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A phenomenology of digital creativity in primary education

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ABSTRACT

This descriptive phenomenological study examines how Malaysian primary school educators foster creativity in digitally transformed classrooms. The study addresses the challenge of enacting creativity-oriented teaching under routine classroom conditions shaped by technological, pedagogical, and contextual constraints. Data were collected through semi-structured interviews with 25 educators and five classroom observations. The findings indicate that creativity-oriented digital pedagogy is enacted most consistently through interactive scaffolding and responsive teaching. Multimedia-enriched delivery primarily supports explanation and engagement, whereas collaborative knowledge-making is less consistently observed. Sustained digital creativity depends on effective pedagogical guidance, adequate infrastructure, and equitable access to digital resources. The study offers an original evidence-based continuum of creativity-oriented digital pedagogy comprising multimedia-enriched delivery, interactive scaffolding, and collaborative knowledge-making. These findings highlight the importance of pedagogical alignment and supportive conditions in sustaining creativity in digitally transformed primary classrooms.

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1. INTRODUCTION

Digital transformation is now embedded in Malaysian primary education through platforms such as Digital Educational Learning Initiative Malaysia (DELIMa) and growing expectations for digital literacy, engagement, collaboration, and higher-order thinking [1], [2]. Recent studies also indicate that digital learning is reshaping classroom pedagogy through innovation and technology integration [3]. In this context, creativity-oriented teaching is important because digital classrooms should support not only content delivery but also idea generation, problem-solving, and active participation [4]. However, creativity-oriented digital teaching remains challenging in primary classrooms. Educators must balance platform use with pupils' needs, classroom management, infrastructure constraints, institutional expectations, and emerging technologies such as artificial intelligence [5]. These demands may restrict creativity in everyday teaching.

Although prior studies have examined platform use, implementation outcomes, professional development, and technology integration [6]–[19], less is known about how primary school educators experience and enact creativity-oriented teaching in digitally transformed classrooms. This study examines how Malaysian primary school educators foster creativity and identifies the pedagogical and contextual factors shaping their practice. The guiding question is: "How do Malaysian primary school educators experience and foster creativity in digitally transformed primary classrooms?"

The novelty of this study lies in developing an empirically grounded continuum of creativity-oriented digital pedagogy from educators' lived experiences and observed classroom practices in Malaysian primary schools. Related literature indicates that linking technology to pedagogy, teacher support, and

purposeful task design makes digital teaching more effective [6], [7], [10]–[13]. Scaffolding, feedback, and participation strengthen creativity-oriented digital learning, while time, infrastructure, and institutional support sustain collaboration. This study addresses the remaining gap by deriving a practice continuum—multimedia-enriched delivery, interactive scaffolding, and collaborative knowledge-making—from phenomenological evidence and classroom observations in Malaysian primary schools.

The study drew on technological pedagogical content knowledge (TPACK), Bloom's digital taxonomy, creativity and task-design literature, and Colaizzi's descriptive phenomenology. TPACK explained the coordination of technology, pedagogy, and content [20], [21]. Bloom's digital taxonomy supported interpretation of cognitive demand [22], while creativity and task-design literature informed analysis of idea generation and collaboration [23], [24]. Colaizzi's approach guided the description of educators' lived experiences [25], [26]. Table 1 delineates TPACK's role in integrating technology, pedagogy, and content. Bloom's digital taxonomy informs the interpretation of cognitive and creative engagement. Colaizzi's approach guides the phenomenological analysis of educators' lived experiences.

Table 1. Analytic use of the frameworks

Framework	Focus	Use in this study
TPACK	Technology, pedagogy, and content integration in context.	Explains enactment of creativity-oriented teaching.
Bloom's digital taxonomy	Cognitive demand of digitally mediated tasks.	Interprets thinking and creative engagement.
Colaizzi's approach	Description of lived experience through themes.	Guides the description of educators' experience.

2. METHOD

2.1. Study design

A descriptive phenomenological design was used to examine how Malaysian primary school educators experience and foster creativity in digitally transformed classrooms. This design was appropriate because the study sought to describe lived experience rather than measure outcomes. Rigor was supported through the consolidated criteria for reporting qualitative research (COREQ) and the standards for reporting qualitative research (SRQR) guidance, reflexive notes, analytic memos, triangulation, member checking, and peer debriefing [18], [26], [27].

2.2. Study phenomenon

The phenomenon was educators' enactment of creativity-oriented teaching in digitally transformed primary classrooms. The analysis focused on how educators promoted creativity while responding to instructional demands, practical constraints, and pupils' learning needs.

2.3. Study instruments

Data were collected using a semi-structured interview protocol and classroom observation schedule. The interviews explored creativity-oriented teaching, digital tool use, instructional decisions, and enabling or constraining classroom conditions. Follow-up probes clarified meanings and deepened responses. The observation schedule focused on scaffolding, responsiveness, multimedia use, collaborative task design, engagement, and creative expression. Combining interviews and observations allowed reported practices to be compared with classroom enactment.

2.4. Trustworthiness

Trustworthiness was addressed through credibility, dependability, confirmability, and transferability. Credibility was strengthened through triangulation, expert review, member checking, and peer debriefing. Dependability and confirmability were supported by standardized procedures, pilot refinement, an audit trail, reflexive journaling, transcripts, and field notes [18].

2.5. Pilot study

A pilot study with two educators assessed the clarity, sequence, and feasibility of the interview protocol. Feedback informed revisions before the main study [18].

2.6. Study population

The study population consisted of educators from TS25 Cohort 6 primary schools in Johor, Malaysia. Participants were eligible if they had at least three years of teaching experience and regularly used technology-enhanced instruction. The final sample comprised 25 interview participants and five classroom observations. Data collection continued until thematic saturation was achieved.

2.7. Sampling strategy

Purposive sampling was used to recruit information-rich participants who met the inclusion criteria and had direct experience with creativity-oriented teaching in technology-enhanced primary classrooms [18], [26].

2.8. Data collection procedures

A total 25 semi-structured interviews lasting 60 to 75 minutes were audio-recorded and transcribed verbatim. They examined educators' understandings of creativity-oriented teaching, digital tool use, student engagement, and contextual influences on instructional choices. In addition, five observations lasting 40 to 60 minutes documented scaffolding, responsiveness, multimedia use, collaboration, and adaptations to classroom constraints. The researcher mainly maintained a non-participant role.

2.9. Data analysis

Interview and observation data were analyzed using Colaizzi's seven-step descriptive phenomenological procedure. NVivo supported data organization and comparison. Significant statements were identified, meanings were formulated, themes were clustered, and findings were returned to participants for member checking. The study was completed over six months, covering literature review, instrument development, ethics approval, data collection, analysis, and validation.

3. RESULTS AND DISCUSSION

3.1. Results

3.1.1. Participant profile

Table 2 summarizes the gender and teaching experience of the 25 interview participants, providing context for interpreting the qualitative findings. Most participants were female, and the sample represented several experience levels. The largest group had 6–10 years of teaching experience, indicating perspectives from different career stages.

Table 2. Demographic profile of interview participants

Characteristic		n	%
Gender	Male	3	12
	Female	22	88
Total		25	100
Teaching experience	Fewer than 5 years	4	16
	6–10 years	8	32
	11–15 years	7	28
	>15 years	6	24
Total		25	100

3.1.2. Interview findings

The interview data produced five strategy clusters: interactive scaffolding and formative assessment, inquiry-based tasks, project-based or collaborative work, gamification, and multimedia-enriched delivery. Digital tools mainly supported feedback, explanation, participation, and shared task completion. Overall, creativity-oriented digital pedagogy was more often guided than fully open-ended. Table 3 summarizes the main strategies and their interpretation in relation to creativity-oriented online teaching.

Table 3. Thematic patterns derived from the interview data

Theme	Clarification
Scaffolded learning	The educator provides step-by-step support to help students complete learning tasks and improve their understanding.
Inquiry-based tasks	Activities that encourage students to ask questions, search for information, explore ideas, and discover answers independently.
Project-based activities	Learning tasks in which students work over time to create a product, presentation, model, video, or other meaningful output.
Collaborative learning	Learning through teamwork, discussion, shared problem-solving, and joint contributions among students.
Gamification	Use of game-like elements such as quizzes, points, competition, and instant feedback to increase engagement and participation.
Multimedia use	Use of videos, animations, slides, audio, graphics, or other visual and digital media to support teaching and learning.

- Theme 1: scaffolded learning and formative assessment

Participants described creativity-oriented teaching as guided work supported by feedback. Digital tools therefore supported monitoring, revision, and improvement. Some educators explained:

> "*I cannot just give them the task and disappear. I break it into small steps—first they answer one reflection question, then they try again after I comment*." (P1)
> "*The quiz is not only for testing. When they see which part is wrong, they become curious and want to improve their answer*." (P4)

- Theme 2: inquiry-based tasks

Inquiry activities encouraged pupils to search, explore, and share ideas. Digital inquiry supported exploration and ownership. Some educators noted:

> "*Sometimes they ask questions I did not plan. I tell them, 'Okay, search and bring one fact to share,' and suddenly the lesson becomes more alive*." (P2)
> "*When they explore online, they feel like 'I found it myself.' That ownership makes them more confident to give ideas*." (P11)

- Theme 3: project-based and collaborative learning

Collaborative platforms supported shared authorship and peer learning. These practices appeared more selectively than scaffolding or multimedia use. Some educators reported:

> "*In Google Docs, they can build the story together—one student writes, another adds pictures, and another checks the spelling. They learn from each other's ideas*." (P3)
> "*Padlet helps shy students. They post first, then we discuss. It becomes teamwork, not only one person answering*." (P24)

- Theme 4: gamification and interactive tools

Game-based tools increased participation and gave rapid feedback. Thus, gamification supported motivation and instructional adjustment. Some educators stated:

> "*When I use Kahoot, even the quiet ones suddenly want to try. The score makes them excited, but the real goal is that they explain why their answer is correct*." (P6)
> "*Quizizz gives instant feedback, so I can adjust immediately—if many get it wrong, I stop and reteach in a different way*." (P13)

- Theme 5: multimedia-enriched lesson delivery

Multimedia supported explanation, attention, and creative response. Multimedia primarily served as a tool for explanation and support. One educator remarked:

> "*If I only talk, they switch off. With short videos and animations, they can see the concept, and then they start imagining their own examples*." (P5)
> "*The visuals help my weaker pupils. When they understand through pictures, they are braver to create something, like a simple infographic or mind map*." (P16)

3.1.3. Observation findings

Table 4 summarizes the observed presence of multimedia use, engagement, collaboration, and responsive teaching across five classrooms. Responsive teaching and engagement-oriented practices appeared most frequently, each in four classrooms. Multimedia-enriched delivery appeared in three classrooms, while collaborative knowledge-making appeared in two. These patterns reinforce the interview findings and align with prior work on teaching for creativity [28].

3.1.4. Summary of findings

Overall, creativity-oriented digital pedagogy was enacted most consistently through interactive scaffolding and responsive teaching. Multimedia supported access and engagement, whereas collaborative knowledge-making appeared less frequently. Higher-agency digital creativity therefore required stronger facilitation and more stable classroom conditions. The novelty of these findings lies in showing how the proposed continuum distinguishes routine digital engagement from higher-agency collaborative creativity in primary classroom practice.

Table 4. Classroom observation results for creativity-oriented digital pedagogy

No.	Observation focus and guiding question	P1	P2	P3	P4	P5	ΣF	Level
1	Multimedia use: visuals, audio, animations, or videos used to support lesson delivery and engagement. Guiding question: were multimedia tools used to support diverse learning needs and make the lesson more interactive?	X	√	√	X	√	3	S
2	Engagement and creativity: interactive quizzes, live worksheets, and collaborative activities that stimulate participation. Guiding question: did the platform support interactive instruction and allow the educator to adjust teaching to learner needs?	√	√	X	√	√	4	T
3	Collaboration: project-based learning and group activities in virtual environments. Guiding question: were collaborative tasks used to support teamwork and shared learning?	X	X	√	X	√	2	L
4	Responsive teaching: scaffolded, inquiry-based, and adaptive strategies used during instruction. Guiding question: did the digital platform enable timely responses to student needs and support reflection and exploration?	√	X	√	√	√	4	T

Note: P1–P5=observed participants; √=observed; X=not observed; ΣF=frequency. Level: L=low (1–2 classrooms), S=moderate (3 classrooms), and T=high (4–5 classrooms).

3.2. Discussion

The findings show uneven enactment of creativity-oriented digital pedagogy. Interpreted through TPACK, Bloom's digital taxonomy, and the practice continuum, interactive scaffolding and responsive teaching were most consistent, while collaborative knowledge-making was less stable [20], [22]. A distinctive contribution of this discussion is that it positions the continuum as an explanatory model for understanding how digital creativity develops from supported engagement to collaborative knowledge-making in primary classrooms.

3.2.1. Interpretation of findings

TPACK highlights the pedagogical nature of digital creativity. Educators used digital tools with prompts, feedback, reteaching, and scaffolding rather than as isolated resources. This indicates that creativity-oriented digital teaching depended on alignment among technology, pedagogy, content, and context [20], [21]. The practice continuum explains differences in enactment. Scaffolding, feedback, and adaptation were common, while collaborative knowledge-making required stronger facilitation, device access, connectivity, time, and support.

Bloom's digital taxonomy helps clarify cognitive demand. Multimedia mainly supported understanding, applying, and early creating [22]. Collaborative knowledge-making required pupils to generate, negotiate, and refine ideas together, reflecting higher-order creative engagement.

3.2.2. Comparison with previous studies

The findings align with studies showing that digital teaching is most effective when guided by pedagogical judgment rather than technology alone [9], [10], [15], [20], [21], [29]. In this study, creativity emerged through scaffolding, feedback, task design, and responsive instructional adjustment [6]. The role of multimedia also aligns with research showing that technology can support creativity by improving representation, exploration, and participation [11], [12], [30], [31]. However, in this study, multimedia mainly supported early creative expression rather than sustained collaborative production [22], [23], [32], [33]. The weaker presence of collaborative knowledge-making reflects evidence that creativity-oriented teaching is harder to sustain when tasks require shared authorship, extended time, strong facilitation, and reliable infrastructure [13], [16], [23], [24], [28], [34], [35].

3.2.3. Contributions, implications, and recommendations

The study contributes an original evidence-based continuum comprising multimedia-enriched delivery, interactive scaffolding, and collaborative knowledge-making. This continuum extends TPACK and Bloom's digital taxonomy by showing that digital creativity varies with pedagogical coordination, cognitive demand, and classroom conditions [21], [22]. The findings support future research, policy attention to infrastructure and device access, and teacher professional learning focused on creative digital pedagogy [16], [25], [26].

3.2.4. Limitations and discussion summary

The study is limited by its small qualitative sample, specific context, interpretive continuum, and absence of long-term student outcome data. Future research should use broader samples, longitudinal designs, and stronger measures of digital creativity and learning. In summary, creativity-oriented digital pedagogy depended more on pedagogical alignment and enabling conditions than on technology alone. Interactive scaffolding and responsive teaching were more sustainable than collaborative knowledge-making.

4. CONCLUSION

This study examined how Malaysian primary school educators foster creativity in digitally transformed classrooms. The study found that educators consistently enacted creativity-oriented digital pedagogy through interactive scaffolding and responsive teaching, as evidenced by interviews and observations. Multimedia-enriched delivery supported explanation and engagement, while collaborative knowledge-making was less frequent. Higher-agency digital creativity therefore required stronger facilitation, reliable infrastructure, and supportive classroom conditions.

The study contributes an evidence-based continuum from multimedia-enriched delivery to interactive scaffolding and collaborative knowledge-making. Derived from phenomenological and observation evidence, the continuum explains why guided digital creativity was more sustainable than collaborative knowledge-making under everyday teaching conditions. Future studies should examine the continuum across wider contexts and relate it to student creativity and learning outcomes. This continuum represents the study's original contribution by explaining how creativity-oriented digital pedagogy progresses from multimedia-supported engagement to guided interaction and collaborative knowledge-making under real classroom conditions.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

Name of Author	C	M	So	Va	Fo	I	R	D	O	E	Vi	Su	P	Fu
Mogana A/P Letchumanan	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓	✓
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C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
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R : **R**esources
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O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors declare no known conflict of interest.

INFORMED CONSENT

Written informed consent was obtained from all participants before data collection.

ETHICAL APPROVAL

Ethical approval was granted by the University of Selangor Research Ethics Committee, Ref. UNISEL/REC/2025/012, on 15 March 2025. Written consent was obtained, confidentiality was protected through pseudonyms, and data were stored on encrypted, access-restricted devices for 5 years after publication. Participant confidentiality was protected through pseudonyms and secure data handling.

DATA AVAILABILITY

The qualitative data are not publicly available because of participant confidentiality and ethical restrictions. De-identified excerpts may be requested from the corresponding author subject to institutional approval.

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