20. This nonparametric test was selected due to the paired nature of the data and to compare differences between pretest and posttest scores within the same group of participants.

The level of statistical significance was set at $\alpha = 0.05$. A statistically significant result indicated a meaningful difference between pretest and posttest scores, supporting the hypothesis that video-based learning effectively enhances counseling students' procedural understanding of group counseling practices.

**RESULTS**

Descriptive analyses were conducted to examine counseling students' procedural understanding of group counseling practices before and after the implementation of the video-based learning intervention. Prior to the intervention, pre-test scores indicated that students' initial levels of procedural understanding varied considerably. The total pre-test score across participants was 3,555, with a mean score of 98.75. Individual pre-test scores ranged from 58 to 131, suggesting substantial heterogeneity in students' prior understanding of group counseling procedures. As illustrated in Figure 1, the mean pre-test score reflected a generally moderate level of procedural understanding before exposure to video-based learning.

Following the implementation of the video-based learning intervention, post-test scores demonstrated a marked improvement in students' procedural understanding. The total post-test score increased to 4,353, with a mean score of 120.91. Post-test scores ranged from 82 to 154, indicating not only an overall increase in performance but also a notable upward shift in the minimum score obtained by participants. As shown in Figure 1, the mean procedural understanding score increased substantially from pre-test to post-test, providing a clear visual indication of improvement following the intervention.
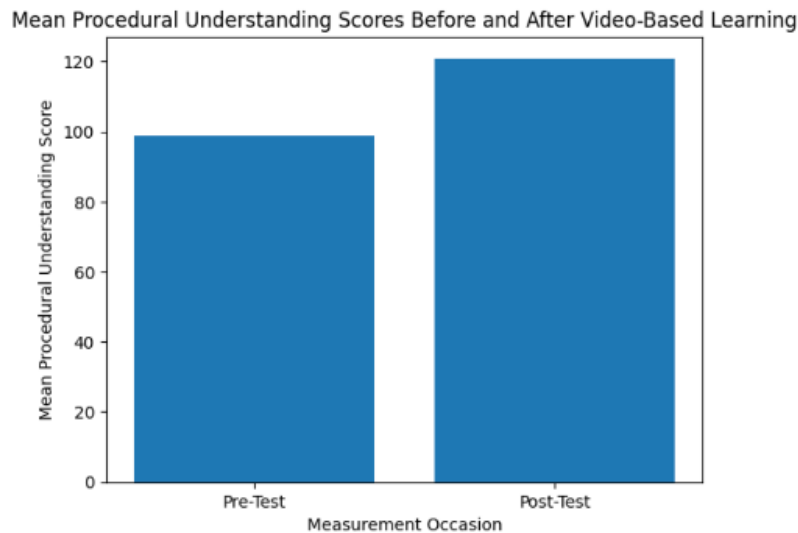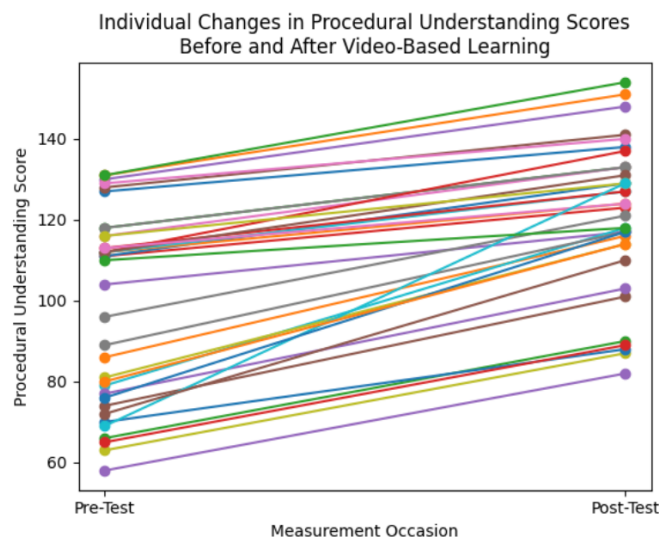
**Figure 1. Mean Comparison Bar Chart**



**Figure 2. Paired Line Plot (Individual Score Changes)**

An examination of individual score changes further highlighted the consistency of improvement across participants. The mean gain score was 22.16 points, corresponding to an average percentage increase of 22.44%. Individual improvements ranged from 8 points (7.27%) to 60 points (86.96%). Figure 2 presents paired pre-test and post-test scores for each participant and demonstrates that nearly all students exhibited higher post-test scores than pre-test scores. The upward trajectories shown in Figure 2 indicate that the positive effect of video-based learning was observed consistently across individuals, rather than being driven by a small subset of high-performing students. Notably, students who initially demonstrated lower levels of procedural understanding tended to show larger relative gains, suggesting that video-based learning was particularly beneficial for students with weaker baseline procedural knowledge.
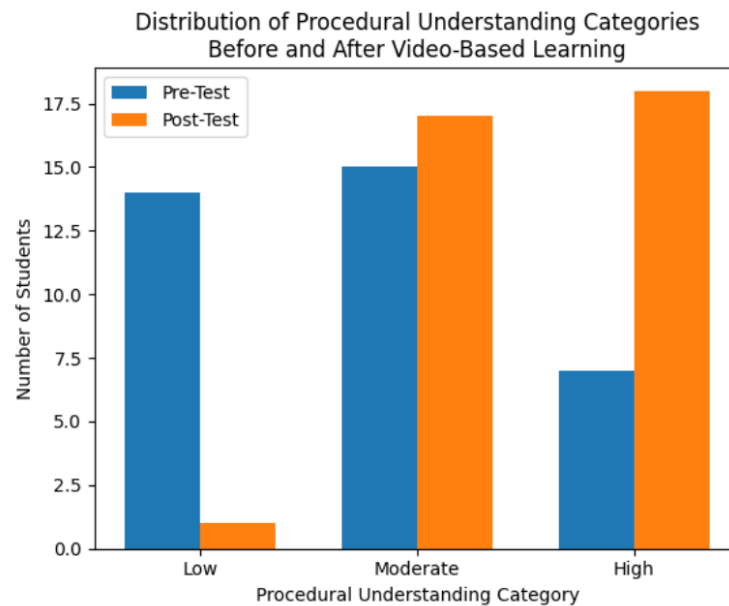
**Figure 3. Category Shift Chart**

In addition to changes in mean scores and individual trajectories, shifts in categorical levels of procedural understanding were also observed. As depicted in Figure 3, the distribution of students across procedural understanding categories changed markedly following the intervention. Before the intervention, a substantial proportion of students were classified in the low and moderate categories, with relatively few students achieving high procedural understanding. After the video-based learning intervention, the number of students in the low category decreased sharply, while the proportion of students classified in the high category increased considerably. This categorical shift indicates that the intervention contributed not only to score increases but also to meaningful progression in students' levels of procedural competence.

To test the research hypothesis regarding the effectiveness of video-based learning, a Wilcoxon Signed-Rank Test was conducted to compare pre-test and post-test procedural understanding scores. This nonparametric test was selected due to the paired nature of the data and to evaluate changes within the same group of participants.

The results of the Wilcoxon Signed-Rank Test indicated a statistically significant difference between pre-test and post-test scores, $Z = -3.48$, $p < .001$ (two-tailed). The obtained significance value was lower than the predetermined alpha level of .05, indicating that the increase in procedural understanding following the video-based learning intervention was statistically significant. These findings provide empirical support for the study hypothesis, confirming that video-based learning significantly enhanced counseling students' procedural understanding of group counseling practices.

Taken together, the descriptive and inferential results demonstrate that video-based learning was effective in improving counseling students' procedural understanding of group counseling practices. Visual evidence from Figure 1 highlights a clear increase in mean scores, Figure 2 illustrates consistent individual improvements across participants, and Figure 3 shows a substantial shift in students' procedural understanding categories. The statistically significant Wilcoxon test further confirms that these improvements were unlikely to have occurred by chance. Overall, the results indicate that video-based learning contributed to both quantitative gains and meaningful qualitative progression in counseling students' procedural understanding of group counseling implementation.

**DISCUSSION**

The present study aimed to examine the effectiveness of video-based learning in enhancing counseling students' procedural understanding of group counseling practices. The findings demonstrate that video-based learning produced a significant and meaningful improvement in students' procedural understanding, as evidenced by increased mean scores, consistent individual gains, categorical shifts toward higher competence levels, and statistically significant results from the Wilcoxon Signed-Rank Test. These results support the study hypothesis and align with prior research emphasizing the value of video-based instructional approaches for procedural learning in professional education.

The substantial increase in mean procedural understanding scores from pre-test to post-test, as illustrated in Figure 1, indicates that video-based learning effectively supported students' acquisition of group counseling procedures. This finding is consistent with prior studies demonstrating that video-based learning enhances procedural knowledge and skill acquisition by allowing learners to observe structured demonstrations and revisit complex procedures repeatedly (Lehmann et al., 2019; Natarajan et al., 2022; Luginbuehl et al., 2023). From a theoretical perspective, this improvement can be explained by the principles of observational learning and experiential learning, which emphasize learning through modeling, reflection, and repeated exposure to expert performance (Cheung et al., 2019, 2021). In the context of counselor education, video-based learning appears to provide an effective bridge between conceptual knowledge and procedural execution, addressing a well-documented challenge in counseling training (Gold et al., 2021; Henry & Manning, 2019).

Beyond mean-level improvements, the paired line plot presented in Figure 2 reveals that the positive effects of video-based learning were observed consistently across individual participants. Nearly all counseling students demonstrated higher post-test scores than pre-test scores, suggesting that the observed improvement was not driven by a small subset of high-performing students but reflected a broadly distributed instructional effect. This pattern of individual-level improvement strengthens the internal validity of the findings and supports the appropriateness of the Wilcoxon Signed-Rank Test for analyzing paired changes. The consistency of individual gains aligns with prior research indicating that video-based learning supports self-paced and repeated learning, which benefits students with varying levels of prior knowledge (Natarajan et al., 2022; Iqbal et al., 2022). Importantly, students with lower initial procedural understanding tended to show larger relative gains, suggesting that video-based learning may be particularly effective in supporting learners who struggle with traditional instructional approaches.

The categorical shifts in procedural understanding levels shown in Figure 3 further underscore the educational significance of the intervention. The marked reduction in the number of students classified in the low category and the substantial increase in the high category indicate that video-based learning contributed not only to numerical score gains but also to meaningful progression in students' levels of procedural competence. This finding is particularly important in counselor education, where competence development is often conceptualized in terms of progression across levels of mastery rather than incremental score changes alone. Prior research on counseling and clinical protocols has emphasized that procedural knowledge underpins treatment fidelity and effective implementation of interventions (Dooren et al., 2020; Lupu et al., 2024). The observed categorical shifts suggest that video-based learning can play a critical role in supporting students' movement toward higher levels of procedural readiness for professional practice.

The statistically significant results of the Wilcoxon Signed-Rank Test further confirm the effectiveness of video-based learning in enhancing procedural understanding. The significant difference between pre-test and post-test scores ($Z = -3.48$, $p < .001$) indicates

that the observed improvements were unlikely to have occurred by chance. This finding is consistent with prior experimental and quasi-experimental studies demonstrating the positive effects of video-based learning on procedural outcomes in professional education settings (Axt et al., 2018; Lehmann et al., 2019; Evi-Colombo et al., 2022). Although much of the existing literature has focused on medical and nursing education, the present study extends these findings to counselor education, specifically within the context of group counseling practices. In doing so, this study addresses a notable gap in the literature, where empirical investigations of video-based learning in counselor education remain limited (Mwenge et al., 2022; Huang et al., 2023).

The findings of this study also have important implications for instructional design in counselor education programs. Video-based learning offers a means of standardizing the presentation of counseling procedures while allowing students to engage in self-paced and repeated learning. This aligns with prior research suggesting that standardized instructional materials can enhance consistency and quality in professional training (Celentano et al., 2020; Body et al., 2022). Moreover, by shifting procedural demonstrations to video-based formats, instructional time can be reallocated toward guided practice, feedback, and reflective discussion—elements that are critical for developing counseling competence (Towersey et al., 2024; Tudor et al., 2019). Thus, video-based learning should be viewed not as a replacement for experiential learning but as a complementary strategy that enhances the overall effectiveness of counseling instruction.

Despite its contributions, this study has several limitations that should be considered when interpreting the findings. First, the use of a one-group pretest–posttest design limits the ability to draw strong causal inferences, as the absence of a control group makes it difficult to rule out alternative explanations such as maturation or testing effects. Second, the sample size was relatively small and drawn from a single cohort of counseling students at one institution, which may limit the generalizability of the findings. Third, the study focused exclusively on procedural understanding as an outcome measure and did not examine longer-term retention of procedural knowledge or its transfer to actual counseling practice. Future research should address these limitations by employing randomized controlled designs, larger and more diverse samples, and additional outcome measures such as counseling competence, self-efficacy, and observed performance in simulated or real counseling settings (Magill et al., 2022; Perryman et al., 2021).

In conclusion, the findings of this study provide strong evidence that video-based learning is an effective instructional approach for enhancing counseling students' procedural understanding of group counseling practices. By integrating observational learning, procedural modeling, and opportunities for repeated engagement, video-based learning addresses key challenges in counselor education related to the translation of theory into practice. The results contribute to the growing body of literature on technology-enhanced learning in professional education and highlight the potential of video-based learning to support the development of practice-ready counseling professionals.

## CONCLUSION

This study provides empirical evidence that video-based learning is an effective instructional approach for enhancing counseling students' procedural understanding of group counseling practices. The findings demonstrate meaningful improvements at the mean level, consistent individual gains, and substantial shifts toward higher levels of procedural competence following the intervention. From a theoretical perspective, these results support learning frameworks that emphasize observational learning, experiential engagement, and the integration of conceptual and procedural knowledge in professional education. The study

contributes to the counselor education literature by extending prior evidence on video-based learning from medical and allied health contexts to group counseling training, highlighting procedural understanding as a critical and measurable learning outcome. Practically, the findings suggest that video-based learning can be strategically integrated into counselor education curricula to support the teaching of complex counseling procedures. By providing standardized demonstrations of group counseling stages and enabling repeated, self-paced learning, video-based materials can complement experiential activities and free instructional time for guided practice, feedback, and reflective discussion, thereby enhancing students' readiness for professional practice.

Despite these contributions, several limitations should be acknowledged. The use of a one-group pretest–posttest design limits the strength of causal inferences, as the absence of a control group precludes definitive conclusions regarding the exclusive effects of the intervention. In addition, the relatively small sample size and the focus on a single cohort from one institution may restrict the generalizability of the findings. The study also assessed procedural understanding immediately following the intervention and did not examine long-term retention or transfer of learning to actual counseling performance. Future research should address these limitations by employing randomized controlled or quasi-experimental designs with comparison groups, involving larger and more diverse samples across multiple institutions, and incorporating longitudinal measures to examine the durability of learning effects. Further studies may also explore additional outcomes, such as counseling competence, self-efficacy, and observed counseling performance, to provide a more comprehensive understanding of how video-based learning supports the development of professional counseling skills.

## REFERENCES

Cheung, J. J. H., Kulasegaram, K. M., Woods, N. N., & Brydges, R. (2019). Why content and cognition matter: Integrating conceptual knowledge to support simulation-based procedural skills transfer. *Journal of General Internal Medicine, 34*(6), 969–977. https://doi.org/10.1007/s11606-019-04959-y

Cheung, J. J. H., Kulasegaram, K. M., Woods, N. N., & Brydges, R. (2021). Making concepts material: Examining the effects of integrating conceptual knowledge into procedural skills training. *Simulation in Healthcare, 16*(6), 392–400. https://doi.org/10.1097/SIH.0000000000000543

Dooren, M. V., Visch, V., Spijkerman, R., Goossens, R., & Hendriks, V. (2020). Mental health therapy protocols and eHealth design: A focus group study. *JMIR Formative Research, 4*(5), e15568. https://doi.org/10.2196/15568

Evi-Colombo, A., Cattaneo, A. A. P., & Bétrancourt, M. (2022). Procedural knowledge acquisition in a second-year nursing course: Effectiveness of a digital video-based collaborative learning-by-design activity using hypervideo. *Journal of Computer Assisted Learning, 39*(2), 501–516. https://doi.org/10.1111/jcal.12758

Gold, S. L., Formby, C., & Scherer, R. W. (2021). The tinnitus retraining therapy counseling protocol as implemented in the tinnitus retraining therapy trial. *American Journal of Audiology, 30*(1), 1–15. https://doi.org/10.1044/2020_AJA-20-00024

Henry, J. A., & Manning, C. (2019). Clinical protocol to promote standardization of basic tinnitus services by audiologists. *American Journal of Audiology, 28*(1S), 152–161. https://doi.org/10.1044/2018_AJA-TTR17-18-0038

Huang, Y., Chan, H. Y., Wang, Y. C., & Ho, Y. H. (2023). Effects of a blended multimedia teaching approach on self-efficacy and skills in over-the-counter medication counselling versus a lecture-based approach: Protocol for a prospective cohort study. *BMJ Open, 13*(1), e068738. https://doi.org/10.1136/bmjopen-2022-068738

Lehmann, R., Lutz, T., Helling-Bakki, A., Kummer, S., Huwendiek, S., & Bosse, H. M. (2019). Animation and interactivity facilitate acquisition of pediatric life support skills: A randomized controlled trial using virtual patients versus video instruction. *BMC Medical Education, 19*(1), Article 7. https://doi.org/10.1186/s12909-018-1442-5

Luginbuehl, H., Nabecker, S., Greif, R., Zuber, S., Koenig, I., & Rogan, S. (2023). Transforming traditional physiotherapy hands-on skills teaching into video-based learning: A mixed-methods study. *BMC Medical Education, 23*(1), Article 582. https://doi.org/10.1186/s12909-023-04556-y

Lupu, I. G., Baciu, R. E., Budală, D. G., Vasluianu, R., Tibeica, C., & Forna, N. C. (2024). The implementation of protocols in dental practice procedures. *Romanian Journal of Oral Rehabilitation, 16*(4), 651–656. https://doi.org/10.62610/rjor.2024.4.16.62

Mwenge, M., Figge, C., Metz, K., Kane, J. C., Kohrt, B. A., Pedersen, G. A., & Murray, L. K. (2022). Improving inter-rater reliability of the enhancing assessment of common therapeutic factors (ENACT) measure through training of raters. *Journal of Public Health in Africa, 13*(3), Article 2201. https://doi.org/10.4081/jphia.2022.2201

Natarajan, J., Joseph, M. A., Shibli, Z., Hajji, S., Hanawi, D., Al Kharusi, A., & Al Maqbali, I. (2022). Effectiveness of an interactive educational video on knowledge, skill, and satisfaction of nursing students. *Sultan Qaboos University Medical Journal, 22*(4), 546–553. https://doi.org/10.18295/squmj.2.2022.013