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Implementing Scaffolded CPBL in Digital Marketing Education: A Study of Vocational Students in Information Technology and Culinary Programs

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Abstract

Although digital marketing education has received increasing attention in vocational learning contexts, research specifically examining the role of scaffolded Cooperative Problem-Based Learning (CPBL) in enhancing students' digital business readiness remains limited. This study aims to explore how scaffolded CPBL influences vocational students' learning experiences, motivation, and readiness for digital business practices. A qualitative approach with a case study design was employed, involving 68 students from Diploma 3 programs in Information Technology and Culinary Arts at a polytechnic institution. Participants were selected through purposive sampling. Data were collected through reflective journals and semi-structured interviews and analyzed using thematic analysis guided by the MUSIC Model of Motivation framework. The findings indicate that scaffolded CPBL enhances students' engagement and learning performance through small-group collaboration, facilitator support, and structured learning activities. These elements foster active participation, autonomy, and deeper understanding of digital marketing concepts. Digital business readiness also emerged as a key outcome, reflected in students' ability to apply marketing strategies, think entrepreneurially, and

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collaborate in solving real-world business problems. The study concludes that scaffolded CPBL plays a crucial role in preparing vocational students for employment and entrepreneurial pathways in the digital economy. These findings contribute to constructivist learning and motivation theory and extend understanding of CPBL implementation in vocational digital marketing education. The implications of this research include practical recommendations for educators and vocational institutions to integrate problem-based and scaffolded learning approaches into digital marketing curricula and to design more industry-relevant learning experiences. The study also identifies opportunities for future research on CPBL implementation in practice-based vocational courses and longitudinal evaluation of students' career outcomes.

Keywords: Cooperative Problem-Based Learning; Scaffolding; Digital Marketing Education; Vocational Students; Digital Business Readiness

INTRODUCTION

The rapid expansion of the digital economy has fundamentally transformed the skill requirements of the modern workforce, particularly within vocational sectors such as information technology and culinary arts (Abduvakhidov, Mannapova, & Akhmetshin, 2021). In this evolving landscape, digital marketing has become a critical competency that enables individuals to promote products, engage customers, and create value through digital platforms (Papageorgiou & Marneros, 2023). For vocational students, mastering digital marketing is not only essential for employability but also for developing the capacity to initiate and sustain digital-based business ventures (Sitaridis & Kitsios, 2024; Tushar & Sooraksa, 2023). Consequently, vocational education institutions are increasingly expected to equip students with both technical and entrepreneurial competencies aligned with industry demands (Diao, Han, Zhou, & Wang, 2024).

However, traditional instructional approaches in vocational education often remain dominated by teacher-centered methods that limit students' opportunities to actively engage in authentic problem-solving (Woods & Copur-Gencturk, 2024). Such approaches are insufficient to develop higher-order thinking skills, adaptability, and real-world application abilities required in digital marketing practices (Rahma Hidayati, Alimuddin, & Andi, 2024). To address this limitation, there is a growing emphasis on adopting student-centered pedagogies that promote experiential and collaborative learning (Zhou, Chen, & Chen, 2019).

Problem-Based Learning (PBL) has been widely recognized as an effective instructional approach that engages students in solving real-world and complex problems. Through this process, students develop critical thinking, self-directed learning, and problem-solving skills that are essential for professional practice. Furthermore, the integration of Cooperative Learning into PBL, known as Cooperative Problem-Based Learning (CPBL), enhances peer interaction, accountability, and knowledge construction through teamwork (Lane, 2023). In CPBL environments, students work collaboratively in small groups to analyze problems, generate solutions, and reflect on their learning experiences, while instructors shift their roles from knowledge transmitters to facilitators.

Despite its potential, the effectiveness of CPBL is highly dependent on the presence of appropriate scaffolding strategies. Scaffolding refers to structured support provided by instructors, peers, and instructional design to assist students in achieving learning objectives. This support may include guiding questions, feedback, collaborative discussions, and structured task frameworks. Effective scaffolding is particularly important in digital marketing education, where students are required to integrate analytical, creative, and strategic thinking skills to address dynamic and context-dependent problems (Pinar et al., 2025; Yadav & Singh, 2026).

To better understand students' engagement in such learning environments, the MUSIC Model of Motivation comprising empowerment, usefulness, success, interest, and caring offers a comprehensive framework for analyzing how instructional strategies influence students' motivational perceptions (Pinar et al., 2025). This model has been widely applied to examine how learning design and instructional support contribute to student engagement and learning outcomes, particularly in active learning environments.

While previous studies have explored the implementation of scaffolded CPBL in entrepreneurship and teacher education contexts, there remains a limited understanding of its application in digital marketing courses within vocational diploma programs. In particular, there is a lack of research examining how CPBL, supported by scaffolding, contributes to students' readiness to engage in digital business practices after graduation. This concept, referred to as digital business readiness, encompasses students' preparedness to apply digital marketing skills in professional or entrepreneurial contexts, including their ability to identify opportunities, utilize digital tools, and create market-oriented solutions (Park & Kim, 2025).

Addressing this gap, the present study investigates the implementation of scaffolded CPBL in a digital marketing course involving vocational students from Diploma 3 programs in Information Technology and Culinary Arts. By integrating perspectives from learning motivation and vocational readiness, this study not only examines students' learning experiences but also extends the discussion toward their preparedness for future careers in the digital economy. Specifically, this study aims to (1) examine how scaffolding strategies are implemented and perceived by students during CPBL activities, and (2) analyze how these experiences influence students' motivation and digital business readiness.

METHODS

Context of the Study

This study was conducted within a digital marketing course offered in a vocational higher education institution, involving Diploma 3 students from Information Technology and Culinary Arts programs. The course was designed to develop students' competencies in applying digital marketing strategies, including content creation, social media management, and online branding, with an emphasis on real-world application (Ye, Kim, & Cho, 2024). The instructional design adopted a Cooperative Problem-Based Learning (CPBL) approach, in which students worked collaboratively in small groups to solve authentic, context-driven problems related to digital marketing practices (Susanty et al., 2024). The learning activities were structured into several problem cycles, each consisting of multiple sessions that guided students through stages of problem identification, information gathering, analysis, and solution presentation, reflecting the core principles of problem-based learning (F. Chen & Chen, 2025; Papasarantou, Alimisi, & Alimisis, 2023).

A series of authentic problems were developed to simulate real digital business scenarios, such as designing marketing strategies for culinary products and promoting IT-based services through digital platforms. At the beginning of each cycle, the facilitator introduced a problem scenario, after which students formulated action plans, identified relevant information, and collaboratively developed solutions. Throughout the process, the facilitator acted as a guide, supporting students' inquiry and decision-making processes, consistent with constructivist learning principles (Nicholus, Muwonge, & Joseph, 2023). To support students' learning, scaffolding strategies were systematically embedded within the

CPBL design. Scaffolding refers to structured instructional support that assists learners in achieving tasks beyond their independent capabilities (Lui, Wang, Yu, & Lok, 2026; Sharma, Nguyen, & Hong, 2024). These scaffolds were categorized into three types: (1) expert scaffolding, provided through facilitator guidance, feedback, and questioning; (2) peer scaffolding, occurring through group discussions and collaborative problem-solving; and (3) activity design scaffolding, implemented through structured tasks, templates, and guided learning resources . The scaffolding was intentionally designed to enhance student engagement and motivation, as well as to support the development of digital business competencies.

Participants

The participants of this study consisted of 68 undergraduate students enrolled in the digital marketing course, including students from Diploma 3 Information Technology and Diploma 3 Culinary Arts programs. These students represent vocational learners who are being prepared for both employment in industry and potential entrepreneurial engagement in digital business contexts. All participants voluntarily agreed to take part in the study. Prior to data collection, they were informed about the research objectives, procedures, and their rights, including anonymity and the option to withdraw from the study at any stage without any consequences, in line with ethical research standards (Sadeghi & Smith, 2024).

Data Collection and Analysis

This study employed a qualitative approach to explore students' perceptions and experiences of scaffolded Cooperative Problem-Based Learning (CPBL) in digital marketing education. A qualitative design is considered appropriate for capturing in-depth insights into participants' experiences and meaning-making processes during learning activities (S. Chen, Lou, Leung, & Yu, 2024; Mantula, Mpofu, Mpofu, & Shava, 2024). Data were collected through multiple sources, namely reflective journals and semi-structured interviews, to allow for triangulation and enhance the credibility of the findings (Donkoh & Mensah, 2023; Meydan & Akkaş, 2024). Students were required to submit reflective journals after completing each problem cycle. The reflective writing was guided using an adapted reflective framework to encourage students to describe their experiences, evaluate their learning process, and reflect on the relevance of the activities to their future career or entrepreneurial aspirations (Tight, 2024).

Reflective journals have been widely used in educational research to capture students' internal learning processes and perceptions (Donkoh & Mensah, 2023; Tight, 2024). To further explore and clarify the findings from the reflective journals, semi-structured interviews were conducted with a selected group of students. Semi-structured interviews provide flexibility in probing participants' responses while maintaining consistency across key topics (Dengel et al., 2023). The interviews focused on students' perceptions of the scaffolding strategies, their learning motivation, and their readiness to apply digital marketing skills in real-world or business contexts. Each interview lasted approximately 20–30 minutes and was audio-recorded and transcribed for further analysis. To ensure systematic coding of students' responses, this study adopted the MUSIC Model of Motivation as the primary analytical framework. The model consists of five key components, namely empowerment, usefulness, success, interest, and caring, which are used to examine students' motivational perceptions during the learning process (Gumm, 2023; Jones & Wilkins, 2023). Based on these components, a set of initial codes was developed to guide the thematic analysis. The codes were adapted to fit the context of digital marketing learning in vocational education. The coding scheme was reviewed by education experts to ensure its relevance and validity. Table 1 presents the codes generated for each component of the MUSIC Model used to guide the thematic analysis process. The coding categories were developed based on the dimensions of empowerment, usefulness, success, interest, and caring within the context of scaffolded CPBL in digital marketing learning..

The collected data were analyzed thematically following the procedure proposed by Braun and Clarke, which includes data familiarization, generating initial codes, searching for themes, reviewing themes, and defining themes (Braun & Clarke, 2023; Riazi, Ghanbar, & Rezvani, 2023). The analysis began with repeated reading of the reflective journals and interview transcripts to achieve data immersion. In addition to the MUSIC model, this study incorporated an interpretive lens focusing on digital business readiness as part of its analytical novelty. Digital business readiness refers to students' preparedness to apply digital marketing competencies in professional or entrepreneurial contexts, including their ability to utilize digital tools, develop marketing strategies, and identify business opportunities in digital environments (Papageorgiou & Marneros, 2023).

The generated codes were subsequently grouped into categories based on similarities and patterns, and then synthesized into broader themes that reflect students'

learning experiences, motivation, and readiness for digital business practices. The final stage of analysis involved reviewing and refining the themes to ensure coherence, consistency, and alignment with the research objectives (Braun & Clarke, 2023; Riazi et al., 2023).

Table 1. Codes generated for each component of the MUSIC Model
Source: Authors' own creation; instruments were reviewed by education experts

Components of MUSIC Model	Codes	Description
Empowerment	M1	Students have control over how they complete digital marketing tasks
	M2	Students have opportunities to express ideas and make decisions during group discussions
Usefulness	U1	Learning digital marketing concepts perceived as useful for course understanding
	U2	Learning perceived as beneficial for future careers (employment or entrepreneurship)
	U3	Learning perceived as applicable in real-life or business contexts
Success	S1	Support from peers during collaborative activities
	S2	Students' confidence in completing digital marketing tasks
	S3	Enjoyment and satisfaction in completing learning activities
Interest	I1	Positive interest and engagement in digital marketing learning
	I2	Negative perceptions or difficulties experienced during learning
Caring	C1	Lecturer support in guiding students to achieve learning goals
	C2	Lecturer demonstrates concern for students' learning progress

RESULTS

The findings of this study aim to explore how scaffolding strategies in the CPBL environment were perceived by vocational students and how these experiences influenced their motivation and digital business readiness. The analysis of students' reflective journals and interview data revealed several patterns aligned with the components of the MUSIC Model of Motivation. Table 2 presents selected excerpts from students' responses, along with the type of scaffolding involved, its implications, and the emerging themes. These excerpts illustrate how different forms of scaffolding contributed to students' learning experiences in the digital marketing course.

Table 2. Excerpts of students' responses from interviews and reflection journals
Source: Authors' own creation/work.

MUSIC Codes	Students' Responses	Type of Scaffolding	Implications	Theme
M1	"We worked in groups to design a digital marketing plan for a product, and everyone could share ideas freely. It made me more confident to participate." (IT5)	Peer scaffolding: group discussion	Encourages student autonomy and active participation	Small group discussion promotes active learning
M1	"The lecturer gave guiding questions at the beginning, so we knew what to focus on when analyzing the marketing case." (CU3)	Expert scaffolding: guiding questions	Helps direct students' thinking and engagement	Teacher guidance drives participation
M2	"We used templates to plan content and campaigns, which made it easier to organize our ideas as a team." (IT2)	Activity design scaffolding: template	Supports structured collaboration and task completion	Structured learning activities support outcomes
U1	"I understand digital marketing better because we directly applied it in solving real business problems." (CU6)	Expert scaffolding: facilitation	Enhances understanding through real-world application	Learning relevance increases motivation
U2	"This course is very useful because I can use it later to promote my own business." (CU4)	Expert scaffolding: feedback and explanation	Connects learning to future career and entrepreneurship	Digital business readiness development
U3	"I realized digital marketing skills are useful not only for business but also for personal branding." (IT1)	Activity scaffolding: real-world task	Extends learning beyond classroom context	Learning relevance increases motivation
S1	"We helped each other during discussions and gave feedback on our ideas." (IT7)	Peer scaffolding: collaboration	Promotes teamwork and shared responsibility	Small group discussion promotes active learning
S2	"At first I didn't understand, but after watching examples and discussing, I could create my own marketing plan." (CU2)	Activity scaffolding: examples and guidelines	Builds confidence in task completion	Structured learning activities support outcomes
S3	"The project was interesting because we worked on real cases, so I enjoyed the process." (IT3)	Activity scaffolding: authentic problem	Increases engagement and enjoyment	Learning engagement through real cases
I1	"I prefer this method because we are more active and not just listening to lectures." (CU5)	Peer scaffolding: discussion	Enhances interest through active learning	Learning engagement through real

MUSIC Codes	Students' Responses	Type of Scaffolding	Implications	Theme
				cases
I2	"Sometimes it was difficult when we didn't understand certain digital tools." (IT6)	Activity scaffolding: tools	Highlights challenges in learning process	Need for better technical support
C1	"The lecturer always checked our progress and gave feedback to improve our work." (CU1)	Expert scaffolding: feedback	Supports student achievement and progress	Teacher guidance drives participation
C2	"The lecturer was supportive and encouraged us to keep trying even when we made mistakes." (IT4)	Expert scaffolding: encouragement	Builds positive learning environment	Teacher guidance drives participation

The findings presented in Table 2 indicate that various scaffolding strategies were experienced by students during the CPBL activities. Overall, students showed positive perceptions of the learning process, particularly in terms of participation, understanding, and engagement. Based on these findings, the following sections discuss the themes in relation to the research questions.

RQ1. How did scaffolding transpire during the course and how did students perceive the scaffolding strategies in relation to their learning performance?

In general, the findings indicate that students had positive perceptions of the scaffolded CPBL approach in the digital marketing course. The analysis resulted in three major themes: (1) small-group discussion promotes active learning, (2) teacher guidance drives greater participation, and (3) structured learning activities support learning outcomes.

1. Small-group discussion promotes active learning

The findings revealed that peer scaffolding through group discussions significantly enhanced students' participation and engagement. Students reported that working in small groups allowed them to share ideas, exchange feedback, and develop solutions collaboratively. This collaborative environment increased their confidence and encouraged active involvement in the learning process. Additionally, students felt more comfortable expressing their opinions in smaller groups, which contributed to deeper understanding

and knowledge construction. The results suggest that peer interaction plays a crucial role in fostering active learning in CPBL environments.

2. Lecturer guidance drives greater participation

The role of the lecturer as a facilitator was perceived as essential in guiding students throughout the learning process. Through guiding questions, feedback, and continuous support, the lecturer helped students stay focused and motivated in completing their tasks. Students highlighted that the lecturer's encouragement reduced passive behavior and increased their willingness to participate in discussions and problem-solving activities. This finding emphasizes the importance of expert scaffolding in maintaining student engagement and ensuring effective learning.

3. Structured learning activities support learning outcomes

The use of structured scaffolding, such as templates, guidelines, and real-world tasks, was found to significantly support students in understanding and completing digital marketing projects. These structures helped students organize their ideas, follow systematic processes, and achieve learning objectives. Moreover, authentic problems and practical tasks enhanced students' engagement and made learning more meaningful. Students reported that these activities helped them better understand how digital marketing concepts are applied in real-life contexts.

RQ2. How did students perceive their learning experience in terms of motivation and digital business readiness?

The findings also revealed that students' learning experiences in the CPBL environment contributed to their motivation and readiness for digital business practices. Three themes emerged: (1) perceived relevance to future careers, (2) development of digital business readiness, and (3) challenges in applying digital tools.

1. Perceived relevance to future careers

Students expressed that the learning activities were highly relevant to their future careers, both in employment and entrepreneurship. They recognized that digital marketing skills are essential for promoting products and services in various industries.

2. Development of digital business readiness

The CPBL approach helped students develop readiness to engage in digital business activities. Students reported increased confidence in creating marketing strategies, using digital platforms, and identifying business opportunities. This finding highlights the contribution of scaffolded CPBL in bridging the gap between academic learning and real-world application, particularly in preparing vocational students for the digital economy.

3. Challenges in applying digital tools

Despite the positive outcomes, some students reported difficulties in using certain digital tools and platforms. These challenges indicate the need for additional technical support and scaffolding to ensure all students can fully benefit from the learning process.

DISCUSSION

The lesson design implemented in this study illustrates how scaffolded Cooperative Problem-Based Learning (CPBL) was structured to support vocational students in achieving learning outcomes in digital marketing education. The purpose of this study is to examine how these scaffoldings were perceived by students and how they contributed to learning performance as well as digital business readiness. Understanding the role of scaffolding in CPBL provides more focused insights into how instructional strategies can enhance students' engagement and preparedness for real-world digital business environments. The findings revealed three dominant scaffolding strategies perceived by students in improving their learning performance: small-group discussion, facilitator encouragement, and structured learning activities. Consistent with previous findings, students reported that collaborative discussions enabled them to exchange ideas, particularly in developing digital marketing strategies such as content planning, branding, and campaign analysis (Yang, 2023). This supports the concept that learning occurs more effectively when students engage in social interaction and knowledge co-construction, aligning with the theory of the zone of proximal development (Cai, Msafiri, & Kangwa, 2025). In cooperative settings, each member contributes to solving complex problems, which strengthens both individual understanding and group outcomes (Yang, 2023).

Furthermore, small-group interaction was found to enhance students' motivation and confidence in expressing ideas. Students became more active participants when they were given opportunities to discuss real-world digital marketing problems, such as market segmentation or social media strategy. This finding aligns with prior studies showing that

active engagement in group work promotes deeper learning and critical thinking [active learning]. When students are positioned as decision-makers in problem-solving contexts, they are more likely to develop ownership of their learning process (Cullen & Oppenheimer, 2024; Rashed Ibraheam Almohesh, 2024). However, similar to challenges reported in cooperative learning environments, this study also identified the potential issue of unequal participation among group members. Some students may rely on more active peers, leading to a "free-rider" phenomenon. This highlights the importance of effective scaffolding from the facilitator to ensure balanced participation and accountability within groups. Teachers play a crucial role in monitoring group dynamics and encouraging equal contribution to maintain the effectiveness of collaborative learning.

The role of facilitator scaffolding was also found to be significant in driving student participation. Students perceived that guidance, prompting questions, and feedback provided by the lecturer helped them stay engaged and focused on problem-solving tasks. This aligns with research indicating that teacher support can enhance student motivation and participation by creating a structured yet flexible learning environment (Zhang & Zou, 2024). In CPBL settings, the instructor shifts from being a knowledge transmitter to a learning facilitator, enabling students to take greater responsibility for their learning. In addition to soft scaffolding, hard scaffolding in the form of structured materials, templates, and guided tasks was essential in supporting students' understanding. These structured supports helped students navigate complex digital marketing problems by breaking them down into manageable steps, such as identifying target audiences, designing campaigns, and evaluating performance metrics. Such scaffolding mechanisms are particularly important in the early stages of problem-based learning, where students need clear direction to engage effectively with authentic problems.

The study also highlights how participation in CPBL influenced students' perception of their future careers, particularly in terms of digital business readiness. Students reported gaining practical insights into how digital marketing strategies can be applied in real business contexts, including entrepreneurship opportunities in online platforms. This finding supports the idea that problem-based learning can bridge the gap between theoretical knowledge and practical application in vocational education. By engaging in real-world problem scenarios, students develop not only technical skills but also entrepreneurial thinking and adaptability (Daspit, Fox, & Findley, 2023). Moreover, the findings suggest that CPBL contributes to the development of competencies required in

the modern workforce, such as problem-solving, collaboration, and self-directed learning (Daspit et al., 2023). These competencies are essential for vocational graduates who are expected to be job-ready or capable of creating their own business opportunities, particularly in the rapidly evolving digital economy. Nevertheless, some students expressed concerns regarding the applicability of CPBL in more technical or hands-on contexts. This perception may stem from their prior exposure to traditional lecture-based instruction rather than constructivist approaches [traditional learning]. Although previous studies have demonstrated the effectiveness of problem-based learning in practical and technical education settings, further investigation is needed to explore how CPBL can be adapted for skill-intensive learning environments such as culinary practices or technical system development.

Finally, this study reinforces the idea that entrepreneurial competencies are not limited to business creation but are relevant across various professional contexts, including digital careers (Mitchelmore & Rowley, 2010). The integration of CPBL in digital marketing education provides students with opportunities to develop innovation, adaptability, and opportunity recognition skills, which are crucial in today's workforce. Therefore, it can be argued that scaffolded CPBL plays a significant role in fostering digital business readiness among vocational students while simultaneously enhancing their learning motivation and engagement.

CONCLUSION

This study investigated how scaffolded Cooperative Problem-Based Learning (CPBL) was implemented in a digital marketing course and how vocational students perceived its impact on their learning performance and digital business readiness. The findings indicate that scaffolding strategies, particularly small-group discussions, facilitator encouragement, and structured learning design, played a crucial role in enhancing student engagement, motivation, and understanding of digital marketing concepts. Students demonstrated increased autonomy, active participation, and the ability to apply knowledge in solving authentic business-related problems. In relation to future readiness, the learning experience contributed to the development of digital business competencies, including strategic thinking, collaboration, and entrepreneurial awareness, which are essential for vocational graduates entering the digital economy.

This study contributes to the existing literature by extending the application of scaffolded CPBL beyond teacher education into vocational digital marketing contexts. Theoretically, it reinforces the role of scaffolding within problem-based learning in fostering motivation and meaningful learning experiences. Methodologically, it demonstrates the relevance of integrating the MUSIC Model of Motivation as an analytical lens to capture students' perceptions in applied learning environments. Practically, the findings highlight how CPBL can be used as an effective instructional approach to prepare vocational students not only for employment but also for entrepreneurial pathways in digital business.

Despite these contributions, several limitations should be acknowledged. First, this study relied primarily on self-reported data obtained from reflective journals and semi-structured interviews, which may be influenced by students' subjective perceptions and social desirability bias. Second, the study was conducted within a single vocational institution involving a relatively limited number of participants from two diploma programs, which may restrict the transferability of the findings to other vocational education contexts. Third, the research focused mainly on students' perceived learning experiences and digital business readiness without incorporating objective performance measures or direct observation of collaborative interactions during CPBL activities. In addition, the relatively short duration of the intervention limits the ability to examine the long-term sustainability of students' motivation, entrepreneurial attitudes, and career readiness after graduation.

These limitations open important opportunities for future research. Subsequent studies are recommended to incorporate classroom observations, learning analytics, or mixed-method approaches to obtain a more comprehensive understanding of behavioral dynamics in scaffolded CPBL environments. Further investigation is also needed to evaluate the effectiveness of CPBL in more practice-intensive vocational subjects, such as laboratory-based or technical production courses, where collaborative problem-solving may present different challenges. Moreover, longitudinal studies examining the transition of vocational graduates into employment or entrepreneurial activities would provide deeper insights into the long-term impact of scaffolded CPBL on digital business readiness and workforce adaptability in the digital economy.

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