

A Qualitative Case Study in Uzbekistan: Digital Pedagogical Creativity among Teacher Candidates at a Creativity-Centred Programme

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Abstract: This case study examines how teacher candidates in Uzbekistan understand and practice Digital Pedagogical Creativity (DPC) within the Master of Arts in Education and Innovation (MA EDIN) programme at a university in Tashkent. Situated within the broader processes of national digitalisation and post-Soviet educational transformation, the study investigates how technology and creativity intersect in teacher education. Data were collected from 30 participants through semi-structured interviews, focus groups, and 55 digital artefacts, and analysed using thematic analysis in NVivo. Following the frameworks of Technological Pedagogical Content Knowledge (TPACK) (Mishra and Koehler, 2006), Amabile's Componential Theory (1983), Csikszentmihalyi's Systems Model (1996), and Rodney's Creativity Model (2024), this research examines DPC. These frameworks illuminate teacher knowledge (TPACK), individual motivation (Amabile, 1983), sociocultural and institutional conditions (Csikszentmihalyi, 1996), and programme-level creative pedagogy (Rodney, 2024), enabling the exploration of the enabling and constraining factors of DPC through a lens of generations, institutions, and infrastructure. The findings indicate that there is a significant balance between the digital creativity interests of teacher candidates and the conflicting practices that stem from resource availability, policy adaptability, and institutional support. The study highlights how centralised systems and cultural expectations continue to shape pedagogical creativity. The results may be useful not only for adapting DPC models to resource-constrained environments but also for



policymakers and teacher educators who are rethinking how to prepare teachers for digital-age classrooms.

Keywords: Digital Pedagogical Creativity, Teacher Education, TPACK, Educational Technology.



1 Introduction

The inclusion of digital technology in teacher education has increasingly gained importance. The rise of digital pedagogy and pedagogical creativity has been strongly linked to the development of critical thinking, collaboration, and problem-solving skills in students (Beghetto and Kaufman, 2009; Sawyer, 2012). Equally, the European Union and North America, as in other parts of the world, have placed greater focus on the formation of teachers' and learners' digital skills. These international trends are also evident in the national policies of Uzbekistan, such as Digital Uzbekistan 2030" (Presidential Decree PF-6079, 2020), which aims to transform Uzbekistan's education sector. Digital Pedagogical Creativity (DPC) has a special emphasis on the creative application of technology and pedagogy in classroom teaching to improve the quality of teaching and learning and making students' learning more meaningful. Although the Technological Pedagogical Content Knowledge (TPACK) framework by Mishra and Koehler (2006) provides a starting point for understanding how technology can be used in education, the creative side of DPC draws from the work of educational creativity theorists (Sawyer, 2012; Beghetto and Kaufman, 2014). Beghetto and Kaufman (2014) suggest that in the contemporary educational landscape, creativity is at the core of teaching and allows the teacher to establish a creative environment in the classrooms.

In general, the present study investigates how teacher candidates in Uzbekistan conceptualise and enact digital pedagogical creativity within a creativity-centred master's programme. Specifically, it explores (1) how teacher candidates understand DPC and its impact on teaching and learning; (2) how they define and apply DPC in their own instructional practices; and (3) which digital pedagogical creativity strategies they consider most effective within their contexts.

Historical context

The education system of Uzbekistan has radically changed since the country gained independence in 1991. One of the most notable transformations has been moving from the Soviet-era rote memorisation towards more learner-focused teaching methods (Silova, 2009). Education policies such as Digital Uzbekistan 2030 strategy (Presidential Decree PF-6079, 2020) promote a unified system of technology integration



into educational processes, yet access to digital tools remain uneven across regions, especially in rural areas, which exacerbates educational inequity (Warschauer and Matuchniak, 2010). In the past decade, there has been a significant push to increase investment in Information and Communication Technology (ICT) infrastructure and online learning, alongside teacher training programmes (Usmonov, 2018).

Regardless of these advancements, educators' attitudes towards digital creativity continue to stem from the outdated, predominantly teacher-centred approaches used in Uzbekistan. Such practices, which are products of the Soviet system, are characterised by didactic, rote memorisation that restricts active, imaginative, and evaluative student engagement (Sharpes, 1973; Silova, 2009). There is growing consensus among educators worldwide that greater emphasis should be placed upon creativity in both the teaching and learning processes (Craft, 2005; Robinson, 2011). In contrast, the Uzbekistan education system is defined by the enduring and remarkable challenges of cultural and institutional norms.

Sociocultural and Sociopolitical Context

Understanding digital pedagogical creativity in the context of teachers' sociocultural frameworks in Uzbekistan is fundamental. The full adoption of digital changes along with new and more modern methods of teaching is the work of members of the teaching staff. The older members are more protective, and they consider new technology a threat to conventional teaching. This is often the case in Uzbekistan's education sector, among older educators, in relation to modern technological advancements.

From a sociopolitical angle, the impact of policy on fostering digital pedagogical creativity is of paramount importance in Uzbekistan. Government initiatives for digital literacy often contend with a rigid, standardised examination system rooted in traditional approaches (Ruziev and Burkhanov, 2018). Institutional support to promote creative teaching is often inadequate, leaving many educators to find their own ways to integrate technology. Rural areas face additional problems, because of the urban-rural divide, such as the gap in technological resources because urban schools are better resourced, which worsens educational inequity (Warschauer and Matuchniak, 2010).



The MA EDIN Programme and Its Role in Shaping DPC

The Master of Arts in Education and Innovation (MA EDIN) programme from Webster University in Tashkent offers insight into digital pedagogical creativity in the context of Uzbekistan. The programme is operationalised in the form of project-based activities, collaborative design activities, digital storytelling activities, and technology-enhanced curriculum development. Students produce a wide range of digital artefacts (e.g., Canva prototypes, storytelling videos, and Miro concept maps), engage in peer feedback cycles, and reflect on how creativity and technology intersect in their teaching. It is part of the educational reform in Uzbekistan aimed at improving the digital competencies of the country's teachers. Designed for scholars at both the national and international levels, the reform of the educational system of Uzbekistan aims to be comprehensive, with the primary goal of enhancing international competitiveness while preserving national cultural identity (Uralov, 2020). These mechanisms enable MA EDIN to embody aspects of Uzbekistan's Digital Uzbekistan 2030 strategy by preparing teachers to design meaningful, innovative, and technology-supported learning experiences (Presidential Decree PF-6079, 2020). As a result, the programme becomes a structured environment where teacher candidates can take creative risks, experiment with new tools, and develop pedagogical approaches that differ from the traditionally rigid instructional models prevalent in Uzbekistan. This aligns with the broader national agenda of cultivating innovation-oriented educators capable of adapting to rapidly evolving digital landscapes.

1.1 Theoretical Framework

In every corner of the globe, technology and teaching now exist in a continual, mutually reinforcing relationship, and so the expectations placed on educators have shifted: employing inventive, digitally mediated methods are now a basic requirement for deepening learner engagement. This research aims to explore creativity in teaching within the context of Uzbekistan through the employment of four theoretical frameworks—TPACK (Mishra and Koehler, 2006), Amabile's Componential Theory (1983), Csikszentmihalyi's Systems Model (1996), and Rodney's Creativity Model (2024).

Mishra and Koehler's (2006) TPACK framework conceptualises teacher knowledge as the dynamic intersection of content knowledge (CK), pedagogical knowledge (PK),



and technological knowledge (TK). TPACK does not see technology as an addition but as the responsibility of the teacher to maintain the dynamic between these domains by continuously adjusting the relationships to produce meaningful experiences among learners. In places such as Uzbekistan, where access to technology is unreliable, and teachers must decide when and how limited tools can be used most effectively, TPACK provides a workable prism through which to view the challenges of technology integration in pedagogy.

Componential Theory of creativity, proposed by Amabile, defines creativity as a set of domain-related skills, creativity-related processes, task motivation, and an enabled or constrained environment. This framework is well suited to analysing the role of institutional support, teacher autonomy, and resource availability in fostering or inhibiting DPC in Uzbekistan. These components are directly observable in Uzbekistan's teacher education context, where institutional structures, available tools, and teacher autonomy shape the degree to which educators can take creative risks with digital tools (Sullivan, 2017; Pozilova, 2023).

Csikszentmihalyi's Systems Model views creativity as a process and that includes interaction between the individual and the domain and the field where the field comprises the sociocultural, institutional and policy structures. These institutions, including the hierarchical system of rule and the unequal digital infrastructure, are core to the development of the capacity of educators to apply innovative digital pedagogy in Uzbekistan.

Rodney's Creativity Model (2024) proposes creativity as the result of the interaction of a creativity core, experiential learning, design thinking, as well as interdisciplinary and global perspective. The framework is very similar to the pedagogical design of the MA EDIN programme, where reflective learning tasks, project-based learning tasks, and technology-enhanced learning tasks are included and they encourage creative development.

The four frameworks present a holistic view of DPC. TPACK offers an understanding of how technology, pedagogy and content may be integrated, Amabile's framework describes the motivational and environmental factors, Csikszentmihalyi's model emphasises a sociocultural and institutional framework, and the model by Rodney



reveals the mechanisms of supporting creativity on a programme level. Their interrelated application can be used to conduct a subtle analysis of DPC at individual, institutional, and systemic levels in the Uzbek context.

2 Literature Review

2.1 Digital Education and Creativity in Uzbekistan

Through national policy frameworks, like Digital Uzbekistan 2030, the country has made significant progress in fostering digital innovation. Research (Usmonov, 2018; Gulyamov et al., 2023) demonstrates how Uzbekistan aims to align national curriculum goals with international benchmarks through systematic allocation of financial and institutional resources to ICT networks, digital coursework, and professional teacher mentoring. Nonetheless, the implementation of these policy documents leaves much to be desired. The curricula for teacher education remain heavily influenced by the Soviet model of education and are still overwhelmingly teacher-centred and standardised (Silova, 2009; Sabirova, 2020). The rural-urban disparity in technological resources (Warschauer and Matuchniak, 2010) tends to widen the gap between the intended policy and teaching practice.

These structural tensions are consistent with the Systems Model of Csikszentmihalyi, the focus on the role of sociocultural and institutional contexts in creativity, and with the focus of Amabile on environmental aids and hindrances. This highlights the importance of multi-layered analyses of DPC.

2.2 Pedagogical Creativity: Global and Local Perspectives

Pedagogical creativity is widely recognised as being central to adaptive and student-centred teaching the world over (Craft, 2005; Robinson, 2011). Digital technology as a support for the differentiation, problem, and autonomous learner skill sets empowers the educator and is immensely valuable (Sawyer, 2012; Beghetto and Kaufman, 2014).

As described above, Amabile's Componential Theory (1983) highlights the domain-relevant skills, processes, motivation, and environment in developing creativity. Research carried out in Uzbekistan suggests that reflective, project-based teacher



training does assist in creativity development (Pozilova, 2023; Mubinabonu and Sohib, 2024). However, these studies also mention appropriate limits such as a rigid curriculum, a strict syllabus followed by limited professional freedom, insufficient digital education, and a lack of professional autonomy. Drawing on Hofstede's (2001) framework of cultural dimensions, post-Soviet education systems can be seen as emphasising compliance due to high power distance and collectivist norms, which may constrain creativity (Sharpes, 1973; Silova, 2009).

2.3 Digital Pedagogical Creativity and the TPACK Framework

The intersection of technology, pedagogy, and creative abilities is what constitutes DPC. TPACK (Mishra and Koehler, 2006), discussed earlier, offers a lens for integrating technology with pedagogy and content.

The available TPACK-related literature found in works by Baran et al. (2011) and Thyssen et al., (2023) illustrates the complex ways the teachers organise technology, pedagogy and content. However, a large part of this literature presupposes uniform access to online apps and education which is not ideal in most Global South or post-Soviet environments. The assumptions that are inherent in TPACK, including the quality of internet, equal access to devices, and continuous digital literacy education are not always fulfilled in Uzbekistan. Mubinabonu and Sohib (2024) argue that despite attempts to digitalize the transformation, teachers experience issues with infrastructural barriers and unspecified training; therefore, DPC cannot be viewed through the prism of technologies only.

2.4 Creativity as a Social Construct: Systems Theory and Institutional Factors

Csikszentmihalyi's Systems Model (1996), described earlier, situates creativity within the interaction of individual, domain, and field. In Uzbekistan, the education ministries, school administrators, and the examination systems form the "field" and are the primary innovators and the most significant deterrents.

Novel teaching practices are often adopted slowly because, in collectivist cultures, such changes tend to disrupt the existing systems and group values (Hofstede, 2001). When placing DPC in the context of the Systems Model, it is feasible to see why



reforms or training programs cannot change practice alone. Teachers work within institutional regulations, cultural practices, and resource bases, all of which should be geared towards consistency so that creativity can be nurtured.

2.5 Rodney's Creativity Model and Context-Sensitive Pedagogy

Rodney's (2024) Creativity Model, developed in the context of Webster University, proposes Creativity Core, Experiential Learning, Design Thinking, and Interdisciplinary and Global Perspectives as its major stages. In the case of Uzbekistan, the framework is further shaped by local culture, institutional constraints, and resources, showcasing its adaptability. Rodney's framework is especially useful for analysing DPC in Uzbekistan because it emphasises programme-level structures, such as inquiry cycles, creative risk-taking, and interdisciplinary problem-solving, that can counterbalance systemic constraints identified in the Systems Model. Figure 1 below shows the interaction of the components to develop creative pedagogical practice. The model used in this work directed the exploration of the ways in which MA EDIN activities support creative digital teaching of teacher candidates.

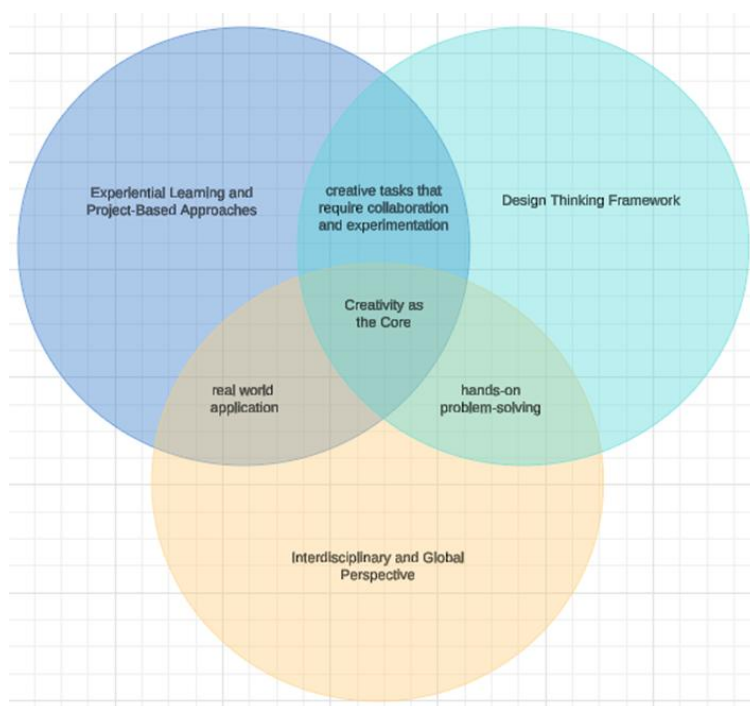


Figure 1. Creativity Model (Rodney, 2024)

2.6 Synthesis and Research Gap

Reviewing the literature on creativity and digital pedagogy shows that these concepts have been effectively developed. However, much of the literature is focused



on Western contexts that have high resource availability. In post-Soviet Uzbekistan, where the coexistence of policy reform and systemic inertia prevails, the understanding, implementation, and sustainability of DPC in the teacher education context remains undocumented.

In Uzbekistan, where policy reform coexists with systemic inertia, understanding how DPC emerges within teacher education requires examining multiple levels: individual, institutional, and sociocultural. This gap justifies the study's use of four theoretical frameworks and its focus on a creativity-centred master's programme.

3 Methodology

This study employed a qualitative case study design to investigate how DPC is understood and practiced by pre-service and in-service teachers enrolled in a creativity-centred master's programme in Uzbekistan. A qualitative approach was selected for its ability to capture participants' lived experiences, beliefs, and practices, and for the depth of analysis on their meaning-making processes (Creswell and Poth, 2018; Yin, 2009). While ethnography could have offered long-term, immersive cultural observation, the defined scope and timeframe of the study made a case study design more appropriate.

A case study was selected over other qualitative designs (e.g., phenomenology, ethnography) for three reasons:

1. **Bounded Context:** In this instance, the analysis is done in a single institutional context, the MA in Education and Innovation programme at Webster University. This is in line with what Yin (2009) calls the contextual boundaries of a case.
2. **Multiple Data Sources:** Case studies allow triangulation across varied evidence types (interviews, focus groups, artefacts), increasing trustworthiness (Stake, 1995).
3. **Theory Application:** This model allows the incorporation of several theoretical models, for example, TPACK, Amabile, Csikszentmihalyi, Rodney, into the frameworks for collection, analysis, and interpretation of data.



The aim was not statistical generalisation but analytical generalisation—developing context-sensitive insights that could inform similar post-Soviet or resource-constrained education systems.

3.1 Participants

Purposive sampling (Patton, 2014) was used to recruit 30 participants (15 pre-service and 15 in-service English language teachers) who engaged directly with the digital creativity components of the MA EDIN programme. Participants were between 23 and 45 years old and had 0–18 years of teaching experience (22 females, 8 males). Including both pre-service and in-service teachers allowed for a broader understanding of how DPC is conceptualised across different professional stages. All procedures were conducted under the ethical guidelines set by Webster University’s Institutional Review Board (IRB).

Category	Description
Total Participants	30
Participant Types	15 pre-service teachers 15 in-service teachers
Gender Distribution	22 females, 8 males
Age Range	23-45 years
Educational Programme	MA in Education and Innovation (MA EDIN)
Teaching Experience	0-18 years (varied among pre- and in-service)
Mode of Participation	Zoom (interviews and focus groups)

Table 1. Participant characteristics

3.2 Data Collection Methods

This study was conducted from August to October of 2024, and utilises a combination of semi-structured interviews, focus group discussions, and digital artefact analysis.

Semi-Structured Interviews

Using Zoom, the individual interviews of thirty participants were conducted. Participants were asked open-ended questions and interviews lasted between 20 to 30



minutes. The interviews focused on DPC, primary barriers to its application, and the incorporation of digital creativity into teaching (Kvale and Brinkmann, 2009).

Focus Group Discussions

Three online focus groups were conducted: each involving 7–8 participants from a different cohort of the programme. Focus groups were conducted to deliberate and consider the application of creative technologies into the education setting. This approach stimulated closer engagement and generated rich qualitative data through shared meaning-making (Krueger, 2014). During focus group discussions, participants were able to resolve challenges collaboratively and share the most effective approaches to integrating digital technologies into their instruction.

Digital Artefact Analysis

A total of 55 digital artefacts were collected, ranging from Canva presentations and storytelling videos to Miro boards and Padlet activities. These artefacts were analysed using three lenses: (1) creativity (Amabile's Componential Model); (2) innovation in pedagogy (TPACK framework); and (3) engagement in learning (based on participant reflections and self-evaluation) (Bowen, 2009).

Interview and focus group protocols covered four domains: definitions of DPC; digital tool use; barriers and supports; and professional learning. Full protocols are available upon request.

3.3 Data Collection Procedures

The data collection was done during the period of August to October 2024. The participants were recruited through emails and informed consent materials were given to them. The interviews and focus groups were recorded and transcribed verbatim. Participants reviewed their transcripts for accuracy. Digital artefacts were collected directly from coursework submissions within MA EDIN. A researcher reflexive journal documented analytic decisions and emerging insights throughout the process.

3.4 Data Analysis

Thematic analysis followed Braun and Clarke's (2006) six-phase framework and was supported by NVivo. Initial inductive coding identified meaning units across



interviews, focus groups, and artefacts, which were refined into broader themes. Theoretical frameworks guided interpretation: TPACK informed analysis of technology–pedagogy alignment; Amabile’s theory supported understanding of motivation and environmental factors; the Systems Model contextualised institutional and sociocultural constraints; and Rodney’s model framed programme-level support for creative development. Focus group and interview protocols were based on the literature of creativity, digital pedagogy, and teacher education. Two experts in digital pedagogy reviewed the draft instruments, and three MA EDIN participants were interviewed in a pre-pilot to assess cultural relevance and clarity of the questions.

3.5 Trustworthiness and Ethical Considerations

Triangulation of data sources, member checking, and having a detailed codebook were used to increase credibility. NVivo coding guidelines were rectified, and memo-writing was used to ensure reflexivity of the researcher. Ethical procedures followed the IRB, hence there was confidentiality, secure storage, and voluntary participation.

3.6 Researcher Positionality and Reflexivity

The researcher was an Uzbek educator and programme leader, which provided her with insider knowledge regarding the sociocultural and institutional context of teaching education. Reflexivity journaling contributed to the reduction of bias and keeping the perspectives of participants at the centre of the analysis.

4 Results

Data from semi-structured interviews, focus groups, and 55 digital artefacts were analysed thematically using Braun and Clarke’s (2006) approach, supported by NVivo software. The results are organised around the three research questions and interpreted through the four theoretical frameworks guiding the study.



Figure 2. Word Cloud from NVivo

Figure 2 illustrates the most frequently occurring concepts in participants' narratives, with prominent terms such as "pedagogical," "digital learning," "tools," "creativity," and "students." These indicate that discussions around DPC centred on tool use, learner engagement, and digital learning, patterns further elaborated in the thematic findings below.

Theme 1: Understanding Digital Pedagogical Creativity

Teacher candidates viewed digital pedagogical creativity as a form of collaboration instead of a singular characteristic which aligns with Mishra and Koehler's (2006) TPACK framework. The teachers focused on shifting from basic incorporation of digital tools to more intentional practices that enhance participation, motivation, and autonomy. P-22 defined DPC as "the use of digital platforms and tools to conduct classes in a creative manner... It is now possible to be more creative and innovative with new digital platforms". P-16 thought DPC was "discovery of new digital platforms... with an open mindset... using digital platforms of different varieties...".

The recognition of engagement through P-3's use of multimedia and P-14 use of MozaikWeb for visually stimulating lessons exemplifies their in-depth understanding of the lessons. Flexibility and customisation were also highlighted; P-20 stressed that "lessons can be tailored...There is a tool for all manner of situations within a lesson". These insights support Sayı (2022) and indicate a move towards pedagogy in Uzbekistan that promotes interactivity and focuses on the needs of the students.

**Theme 2: Application of Digital Pedagogical Creativity in Teaching**

The second theme focuses on the DPC performance by participants as the others shifted towards the use of collaborative digital tools (Canva, Miro, Padlet), gamification (Kahoot and other AI-driven quizzes), and multimedia digital storytelling. Their primary focus was to enhance the learners' attention, enhance visual learning, and provide opportunities for the learners to be actively involved. P-12 reflected, "We worked on this project collaboratively using Miro within the Design Thinking class. It was the first time I did this, and it was a great way to organise ideas visually". Similarly, P-15 noted, "Using Kahoot is a great example of digital pedagogical creativity... I've incorporated interactive whiteboards for collaborative brainstorming and visual notetaking, created engaging videos to explain complex concepts, and utilised online platforms for peer feedback and collaborative writing assignments".

The participants spoke about digital storytelling as an efficient motivational tool, noting that it also makes complex topics or traditionally "boring" subjects more interesting. This aligns with the literature reviewed by Moradi and Chen (2019) that digital storytelling boosts comprehension and supports learner engagement. Overall, the role of technology has gradually moved from the teacher to the learner, allowing for more adaptive and responsive instruction.

Theme 3: Challenges and Strategies for Implementing DPC

Although participants were enthusiastic about DPC, they mentioned that a lack of devices and internet access, low institutional motivation, and insufficient training hindered progress. As P-8 explained, "In our country, the most common problem is the lack of digital tools in schools. Therefore, most of the students are not familiar with using them. Implementing them into the lesson poses a challenge to me too". In the same line, P-7 remarked about the need to focus on practical training: "It would be really helpful to have training sessions on basic and practical strategies... it would be nice if there were spaces for teachers to discuss and learn from one another". This is in line with the broader digital divides discussed by Selwyn (2016).

Other concerns included poor internet connections, a lack of devices for underprivileged students, and rigid policy frameworks from schools. P-20 noted, "The most difficult for me for a long time was... lack of technological resources and in



particular connectivity. Many students faced a lack of resources at home to perform digital tasks". To overcome these policies, respondents suggested mobile-responsive frameworks combined with proactive professional development (P-18), tailored blended learning for students with low internet connectivity, and more primary IT literacy in earlier grades. These policy changes as suggested by Sayı (2022), would encourage tailored creativity and enhance learning.

Participants suggested that motivation to adopt digital pedagogical practices was influenced by a combination of structural and relational factors. Some teachers felt that their creative efforts were not always recognised institutionally, which they associated with reduced motivation. However, they also highlighted external barriers, such as incomplete training, limited access to devices, and unstable internet, that affected their willingness or ability to engage in DPC. Looking at inspiring teachers' intrinsic motivation at the professional, institutional level regarding support and freedom, this aligns with Amabile's theory on the significance of intrinsic motivation in creativity. On the other hand, lack of proper training and training resources as external obstacles curtail educators' willingness to innovate through the use of digital tools.

There was concern from older teachers with more years of experience regarding the pedagogical validity of technology-dependent teaching methods. The proposed solutions also included policies and frameworks that were mobile-compatible, blended learning, and professional development that was relevant and targeted to the immediate context.

Theme 4: The Role of the MA EDIN Programme in Developing DPC

Although there was no specific research problem stated, all participants endorsed the MA EDIN for having improved their DPC. The programme shaped digital literacy and professional development, as highlighted by Darling-Hammond and Bransford (2007), with the fostering of professional development together with the programme's collaborative learning focus, design thinking, critical reflection, and transformative pedagogy.

Respondents highlight skill development, especially from more practical perspectives. P-12 said, "The MA EDIN programme has influenced my digital literacy because I learned how to use a learning management system, Canvas... connect with



professors and classmates”. P-10 commented, “I was taught digital storytelling in Design Thinking... I use it in English classes, which makes the learning process more engaging”. In the same way, P-3 talked about learning “Powtoon, Animaker, Canva, Storyboarding... and OneNote” and P-26 talked about “AI-suggested methods for lesson planning”.

Participants noted that MA EDIN’s structured use of digital storytelling and interdisciplinary projects demonstrated that creative teaching is possible within constrained systems when programmes explicitly endorse and scaffold such approaches.

Figure 3 shows the incorporation of DPC in the MA EDIN where tools can be classified into five groups: digital storytelling; teaching through games; communication tools; visual collaboration; and visual content creation. Storytelling is supported through tools like Powtoon, Animaker, and TweenCraft, while Kahoot, WordWall and Quizlet encourage game-based learning. Communication is enhanced through Zoom and Telegram; Miroboard and Padlet allow collaborative design, and Canva fosters visual creativity.

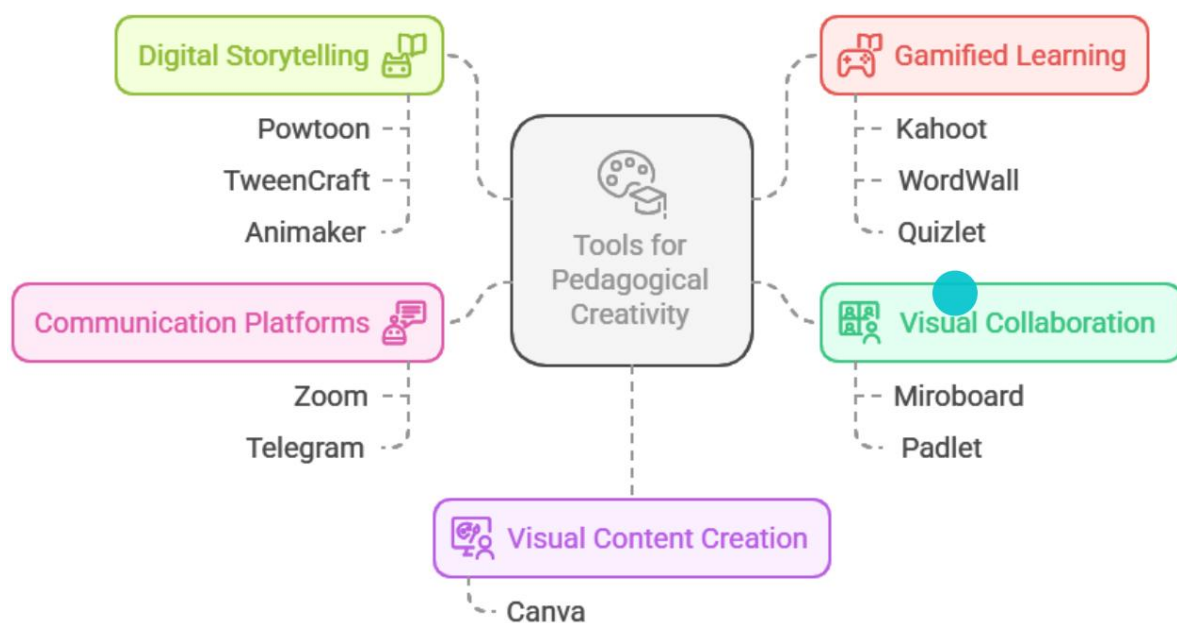


Figure 3. MA EDIN DPC

4.1 Artefact Analysis

The first emerging themes based on the focus groups and interviews were substantiated with an analysis of 55 digital artefacts. These were evaluated according to a rubric developed from Amabile's Componential Theory, TPACK, Csikszentmihalyi's Flow Theory, and Rodney's Creativity Model. The highlighted themes were:

- **Narrative Creativity:** Combines empathy and originality to create storyboards and videos addressing global issues.
- **TPACK Integration:** The inclusion of pedagogy, content knowledge, and technology was demonstrated in various artefacts, for instance, the Canva posters and the Miro maps.
- **Inclusion and Equity:** Amabile's domain-relevant creativity was observed through artefacts where learners of varying abilities were incorporated using UDL frameworks.
- **Engagement:** The materials were gamified, and the interactions were fostered together with intrinsic motivation and learner autonomy.
- **Reflection:** Self-assessments make up over 70% of the portfolios, consisting of sequential self-reflections (Rodney, 2024).

Figure 4 presents types of digital artefacts created by the participants.

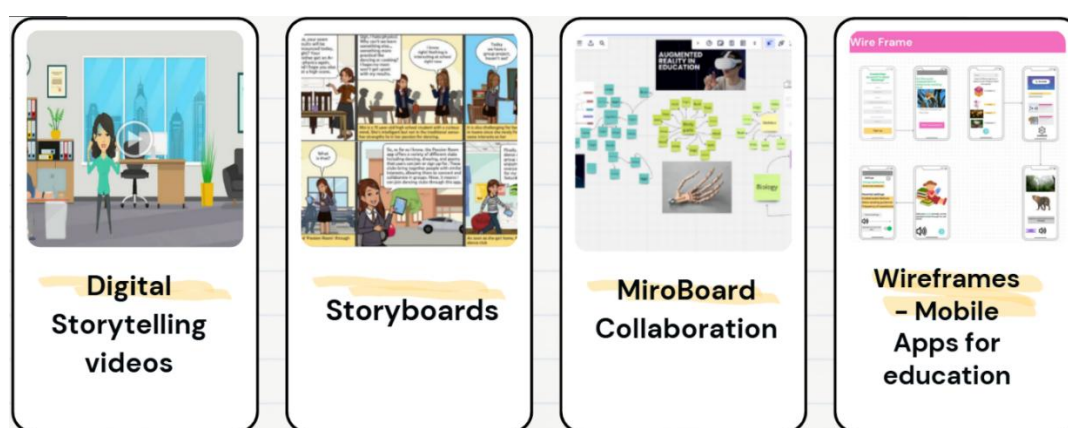


Figure 4. Digital Artefacts



Theme	Representative Quote	Theoretical Link
Understanding DPC	“Discovering new digital platforms, staying open-minded... Using a variety of digital platforms... will help keep students focused”. (P-16)	TPACK (integration of technology, pedagogy, content); Amabile’s Componential Theory (creativity-relevant processes); Csikszentmihalyi’s Systems Model (social context)
Application in Teaching	“Interactive whiteboards and online feedback platforms make my classes more engaging”. (P-15)	Rodney’s Creativity Model (experiential learning, design thinking)
Challenges and Strategies	“The main problem is lack of digital tools... students aren't familiar with them”. (P-8)	Amabile’s Componential Theory (environmental constraints); Csikszentmihalyi’s Systems Model (systemic factors)
Role of MA EDIN	“We used tools like PowToon, Animaker, Canva, and Miro... I gained the necessary skills...”. (P-3)	TPACK (integration); Rodney’s Creativity Model (interdisciplinarity, reflection)

Table 2. Themes, Quotes, and Theoretical Links

5 Discussion

This research focuses on the understanding and implementation of DPC by pre-service and in-service teachers in Uzbekistan within the MA EDIN programme, guided by four frameworks: TPACK, Amabile, Csikszentmihalyi, and Rodney. The results of the study affirm the applicability of the frameworks while also modifying them to address the post-Soviet, under-resourced, culturally situated infrastructure realities.

5.1 TPACK in Resource-Constrained Contexts

Participants considered DPC to be more than the use of tools, they stressed strategic combination of pedagogy, content and technology in a manner that promoted creativity and learner interest. While TPACK was useful in structuring this integration (Mishra and Koehler, 2006), the assumption of equitable resource availability is greatly



undermined in the context of rural areas with scant training opportunities, devices, and infrastructure (MacKinnon, 2017; Li, 2025; Sepadi, 2025). In contrast, well-resourced institutions enabled their teachers to use Canva, Miro, and Quizizz to enhance creative and engagement levels. Research in rural South Africa (Sepadi, 2025) and post-pandemic China (Li, 2025) also suggest a similar tendency: the inability of teachers to respond to TPACK principles due to unfair digital infrastructure and uneven professional development, which validates the importance of the analysis of DPC in terms of various theoretical approaches.

5.2 Motivation and Autonomy in Amabile's Componential Theory

Amabile's (1983) emphasis on task motivation, domain skills and their interrelated processes was observed. Educators with autonomy and some level of institutional support exhibited stronger intrinsic motivation. Although reduced motivation was linked by some teacher candidates to the limited institutional reward of creative work, it was dependent on the external factors of lack of training and infrastructure. This is consistent with the position that Amabile has made that creativity comes about due to the interaction between the domain-specific skills, creativity-specific processes and task motivation which are supported or inhibited by the environment (Amabile, 1983). The pressure of workload, prescriptive curriculum, and absence of autonomy have also been emphasised by international studies as factors that undercut the creative use of technology by teachers (Ertmer, 1999; Sullivan, 2017). These results are in line with the situation in Uzbekistan, whereby hierarchical and standardised assessment diminishes possibilities of experimentation. In this way, the framework developed by Amabile can be used to explain the fact that the enthusiasm was not enough to support DPC; the environmental and motivational conditions were critical.

5.3 Systems Thinking and the Digital Divide

The Systems Model by Csikszentmihalyi emphasises the point of convergence between individual abilities, field standards and organizational frameworks as the processes that create creativity. The experiences of the participants were indicative of the systemic problems within the education system of Uzbekistan such as poor access to digital connection and examination-based learning. The difference between an urban and a rural setting also illustrates how structural inequity informs the opportunities of



creative pedagogical practice. This is similar to the comparative post-Soviet situations in which reform intentions are frequently accompanied by structural inertia (Silova, 2009; Ruziev and Burkhanov, 2018). The shortages of resources and technology were aligned with the findings of Warschauer and Matuchniak (2010) about the more systematic effects of the digital divide.

5.4 Rodney's Model: Policy, Practice, and Assessment

Participants consistently described MA EDIN as a space that normalised creative experimentation through digital storytelling, interdisciplinary projects, and reflective tasks. The programme's explicit emphasis on creativity helped counterbalance systemic constraints and modelled how innovative pedagogy could be enacted even in restrictive environments. This is in line with the argument of Rodney that creativity grows as a result of structured experience of learning, openness, and an integrated and repetitive approach towards problems. Similar reports in the literature of education point to the role of design thinking and project-based learning in establishing creative confidence and digital pedagogical proficiency (Darling-Hammond and Bransford, 2007; Baran et al., 2011). Programme-level structures are therefore catalysts to develop DPC even in the face of larger systemic challenges.

5.5 Balancing Innovation with Tradition

In one focus group, there was some concern about an overreliance on digital methods. One teacher noted, "Teachers should not forget the basics, technology should only assist in the teaching process". This concern aligns with Mishra and Koehler's (2006) plea to prioritise pedagogy in the use of technology. This indicates that even among motivated teacher candidates, adopting DPC requires negotiating cultural beliefs about "good teaching," assessment expectations, and long-standing instructional norms.

5.6 Implications for Research Communities and Marginalised Contexts

Studies on creativity and online learning imply that creative learning is most compatible in institutional policy, professional networks, and long-term professional growth (Ertmer and Glazewski, 2012; Glăveanu, 2008). This is echoed in the findings



because they show that MA EDIN helps in fostering creativity, yet systemic inequities still influence the way teachers can practice what they are learning.

The results indicate the significance of:

- Enhancing internet infrastructure and equal access.
- Building long-lasting professional development, which incorporates creativity and digital pedagogy. Provision of institutional cultures that support and reward creative teaching.
- Dealing with institutional injustices that restrict the ability of teachers to carry out DPC.

These insights clarify how DPC can be developed in post-Soviet and resource-constrained education systems.

5.7 Limitations

Focusing on participants from a single MA EDIN programme at an urban university limited the scope of the study, which affects its generalisability. This study is also limited due to the lack of representation from rural teachers, in addition to the issue of data self-reporting, which suggests social desirability bias. This study offers only a snapshot rather than a longitudinal view, and it is possible that it missed more important contextual innovations.

6 Conclusion

The findings of this study demonstrate that while DPC can be meaningfully cultivated within teacher education, its development is shaped by the interplay between individual capacities, programme-level structures, and broader sociocultural and institutional conditions. National digital transformation intentions in Uzbekistan are in combination with systemic limitations, such as differences in the accessibility of digital tools, unequal professional growth, and institutional cultures that do not necessarily appreciate innovation.

According to the prism of TPACK, this research demonstrates that teacher students can combine technologies in an innovative manner if pedagogical and technical factors do not impede the development of this work. According to the



Componential Theory by Amabile, motivation, autonomy, and environmental support are all crucial to maintain creative engagement. The Systems Model by Csikszentmihalyi highlights the role of structural factors, i.e. governance, policy, as well as the digital divide in determining the ability of teachers to implement creative digital practices. The Creativity Model by Rodney explains the way programme-level scaffolding, including design thinking, reflective practice, interdisciplinary projects, may help develop creative confidence and viable innovation.

The implications for policy include the need to strengthen digital infrastructure across all educational contexts, particularly in rural schools; ensure equitable access to devices and stable internet; and promote blended learning models that support creative, flexible instruction. Professional development, therefore, should go beyond the acquisition of technical skills, to be focused on creativity, reflective practice, and collaborative pedagogical design. DPC requires institutional cultures that acknowledge and appreciate innovative teaching to maintain the culture.

Future research could investigate how teachers sustain DPC after graduation, how digital creativity evolves in rural or under-resourced environments, and how emerging technologies such as Virtual Reality (VR), Augmented Reality (AR), and Artificial Intelligence (AI) might enhance creative opportunities without exacerbating inequalities. The longitudinal and comparative studies would further enhance knowledge regarding the development of DPC in different educational systems.

Overall, this research aids in comprehending the intersection of creativity, technology, and pedagogy in a changing post-Soviet educational environment and how the system should be re-aligned to promote meaningful and equitable digital pedagogical creativity.



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