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# Integrating Dual Coding Theory with Canva to Enhance EFL Presentation Skills, Reduce Speaking Anxiety, and Improve Learners' Attitudes

**Pimpisa Chanted**

*Kasetsart University Sriracha Campus, Thailand*

<https://orcid.org/0009-0008-2873-8011>

**Tirush Rumpanetch**

*Silpakorn University, Nakhon Pathom, Thailand*

<https://orcid.org/0009-0005-6932-3451>

## Abstract

*In today's visually driven communication world, the ability to deliver effective presentations has become an essential skill for EFL learners. This mixed-methods study investigated the effects of integrating Dual Coding Theory (DCT) with Canva on English presentation skills, speaking anxiety, attitudes, and satisfaction of EFL undergraduate business students. A one-group pretest-posttest quasi-experimental method was employed with a sample of 68 students selected through cluster and purposive sampling from a Thai public university. An 8-week instructional program was designed to apply DCT's verbal and visual principles through presentation design activities, using Canva. Quantitative results revealed a statistically significant improvement in English presentation skills, with mean scores increasing from 1.91 (SD = 0.47) to 3.17 (SD = 0.38),  $t(67) = -22.29$ ,  $p < .001$ , and a very large effect size ( $d = 2.70$ ). Speaking anxiety demonstrated a significant declining trend ( $M = 3.09 - 3.98$ ). Students reported consistently high attitudes and satisfaction across all measured dimensions ( $M = 4.21 - 4.65$ ), with the highest satisfaction toward the utility of Canva ( $M = 4.62$ ). Qualitative results from the thematic analysis revealed four main themes: visual-verbal support, greater design confidence, lower anxiety, and positive attitudinal change. Triangulation confirmed convergence across all data sources. These findings provide evidence that integrating DCT with Canva can effectively enhance EFL presentation skills, reduce speaking anxiety, and improve learners' attitudes in Thai higher education. To further investigate the effectiveness of DCT and English presentation skills, future studies should incorporate controlled designs, long-term follow-ups, and cross-cultural comparisons.*

**Keywords:** Dual Coding Theory, Canva, Presentation Skills, Speaking Anxiety, EFL Presentation, Multimodal Learning

## Introduction

In today's globalized world, English presentation competence is a crucial communication skill that business graduates need to acquire to become effective professionals. The World Economic Forum (2023) and Graduate Management Admission Council (2023) identified communication skills as among the top competencies that employers worldwide will prioritize, highlighting a critical gap between market demands and business graduates' actual capabilities, a concern that warrants attention from English language educators in Thai higher education institutions. Even with adequate declarative language knowledge, many EFL learners find it difficult to put this knowledge into practice when giving a presentation. For instance, it is common for students to overload the number of words on a slide, read slides instead of engaging with their audience and presenting information out of sequence, and express low performance confidence ([Lan](#)

[et al., 2024](#)). Eventually, these students often face speaking anxiety, as described by [Horwitz et al. \(1986\)](#).

According to DCT Paivio, ([1986, 2006](#)), learning can be greatly facilitated when both verbal and imagery cognitive systems are activated simultaneously through referential connections. Thus, Canva, a free online graphic design platform, can be one of the mediums that can facilitate DCT application. However, no empirical study has examined the implementation of a DCT-Canva integration approach focusing on three aspects, namely, English presentation skills, speaking anxiety, and learners' attitudes towards English presentation skills among Thai EFL business undergraduates. This study investigated how implementing DCT with Canva presentations influences the English presentation skills of Thai EFL students and measured their speaking anxiety. The significance of this study is that it provides valuable insights for English teachers in designing lessons that can effectively develop English communication and presentation skills in higher-education settings.

### Research Objectives

- To investigate the effects of DCT-Canva integration on English presentation skills
- To analyze changes in English speaking anxiety following the intervention
- To evaluate its impact on students' attitudes and satisfaction toward learning
- To explore the factors influencing the effectiveness of integration through qualitative inquiry.

### Literature Review

#### Dual Coding Theory and Its Cognitive Foundations

Paivio's ([1986, 2006](#)) Dual Coding Theory posits that the mind consists of two separate and independent representational systems: a verbal system that processes words as logogens (discrete verbal units) and an imagery system that processes concrete and abstract nonverbal information in imagens via visual, spatial, and motoric experience. When verbal and visual information are processed together, all three levels of information processing (representational,

referential, and associative processing) are active within one system. Thus, learning and retention are greatly enhanced.

DCT was further built on by [Mayer's \(2021\)](#) Cognitive Theory of Multimedia Learning within a cognitive architecture framework. This study posits that learners process both auditory/verbal and visual/pictorial information to construct mental models of the presented material. Information from the channels is processed by selecting relevant information and organizing it to create coherent mental models. These models are then integrated by learners with previously acquired knowledge.

In the context of English presentations, building slides following these design rules can reduce extra cognitive load and increase working memory capacity for higher-order skills, such as linguistic production, audience awareness, and nonverbal cues for a truly proficient presenter.

#### Canva as a DCT-Compatible Pedagogical Tool

Canva is a well-known multimodal composition tool. Learners can create their own visual-verbal compositions by deliberately choosing to combine text, images, colors, typography, and spatial arrangements. The digital environment in which learners create their multimodal compositions is a semiotic meaning-making space ([Kress, 2010](#)). In this space, learners can choose from a variety of signs (graphemes and phonemes) and modes of communication (such as images and gestures) to convey the meaning that they want to convey. The process of creating compositions was active and was described by dual encoding theory (DCT) (Paivio, [1986, 2006](#)). In the design stage of the compositions, learners chose pictures that semantically matched their verbal key points. The retrieval stage involved learners making a visual-verbal referential connection between the pictures and verbal key points by arranging the pictures in a spatial arrangement that corresponded to the speech structure of the verbal key points.

Recent evidence also suggests that presentation experience and motivational development play important roles in reducing learners' anxiety during oral presentations. [Wu \(2024\)](#) suggests that greater exposure to presentation practice and positive

motivational development were associated with improved communicative performance and lower levels of presentation anxiety among EFL learners. [Wu and Rose \(2025\)](#) further emphasize that learners' ability to overcome public speaking anxiety can be predicted by their level of 'grit' and belief in their 'self-efficacy'. Therefore, teachers should combine regular practice with a focus on building students' 'grit' and confidence so that they can overcome emotional barriers and speak with greater confidence.

[Jin \(2024\)](#) revealed that technology-supported speaking activities improve learners' confidence and promote more active engagement in oral communication tasks, suggesting that digital learning environments can reduce psychological barriers and encourage stronger participation among EFL learners. [Wijayanti \(2022\)](#) also found that both teachers and students held positive perceptions of Canva in English language teaching, noting its usefulness, ease of use, accessibility, and effectiveness in enhancing pedagogical processes. Moreover, research on multimodal learning ([Bai, 2024](#); [Fatwassani et al., 2025](#)) suggests that integrating visual-verbal modes in presentations acts as a scaffold for EFL learners, resulting in measurable improvements in content organization, language use, and audience engagement. Similarly, [Tsai \(2025\)](#) found that EFL learners who created visual-verbal compositions as communication tools demonstrated significant gains in multimodal communicative competence, including verbal delivery and verbal-visual coherence, suggesting that the process of designing visual content actively supports the spoken language performance. Likewise, [Rodríguez Mina et al. \(2024\)](#) found that Canva enhances students' creativity, critical thinking skills, and technical skills through the creation of visual learning materials.

In the Thai context, [Panyasai \(2025\)](#) and [Khuawan and Watanapokakul \(2025\)](#) documented Canva's role in ESP Business English courses, pointing out its alignment with the development of professional presentation competency. Collectively, this body of empirical evidence suggests that Canva is a transformative medium for EFL presentation learning when it is positioned within a conceptually sound instructional framework rather than a surface-level aesthetic tool.

## English Speaking Anxiety: Structure, Sources, and Reduction

Owing to the uniqueness of the language-learning process, foreign language speaking anxiety is a situation-specific form of self-perception, beliefs, attitudes, and behaviors ([Horwitz et al., 1986](#)). This is evident in the four empirically distinguishable sub-dimensions relevant to the present study. These sub-dimensions include communication anxiety (nervousness during in-class speech), fear of negative evaluation (concern about judgments from teachers and peers), presentation anxiety (nervousness when speaking before an audience), and physical symptom anxiety (palpitations, trembling, and dry mouth).

Many empirical studies have investigated speaking anxiety in the context of oral presentations, particularly among EFL learners. [Kho and Ting \(2023\)](#) suggest that a huge percentage of ESL/EFL university students experience high levels of anxiety when engaging in presentation tasks due to fear of forgetting content, mispronouncing words and concept names, and answering questions. However, [Öztürk and Öztürk \(2021\)](#) revealed that structured speaking support, which is defined by clear preparation frameworks, progressive exposure, and constructive feedback cycles, can significantly reduce speaking anxiety and enhance communicative confidence among EFL learners. [Tsang \(2020\)](#) further demonstrated that self-perceived presentation delivery competence is negatively associated with speaking anxiety: when presenters develop stronger self-efficacy through well-prepared and scaffolded presentations, their public speaking anxiety tends to decrease.

## Research Gap and Rationale

Although previous studies have explored DCT, Canva in EFL education, and speaking anxiety in English presentation contexts, these areas have rarely been integrated into a single study design. Furthermore, no study has investigated a DCT-guided Canva instructional design, exploring English presentation skills, speaking anxiety, learners' attitudes, and their satisfaction simultaneously among Thai EFL business undergraduates using a mixed-methods research approach. This research gap is relevant for identifying presentation-focused instructional interventions for this group of learners.

## Methodology

### Research Design and Participants

This study employed a mixed-methods sequential explanatory research design consisting of a quantitative phase, a one-group pretest-posttest quasi-experimental design, followed by a qualitative phase. The research was conducted at the Faculty of Management Sciences, Kasetsart University Sriracha Campus (ethics approval: KUREC-SRC68/042; COA No. COA68/005).

The participants of this study were first- and second-year students majoring in Finance and Investment enrolled in English for Job Opportunities (Course No. 01355103) in Semester 2, academic year 2025. They were selected using cluster and purposive sampling approaches. The total number of participants in the study was 68 students, with an attrition rate of 9.33% (Ary et al., 2018). This low attrition rate indicates acceptable participant retention and supports the validity and reliability of the findings.

In the quantitative phase, most participants were female (76.47%) with an average age of 19 years. Based on the KU-KET placement test results, the majority of the sample was found to be at CEFR B1 level (63.24%), followed by CEFR A2 level (17.65%). The inclusion criteria required the students to enroll in the target course, have basic computer skills with no prior formal Canva training, and receive appropriate KU-KET placement scores.

For the qualitative phase, a purposeful subsample of 10 students was selected using maximum variation sampling. This subsample represented high ( $n = 4$ ), moderate ( $n = 3$ ), and low ( $n = 3$ ) levels of performance.

### Research Instruments

Three research instruments—the DCT-Canva evaluation form (administered as both a pretest and posttest), a questionnaire measuring anxiety, attitudes, and satisfaction, and an interview form—were developed and validated by three experts specializing in ELT, educational measurement, and technology-enhanced learning. The instruments (questionnaire and test items) demonstrated satisfactory content validity, with IOC values ranging from 0.67 to 1.00, exceeding the minimum acceptable threshold of 0.50 recommended by Yusoff (2019).

First, the English Presentation Skills Assessment Rubric (EPSAR) was used to measure content and organization, language use and grammar, Canva media use, nonverbal communication, and communication fluency, which were evaluated on a 5-point Likert scale. Two trained raters independently assessed all presentations, with acceptable inter-rater reliability confirmed through the Intraclass Correlation Coefficient ( $ICC = 0.67$ ; two-way random effects, absolute agreement model; Koo & Mae, 2016). Second, the English-Speaking Anxiety Scale consists of 20 items measuring communication anxiety, fear of negative evaluation, presentation anxiety, and physical symptoms. Third, the Attitude Scale included 15 items across the cognitive, affective, and behavioral domains. Fourth, the Satisfaction Scale contained 14 items assessing the instructional process, Canva utility, and skill development. All the scales employed a 5-point Likert format. Finally, a semi-structured interview guide containing 20 questions across seven thematic areas was used in the qualitative phase.

### Instructional Intervention

This DCT-Canva instructional strategy was implemented for an eight-week small group project activity called “DCT-Canva – Business Trend Presentations.” The project consisted of three phases: Phase 1 (weeks 1–2), Phase 2 (weeks 3–6), and Phase 3 (weeks 7–8).

In Phase 1, students became familiar with the DCT key concepts as well as the use of the Canva application in Week 1, and the pretest Canva presentation on “Business Trends in Thailand” was carried out in Week 2, using two raters to rate the presentations.

In Phase 2, four scaffolded units of instruction were developed to help students gain mastery of key aspects of presentations (how to make image-text balance and visual hierarchy in their presentations, data visualization and how to design an infographic, and using business vocabulary and visual design to present the 4Ps and conduct a SWOT analysis) in Weeks 3–6. DCT was applied using semantically related visuals with minimal on-screen text and organizing the slides to correspond to key speech structures.

In Phase 3, students participated in a 3 hours workshop session in Week 7 on body language and vocal modulation using English for speaking purposes in business presentations. In Week 8, students presented “Sustainable Business Ideas” using Canva, which served as a post-test. Follow-up interviews were conducted with selected participants in Weeks 9 and 10 to gather more information on their learning during the intervention period.

### Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics 28. The normality of the difference scores was assessed using the Shapiro-Wilk test, and the composite difference score satisfied normality ( $W = 0.976$ ,  $p = .205$ ), supporting the use of parametric statistics (Field, 2018). Paired Samples t-tests were used to examine pre-post differences in presentation skills, and effect sizes were calculated using Cohen’s  $d$  and interpreted according to [Cohen’s \(1988\)](#) guidelines. Descriptive statistics ( $M$  and  $SD$ ) were used to analyze anxiety, attitude, and satisfaction levels. Thematic analysis of the qualitative data from the interviews was conducted following the six-phase framework outlined by [Braun and Clarke](#)

(2006). The findings from the quantitative data and qualitative themes were triangulated to ensure the credibility and confirm ability of the findings.

## Results

### English Presentation Skills

Table 1 presents the pre- and post-test descriptive statistics and Paired Samples t-test results for all five presentation skill components and the overall composite. Overall mean scores increased from  $M = 1.91$  ( $SD = 0.43$ ) at pretest to  $M = 3.17$  ( $SD = 0.38$ ) at posttest, a mean difference of  $\Delta = +1.25$ . The Paired Samples t-test yielded  $t(67) = -22.29$ ,  $p < .001$ , with a very large effect size ( $d = 2.70$ ). The superior gain in nonverbal communication ( $\Delta = +1.43$ ) may reflect the fact that Canva’s design process naturally encourages students to align their delivery with the visual content. The comparatively smaller improvement in language use ( $\Delta = +1.02$ ) may suggest that linguistic competence requires more sustained exposure than a single intervention. Overall, visual-communicative integration may have supported multimodal processing and content recall during the presentations.

**Table 1 Pretest–Posttest Results for English Presentation Skills (N = 68)**

| Component                  | Pre M (SD)  | Post M (SD) | $\Delta$ | $t(67)$ | $p$   | $d$  | Magnitude  |
|----------------------------|-------------|-------------|----------|---------|-------|------|------------|
| 1. Content & Organization  | 2.24 (0.48) | 3.49 (0.47) | +1.25    | -17.31  | <.001 | 2.10 | Very Large |
| 2. Language Use            | 2.06 (0.51) | 3.08 (0.42) | +1.02    | -13.88  | <.001 | 1.68 | Large      |
| 3. Media Use (Canva)       | 1.98 (0.51) | 3.23 (0.54) | +1.25    | -16.96  | <.001 | 2.06 | Very Large |
| 4. Nonverbal Communication | 1.51 (0.57) | 2.93 (0.59) | +1.43    | -18.15  | <.001 | 2.20 | Very Large |
| 5. Communication Fluency   | 1.79 (0.61) | 3.12 (0.44) | +1.32    | -15.13  | <.001 | 1.83 | Very Large |
| Overall (Mean of 5)        | 1.91 (0.43) | 3.17 (0.38) | +1.25    | -22.29  | <.001 | 2.70 | Very Large |

Note. All tests two-tailed. Effect size benchmarks ([Cohen, 1988](#)):  $d \geq 0.80$  = Large;  $d \geq 2.00$  = Very Large. Scale: 1.00–1.80 = Poor; 1.81–2.60 = Fair; 2.61–3.40 = Moderate; 3.41–4.20 = Good.

### Speaking Anxiety

Table 2 presents the post-intervention descriptive statistics for the four anxiety dimensions. Students reported the highest anxiety for Presentation Anxiety ( $M = 3.98$ ,  $SD = 0.98$ ), especially for the aspect of Q&A ( $M = 4.29$ ), followed by Communication Anxiety ( $M = 3.59$ ,  $SD = 1.09$ ). In contrast, Fear

of Negative Evaluation ( $M = 3.09$ ,  $SD = 1.24$ ) and Physical Symptoms ( $M = 3.25$ ,  $SD = 1.19$ ) were moderate. These findings suggest that students experienced more anxiety related to their performance and classroom communication than to evaluation and physical reactions.

**Table 2 Post-Intervention Speaking Anxiety, Attitude, and Satisfaction Results (N = 68)**

| Scale / Domain                        | M (SD)      | Min–Max | Highest Item (M)                           | Level    |
|---------------------------------------|-------------|---------|--------------------------------------------|----------|
| <b>SPEAKING ANXIETY</b>               | —           | —       | —                                          | —        |
| Communication Anxiety (5 items)       | 3.59 (1.09) | 1–5     | Nervous speaking in class (3.94)           | High     |
| Fear of Negative Evaluation (5 items) | 3.09 (1.24) | 1–5     | Fear of appearing unconfident (3.65)       | Moderate |
| Presentation Anxiety (5 items)        | 3.98 (0.98) | 1–5     | Q&A pressure after presenting (4.29)       | High     |
| Physical Symptoms (5 items)           | 3.25 (1.19) | 1–5     | Heart racing when called to speak (3.74)   | Moderate |
| <b>ATTITUDE</b>                       | —           | —       | —                                          | —        |
| Cognitive Domain (5 items)            | 4.58 (0.58) | 3–5     | Presentation skills for career (4.72)      | Highest  |
| Affective Domain (5 items)            | 4.30 (0.58) | 2–5     | Prefer visual-illustrated EFL (4.43)       | High     |
| Behavioral Domain (5 items)           | 4.40 (0.67) | 3–5     | Apply Canva to other courses (4.65)        | High     |
| <b>SATISFACTION</b>                   | —           | —       | —                                          | —        |
| Instructional Process (5 items)       | 4.32 (0.70) | 2–5     | Practice activities adequate (4.40)        | High     |
| Canva Utility (5 items)               | 4.62 (0.55) | 2–5     | Ease of use (4.75)                         | Highest  |
| Skill Development (4 items)           | 4.32 (0.74) | 2–5     | DCT-Canva integration is beneficial (4.54) | High     |

Note. Interpretation benchmarks: 4.50–5.00 = Highest; 3.50–4.49 = High; 2.50–3.49 = Moderate. Anxiety: higher scores indicate higher anxiety. H3 confirmed.

### Attitudes and Satisfaction

Table 2 outlines the attitudes and satisfaction levels. Attitudes toward the cognitive domain were at the highest level ( $M = 4.58$ ,  $SD = 0.58$ ), as seen by the importance of presentation skills in their careers ( $M = 4.72$ ). Similarly, the affective and behavioral attitude domains were at a high level ( $M = 4.30$  and  $M = 4.40$ , respectively). The highest behavioral intention was to apply Canva skills to other courses ( $M = 4.65$ ). This may be because students have a strong belief that presentation skills are relevant to their future careers and that they intend to apply these skills in other courses.

Regarding students' satisfaction, Canva utility showed the highest level ( $M = 4.62$ ,  $SD = 0.55$ ), as seen in the ease of use item ( $M = 4.75$ ). Moreover, the results for the instructional process and skill development were relatively high ( $M = 4.32$  for each). These results indicate that the use of Canva has helped lower the technological barriers for students to produce content, allowing them to focus on their work and not on fighting with technology.

### Qualitative Findings

From the semi-structured interviews of 10 students, thematic analysis was used, and four key themes were found.

Theme 1: Visual-Verbal Linkage as Cognitive Scaffold (10/10 participants)

All participants (high and low development) reported that they found the Canva slides useful for organizing and remembering the content of the presentation through image association. Participants noted that the visual elements served as retrieval cues, which in turn enabled them to remember key points from their presentations without having to recollect them all from memory. For example, Participant 3 (high development) said, "The images help you remember the sequence of your presentation; you do not have to remember everything by heart; you just look at the picture and then you continue from there". In addition to enabling visual-verbal integration, the slides support cognition and presentation for participants.

## Theme 2: Quality Design as Self-Efficacy Catalyst (8/10 participants)

The professionally developed slides increased the participants' confidence and made them feel less self-conscious in front of their audience. For example, Participant 2 (high development) described her feelings: "I felt much more professional. The Canva slides were beautiful—when the audience sees good slides, they pay attention, and that makes me feel braver."

## Theme 3: Clear Visual Structure as Anxiety Reduction (9/10 participants)

Having a clear structure of slides for presentation was reported to reduce the fear of forgetting content across all development levels. For example, Participant 1 (low development) said, "Dual Coding shows you what to say without memorizing. The image tells you what comes next in the text. The pressure was less."

## Theme 4: Positive Attitudinal Transfer and Cross-Contextual Application (7/10 participants)

The participants described a shift in their motivation to learn English. The focus has shifted from completing English learning tasks, such as memorizing vocabulary, to creating meaningful

work. For example, Participant 6 (high development) said, Canva makes it fun; it's not just memorizing words anymore; it's creating something I'm actually proud of".

## Data Triangulation

Data triangulation was employed to strengthen the credibility of the findings of this study. Data from three different sources were integrated for the analysis, including 1) results from Paired Samples t-tests and Cohen's d, 2) descriptive statistics from the questionnaires administered to participants to measure their attitude, satisfaction level, and speaking anxiety level, and 3) the results from the Thematic Analysis.

For each research question, evidence from all three sources was examined for convergence to ensure consistency. As presented in Table 3, all four research questions demonstrated consistent patterns across data sources, confirming both the effectiveness of DCT-Canva integration and the boundary condition identified in RQ2, where speaking anxiety reduction was limited to prepared presentations but did not extend to spontaneous Q&A interactions.

**Table 3 Data Triangulation: Convergence Across Three Sources (N = 68; Qualitative n = 10)**

| RQ                         | Source 1<br>Quantitative                                                            | Source 2<br>Questionnaire                                                           | Source 3<br>Qualitative (n = 10)                                                             | Convergence                                                                          |
|----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| RQ1<br>Presentation Skills | d = 2.70 (Very Large)<br>t(67) = -22.29, p < .001<br>Nonverbal: d = 2.20 (highest)  | Visual-verbal pairing aids retention (M = 4.65)<br>Canva supports design (M = 4.54) | Theme 1 — 10/10 (100%)<br>"Slides acted as a presentation map"                               | All 3 sources confirm visual scaffolding improves presentation skills significantly. |
| RQ2<br>Speaking Anxiety    | Nonverbal d = 2.20 → confidence proxy<br>Language use d = 1.68 → boundary condition | Forgetting anxiety: M = 3.49 (lowest item)<br>Q&A pressure: M = 4.29 (highest item) | Theme 3 — 9/10 (90%)<br>Structured slides reduced forgetting anxiety; Q&A anxiety persisted. | DCT-Canva reduces preparation anxiety; Q&A remains a boundary condition.             |

|                                        |                                                                                                       |                                                                                                   |                                                                                                   |                                                                                  |
|----------------------------------------|-------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>RQ3</b><br>Attitudes & Satisfaction | Media use: $d = 2.06$<br>Fluency: $d = 1.83$<br>→ reflect learning investment from positive attitudes | Cognitive attitude: $M = 4.58$ (Highest)<br>Canva utility: $M = 4.62$ (Highest)                   | Theme 4 — 7/10 (70%)<br>EFL learning reframed as creative production; intrinsic motivation ↑      | Positive attitudes are grounded in professional relevance and learner ownership. |
| <b>RQ4</b><br>Influencing Factors      | Pearson $r = 0.330\text{--}0.378$<br>$p < .01$<br>→ prior competence moderates growth rate            | Canva utility: $M = 4.62$<br>Practice adequacy: $M = 4.40$<br>Open-ended: need more practice time | Themes 1–3 All levels benefited; media quality, practice time, and prior ability are key factors. | 3 factors identified: (1) media quality, (2) practice time, (3) prior ability.   |

Note. RQ = Research Question. Convergence column summarizes integrated findings. Effect size:  $d \geq 0.80$  = Large;  $d \geq 2.00$  = Very Large (Cohen, 1988). Questionnaire benchmarks: 4.50–5.00 = Highest; 3.50–4.49 = High; 2.50–3.49 = Moderate. Theme prevalence is reported as number of interviewees out of 10.

## Discussion

### Presentation Skill Development

The statistically significant improvement in the participants' overall English presentation skills ( $d = 2.70$ ) supports the core DCT proposition of [Paivio \(2006\)](#), namely that by having learners generate verbal and visual cognitive structures and form referential connections between them, dual-encoded content is created, which facilitates greater fluency and organization in speaking recall from memory. In this study, the mechanism was operationalized through Canva, in which the subjects created visual-verbal referential pairs consisting of brief verbal key points and images semantically relevant to the content, which were presented as on-screen cognitive scaffolds during the delivery of the presentations. This has been found to increase EFL presentation performance in terms of content clarity, fluency, and audience engagement ([Bai, 2024](#); [Fatwassani et al., 2025](#)). [Wu and Rose \(2025\)](#) further demonstrated that self-efficacy is a significant predictor of oral presentation performance among EFL learners, which aligns with the improved confidence and performance observed in the present study. This is further supported by [Tsai \(2025\)](#), who found that EFL learners who engaged in visual-verbal design tasks demonstrated measurable gains in verbal

delivery and verbal-visual coherence, consistent with the multimodal processing gains observed in this study.

The largest single-component gain was observed in nonverbal communication ( $d = 2.20$ ). This result is consistent with [Mayer's \(2021\)](#) cognitive load framework in that Canva's visual scaffolding offloads some of the content-sequencing demand on working memory, allowing students to focus on important aspects of presentation delivery such as eye contact, gesture, vocal modulation, and audience interaction —skills of presentation that approach the professional level. The effect size for language use was the lowest ( $d = 1.68$ ), indicating that DCT-Canva integration may have a greater impact on organization-dependent competencies than on grammatical accuracy. Instructors should consider this aspect when designing assessment rubrics for ESP presentations.

### Speaking Anxiety Reduction and Its Boundary Conditions

The results from the DCT-Canva integration section (Presentation Anxiety) show that the participants experienced reduced levels of preparation-dependent content-forgetting anxiety (see Table 4). The mean score for 'forgetting

prepared content' was 3.49. As [Öztürk and Öztürk \(2021\)](#) and [Tsang \(2020\)](#) pointed out, speaking anxiety is reduced when speaking tasks are preceded by effective speaking preparation, and participants have high self-perceived delivery competence. The qualitative finding from Theme 3 indicated that after the instructional activity, 9 out of 10 of ten students reported that they felt less anxious about forgetting their prepared content. This finding is also consistent with [Wu \(2024\)](#), who reported that increased presentation practice was associated with lower oral presentation anxiety among EFL learners.

However, post-presentation Q&A remained the highest-scoring single item in the study ( $M = 4.29$ ), revealing an important boundary condition. DCT-Canva integration reduces anxiety only when visual retrieval cues are present. During Q&A sessions, learners must respond spontaneously without visual support, relying on their working memory under pressure. This condition restricts efficacy; however, it is in line with [Öztürk and Öztürk's \(2021\)](#) and [Tsang's \(2020\)](#) findings regarding the role of design-based visual scaffolding in ameliorating speaking anxiety. Thus, supplementary activities other than DCT, such as impromptu speaking exercises, scaffolded peer discussion, and unrehearsed tasks that enhance learners' spontaneous speech performance, need to be incorporated into anxiety-reducing instructional programs.

### Attitudes, Satisfaction, and Learner Ownership

The high to highest attitude and satisfaction scores in this study are similar to the findings obtained by [Santiana et al. \(2024\)](#), who reported positive EFL students' dispositions toward DCT-Canva integrated learning. Specifically, the mean score obtained for the cognitive domain attitudes was 4.58 (highest), driven by the perceived career importance of presentation skills ( $M = 4.72$ ), indicating that positive dispositions are grounded in professional identity formation rather than driven solely by hedonic factors. As DCT-Canva activities are instrumentally meaningful, students perceived learning as directly related to their future professional demands, which is a motivational orientation linked to deeper learning investment.

The highest behavioral intention score from the survey was 'planning to apply Canva skills to other courses' ( $M = 4.65$ ). This is in line with [Wijayanti et al. \(2025\)](#) theoretical construct of learner ownership, where students take ownership of their learning by creating their own learning products. Theme 4 (from qualitative data) found that students engaged in deep processing and were positively affected when they created slides that required them to think critically and present their content understanding in a visually appealing format. The highest single score for satisfaction with course experience was for 'Canva ease of use' ( $M = 4.75$ ), indicating that low technological adoption barriers are essential for enabling learners to focus their cognitive resources on communicative design rather than tool operation.

### Limitations

This study has several limitations. First, the absence of a control group means that some of the gains may be due to maturation (i.e., learning from experience as time passes) rather than the specific treatments and activities of the intervention. However, the large effect sizes ( $d > 2.00$ ) suggest that the intervention was likely the primary factor contributing to the observed gain. Second, all the participants were students of Finance and Investment from a single campus, mostly female, at the CEFR B1 level, which makes it challenging to generalize the findings to other stakeholders, disciplines, settings and levels. Third, eight weeks of training may be a relatively short period for measuring gains in proficiency that may last in the long term or be transferred to contexts other than the academic setting in which the training took place. Finally, several variables, including students' prior digital literacy, individual motivation, and access to technology outside the classroom, that could potentially affect learning may not have been controlled in this study.

### Pedagogical Implication

Instructors should provide learners with autonomy in creating visual aids and encourage the transfer of Canva-based design skills to other academic contexts to promote sustainability. Additionally, incorporating structured impromptu speaking activities into English language presentation training

may assist students in reducing Q&A anxiety and strengthening their spontaneous speaking skills.

### Recommendations for Future Research

For future research, a controlled experimental design could be used whereby comparison groups could be carefully matched. Long-term follow-up could also be conducted to evaluate how well the participants retained and demonstrated the new presentation skills. For further enhancement, future studies could explore digital literacy as a potential moderator or aim to generalize to different academic disciplines, research contexts, and countries. It could also include comparative and cross-cultural studies to examine the usefulness and effectiveness of DCT in diverse educational and cultural contexts.

### Conclusion

This study reports on the theory-driven integration of Dual Coding Theory (DCT) with Canva, which holds promise as a pedagogical approach for developing English presentation skills among Thai EFL undergraduate business students. The very large overall effect size across all five presentation skill components, along with high student attitudes and satisfaction, suggests a favorable reception of this approach, with a significantly declining trend in speaking anxiety. These findings highlight the potential of DCT-based instruction to improve oral presentation performance in Thai higher education EFL contexts and inform the design of more effective English presentation courses in the future. Finally, future studies should employ controlled research designs, longitudinal follow-up measures, and cross-cultural comparisons to further examine the effectiveness of DCT, Canva, and other presentation tools.

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## Author Details

**Pimpisa Chanted**, Kasetsart University Sriracha Campus, Thailand, **Email ID:** [pimpisa.chan@ku.th](mailto:pimpisa.chan@ku.th)

**Tirush Rumpanpetch**, Silpakorn University, Nakhon Pathom, Thailand, **Email ID:** [tirushrump@gmail.com](mailto:tirushrump@gmail.com)