

Gamification and Student Engagement in Arabic Language Learning for Students with Special Educational Needs: A Self-Determination Theory Perspective

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Abstract

Gamification is widely used to raise student engagement, but its role in Arabic language learning for students with special educational needs (SEN) is rarely examined in inclusive classrooms. This qualitative case study asked how teachers enact gamified Arabic instruction for students with SEN at Pondok Pesantren Al-Bajigur, Sumenep, Indonesia, and how it shapes their behavioural, emotional, cognitive, and social engagement. Data came from eight non-participant observations, semi-structured interviews with two Arabic teachers, two students with SEN, and one member of the learning-support personnel, and a review of instructional documents; the researcher coded the material through first-cycle, second-cycle, and pattern coding following Miles, Huberman, and Saldaña. Engagement followed gamified activities but remained uneven: intensity and form shifted with each student's profile, task demand, and adult support. Behavioural participation depended on prompts, emotional engagement on manageable challenge, cognitive effort on graduated scaffolding, and social interaction on the learning-support person. Read through Self-Determination Theory (SDT) as an interpretive lens, these conditions fit competence, autonomy, and relatedness, though the study did not measure them. Gamified Arabic instruction supports SEN learners only when paired with accessible tasks and sustained human scaffolding, with the support person as a central actor.

Keywords: gamification; student engagement; Arabic language learning; special educational needs; self-determination theory; inclusive education

Introduction

Inclusive education has expanded access for students with special educational needs (SEN), yet access alone does not secure their participation in learning. The 2006 Convention on the Rights of Persons with Disabilities and successive policy commitments under Sustainable Development Goal 4 have brought growing numbers of these students into mainstream and specialised settings. The UNESCO Global Education Monitoring Report on inclusion nonetheless stresses that inclusion is a process rather than a matter of placement, and that enrolment does not guarantee genuine participation.¹ Recent analyses of inclusive practice similarly locate its central concern in participation and agency rather than physical presence.² In this framing, engagement-students' observable behavioural participation, emotional involvement, cognitive effort, and social interaction during learning activities-becomes a key phenomenon through which inclusion is realised or fails.³ The present study treats engagement in this way: as a situated, observable phenomenon in classroom interaction rather than a measured outcome.

Arabic language learning is a demanding setting in which these participation concerns are amplified. Arabic imposes considerable processing demands on struggling learners: its morphological density is associated with weaker reading comprehension in children with reading disabilities,⁴ and its visually similar letterforms complicate letter recognition and decoding.⁵ Learning the language requires sustained attention, repeated practice of linguistic forms, and participation in communicative activity. For students with SEN, meeting these demands typically requires differentiated support, adjustments to task difficulty, pacing, and mode of participation, matched to individual learning

¹ UNESCO, "Global Education Monitoring Report 2020: Inclusion and Education: All Means All" (Paris: UNESCO, 2020).

² Suvi Lakkala, Mhairi C Beaton, and Kirsi Kokko, "A Conceptual Analysis of Inclusive Education in Terms of Participation and Agency," *Support for Learning* 39, no. 3 (2024): 125–36, <https://doi.org/10.1111/1467-9604.12477>.

³ Jennifer A Fredricks, Phyllis C Blumenfeld, and Alison H Paris, "School Engagement: Potential of the Concept, State of the Evidence," *Review of Educational Research* 74, no. 1 (2004): 59–109, <https://doi.org/10.3102/00346543074001059>.

⁴ Ibrahim A Asadi, Abeer Asli-Badarnah, and Vered Vaknin-Nusbaum, "The Impact of Morphological Density on Reading Comprehension in Arabic: A Comparison between Typically Developing and Children with Reading Disabilities," *Dyslexia* 30, no. 1 (2024), <https://doi.org/10.1002/dys.1761>.

⁵ Haitham Abuzaid and Murad Al Kayed, "The Impact of Using Storyboards on Improving Reading Skills of Third-Grade Students with Reading Disabilities in the Jordanian Context," *International Journal of Learning, Teaching and Educational Research* 19, no. 1 (2020): 172–87, <https://doi.org/10.26803/ijlter.19.1.10>.

profiles.⁶ Reviews of technology integration in the Arabic curriculum likewise report growing but uneven attention to learner diversity.⁷ How to provide such support while sustaining, rather than suppressing, active participation remains an open pedagogical problem.

Gamification offers one pedagogical response to this problem. Defined as the use of game design elements in non-game contexts,⁸ gamification introduces challenges, feedback, progression, and rewards into learning activities to encourage participation and motivation.⁹ Evidence associates gamified learning with increased engagement across varied populations, and reviews report similar potential for learners with disabilities in developing skills and participation,¹⁰ including gameful strategies in the education of autistic children.¹¹ It is important, however, to distinguish gamification from adaptive or differentiated instruction: game elements structure the learning experience, but adjusting those elements to individual learner profiles is a separate pedagogical act. The value of gamification for students with SEN therefore lies not in game mechanics alone but in how teachers embed and adapt them, an interaction this study foregrounds.

Gamification, on its own, does not explain why engagement occurs. Self-Determination Theory (SDT) provides a mechanism: it holds that motivation and engagement are supported when activities satisfy three basic psychological needs, competence, autonomy, and relatedness.¹² Read through SDT, gamified elements may

⁶ Ahmed Mohamed et al., “Arabic Language Teachers’ Beliefs and Practices of Using Evidence-Based Practices for Students with Learning Disabilities in the UAE: A Mixed-Methods Study,” *Cogent Education* 11, no. 1 (2024), <https://doi.org/10.1080/2331186X.2024.2418807>.

⁷ Mior Syazril Mohamed Sapawi and Nik Mohd Rahimi Nik Yusoff, “Integrating Technology into the Arabic Language Curriculum: A Systematic Review,” *Social Sciences and Humanities Open* 12 (2025), <https://doi.org/10.1016/j.ssaho.2025.101974>.

⁸ Federica Gini et al., “The Role and Scope of Gamification in Education: A Scientometric Literature Review,” *Acta Psychologica* 259 (2025), <https://doi.org/10.1016/j.actpsy.2025.105418>.

⁹ Juho Hamari, Jonna Koivisto, and Harri Sarsa, “Does Gamification Work? A Literature Review of Empirical Studies on Gamification,” *Proceedings of the 47th Hawaii International Conference on System Sciences*, 2014, <https://doi.org/10.1109/HICSS.2014.377>.

¹⁰ Elham Hussein et al., “Exploring the Impact of Gamification on Skill Development in Special Education: A Systematic Review,” *Contemporary Educational Technology* 15, no. 3 (2023), <https://doi.org/10.30935/cedtech/13335>; P T Sheejamol, Anu Mary Chacko, and S D Madhu Kumar, “Beyond the One-Size-Fits-All: A Systematic Review of Personalized and Gamified e-Learning for Neurodivergent Learners,” *Electronic Journal of E-Learning* 23, no. 3 (2025): 101–19, <https://doi.org/10.34190/ejel.23.3.4051>.

¹¹ Noemi Honorato et al., “Gameful Strategies in the Education of Autistic Children: A Systematic Literature Review, Scientometric Analysis, and Future Research Roadmap,” *Smart Learning Environments* 11, no. 1 (2024), <https://doi.org/10.1186/s40561-024-00309-6>.

¹² Richard M Ryan and Edward L Deci, “Intrinsic and Extrinsic Motivation from a Self-Determination Theory Perspective: Definitions, Theory, Practices, and Future Directions,” *Contemporary Educational Psychology* 61 (2020): 101860.

support engagement by signalling competence through feedback and attainable challenge, offering autonomy through meaningful choice, and fostering relatedness through shared activity. Yet the evidence base for SEN learners is uneven. Effects on relatedness and general motivation are relatively well documented, whereas effects on perceived competence are inconsistent, and autonomy is rarely examined for this population.¹³ Reviews further caution that these needs are not satisfied automatically; whether game elements support engagement depends on their interaction with instructional support rather than on the mechanics themselves.¹⁴ SDT thus offers an established but incompletely tested lens for interpreting how gamified Arabic learning may support the engagement of students with SEN.

The relevant literature remains fragmented across four largely separate strands, gamification, language learning, special educational needs, and Arabic, and is further blurred by the frequent conflation of gamification with game-based learning.¹⁵ A recent review of gamified language learning for students with SEN identified only a small number of eligible studies, indicating how thinly this intersection has been examined.¹⁶ Studies combining Arabic, gamification, and SEN are scarcer still; the closest is a single design study of game-based Arabic letter learning for children with dyslexia and hearing impairment,¹⁷ alongside broader work on gamified language learning for learners with SEN and hearing impairment in other languages.¹⁸ Related work has examined game-based Arabic learning frameworks for dyslexic children and gamification for teaching Arabic to non-native speakers, but not gamified Arabic instruction for students with SEN

¹³ Liuyufeng Li, Khe Foon Hew, and Jiahui Du, "Gamification Enhances Student Intrinsic Motivation, Perceptions of Autonomy and Relatedness, but Minimal Impact on Competency: A Meta-Analysis and Systematic Review," *Educational Technology Research and Development* 72, no. 2 (2024): 765–96, <https://doi.org/10.1007/s11423-023-10337-7>; Fei Gao, "Advancing Gamification Research and Practice with Three Underexplored Ideas in Self-Determination Theory," *TechTrends* 68, no. 4 (2024): 731–40, <https://doi.org/10.1007/s11528-024-00968-9>.

¹⁴ Hugo Alejandro Muñoz-Bonilla and Juana María Ortega-Tudela, "Structural Analysis of High-Impact Literature on Gamification and Game-Based Learning," *Contemporary Educational Technology* 18, no. 3 (2026), <https://doi.org/10.30935/cedtech/18870>.

¹⁵ Muñoz-Bonilla and Ortega-Tudela, "Structural Analysis of High-Impact Literature on Gamification and Game-Based Learning."

¹⁶ Bingham Liu, "Gamification in Language Learning for Students with SEND: Mapping Emerging Evidence," *Support for Learning* 41, no. 2 (2026), <https://doi.org/10.1111/1467-9604.70052>.

¹⁷ Sahar A EL-Rahman, "A Game-Based Learning for Teaching Arabic Letters to Dyslexic and Deaf Children," in *Studies in Systems, Decision and Control*, vol. 295 (Cham: Springer, 2021), 337–61, https://doi.org/10.1007/978-3-030-47411-9_19.

¹⁸ Gwendoline Laurissa Chan, Mohammad Issack Santally, and Jack Whitehead, "Gamification as Technology Enabler in SEN and DHH Education," *Education and Information Technologies* 27, no. 7 (2022): 9031–64, <https://doi.org/10.1007/s10639-022-10984-y>.

in authentic classrooms.¹⁹ Qualitative accounts of how teachers actually adapt gamified Arabic activities to different learning profiles, and how students respond during authentic classroom interaction, are largely absent.

This contextual gap is pronounced in the *pesantren*, an Indonesian Islamic boarding school. The *pesantren* in this study is instructionally distinctive in providing an inclusive learning environment for students with SEN, educational facilities, instructional services adapted to diverse learning characteristics and needs, and dedicated learning-support personnel who assist students during learning and mediate between teacher and student. These features shape how participation is enabled and are directly relevant to the engagement of students with SEN, yet gamified Arabic instruction for such students has not been examined in this setting. The *pesantren* therefore offers not merely an unstudied location but an instructionally meaningful context in which to observe how gamified learning is enacted and supported.

Accordingly, this study examines how gamification is implemented in Arabic language learning for students with SEN in a *pesantren*, and how it supports their engagement during learning activities. Using a qualitative case study, it traces implementation, adaptation, classroom interaction, and the forms of engagement these produce, treating gamification as an enacted pedagogical practice rather than a fixed set of game elements, and using SDT as an interpretive lens rather than a measured outcome. The study contributes situated qualitative evidence on how gamified Arabic learning is adapted to diverse learning characteristics in a context where such practice has not previously been documented.

Research Method

This study used a qualitative interpretive case study design within an interpretivist paradigm.²⁰ This design is suited to examining a phenomenon in depth within its real-life context, where participants' meanings and experiences are central. Educational practices are treated here as socially and contextually situated, their meanings constructed through

¹⁹ Noor Azli Mohamed Masrop et al., "A Systematic Review of Elements in Game-Based Arabic Language Learning Framework for Dyslexic Children," *Journal of Nusantara Studies (JONUS)* 8, no. 2 (2023): 334–53, <https://doi.org/10.24200/jonus.vol8iss2pp334-353>; Sultan A Almelhes, "Gamification for Teaching the Arabic Language to Non-Native Speakers: A Systematic Literature Review," *Frontiers in Education* 9 (2024), <https://doi.org/10.3389/educ.2024.1371955>.

²⁰ J W Creswell and J D Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 5th ed. (SAGE Publications, 2018).

participants’ experiences and interactions.²¹ The case study thus allowed close examination of how gamification was implemented and experienced in Arabic language learning for students with SEN at Pondok Pesantren Al-Bajigur.

The study was conducted at Pondok Pesantren Al-Bajigur, Sumenep Regency, East Java, Indonesia, purposively selected as an Islamic boarding school that operates formal education and provides educational services for students with SEN. The school offers an inclusive learning environment supported by educational facilities, instructional services adapted to students’ diverse learning characteristics and needs, and dedicated learning-support personnel. These features make it an information-rich case for examining gamification in Arabic language education.

Participants were selected through purposive sampling based on their direct involvement in gamified Arabic instruction and their capacity to provide information relevant to the research question. Selection prioritised information-rich participants across different roles: Arabic language teachers, learning-support personnel, and students with SEN. The small sample is consistent with a case study design that privileges in-depth exploration of a bounded case over statistical representation. Each participant was assigned an anonymous code. Table 1 summarises their characteristics.

Table 1.
Characteristics of participants

Code	Role	Gender	SEN (level)	Grade / Experience	Involvement
T1	Arabic teacher	Male		12 years	Designed and delivered gamified instruction
T2	Arabic teacher	Female		8 years	Assisted in instruction
S1	Student	Male	ADHD (mild)	Grade VII	Participated in gamified learning
S2	Student	Female	Specific learning difficulty (moderate)	Grade VIII	Participated in gamified learning
P1	Learning-support personnel	Female		6 years	Assisted students during learning

The two students presented different learning-support needs: S1 with mild ADHD and S2 with a moderate specific learning difficulty identified through school-based assessment records. This contrast allowed the study to examine how gamified instruction

²¹ Sharan B Merriam, *Qualitative Research: A Guide to Design and Implementation* (San Francisco: Jossey-Bass, 2009).

was experienced across differing learner characteristics. Their characteristics were considered when interpreting their participation and responses.

For the two students, interview procedures were adapted to their learning characteristics: questions were posed individually in clear, accessible language, with clarification or repetition as needed and sufficient pauses for students to formulate responses. These adaptations supported participation without altering the substantive focus of the questions.

Data were collected through non-participant classroom observation, semi-structured interviews, and document analysis, enabling a comprehensive account of how gamification was implemented for students with SEN.²² Observations examined classroom interaction and manifestations of behavioural, emotional, cognitive, and social engagement during gamified activities. Interviews with teachers, learning-support personnel, and students explored their experiences, perceptions, and interpretations of gamified instruction. Document analysis of lesson plans, instructional materials, and classroom documentation corroborated evidence from observations and interviews.²³ All instruments were developed from the four-dimensional student-engagement framework, aligning the research question with data collection. Table 2 presents the operationalisation.

Table 2.
Operationalisation of research instruments

Dimension	Indicators	Instrument	Primary data source
Behavioural	Active participation, following instructions, involvement in gamified tasks, task completion, sustained attention	Observation; interview	Observation of students; teachers and support personnel
Emotional	Enthusiasm, enjoyment, confidence, motivation, positive affective responses	Observation; interview	Observation of students; students; teachers
Cognitive	Efforts to understand material, use of learning strategies, persistence with challenges, reflection	Observation; interview; documents	Teachers; documents; observation of students
Social	Positive interaction with teachers and peers, collaboration, active communication, mutual support	Observation; interview	Observation of students; teachers; support personnel

²² Melanie Handley et al., “Using Non-Participant Observation to Uncover Mechanisms: Insights from a Realist Evaluation,” *Evaluation* 26, no. 3 (2020): 380–95, <https://doi.org/10.1177/1356389019869036>.

²³ Hani Morgan, “Conducting a Qualitative Document Analysis,” *The Qualitative Report* 27, no. 1 (2022): 64–77, <https://doi.org/10.46743/2160-3715/2022.5044>.

Each engagement dimension was translated into observable indicators guiding observation and interviews, providing a systematic basis for coding, categorisation, and theme development.

Data were analysed concurrently with collection using the interactive model of Miles, Huberman, and Saldaña data condensation, data display, and conclusion drawing and verification.²⁴ Observation notes, transcripts, and documents were coded through first-cycle coding to label relevant segments, second-cycle coding to group codes into conceptually meaningful categories, and pattern coding to identify relationships among categories relevant to gamified Arabic learning and engagement. The condensed data were displayed as matrices, narrative descriptions, and thematic groupings to enable comparison across participants and sources. The four engagement dimensions served as an a priori analytical framework for organising evidence rather than as predetermined findings; within this framework, the analysis remained attentive to categories emerging from participants' accounts, observations, and documents. Conclusions were drawn and continuously verified by comparing interpretations across the three data sources. The primary researcher conducted the coding; rather than computing inter-coder agreement, dependability was supported through iterative review of transcripts, cross-source comparison, an audit trail, and peer discussion of emerging interpretations.

Fieldwork ran from January to April 2025. The researchers conducted eight non-participant observation sessions of approximately 90 minutes each, documented through field notes. Teachers T1 and T2 were each interviewed twice, students S1 and S2 twice each, and support personnel P1 once; interviews lasted 45–50 minutes. Repeated observations and interviews across roles allowed observed practices and participant accounts to be compared throughout fieldwork.

The study followed Lincoln and Guba's criteria of credibility, transferability, dependability, and confirmability. Credibility was supported through methodological triangulation (observation, interviews, documents) and source triangulation (teachers, support personnel, students), and through member checking to verify the accuracy of interpretations. For teachers and support personnel, member checking involved reviewing the researchers' interpretations directly; for the two students, it was adapted to their

²⁴ Matthew B. Miles, A. Michael Huberman, and Johnny Saldana, *Qualitative Data Analysis: A Methods Sourcebook* (Washington: SAGE Publications, 2014).

learning characteristics by presenting summaries of the interpretations in accessible language for clarification. Transferability was supported through thick description of the setting, participants, and gamified practice, enabling readers to judge relevance to comparable contexts. Dependability was supported through systematic documentation of procedures participant selection, data collection, coding, display, and verification, as an audit trail. Confirmability was supported through reflexive note-taking, peer discussion, and cross-source comparison, ensuring interpretations were grounded in evidence rather than researcher assumptions alone.

Research Results

Analysis of classroom observations, semi-structured interviews, and documentary evidence was organised around four a priori analytical categories from the research framework: behavioural, emotional, cognitive, and social engagement. Within each category, the analysis identified patterns, variations, and the conditions under which engagement occurred. Findings are reported as observed and reported phenomena; their theoretical implications are reserved for the Discussion. Across the four dimensions, one pattern was consistent: engagement was rarely independent or uniform, but emerged and was sustained through the instructional support that teachers and learning-support personnel provided.

Behavioural Engagement

Students' behavioural engagement was evident in their participation, attention, adherence to game rules, and persistence in completing tasks at their individual ability levels. T1 described gamified activities as producing an enjoyable, low-pressure atmosphere in which students attended to the activity:

“They really enjoy it. Games are very important for these children because they learn while playing.” (T1)

“From what I observed, the students naturally paid more attention together. Compared with other teaching approaches, gamification gives them space to laugh and enjoy themselves. For example, when learning Arabic grammar, they do not seem to feel pressured.” (T1)

Teachers linked continued participation to the individual assistance students received, and to their persistence despite difficulty:

“Most of the children rarely break the rules because each student is accompanied by a “learning assistant” who monitors them individually.” (T2)

“Alhamdulillah, they remain enthusiastic and continue trying to learn despite their limitations.” (T2)

Observations corroborated these accounts while qualifying them. During picture-card and quiz activities, students responded to instructions, attended to the materials, and took part in picture-based quizzes, vocabulary games, and word-arrangement tasks (Obs. 1, 2). Participation was not uniform: some students responded independently, while others required verbal prompts, demonstrations, or individual assistance from the teacher or learning-support personnel before responding (Obs. 1, 4). Difficulty did not typically end participation; students generally returned to the activity after receiving support (Obs. 4). Documentary records, lesson plans, classroom photographs, and instructional materials, showed the gamified media in use: picture cards, interactive quizzes, scoreboards, and simple reward systems. Behavioural engagement was thus characterised less by continuous independent participation than by students' capacity to stay involved in gamified activities with varying levels of support.

Emotional Engagement

Emotional engagement appeared as enjoyment, enthusiasm, willingness to participate, and confidence. Teachers associated these responses with the enjoyable and manageable nature of the activities rather than with competition or success:

“From what I observed, they were happy and learned without pressure. Their enthusiasm seemed no longer constrained by the classroom environment, which is often perceived as monotonous.” (T2)

“The activities they enjoy the most are quizzes and picture-guessing games supported by simple technology. Quizzes provide challenges without becoming burdensome, especially because rewards are given at the end of the lesson.” (T1)

“Certainly, their self-confidence develops naturally because it is stimulated through meaningful and enjoyable learning activities.” (T2)

The student interviews were consistent with these accounts: S1 reported greater motivation and enthusiasm during activities, while S2 indicated that students could remain happy when activities were oriented toward enjoyment rather than winning. These responses were not contingent on successful performance; enjoyment itself sustained participation. Observations recorded students smiling, laughing, and showing enthusiasm during the quiz activity, and continuing to take part even when they did not complete every task or achieve the same scores (Obs. 2). Documentary materials, picture cards, interactive quizzes, scoring mechanisms, and reward systems, provided structured opportunities to combine learning tasks with enjoyable experiences. Across interviews, observation, and documents, gamification supported emotional engagement by making activities that students experienced as enjoyable, manageable, and encouraging.

Cognitive Engagement

Cognitive engagement was the most variable dimension and the most dependent on individual capacity and support. T1 described problem-solving as supported through discussion and guidance, recall as uneven across students, and independent thinking as encouraged selectively rather than uniformly:

“Through discussions and guidance provided by teachers or learning assistants, which have become part of the boarding school’s non-physical educational support.” (T1)

“Some students can do it, while others are not. Each child has a different level of intellectual ability.” (T1)

“We do not place excessive emphasis on this aspect. Instead, students who are capable are given opportunities to develop and try independently.” (T1)

Observations made these processes visible. In picture-based tasks, students examined visual information and connected it to Arabic vocabulary, with independence varying across students (Obs. 6). In recall-based quizzes, some students retrieved previously learned material unaided while others paused or required repetition, paralleling T1’s account of uneven recall (Obs. 7). Word-arrangement tasks showed students trying arrangements, revising them, consulting examples, and continuing after prompts (Obs. 8). When tasks were difficult, problem-solving proceeded through a graduated sequence, independent attempts, guiding questions, demonstration, and direct assistance (Obs. 9). In progressively structured tasks, students who had grasped the instructions attempted subsequent steps before seeking confirmation, while others worked independently only after individual guidance (Obs. 10, 11). Documentary evidence, vocabulary quizzes, picture-matching exercises, and progressively structured tasks, confirmed that activities were designed to accommodate differing abilities. Cognitive engagement was therefore observable but conditional: it appeared as students’ attempts to understand, retrieve, and complete tasks, and its independence differed markedly across learners and with the level of support provided.

Social Engagement

Social engagement took the form of interaction with teachers, learning-support personnel, and peers, participation in shared activities, and supportive behaviour, though its form differed from that of typically developing learners and continued to require guidance. Communication was described as cooperative despite students’ individual limitations, and collaboration as emerging mainly through shared play rather than sustained joint work:

“Alhamdulillah, it is good. Although students have limitations, they are still able to cooperate with teachers and learning assistants.” (S2)

“It is the same. There is no difference because they are in the same forum.” (T1)

“It is more about individual responses between one student and another. Their collaboration appears through playing activities such as arranging words and similar tasks.” (T1)

“Yes, but it is not the same as with typical children. Their support is more about showing care and helping within the limits of what they are capable of because of their limitations.” (T1)

“They remain actively involved when placed in groups, but they still need guidance and assistance from teachers and learning assistants.” (T1)

Observations of group activities were consistent with these accounts. In word-arrangement and group games, students remained within the shared task and interacted with peers, mainly by responding to the task and taking part together, while teachers and assistants moved among them to provide explanation and individual help (Obs. 3, 5). Collaboration varied across students, and some continued to need direction to sustain involvement (Obs. 5). Drawing on interviews and observation, social engagement was characterised by interaction, group participation, and care aligned with students’ capacities, but remained dependent on structured support.

Summary of Findings

Across the four dimensions, gamified Arabic learning was associated with active participation, positive emotional responses, observable cognitive effort, and social interaction, but engagement was neither uniform nor independent. Its intensity and form varied with students’ individual characteristics, task complexity, and the level of support from teachers and learning-support personnel, and the analysis surfaced recurring challenges: uneven participation, differences in task completion, dependence on scaffolding, and varying capacities for independent interaction. Table 3 summarises the principal patterns and the evidence supporting each.

Table 3.

Summary of engagement patterns and supporting evidence			
Dimension	Main pattern	Key indicators	Supporting evidence
Behavioural	Students participated and stayed involved at their individual ability levels, with support	Participation, attention, adherence to rules, persistence	Interview, observation, documentation
Emotional	Activities were experienced as enjoyable and manageable, sustaining enthusiasm, confidence, and motivation	Enjoyment, enthusiasm, confidence, motivation	Interview, observation, documentation

Cognitive	Cognitive effort was observable but conditional, varying with individual capacity and support	Understanding material, recall, problem-solving, attempts at independent work	Interview, observation, documentation
Social	Interaction and collaboration emerged mainly through shared play and required continued guidance	Teacher and peer interaction, collaboration, mutual support, group participation	Interview, observation

Overall, gamification in Arabic language learning for students with SEN was associated with engagement across behavioural, emotional, cognitive, and social dimensions simultaneously, while the intensity and form of that engagement remained shaped by individual characteristics and by the adaptive support of teachers and learning-support personnel. These patterns provide the basis for the theoretical and practical interpretation developed in the Discussion.

Discussion

The findings show that gamification in Arabic language learning for students with SEN is not adequately understood as the use of game elements to raise motivation or enjoyment. Across all four engagement dimensions, one pattern recurred: engagement was seldom independent or uniform. It emerged and was sustained through the interaction between accessible gamified activities and the scaffolding of teachers and learning-support personnel. This observation frames the discussion that follows. Rather than treating each engagement dimension as a separate positive outcome, we argue that gamified activities established the conditions for participation, while human support determined whether those conditions were taken up, a reading consistent with reviews cautioning that gamification does not benefit learners automatically but depends on how game elements interact with instructional support.²⁵

This position also requires conceptual precision. The activities observed, picture cards, matching, quizzes, word-arrangement tasks, points, and end-of-lesson rewards, combined gamified elements with adaptive, differentiated support. The pedagogical work lay less in the game mechanics themselves than in how teachers embedded and adjusted them for individual learners, a distinction often lost when gamification and game-based

²⁵ Muñoz-Bonilla and Ortega-Tudela, “Structural Analysis of High-Impact Literature on Gamification and Game-Based Learning”; Li, Hew, and Du, “Gamification Enhances Student Intrinsic Motivation, Perceptions of Autonomy and Relatedness, but Minimal Impact on Competency: A Meta-Analysis and Systematic Review.”

learning are conflated.²⁶ Self-Determination Theory (SDT) is used here as an interpretive lens rather than a measured construct: the study did not assess students' psychological needs or intrinsic motivation, so SDT is used to interpret why particular conditions may have supported engagement, not to claim that specific needs were satisfied.²⁷ Read through SDT, the recurring role of manageable challenge, feedback, and supportive relationships points to the needs for competence, autonomy, and relatedness as plausible mechanisms underlying the observed patterns.

Behavioural Engagement: Participation As an Enabled Condition

Behavioural engagement appeared as participation, attention, adherence to rules, and persistence, but rarely as an autonomous learner disposition. Fredricks, Blumenfeld, and Paris characterise behavioural engagement through participation, effort, attention, and persistence;²⁸ the present findings qualify this account for SEN contexts by showing that these behaviours were frequently co-constructed. Students often participated and persisted only after verbal prompts, demonstrations, or individual assistance, and difficulty typically interrupted rather than ended participation. This aligns with evidence that highly inclusive teaching is defined by how the environment is arranged to respond to all learners rather than by learner disposition alone,²⁹ and with qualitative findings on gamified attention support for students with ADHD, where sustained participation depended on individualised mediation,³⁰ and with SDT-informed gamified designs that report engagement benefits while noting risks for learners who need additional support.³¹ Behavioural engagement, then, is better understood not only as what students did but as what the gamified environment and its human support enabled them to do. Comparable

²⁶ Muñoz-Bonilla and Ortega-Tudela, "Structural Analysis of High-Impact Literature on Gamification and Game-Based Learning"; Gini et al., "The Role and Scope of Gamification in Education: A Scientometric Literature Review."

²⁷ Ryan and Deci, "Intrinsic and Extrinsic Motivation from a Self-Determination Theory Perspective: Definitions, Theory, Practices, and Future Directions."

²⁸ Fredricks, Blumenfeld, and Paris, "School Engagement: Potential of the Concept, State of the Evidence."

²⁹ Petr Svojanovský et al., "Highly Inclusive Teachers' Practices in Responding to All Students' Learning," *Learning and Instruction* 107 (2027), <https://doi.org/10.1016/j.learninstruc.2026.102479>.

³⁰ Adistyana Pitaloka Kusmawati, Fahrurrozi, and Asep Supena, "Increasing Concentration of Attention Deficit Hyperactivity Disorder (ADHD) Students through Gamification," *International Journal of Special Education* 38, no. 1 (2023): 169–84, <https://doi.org/10.52291/ijse.2023.38.15>.

³¹ Lui-Kwan Ng and Chung-Kwan Lo, "Online Flipped and Gamification Classroom: Risks and Opportunities for the Academic Achievement of Adult Sustainable Learning," *Sustainability* 14, no. 19 (2022), <https://doi.org/10.3390/su141912396>.

gamification effects reported in mainstream settings therefore cannot be assumed to transfer to SEN learners without this scaffolding.³²

Emotional Engagement: Enjoyment, Manageable Challenge, and the Limits of Competence Claims

Emotional engagement was evident in enjoyment, enthusiasm, confidence, and continued participation that did not depend on success. Interpreted through SDT, the most relevant need is competence: quizzes and picture-based tasks offered manageable challenges, immediate opportunities to respond, and visible progress, conditions under which learners are more likely to experience positive motivational states.³³ This reading is supported by evidence that game elements can enhance situational mastery experience and willingness to learn in children with specific learning disorders,³⁴ and by a meta-analysis reporting emotional and social engagement benefits of adaptive educational technologies for students with autism.³⁵ Two cautions follow, however. First, self-confidence observed in behaviour is not equivalent to measured perceived competence; the study documents conditions compatible with competence support, not competence satisfaction, and self-efficacy and SDT's perceived competence are related but not identical constructs.³⁶ Second, the activities combined enjoyment with explicit rewards, and SDT distinguishes externally regulated behaviour from intrinsic motivation.³⁷ The data support the claim that gamification created conditions associated with enjoyment and willingness to participate; they do not establish sustained intrinsic motivation. Evidence that gamification's effects on relatedness and motivation are better documented than its effects on perceived competence is consistent with this restraint.³⁸

³² Hamari, Koivisto, and Sarsa, "Does Gamification Work? A Literature Review of Empirical Studies on Gamification"; Michael Sailer and Lisa Homner, "The Gamification of Learning: A Meta-Analysis," *Educational Psychology Review* 32, no. 1 (2020): 77–112, <https://doi.org/10.1007/s10648-019-09498-w>.

³³ Ryan and Deci, "Intrinsic and Extrinsic Motivation from a Self-Determination Theory Perspective: Definitions, Theory, Practices, and Future Directions."

³⁴ Manuel Ninaus et al., "Enhancing Situational Mastery Experience and Willingness to Learn with Game Elements in Children with Specific Learning Disorders," *Mind, Brain, and Education* 19, no. 4 (2025): 232–40, <https://doi.org/10.1111/mbe.70016>.

³⁵ Sofia Mastrokoukou et al., "Adaptive Educational Technologies for Students with Autism Spectrum Disorder," *Journal of Autism and Developmental Disorders*, 2026, <https://doi.org/10.1007/s10803-026-07429-7>.

³⁶ Ninaus et al., "Enhancing Situational Mastery Experience and Willingness to Learn with Game Elements in Children with Specific Learning Disorders."

³⁷ Ryan and Deci, "Intrinsic and Extrinsic Motivation from a Self-Determination Theory Perspective: Definitions, Theory, Practices, and Future Directions."

³⁸ Li, Hew, and Du, "Gamification Enhances Student Intrinsic Motivation, Perceptions of Autonomy and Relatedness, but Minimal Impact on Competency: A Meta-Analysis and Systematic Review"; Chong En

Cognitive Engagement: Supported Effort and Graduated Autonomy

Cognitive engagement was the most variable dimension and the most contingent on support. Observations showed students recognising visual information and mapping it to Arabic vocabulary, retrieving prior material unevenly, revising word arrangements, and solving problems through a graduated sequence of independent attempts, guiding questions, demonstration, and direct help. Interpreted through SDT, this sequence bears on both competence and autonomy: support was calibrated so that students attempted subsequent steps themselves once they had grasped a task, and teachers withheld direct answers from students able to try independently. This is the structure of autonomy-supportive scaffolding rather than of independent cognition, and it resonates with accounts that reimagine inclusive participation around agency and autonomy for learners with difficulties³⁹ and with reviews of serious games for literacy in children with learning difficulties, where cognitive gains were mediated by task design and guidance.⁴⁰ Frameworks integrating SDT with flow and cognitive load similarly locate gamification's cognitive value in appropriately calibrated challenge rather than in game mechanics.⁴¹ Meaningful cognitive engagement for these students thus took the form of supported, progressive attempts, not identical levels of independent completion.

Social Engagement: Relatedness And the Centrality of the Support Person

Social engagement emerged mainly through shared play and required continued guidance. Collaboration appeared as parallel participation and care within students' capacities rather than as sustained joint work, and students remained involved in groups only with mediation from teachers and assistants. Interpreted through SDT, this points to relatedness: supportive relationships created the conditions for students to remain socially and academically involved.⁴² This mediated, relational character is also consistent with a

Si and Kyra Ley Sy Law, "Enhancing Motivation in Gamified Learning: How Relatedness Moderates the ARCS Model," *Cogent Education* 13, no. 1 (2026), <https://doi.org/10.1080/2331186X.2026.2665500>.

³⁹ Silvia Perzoli et al., "Reimagining Inclusive Education through Challenge-Based Learning: Opportunities for Students with Learning Difficulties," *Research in Developmental Disabilities* 175 (2026), <https://doi.org/10.1016/j.ridd.2026.105343>.

⁴⁰ Chiara Valeria Marinelli et al., "The Effectiveness of Serious Games for Enhancing Literacy Skills in Children with Learning Difficulties," *Applied Sciences* 13, no. 7 (2023), <https://doi.org/10.3390/app13074512>.

⁴¹ Eleni Kougioumtzidou et al., "From Points to Progress: A Systematic Literature Review on How Gamification Affects Engagement and Motivation," *Education Sciences* 16, no. 8 (2026), <https://doi.org/10.3390/educsci16081200>.

⁴² Si and Law, "Enhancing Motivation in Gamified Learning: How Relatedness Moderates the ARCS Model."

sociocultural view in which participation is co-constructed through interaction with more capable others.⁴³ The finding foregrounds the learning-support person as a central actor, not a background presence. This aligns closely with research on how paraprofessionals conceptualise and facilitate the social participation of students with SEN,⁴⁴ and with work framing the teacher-aide relationship as a bridge to learning.⁴⁵ It is also consistent with evidence that social support in education is strongly associated with the engagement of students with disability.⁴⁶ Social engagement here was therefore relational and mediated: gamified group activities opened opportunities for interaction, but relatedness was enacted largely through the support person.

Theoretical Contribution

This study extends the empirical application of the four-dimensional engagement framework, rather than modifying it, by specifying how each dimension operates for students with SEN in a gamified Arabic learning setting: as enabled participation, competence-compatible enjoyment, supported cognitive effort, and mediated relatedness. Its central contribution is to reframe engagement in this context as co-constructed, produced through the interaction of gamified activities, individual learner characteristics, task demands, and human support rather than as an effect of game elements. Linking this framework to SDT clarifies the mechanism: manageable challenge and feedback are compatible with competence, graduated scaffolding with autonomy, and the support person with relatedness, while the study stops short of claiming these needs were satisfied because they were not measured.⁴⁷ The engagement framework supplies the empirical structure for identifying participation; SDT interprets the motivational conditions surrounding it. The contribution is contextual: it extends gamification scholarship to Arabic language learning for students with SEN in a pesantren, an empirically

⁴³ Lev S Vygotsky, *Mind in Society: The Development of Higher Psychological Processes* (Cambridge, MA: Harvard University Press, 1978).

⁴⁴ Eva Kemler and Ulla Licandro, “Whose Role Is It Anyway? Paraprofessionals’ Conceptualisations of Facilitating the Social Participation of Students with Special Educational Needs,” *Journal of Research in Special Educational Needs* 26, no. 3 (2026), <https://doi.org/10.1111/1471-3802.70113>.

⁴⁵ Jeanette Quill and Ella R Kahu, “Building a Bridge to Learning: The Critical Importance of Teacher Aide–Student Relationships,” *Australasian Journal of Special and Inclusive Education* 46, no. 2 (2022): 164–77, <https://doi.org/10.1017/jsi.2022.12>.

⁴⁶ Helen Dickinson et al., “The Importance of Social Supports in Education: Survey Findings from Students with Disability,” *Disability and Society* 38, no. 8 (2023): 1304–26, <https://doi.org/10.1080/09687599.2021.1994371>.

⁴⁷ Gao, “Advancing Gamification Research and Practice with Three Underexplored Ideas in Self-Determination Theory.”

underexplored setting, and shows that gamification's pedagogical value depends not on game elements alone but on their integration with accessible tasks, instructional support, and opportunities for meaningful interaction. Table 4 summarises this interpretation.

Table 4.
Interpretation of gamified Arabic language learning through the engagement framework and SDT

Engagement dimension	Empirical finding	SDT interpretation (lens, not measured)	Contribution
Behavioural	Participation, attention, and persistence at individual ability levels, with support when needed	Conditions that may enable participation; autonomy and competence not measured	Shows behavioural engagement is enabled and co-constructed, not an autonomous disposition
Emotional	Enjoyment, enthusiasm, and confidence during manageable, enjoyable activities	Manageable challenge and feedback compatible with competence support; confidence $\neq$ measured competence	Shows gamified Arabic learning can create competence-compatible, low-pressure experiences when supported
Cognitive	Supported, progressive attempts to understand, recall, and complete tasks, with uneven independence	Graduated scaffolding compatible with competence and autonomy support	Shows cognitive engagement as supported, progressive effort rather than independent completion
Social	Interaction and care mainly through shared play, requiring continued guidance	Supportive relationships compatible with relatedness	Shows relatedness is enacted largely through the support person
Overall	Engagement emerged through the interaction of activities, learner characteristics, task demands, and support	Engagement framework as empirical structure; SDT as interpretive lens	Reframes engagement for SEN learners as co-constructed rather than game-element-driven

Limitations

Several limitations qualify these interpretations. First, applying the four engagement dimensions a priori made the analysis framework-directed and may have foregrounded some forms of engagement over others. Second, the voices of students with SEN were thinner than those of adults: several interpretations rested on observation and adult accounts, and possible acquiescence during member-checking limits confidence in student-derived findings. Third, disconfirming evidence was scarce; the data capture uneven participation and reliance on assistance but not systematic resistance or sustained failure, so the findings do not show that gamification consistently produces positive engagement. Fourth, five participants at one pesantren with specific SEN profiles limit transferability. Finally, the study examined engagement, not Arabic language

achievement. Future research should combine longitudinal and comparative designs across pesantren, madrasah, and formal inclusive schools; use child-appropriate, participatory methods to access student voice directly;⁴⁸ seek disconfirming cases deliberately; and adopt mixed-method designs that measure both engagement and Arabic outcomes while separating the effect of game elements from that of instructional support.⁴⁹

Conclusion

This study examined how gamification was implemented in Arabic language learning for students with special educational needs at Pondok Pesantren Al-Bajigur, Sumenep, and how it supported their engagement. The central finding is that engagement was co-constructed rather than produced by game elements: picture cards, quizzes, word-arrangement tasks, and rewards opened accessible entry points into learning; but behavioural participation, emotional involvement, cognitive effort, and social interaction were realised through the continuous scaffolding of teachers and learning-support personnel and calibrated to each student's capacity. Engagement was neither uniform nor independent; its intensity and form varied with individual characteristics, task demands, and the support available. Interpreted through Self-Determination Theory as an interpretive lens, the recurring conditions of manageable challenge, feedback, graduated scaffolding, and supportive relationships were compatible with the needs for competence, autonomy, and relatedness, though the study interpreted rather than measured these needs.

The study contributes situated qualitative evidence to gamification scholarship by extending the empirical application of the engagement framework to Arabic language learning for students with SEN in a pesantren, an empirically underexplored setting, and by showing that the pedagogical value of gamification depends on its integration with accessible tasks and human support rather than on game mechanics alone. For practice, this implies that gamifying Arabic instruction for students with SEN requires deliberate task adaptation and sustained instructional support, with the learning-support person treated as a central actor rather than an auxiliary one. These conclusions hold within the

⁴⁸ Tansel Yazicioğlu, Adile Emel Sardohan Yildirim, and Özlem Altındağ Kumaş, "Inclusive Education from Children's Perspective: Examining Social, Emotional, and Educational Dimensions," *Psychology in the Schools* 62, no. 9 (2025): 2851–59, <https://doi.org/10.1002/pits.23506>.

⁴⁹ JiaMin Dai, Ailifeire Wufue, and Hong Zhang, "Effectiveness of a Gamified Educational Application on Attention and Academic Performance in Children with ADHD," *Frontiers in Education* 10 (2025), <https://doi.org/10.3389/feduc.2025.1668260>.

boundaries of a single-case qualitative study of five participants in which student voice was limited, the engagement dimensions were applied a priori, and language achievement was not measured; the directions set out above, longitudinal, comparative, participatory, and mixed-method designs that also separate the effect of game elements from that of instructional support, would test how far they extend beyond this case.

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Ethics Statement

This study was approved by the Institute for Research and Community Service (LPPM) of Institut Agama Islam Miftahul Ulum Pamekasan (approval no. 213/LPPM-IAIMU/IV/2025). Written informed consent was obtained from the parents or guardians of all student participants, and the students gave their assent before taking part. Teachers and support personnel provided written informed consent. All participants were anonymized in the transcripts and in this article, and participation could be withdrawn at any time without consequence.

Conflict of Interest Statement

The authors declare no conflict of interest.

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Author Contributions

Mirza Muttaqin: Conceptualization, Methodology, Formal analysis, Writing – original draft. Abdul Muntaqim al-Anshory: Investigation, Data curation, Writing – original draft. Bisri Mustofa: Methodology, Validation, Writing – review & editing. M. Mansyur: Resources, Project administration, Writing – review & editing. Maltuful Anam: Investigation, Visualization, Supervision. All authors read and approved the final manuscript.

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