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Integrating drama and digital technology for English learning

An exploratory mixed-methods study

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The reported study investigates high-school ESL learners' responses to an innovative English learning experience that integrates drama and digital technology in the teaching-learning lab setting (Lehr-Lern-Labor). An essential part of the so-called Digital Drama Lab seminar (DDL), the teaching-learning lab gives pre-service English teachers, namely, the seminar participants, a platform to experiment with this drama-digital integration (DDI) approach as they teach a group of high-school learners (N = 28). The study employed an exploratory mixed-methods research design to examine both positive and negative experiences of the teenage learners and identify the respective contributing factors. Findings suggest a reciprocal relationship between drama-based activities and digital technology in the English education context. Digital tools were reported to mitigate challenges and discomfort induced by drama-based language activities, while drama activities were found to create an engaging, supportive, and meaningful environment conducive to authentic language use. The results highlight the potential of the DDI approach in promoting a positive English learning experience, especially for less advanced learners. In addition, this approach appears to have great potential for addressing controversial and intercultural topics in language classrooms.

Keywords: drama-technology integration; ESL learning; intercultural communicative competence; teaching-learning lab; mixed-methods research

1 Introduction

In Germany, digital cultural competence has emerged as a central goal for English language teaching as digital advances continually reshape social and cultural contexts (Alter, 2021). Building on Byram's (1997) seminal five-component model of intercultural communicative competence (ICC), it demands that ESL learners, whether interacting online or in person, show empathy (attitude), know about cultural and social diversity (knowledge), interpret and interact appropriately (skills of interpreting and relating; skills of discovery and interaction), and critically reflect upon diverse cultural practices (critical cultural awareness). Ultimately, rather than merely being proficient "in foreign ways of speaking and writing" (Kramsch, 2022, p. 31), ESL learners are encouraged to become empathetic, responsible, and competent intercultural speakers.

Despite the indispensability and the potential positive impacts of including digital tools in ESL, there is also a growing criticism against and concern about the overt dependence on digitalisation. Challenges to achievement and mental well-being while learning in online environments were widely reported during the pandemic (Peper et al., 2021; Schneider et al., 2021). Kramsch (2023) cautions against the danger of being colonised by our own machines, where algorithmic calculations and deductions are prioritised at the cost of emotions, storied histories, and reasoning — the essential features of human interaction. This raises a critical question and a challenge: How can we harness the strengths of technology to create meaningful and effective ESL learning experiences?

Drama has been advocated as a transformative pedagogy for fostering language and literacy development and critical intercultural awareness (Piazzoli, 2011; Winston & Lin, 2015). While verbal exchanges in virtual language classrooms "reduce bodies to talking heads" (Kramsch, 2023, p. 20), drama, by contrast, celebrates embodied, communal, contextualised, and playful learning. Integrating drama into technology-mediated language classrooms may help address the challenges, while also contributing to the development of interculturally and digitally competent ESL learners.

The DDL study reported in this article is set in this context. In 2024, the Digital Drama Lab seminar, from which the study gained its name, was created for pre-service English teachers at the Free University of Berlin, where both authors worked at the time of the study. Informed by the digital cultural competence model outlined above, the seminar explored the potential of combining drama and digital tools in English language teaching, namely, the DDI approach. Moreover, it was embedded in a teaching and learning lab design, in which these pre-service teachers practised teaching English to visiting high-school ESL learners using the DDI approach.

Set in this lab context, the DDL study has two research foci: 1) Investigating how the high-school ESL learners respond to the novel English learning experience involving the integral use of drama and digital technology; 2) Identifying factors that contribute to both positive and challenging learning moments. The study was approved by the Berlin Senate Department for Education, Youth and Family.

2 Digital technology and drama integration in ESL education

Against the backdrop of the digitalisation hype, studies investigating the impact of technology and how it contributes to language acquisition have grown exponentially. Empirical studies indicate that digital technology can effectively address common classroom challenges by offering individualised, non-threatening, and timely feedback (Chen, 2024; Nielson, 2022). Applying these tools may improve students' willingness to communicate (Zhang et al., 2024) and support ESL writers in academic writing (Xiao, 2024).

However, when the pandemic forced all instruction and learning into fully online or hybrid scenarios, the prevailing positive discourse regarding the use of technology in language classrooms was challenged. Many participants reported focus problems and feelings such as isolation, anxiety, and depression (Peper et al., 2021). In Germany, school teachers reported a drastic decline in learner motivation (Schneider et al., 2021). ESL learners often feel uncomfortable interacting in virtual spaces, therefore tending to remain quiet in break-out rooms (Lo & Liu, 2022). Teachers noted that the lack of personal contact with their students in digital settings limited their ability to offer emotional support and to appropriately respond to their students' reactions (Klimova et al., 2023).

The application of technology alone does not automatically bring about positive outcomes or better learning results. Based on a synthesis of existing studies, a meaningful technology-mediated ESL learning environment necessitates four intertwined elements. To begin with, the learners must perceive a higher social and physical presence which resembles real-life communication (Cheung, 2021).This presence can be achieved through incorporating non-verbal communication modes, involving the use of human-body and digital tools, as well as the interaction between the two. Additionally, a learning community should be created where the participants experience a high level of relatedness and togetherness (Freiermuth, 2020). In digital spaces, the need for personal connection and mutual support is inherent to all participants, or even stronger (Heinz, 2021). The third aspect is about meaningful content and communication. Instructors should embed content material in significant contexts and design tasks which lead to "the creation of something meaningful to students" (Buendgens-Kosten, 2013, p. 282). Lastly, to engage learner agency, learners must experience a sense of achievement or competence satisfaction (Holzer et al., 2021). This aspect relates to the perceived purposefulness of the tasks and foregrounds learners' self-efficacy. The tasks should be cognitively challenging and diversified to accommodate different learning needs and styles (Heinz, 2021).

Integrating technology and drama for language and literacy teaching has attracted research and practice interest since the turn of this century. Online and blended classrooms can benefit from modelling drama workshop designs aiming at students' individual and social participation in the learning, as well as on the aesthetics and the semiotic setting of the learning space (Nicholls & Philip, 2012). The as-if drama framework can provide a safer and more meaningful space for learners to interrogate actions, identities, and power dynamics associated with the use of technologies which might have otherwise been transgressive (Carroll & Cameron, 2009). Digital features like "simulation, problem posing, quests, world-making", initially intended for entertainment and commercial uses, can be incorporated into drama and transform young people into "active learners" rather than mere "consumers"

(Neelands, 2009, p. xv). Alternatively, digital tools also enhance drama. Digital media — animated films, emails and blog entries, social networking sites, and games — can function as stimulating pretexts that infuse tension into drama activities (Carroll & Cameron, 2009).

Three types of drama-digital integration emerge based on learning scenarios: a) In-person drama work enhanced by technology (Cannon et al., 2024; Ding, 2024); b) Virtual drama work mediated by technology (Georgiou, 2021; Göksel & Abraham, 2022); c) Role-play in immersive virtual or augmented reality spaces (Peschke et al., 2023). In all scenarios, drama can take the form of both small-scale activities like single or combined use of educational drama strategies and large-scale activities like improvised or staged theatre performances. The different types can be combined to create blended learning environments, such as digital storytelling (Lim & Park, 2023; Luan et al., 2024). Digital storytelling is popular in technology-mediated ESL classrooms. It is also theorised as an applied theatre praxis which enables young learners to "reflect and archive (re)vision and (re)construct complex notions of (their) identity, culture and community" (Alrutz, 2013, p. 45).

3 The DDL Study: Background and data collection

The DDL study was conducted within the Digital Drama Lab seminar's lab setting. Through hands-on workshops, lectures, and group presentations of selected case studies from the literature, the pre-service teachers were first introduced to the theories and creative practices featuring drama-digital integration in language education. They later formed five teaching groups, developing and rehearsing a 45-minute lesson before teaching it to the visiting high-school ESL learners. Each lesson focused on one theme area specified by the Berlin-Brandenburg Modern Foreign Language Curriculum Framework (SBJFB & MBJSLB[1], 2024). Each group created a distinctive group ID to match the chosen theme area (See Appendix).

Twenty-eight ESL learners from an integrated secondary school in Berlin joined the teaching event, divided into groups of six to eight across the five teaching groups. To guarantee privacy, each learner created a two-word pseudonym beginning with the same letter, such as Fantastic Flower or Jelly Joy. The Appendix table outlines the teaching plan for four groups, demonstrating how drama and technology was combined for language learning purposes[2]. In general, digital media and tools served as content and language input, task preparation, and sites of interaction. Drama activities adopted included warm-up games, improvised role-plays, simulated role-play debates, online performances, and TikTok sketches. In other words, the

[1] The acronyms SBJFB and MBJSLB stand for *Senatsverwaltung für Bildung, Jugend und Familie Berlin & Ministerium für Bildung, Jugend und Sport des Landes Brandenburg*, namely, Senate Department for Education, Youth and Family Berlin and Ministry of Education, Youth and Sport of the State of Brandenburg.
[2] The fifth group was not able to carry out teaching due to a lack of participants.

pre-service teachers mainly adopted the first two types of drama-digital integration summarised earlier.

To explore what contributed to the ESL learners' positive and negative learning experiences with the DDI approach, this study employed a mixed-methods design for data collection and analysis. Two instruments were used: a short questionnaire survey and a structured small-group interview within each teaching group. Both instruments were designed by the researchers and were introduced to the pre-service teachers beforehand.

The questionnaire, presented in English, contained two parts, with one focusing on the learners' prior experiences of theatre, digital technology use, and English language proficiency, and the other on their lesson responses measured through nine agree-disagree statements. The nine statements adopted a 4-point Likert scale: Yes, Somewhat Yes, Somewhat No, and No (Yes = 4, No = 1), containing general enjoyment measures regarding the DDI approach (Q2.4, Q2.8) and more specific measures such as the use of digital media (Q2.1), classroom engagement (Q2.2), drama activities (Q2.3), topic area (Q2.5), conversation in English (Q2.6), teacher-student interaction (Q2.7), and learning product (Q2.9).

The interviews were conducted after the 45-minute lesson, facilitated by the pre-service teachers who had taught that group. The teenager participants were invited to recall and justify specific moments of enjoyment and discomfort, and were also encouraged to share their main takeaways, prompting reflection on the personal significance of the themes and learning processes. Depending on the learners' needs, both English and German were used during the interview.

The quantitative data analysis was based on 25 valid questionnaire responses. The mean values, combined with two-sample t-tests (Welch's t-tests, appropriate for the small, uneven subgroups), provided initial insights about the general response patterns and how the learners' prior experience and English level might have impacted their enjoyment of the learning experiment. Given the Likert data's ordinal nature, Spearman's rank correlations (r) were used to identify correlational patterns between variables. When moderate or strong correlations were detected, statistical significance (p-value) was tested using the t-distribution with $n-2$ degrees of freedom in Google Sheets.

In total, twenty-five high schoolers participated in the interviews. The voice recordings were transcribed and later imported into MAXQDA. The transcripts were examined through thematic analysis following a hybrid deductive-inductive approach (Braun & Clarke, 2012). Guided by the research question, coding focused on two pre-determined areas: specific moments of enjoyment or discomfort and the justifications for these positive or negative moments. Within these areas, initial codes were generated from the data and assigned to

relevant text segments. Throughout the coding process, these initial codes were constantly revisited, refined, discarded, or merged with other codes to form broader categories, and ultimately, the overarching themes that structure the discussion section.

4 Presenting quantitative and qualitative results

In the following section, the findings from the study's DDI English lessons are presented. First, the quantitative data provides the learners' baseline proficiency as well as key statistical correlations between their prior experiences, perceived challenges, and overall enjoyment. Secondly, the specific classroom moments and underlying pedagogical factors influencing the numerical trends are explored qualitatively.

4.1 Quantitative results

According to the learners' self-reports (Q1.6), their English abilities are mixed, with 68% reporting a grade between 2 and 3. In the German grade system, 1.0 represents the highest level, whereas the grade between 2 and 3 represents intermediate English proficiency. Most have limited experience with drama and theatre: over half have never attended a theatre event (Q1.1), and only about one-third have participated in drama clubs (Q1.3). More than half of them have used digital tools for English learning (Q1.4, Q1.5), including translators and language apps like Google Translate and Duolingo (46.6%), video platforms like YouTube and TikTok (36.7%), and ChatGPT (16.7%).

Data collected via the second half of the questionnaire indicated a very positive general response. This is evidenced by the overall high mean values ($M > 3.0$) of all items in Figure 1. Use of digital tools (Q2.1, $M = 3.76$), drama activities (Q2.3, $M = 3.64$), and interactions with the pre-service teachers (Q2.7, $M = 3.64$) attained the highest average scores, representing the top three aspects enjoyed by the learners. The mean values for Q2.4 and Q2.6 in Figure 1 were reversed values, as these two items were worded negatively[3]. After conversion, the means for perceived challenges (Q2.4, $M = 3.28$) and discomfort with English conversation (Q2.6, $M = 3.40$) ranked the lowest. With higher values indicating less challenge and less discomfort, these comparatively lower scores suggest that the learning experience, though positive overall, was not without difficulties for the teenage participants.

[3] The negatively worded items (Q2.4, Q2.6) were reverse-coded using the formula $X = 5 - X_0$.

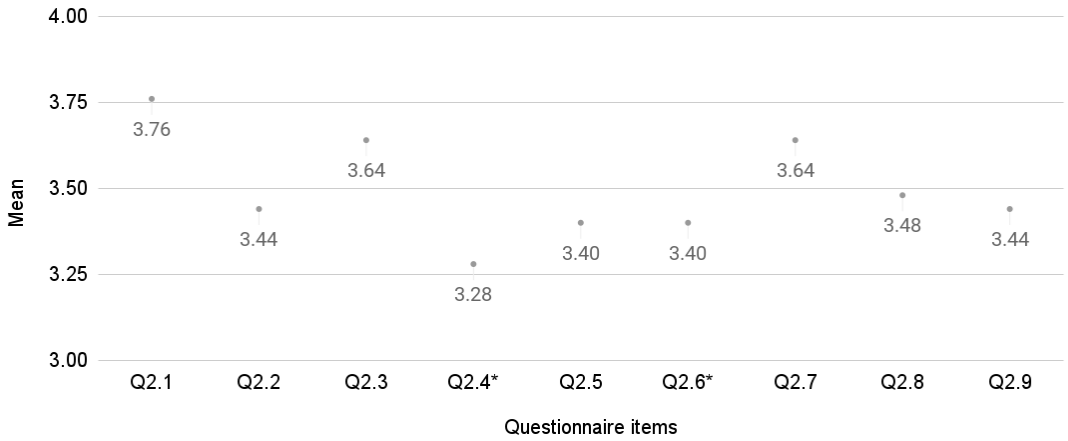

Figure 1: Mean value of each questionnaire item

The mean values in Table 1 reveal a complicated relationship between the learners' prior experience and English proficiency level and their enjoyment and discomfort relating to the integral use of drama and technology in English lessons. Learners with no prior drama (Q1.3) or digital English learning experience (Q1.4), and those with lower English proficiency (Q1.6), reported both a higher level of enjoyment (Q2.8) and a higher level of felt challenges (Q 2.4). This calculation showed no significant difference with all p-values bigger than 0.05. Though correlations are difficult to establish with such a small sample, this pattern is nonetheless striking and will be explored further by consulting the interview data in the discussion.

		Prior drama		**Digital tools**		**English proficiency**		
		Yes	No	Yes	No	Advanced	Intermediate	Basic
Number		8	17	14	11	6	17	2
Mean	Q2.4	1.63	1.76	1.64	1.82	1.83	1.65	2.00
	Q2.8	3.13	3.65	3.43	3.55	3.33	3.53	3.50
p	Q2.4	0.69		0.60		A/I: 0.62	A/B: 0.90	I/B: 0.78
	Q2.8	0.07		0.64		A/I: 0.60	A/B: 0.81	I/B: 0.96

Table 1: Mean value difference across different groups

Table 2 summarises the r-values which indicate strong and moderate correlations between different variables and the respective p-values which suggest whether the correlation is significant. When $r \geq 0.30$ and $p < 0.05$, this indicates a moderate to strong correlation between two variables and that the correlation is significant. To keep the article at a manageable length, we will only describe correlations that are not only moderate/strong but also statistically significant.

The learners' enjoyment of DDI (Q2.8) was found to be strongly and significantly correlated with their interaction with the pre-service teachers (Q2.7, $r = 0.998$; $p < 0.001$). Meanwhile, their enjoyment of DDI is moderately correlated with what they created in class (Q2.9, $r = 0.41$;

p = 0.042). This suggests that learners who enjoyed interacting with teachers, or who valued their classroom creations, were highly likely to enjoy the overall DDI experience. Enjoyment of these classroom creations (Q2.9) was, in turn, related to two further aspects: the perceived closeness of teacher-student relationship (Q2.7, r = 0.42; p = 0.036) and their enjoyment of drama activities (Q2.3, r = 0.46; p = 0.020). Enjoyment of the drama activities (Q2.3) was itself strongly correlated with enjoyment of the lesson topic (Q2.5) (r = 0.53; p = 0.006). These patterns suggest that when the lesson topics were engaging and learners had meaningful opportunities for learning creation, they tended to enjoy the drama activities more, and through that, the lesson overall.

	Q2.2		**Q2.3**		**Q2.7**		**Q2.8**	
	r	p	r	p	r	p	r	p
Q2.4	-	-	0.40	0.048	-	-	-	-
Q2.5	-	-	0.53	0.006	-	-	-	-
Q2.6	-0.40	0.048	-	-	-	-	-	-
Q2.8	-	-	-	-	0.998	0.00..1	-	-
Q2.9	-	-	0.46	0.020	0.42	0.036	0.41	0.042

Table 2: Spearman's rank correlation and significance test results

There were two moderate but significant negative correlations. The first was between the drama enjoyment measure (Q2.3) and the negatively formulated DDI challenges measure (Q2.4). With a correlation coefficient of r = 0.40 and a p-value = 0.048, the data suggest that students who enjoyed drama activities more also found the integrated use of drama and technology in the classroom more challenging. This counterintuitive finding between drama enjoyment and DDI challenge, like the analysis above among different prior experience groups, also begs further explanation. Another negative correlation was discerned between the participants' perceived discomfort while communicating in English (Q2.6) and their level of engagement in the classroom (Q2.2) (r = - 0.40; p = 0.048). This relationship implies that participants who felt more challenged while communicating in English are less likely to participate in classroom activities.

4.2 Qualitative results

Complementing the correlational quantitative analysis, the qualitative thematic analysis probed into the fine-grained details of the learning event by focusing on the learners' recalling of and reflection upon their learning experiences. This includes their specification of particular positive or negative moments, explicit reasoning, and key takeaway explanations.

Table 3 shows that there were more counts of positive moments than negative ones. The reported enjoyable moments are mainly associated with drama activities, especially the

warm-up games (13). However, the learners' discomfort in class was also predominantly related to drama activities, particularly the devising process for the final performance (5). Despite the enjoyment brought by warm-up games, they were often also causes of initial temporal discomfort (3), which, according to the learners, slowly faded once they got used to the working mode. Digital elements seemed to play a minimal role in evoking strong positive or negative feelings. Teacher instruction, especially when involving prompts for public speaking, appears to result in discomfort for students (2).

	Drama activities				**Digital elements**		**Teacher instruction**
	Warm-up	In-role debate	Performing	Devising	Video input	Video call	Prompted to speak
Enjoyment	13	5	5	2	1	2	-
Discomfort	3	1	-	5	1	-	2

Table 3: Moments of enjoyment and discomfort occurrence

There is also a great difference regarding the number of contributing factors between the reported positive and the negative moments. Five factors were identified and organised in Table 4, each containing single or multiple subcomponents: learning context, classroom dynamic, task design, language use, and knowledge. Classroom dynamic has the highest occurrences (18), especially the felt sense of a learner community (13). Students frequently commented how they liked "working with each other" and "feeling very included". They also found the interactive teacher instruction (5) helpful when teachers played along while demonstrating, "which took away some stress from us students" (Fantastic Flower).

The second largest effecting factor is task design, comprising novelty of tasks (8), appropriate level of challenge (5), and digital mediation (2). The fact that the tasks differed from their usual English classroom practices excited them and they were positively surprised. The challenges, such as having to "do something in a short amount of time" and "act on improvisation", also made it fun (Jelly Joy). Digital mediation seemed to have reduced performance anxiety according to learners from the DB group as they performed to their peers who were only digitally present via Zoom, separated by the classroom door.

Learning context and language use each had 13 occurrences, ranking as the third biggest contributing factors. The fun atmosphere (11) was constantly mentioned by students and the experimental lab setting (2) also contributed to a relaxed, playful mindset. Students also enjoyed that they could have conversations and discussions with each other in English (6) and such conversations were not purposeless (7). Gaining topic knowledge also greatly contributed to the learners' positive experience (11). This aspect was mainly coded from answers to the last question about their main takeaways. This category was frequently

brought up by learners from groups that had worked with controversial social and cultural topics, such as vaping and intercultural miscommunication.

	Positive			Negative		
	Factors	Occurrence		Factors	Occurrence	
Learning context	Fun atmosphere	11	13	Fun interference	3	3
	Lab setting	2				
Classroom dynamic	Learner community	13	18	Put on the spot	2	2
	Teacher interaction and support	5				
Task design	Digital mediation	2	15	Challenging video input	1	4
	Appropriate challenge	5		Improvisation	1	
	Creative unusual tasks	8		Acting in public	2	
Language use	English practice	6	13	Lack of purpose	1	1
	Purposefulness	7				
Knowledge	Gaining topic knowledge	11	11	Lacking topic knowledge	4	6
				Lacking drama experience	2	

Table 4: Contributing factors code distribution

Interestingly, the knowledge aspect was reported to be the biggest causal factor for negative experiences (6). The lack of knowledge about certain topics and drama-devising strategies prevented them from joining classroom conversations. Task design (4) ranked the second. Tasks such as improvisation and acting in public were found to be stressful for some learners. The contextual aspect of the fun atmosphere, which excited the teenage participants, was also reported to have hindered real communication (3). In the improvised role-play warm-up, learners from the CC group commented how the drama subtexts, such as "standing to each other as close as possible", forced them to focus entirely on their own role, which made it complicated to communicate properly. Other discomfort-inducing aspects are associated with being put on the spot when the pre-service teachers cued individuals to read or speak in public and not knowing the sense of certain communicative activities.

5 Themed discussion

The DDI-mediated English lesson seemed to have brought great enjoyment for the high-school participants, with only occasional challenges. Interestingly, the less proficient learners and those without prior active drama and/or digital language learning experience simultaneously enjoyed more and felt more challenged by this innovative way of learning. Both digital and drama elements received great positive reception, though the learners' moments of enjoyment and discomfort all centred on drama-related activities. Digital technology seemed to have played a minor role in eliciting strong positive or negative responses. This is evidenced

by the discrepancy in the statistical analysis wherein the high enjoyment level of digital tool use was not meaningfully correlated with the overall positive DDI response.

The drama was perceived to have contributed to the learners' positive experiences due to the following five categorical features: a playful learning context, a supportive learning community, creative and challenging tasks concerning performance devising and improvisation, a genuine context for language use, and knowledge attainment. The five causal factors greatly overlap with the aspects that were meaningfully correlated with the learners' positive learning experiences, such as the perceived positive teacher-student relationship, engaging lesson topics, and meaningful learning product creations. However, the drama element was also the major cause of discomfort for the young learners. Comprising the primary sources of difficulty were the playfulness of dramatic interactions (and thus the loss of communication purpose), the lack of devising knowledge, and the need to improvise and perform in public.

The above cross-examination of the quantitative and qualitative analysis highlights a few interesting themes regarding the role of the learning environment, challenges, and learning attainment. In what follows, we will probe into these three themes, aiming to shed light on the reciprocal relationship between drama and digital tools in creating positive language learning experiences.

5.1 A playful and supportive learning context

One interesting finding in this study concerns the higher level of enjoyment and discomfort among less proficient learners and those without prior active drama and/or digital language learning experience. Though the difference is not statistically significant, it is nonetheless worth contemplating.

We may speculate that the learning experience is made enjoyable by the innate playfulness of drama activities. Drama opens up an "affective space" where the participants feel safe to "take risks and let go of their self-conscious attitudes when speaking in the target language" (Piazzoli, 2011, p. 564). Therefore, less advanced ESL speakers and those less used to drama activities perhaps feel less inhibited from participating in classroom discourses, which, in formal language classrooms, are often dominated by their more proficient classmates. By playing along in drama warm-ups and in-role interactions — as commented by the young participants, the pre-service teachers are no longer traditional authority figures dominating the voice in the classroom. This altered classroom hierarchy further allows the learners to "feel safe enough to take risks with language that they would otherwise feel too self-conscious to attempt" (Winston, 2012, p. 18).

More importantly, as reflected in the learners' remarks on classroom dynamics and unusual task design, drama cherishes spontaneity and collaboration. This sense of a supportive learning community "encourages children to take risks and be creative, as well as establishing the need for them to listen carefully and work socially, as a group" (Winston, 2022, p. 597)(Winston, 2022, p. 597). The process of devising engaged the learners in collaborative problem-solving characterised by the complex dynamic of individuality and consensus. This togetherness is further strengthened by the embodied and performed act of knowledge through performance presentations. From a neuroscience perspective, such activities activate the learners as a group, generating "interpersonal brain activity synchronisation", which results in reported social connectedness and engagement in learning experiences (Sambanis, 2024, p. 169). In this sense, the inclusion of drama addresses the "psychological price" induced by the sometimes too individualised and mechanic learning experiences in digital education contexts (Freiermuth, 2020, p. 15).

5.2 Challenges, enjoyment, and self-efficacy

The DDI-mediated learning experience was not without challenges, especially for those less proficient in English and those with no prior drama and/or digital language learning experience, despite reporting higher learning enjoyment. The negative and moderate correlation between drama enjoyment and the perceived DDI challenge concurs with this observation. Drama functions like a double-edged sword in this learning context in the way that its playfulness, spontaneity, and public performance are also causes of discomfort and anxiety. Such challenges were further worsened by language-related tasks, including being prompted to speak in public, responding to challenging video input, and discussing unfamiliar topics. The quantitative finding on the negative correlation between active classroom engagement and speaking discomfort provides further evidence, given that speaking discomfort is often associated with less proficient language learners and those less used to drama activities (Tsang, 2022; Zondag, 2024).

This ambivalent relationship between enjoyment and challenge invokes the concept of optimal challenge in Flow theories within positive psychology (Abuhamdeh & Csikszentmihalyi, 2012). Optimal challenges are "stimulating" rather than "too deterring or underwhelming" (Sambanis & Ludwig, 2024, p. 74). This begs contemplation on how such an intricate relationship between learning enjoyment and task challenge was fostered and mediated by the integral use of drama and digital technology.

Though less significant in contributing to the overall enjoyment, digital technology incorporation did seem to make speaking and public performance less deterring. This appears to align with the studies reviewed previously, which proved the effectiveness of digital

technology in alleviating speaking anxiety and promoting the willingness to communicate. In this study, performing Christmas scenes via video calls, instead of before a live audience, was reported to have made things easier for DB members: “If there are people (in front of you), you are a little nervous and then something goes wrong” (Jelly Joy). The presence of a digital screen represents a physical fourth wall between actors and spectators, creating a seemingly safer space as the audience was perceived as less judgemental and thus less intrusive. In this way, the challenge of performing in public, particularly for less advanced learners or those who are shy, was made feasible.

Digital technology also helps tone down language-related challenges concerning the discussion of unfamiliar topics. Digital tools such as ChatGPT, YouTube videos, and search engines were often mentioned to have enabled preparation in terms of content, procedural knowledge of how things could be done, and inspiration. With such tools, they could “pre-produce many things”, “ask on the internet if you don’t know how to do it”, and “be inspired to write something yourself” (Karate Kid).

Moreover, knowledge gained through digital tools, according to the learners, was put into practical use in drama simulations. The VD group were excited about being able to “really demonstrate what we know” and “really show what you learnt” (Mega Mind) in the simulated drama debate on whether vaping should be banned by law. For them, the fictional roles, such as worried mothers and tobacco shop owners, open up space for diverse and conflicting voices, creating tension which heightened the need for conversation. The debate was “not just like reading off your paper”, “not just playing the question and answer”, but rather “like more of a discussion” (Enchanted Egg). Viewed in this way, drama appears to have provided a genuine purpose and context for the learners to utilise their prior linguistic and experiential knowledge.

The perceived challenge is a strong predictor for the enjoyment of intrinsically motivated, goal-directed activities in leisure activities and classroom contexts (Abuhamdeh & Csikszentmihalyi, 2012). The young learners’ reflection upon improvisation-induced stress testifies to this observation. Though causing initial discomfort, the stress about having to act and react on the spot faded once they got used to the work mode. For Elegant Elephant, “when you do it more often and get used to it”, such spontaneous interactions “help with your language because you don't have a lot of time to think about dialogue or something like that.”

Meanwhile, drama activities in this study always involved the young learners in creating a final learning product, either in the form of short sketches or in semi-improvised role-play simulations. The creation process of a short performance or simulated role-play, either in-person or mediated by digital screens, engages learner agency in individual and group problem-solving; meanwhile the presentation of and reflection upon what was created gratifies their need for self-efficacy (Capron Puozzo & Audrin, 2021). The positive and

moderate correlation between learning product creation and overall DDI enjoyment also testifies to this finding.

5.3 Gaining knowledge: Critical cultural awareness

As noted in the introduction, critical cultural awareness is a key component of Byram's (1997) intercultural communicative competence (ICC) model and, by extension, of Alter's (2021) digital competence model which guided the formation of this DDL seminar and the DDI lessons taught in this research project. Following the Council of Europe's (2018a) definition, critical cultural awareness involves the mutual understanding and respect at work when one interacts with "the other", a term referring not only to groups with different nationalities or languages, but also to people from different social classes or holding different values (p.31).

While justifying their positive moments and main takeaways, the young participants repeatedly referred to their heightened critical cultural awareness and growing ability to navigate complicated conversations with others. Controversial and intercultural topics appeared to excite teenage learners, and this finding resonates with the positive correlation between engaging lesson topics and general DDI enjoyment. On the one hand, this seems to indicate that gaining critical cultural awareness and skills contributed to the development of self-efficacy. On the other hand, it is worth exploring how the DDI approach may have enabled and fostered the development of this awareness and ability while interacting with the other.

VD group members reflected on how the different roles taken by their peers during the role-play debate brought different voices into the room about vaping. The presence of different voices, as well as the justifications and counter arguments, prompted them to reflect upon the personal and societal causes and the health and environmental consequences. Protected by the fictional characters, the young participants "can embody and envisage alternative realities while still being themselves"; and this embodiment of the other while retaining one's self, helps to "build understanding and empathy for others' and 'bring together people from different circumstances" (Freebody & Finneran, 2021, p. 27). This is evident in Mega Mind's remark about how to meet others with different personal and social views in the middle: "I now know how to have a discussion with other people and how to form a compromise when you have a pro and a contra, and you want to meet in the middle."

A heightened critical cultural awareness was frequently brought up by CC group members who worked in pairs to turn foreign cultural practices into TikTok-style life-scenario sketches. The warm-up game involved the learners conversing in pairs about daily life topics, but each had his or her unique subtext, or cultural behaviour. It placed them immediately in intercultural communication situations, "a great way to lead us into the topic" (Karate Kid). Digital media, such as Liam Carpenter's TikTok video clips dramatising cross-cultural misunderstandings,

played a bridging role by providing inspiration, structure, and style for the learners' own digital storytelling: "You somehow have it in front of your eyes, and then you know how you do it" (Karate Kid). By creating and performing sketches featuring confusions caused by different gestures or greeting distances, the learners brought along and looked at their own personal and cultural beliefs against those of the other — their work partners and/or the characters. In doing so, they could "practice the way you would talk to other people in real life" (Karate Kid). They were more aware of the importance of "find[ing] out what the cultures are" before going to other countries, because we may "insult another person" with our perceived normalities (Jeasons Jenga). Drama activities, in this way, offered a "boundary" space where "common understandings and nuances of difference to be voiced, explored and reflected upon" (Winston & Lin, 2015, p. 210). Due to data protection constraints, however, the learners performed only for one another rather than creating full TikTok videos. The complete digital storytelling process would likely have shed further, or different light on their reception of the DDI approach.

6 Conclusion

The adolescent learners enjoyed the learning experience in this DDL study, with occasional and usually temporal challenges. Less proficient learners and those without prior drama or digital language learning experience found the approach particularly appealing, although they also indicated greater difficulties. Interestingly, drama was the primary source of both enjoyment and discomfort. It contributed to the overall learning enjoyment through five key factors: playfulness, learning community, meaningful and creative task design, purposefulness, and knowledge attainment. However, the same features that generated enjoyment, such as improvisation, public performance, and (the lack of) knowledge, also caused challenges.

Moreover, through a focused discussion on three emergent themes, the study tentatively explores the working mechanism of the DDI approach, that is, how the five factors interact to create enjoyable English learning experiences. The playfulness and inherent communal nature of drama open up an affective social space, motivating the less advanced learners to participate in classroom discourses often dominated by the more proficient ones. Meanwhile, the DDI approach facilitates a balanced task challenge, engaging learners as creative content creators rather than passive consumers. Challenges presented by drama and insufficient language and knowledge resources were mitigated by the purposefulness of drama work creation and the use of digital tools. Particularly digital tools alleviated performance anxiety by creating a safer space through virtual interfaces and assisted with preparatory language and content work using online resources. The study also investigates the potential of the DDI approach for facilitating intercultural communication in ESL lessons by exploring critical social

and cultural topics. Knowledge gained through digital input was put into dramatic interactions, wherein the learners lived through and interacted with cultural norms other than what they were used to.

These insights may further our understanding of how the integrated digital drama approach works, providing valuable implications for future practices and broader school applications. However, it should be acknowledged that this study took place in a teaching-learning lab setting, where the pre-service teachers' varied teaching styles and abilities may have shaped the teenagers' DDI experience. This, in combination with the small sample size, might have impacted the correlational findings and limited its generalisability to other teaching contexts. Moreover, perhaps due to the study's in-person setting, the digital tools seemed to have played a minor role in provoking strong positive or negative feelings in this study. Using the DDI approach in online learning spaces may generate different realities regarding the interplay between drama and digital tools in language lessons. However, positive learning experiences facilitated by this approach should not be mistaken for successful language acquisition. To better understand the impact of the DDI approach on language performance and the interplay between drama and digital technology in language learning, future research should collect both observational data on classroom dynamics and learning outcome data, such as recorded performances or edited sketch videos.

Disclosure Statement

The authors declare no competing interests.

Generative AI was used for language improvement during the drafting and revising process. The authors are solely responsible for the content, accuracy, and integrity of the work.

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Appendix: Themes, teaching plans, and group IDs

Group ID	Theme	Teaching Activities
Vaping Drama **(VD)**	Social issues	1) Warm-up in circle 'Move, if …'; 2) YouTube video on disposable vapes, Mentimeter survey on why people vape based on the video; 3) Role-play debate character preparation: 'There should be a government ban on vapes'. 4) Simulated debate. Pre-service teachers as moderators; 5) Reflection.
Main Character Energy **(MCE)**	Literary texts	1) Energy warm-up with Shakespeare elements; 2) YouTube video of the balcony scene in *Romeo and Juliet:* character inner voice; 3) Short scene preparation in groups: modernising the scene through three-way phone-call, a talk show, or a live-interview. 4) Act out in space; 5) Reflection.
Drop Bear **(DB)**	Cultural diversity	1) Christmas charades competition; 2) YouTube video and resource sheets on Australian Christmas; 3) Group video call preparation: Christmas encounters in Australia; 4) Act out via Zoom call; 5) Reflection.
Cohesion Corner **(CC)**	Cultural misunderstanding	1) Conversation in space with a secret task/subtext; 2) TikTok sketches about typical German stereotypes; 3) TikTok Sketch preparation: One situation of misunderstanding; 4) Act out in space; 5) Reflection.