

Effectiveness of animated video lessons on learners' reading fluency and comprehension skills

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Abstract

This study determined the effectiveness of animated video lessons in improving the reading fluency and comprehension skills of struggling readers in Iyapan Primary School, Division of Apayao, during School Year 2025–2026. Employing a quasi-experimental one-group pretest-posttest design, the study involved eighteen learners from Grades 4, 5, and 6 who were identified as struggling readers based on the school's reading assessment. The intervention was implemented over five months with sessions conducted three times per week using animated video lessons as the primary instructional tool. Data were gathered using standardized reading passages adapted from the Philippine Informal Reading Inventory (Phil-IRI), a reading fluency scoring rubric, and a learner engagement survey questionnaire. Descriptive statistics including mean and standard deviation were used to describe learners' performance, while a paired samples t-test was applied to determine the significant difference between pretest and posttest scores at a 0.05 level of significance. Findings revealed that prior to the intervention, learners demonstrated fair reading fluency and performed at the instructional comprehension level, indicating a need for continued teacher support. Following the five-month implementation, learners exhibited marked improvement, achieving higher levels of reading fluency and advancing to the independent comprehension level. Statistical analysis confirmed a significant difference between pretest and posttest scores in both reading fluency and comprehension. Additionally, learners demonstrated a high level of engagement throughout the animated video lesson sessions. The study concludes that animated video lessons are an effective technology-based instructional strategy for enhancing reading fluency, comprehension, and learner engagement among struggling readers, particularly in resource-constrained rural school settings.

Keywords: Animated Video Lessons; Reading Fluency; Reading Comprehension; Struggling Readers; Learner Engagement

1. Introduction

Reading is the cornerstone of all learning endeavors. The ability to read fluently and comprehend text meaningfully is indispensable for academic success and lifelong learning [1]. It serves as the foundation upon which learners build their knowledge, critical thinking, and communication skills, making it a vital competency in today's information-driven society. However, a significant number of learners in primary grades encounter challenges in decoding, pronunciation, fluency, and comprehension, which impede their literacy development and overall academic progress [2]. These difficulties can manifest as problems with phonological awareness, decoding speed, accuracy, expression, and the capacity to extract meaning from written texts [3,22].

Early identification and intervention for struggling readers are crucial to ensure that foundational reading skills are acquired during the formative years [4]. Without proper support, these learners are at risk of falling further behind their peers, leading to persistent reading difficulties that can negatively impact their future educational opportunities

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[23]. Addressing these issues early on through targeted strategies is essential for fostering literacy and confidence in young learners.

Fluency and comprehension are interdependent aspects of reading, each contributing uniquely to overall reading proficiency [5,24]. Fluency involves reading words accurately, quickly, and with proper expression, which allows learners to focus their cognitive resources on understanding the text [6]. Comprehension, on the other hand, is the ability to interpret, analyze, and derive meaning from written material [7]. Research suggests that children who read fluently tend to comprehend better because they are not burdened by decoding efforts, while slow or inaccurate readers often struggle to grasp the meaning of texts, which diminishes their motivation and engagement [8]. Therefore, interventions that address both fluency and comprehension are essential to foster holistic literacy development and to prepare learners for more advanced academic tasks.

Integration of animated video lessons serves as a transformative intervention by addressing the cognitive and affective barriers to literacy. By leveraging multimedia stimuli, these lessons provide essential scaffolding that bridges the gap between text and meaning [16,17,25]. According to Mayer's Cognitive Theory of Multimedia Learning, learners process information more effectively when it is presented through both visual and auditory channels, as this dual-stream approach reduces cognitive load [16,28]. This is further reinforced by Paivio's Dual Coding Theory, which suggests that the simultaneous presentation of animations and narration creates stronger mental representations, leading to better retention and recall of vocabulary compared to traditional text alone [19]. Furthermore, these videos provide consistent auditory models that help learners develop the accuracy and pace necessary for fluent reading [20]. Beyond these gains, animated videos create a captivating environment that increases learner engagement and reduces the anxiety often associated with traditional reading instruction [18,21].

Globally, disparities in literacy rates reflect unequal access to educational resources and opportunities. UNESCO reports indicate that millions of children worldwide lack basic reading skills, which significantly hinder their prospects for future success and socio-economic mobility [9,26]. While developed countries have implemented comprehensive literacy programs, challenges persist among marginalized communities, especially in rural and underserved regions [10]. In many developing nations, issues such as inadequate teacher training, limited access to instructional materials, and socio-economic disparities exacerbate the problem, creating a cycle of underachievement and inequality that is difficult to break [11].

In the Philippines, national assessments have consistently revealed that many students struggle with reading fluency and comprehension, particularly in the early grades where foundational skills are supposed to be developed [12,27]. These issues are more pronounced in rural and marginalized areas, where resources, qualified teachers, and engaging learning materials are often scarce [13]. This situation perpetuates a cycle of poor academic performance, social inequality, and limited future opportunities for disadvantaged learners [14].

The rapid development of technology has opened new avenues for addressing these challenges. Among the innovative approaches, animated video lessons have emerged as effective instructional tools that combine visual and auditory stimuli to actively engage learners [15,29]. Animated videos help simplify complex concepts, provide contextualized learning experiences, and enhance vocabulary development through visual representation [28]. Mayer's Cognitive Theory of Multimedia Learning emphasizes that individuals learn more effectively when information is presented through both words and pictures, as this dual coding enhances understanding and retention [16]. Animated videos serve as dynamic resources that help learners connect texts to their underlying meanings, thereby improving reading fluency and comprehension [17]. Moreover, they can foster motivation, reduce anxiety, and create a more enjoyable learning environment for struggling readers [18].

Despite the growing body of literature supporting the effectiveness of animated video lessons, there remains a significant gap in their application in specific local contexts. In the Philippines, particularly in rural areas such as Apayao, there is limited documented evidence on the use of animated video lessons as an intervention for improving reading fluency and comprehension. Existing studies are often conducted in urban or technology-rich environments, leaving a gap in understanding their effectiveness in resource-constrained settings [30].

In the local context of Iyapan Primary School, these challenges are evident. Based on the school's reading assessment conducted in December 2025, many learners exhibit low fluency and comprehension scores. Specifically, the average reading level of Grades 4, 5, and 6 learners is two grade levels below their current grade. This indicates that learners are currently performing below the expected proficiency level, requiring immediate and targeted intervention. Furthermore, there is a noticeable lack of similar interventions utilizing animated video lessons within the Kabugao

District and the broader Apayao region. A review of existing literature and consultations with local educators revealed a gap in research and implementation of such technology-enhanced methods in the region.

This situation highlights the urgent need for innovative, engaging, and pedagogically sound interventions. Animated video lessons present a promising approach by providing visual support, modeling fluent reading, enhancing comprehension through context, and increasing learner engagement. These features directly address the current reading difficulties of learners by making reading more accessible, interactive, and meaningful.

This study explores the effectiveness of animated video lessons as an intervention strategy to improve the reading fluency and comprehension of struggling readers in Iyapan Primary School. By investigating the effectiveness of this approach, this research aims to provide insights into how technology-enhanced interventions can support literacy development in resource-constrained settings and contribute to the broader goal of improving reading outcomes for all learners.

As the Reading Coordinator of Iyapan Primary School, the researcher is motivated by the urgent need to support young learners who struggle with reading fluency and comprehension. Daily exposure to learners with persistent reading difficulties inspired the search for an engaging and effective intervention. Animated video lessons were explored as a practical tool to help improve early-grade literacy and strengthen the school's reading program. This study reflects the researcher's commitment to ensuring that every child has the opportunity to become a confident and successful reader.

2. Methodology

2.1. Research Design

This study used a quasi-experimental one-group pretest–posttest design to determine the effect of animated video lessons on improving reading fluency and comprehension skills.

2.2. Locale of the Study

The study was conducted at Iyapan Primary School, located in Kabugao District I, Province of Apayao.

2.3. Participants of the Study

The participants consisted of eighteen (18) learners from Grades 4, 5, and 6. Total enumeration was employed.

2.4. Research Instrument

The study used tests and a questionnaire to examine the effect of animated video lessons on learners' reading fluency and comprehension. Pre-tests and post-tests, adapted from PHIL-IRI, measured accuracy, speed, expression, and comprehension using a standard fluency scoring rubric, with different but equally difficult passages administered before and after the intervention. To assess engagement, a structured survey questionnaire adopted from Yunus et. al, [7] was employed, consisting of ten indicators rated on a four-point Likert scale. Together, these instruments provided quantitative measures of improvement in reading fluency and comprehension, as well as learners' engagement with the animated video lessons.

2.5. Statistical Analysis

The study employed both descriptive and inferential statistical analyses to address the research questions. Frequency distribution and percentages were used to present learners' performance levels across assessment periods, while mean and standard deviation summarized pre-test and post-test scores in reading fluency, comprehension, and engagement. To test for significant differences, a paired samples t-test was conducted at the 0.05 level of significance, comparing learners' scores before and after the intervention. The computed t-values were evaluated against the critical value of ± 2.110 at 17 degrees of freedom, with p-values guiding the decision to reject or retain the null hypotheses, ensuring accurate interpretation within the established significance threshold.

3. Results and discussion

Table 1 Frequency Distribution of Pre-Test Reading Fluency Levels

Reading Fluency Level	Frequency	Percentage	Interpretation
Fair (Scores 9–11)	9	50.00%	Fair
Good (Scores 12–13)	9	50.00%	Good
Total	18	100%	

Overall Mean = 11.17 | SD = 1.50 | Interpretation: Fair

Table 1 shows the pre-test reading fluency scores yielded an overall mean of 11.17 (SD = 1.50), interpreted as Fair. The frequency distribution shows that exactly half of the learners (n = 9, 50.00%) obtained scores in the Fair range, while the other half (n = 9, 50.00%) performed at the good level. No learner demonstrated an Excellent level of reading fluency prior to the implementation of the animated video lessons. These findings suggest that learners generally possessed developing but below-expected reading fluency skills at the start of the intervention.

These baseline results align with previous studies indicating that struggling readers frequently exhibit low performance in initial fluency measures, highlighting specific reading deficiencies prior to any intervention [1]. Furthermore, literature emphasizes that primary grade learners often demonstrate weak initial fluency skills, necessitating targeted instructional scaffolding to progress beyond foundational levels [2].

Table 2 Frequency Distribution of Pre-Test Reading Comprehension Levels

Reading Comprehension Level	Frequency	Percentage	Interpretation
Frustration Level (Scores 1–2)	6	33.33%	Frustration Level
Instructional Level (Scores 3–4)	12	66.67%	Instructional Level
Total	18	100%	

Overall Mean = 2.83 | SD = 0.86 | Interpretation: Instructional Level

Table 2 presents the pre-test reading comprehension performance. The overall mean score was 2.83 (SD = 0.86), interpreted as Instructional Level, indicating that learners required instructional support to comprehend reading materials. A majority of the learners (n = 12, 66.67%) were at the Instructional Level, while six learners (33.33%) were at the Frustration Level meaning they struggled significantly with reading comprehension tasks without teacher guidance. None of the learners reached the Independent Level before the intervention. This confirms that reading comprehension was an area requiring significant improvement among the respondents.

This finding supports O'Connor, Swanson, and Gersten [2], who reported that primary grade learners frequently perform at an instructional level in comprehension and require scaffolding to succeed. Furthermore, this supports the observations of Kim and Wagner [1], who noted that initial reading measures routinely reveal low pre-test performance among struggling readers, highlighting specific reading deficiencies prior to the application of any instructional intervention.

Table 3 Frequency Distribution of Post-Test Reading Fluency Levels (N = 18)

Reading Fluency Level	Frequency	Percentage	Interpretation
Good (Scores 12–13)	7	38.89%	Good
Excellent (Scores 14–16)	11	61.11%	Excellent
Total	18	100%	

Overall Mean = 14.06 | SD = 1.30 | Interpretation: Excellent

Table 3 shows the post-test reading fluency scores showed a marked improvement compared to pre-test results. The overall mean increased to 14.06 (SD = 1.30), interpreted as Excellent. The majority of learners (n = 11, 61.11%) reached

the Excellent level, while seven learners (38.89%) were at the Good level. Notably, no learner remained at the Fair level after the intervention. This remarkable shift indicates that the use of animated video lessons had a substantial positive effect on the reading fluency of the learners.

These results are consistent with the findings of Catapang and Medina [11], who observed that exposing struggling learners to video-animated stories significantly improves their reading speed and overall fluency. Furthermore, this substantial positive effect aligns with the principles of Mayer's Cognitive Theory of Multimedia Learning, which posits that integrating visual and auditory stimuli helps learners better process and retain information, thereby facilitating smoother and more accurate reading [5].

Table 4 Frequency Distribution of Post-Test Reading Comprehension Levels (N = 18)

Reading Comprehension Level	Frequency	Percentage	Interpretation
Instructional Level (Scores 4–5)	4	22.22%	Instructional Level
Independent Level (Scores 6–8)	14	77.78%	Independent Level
Total	18	100%	

Overall Mean = 6.06 | SD = 1.26 | Interpretation: Independent Level

Table 4 presents the post-test reading comprehension distribution. The overall mean rose significantly to 6.06 (SD=1.26), interpreted as Independent Level meaning learners could now comprehend reading materials independently without the need for teacher guidance. Fourteen learners (77.78%) achieved the Independent Level, while four (22.22%) remained at the Instructional Level. No learner remained at the Frustration Level after the intervention. This dramatic shift from predominantly Instructional and Frustration levels in the pre-test to the Independent Level in the post-test underscores the effectiveness of animated video lessons in enhancing reading comprehension.

These findings substantiate the research of Su and Liang [13], who demonstrated that animated cartoons significantly improve learners' reading comprehension compared to traditional text-based methods. Furthermore, this marked improvement aligns with Mayer's Cognitive Theory of Multimedia Learning, which suggests that combining text, images, and audio helps struggling readers process and retain information more effectively, thereby bridging critical gaps in comprehension [5].

3.1. Significant Difference Between Pre-Test and Post-Test Scores

To determine whether the differences observed between the pre-test and post-test scores were statistically significant, a paired samples t-test was conducted at a 0.05 level of significance.

Table 5 Paired Samples t-Test Results for Reading Fluency and Reading Comprehension

Variable	Pre-Test		Post-Test		df	t-value	p-value
	Mean	SD	Mean	SD			
Reading Fluency	11.17	1.50	14.06	1.30	17	7.311**	0.001
Reading Comprehension	2.83	0.86	6.06	1.26	17	24.932**	0.001

Table 5 presents the results of the paired samples t-test for both reading fluency and reading comprehension. For reading fluency, the computed t-value was 7.311, which far exceeds the critical value of ± 2.110 (df=17, $\alpha=0.05$). The associated p-value of 0.001 is less than the 0.05 level of significance. Consequently, the hypothesis is rejected, indicating a statistically significant improvement in reading fluency after the implementation of animated video lessons.

Similarly, the paired t-test for reading comprehension yielded a t-value of 24.932, again exceeding the critical value and with a p-value of 0.001, well below the 0.05 threshold. The hypothesis is therefore also rejected for reading comprehension. The mean gain from pre-test to post-test was 2.89 points for reading fluency and 3.22 points for reading comprehension, both providing indication that the use of animated video lessons produced statistically significant improvements in both dimensions of reading performance among the learners.

These significant gains are heavily supported by Azhimia [8], who demonstrated that animated stories yield substantially higher scores in students' reading metrics compared to conventional instruction. Furthermore, this statistical improvement is consistent with the findings of Munawaroh [17] and Utama [18], who independently concluded that the integration of animation videos significantly raises learners' reading comprehension and overall literacy skills by making textual concepts more accessible.

Table 6 Frequency Distribution of Learner Engagement Levels

Engagement Level	Frequency	Percentage	Interpretation
Low Engagement (Score ≤ 20)	2	11.11%	Low Engagement
Moderate Engagement (Score 21–29)	4	22.2%	Moderate Engagement
High Engagement (Score 30–40)	12	66.67%	High Engagement
Total	18	100%	

Overall Mean = 31.41 | SD = 4.89 | Interpretation: High Engagement

Table 6 displays the distribution of learner engagement scores. The overall mean engagement score was 31.41 (SD=4.89), interpreted as High Engagement. The majority of the learners (n=12, 66.67%) demonstrated High Engagement toward the use of animated video lessons. Four learners (22.22%) showed Moderate Engagement, while only one learner (11.11%) exhibited Low Engagement. These results suggest that most learners were positively receptive and actively engaged with the animated video lessons as an instructional tool. The high level of engagement observed aligns with the research of Yunus, Salehi, and John [7], who emphasized that visual aids serve as a powerful motivational tool, significantly enhancing students' interest and active participation in reading activities. Furthermore, Sari [20] affirmed that animated videos highly stimulate students' reading interest, providing a captivating learning environment that sustains their attention and motivation to learn far better than traditional print-based approaches.

Overall, the findings across the research guide questions converge to support the effectiveness of animated video lessons not only in improving reading fluency and comprehension but also in fostering high levels of learner engagement. These results have meaningful implications for the integration of technology-enhanced instructional materials in primary education, particularly in communities where foundational literacy skills require targeted intervention. This holistic improvement validates the Cognitive Theory of Multimedia Learning proposed by Mayer [5], affirming that engaging multiple sensory channels simultaneously optimizes both the affective engagement and cognitive development necessary for early literacy success.

4. Conclusion

The study concludes that animated video lessons are an effective instructional intervention in improving the reading fluency and comprehension skills of struggling readers in Iyapan Primary School, as demonstrated by the statistically significant gains in both reading fluency and comprehension levels following the five-month implementation. Prior to the intervention, learners performed at fair fluency and instructional comprehension levels, reflecting a considerable dependence on teacher support in processing and understanding texts; however, after consistent and structured exposure to animated video lessons, learners progressed to higher fluency levels and attained independent comprehension, signifying a meaningful and measurable development in their overall literacy skills. The high level of learner engagement recorded throughout the intervention further affirms that animated video lessons not only enhance academic performance but also foster motivation, reduce reading anxiety, and create a more stimulating and inclusive learning environment for struggling readers. These findings establish that even in resource-constrained and rural educational settings such as those in Apayao, the purposeful integration of technology-based instructional tools like animated video lessons can serve as a practical, accessible, and highly effective strategy for addressing persistent reading difficulties and advancing the literacy development of primary learners.

Compliance with ethical standards

Acknowledgments

I acknowledge that I have not used ChatGPT or Copilot for refining some of the sections in the document.

Disclosure of conflict of interest

Authors have declared that they have no known competing financial interests OR non-financial interests OR personal relationships that could have appeared to influence the work reported in this paper.

Statement of ethical approval

The study was conducted with approval and in accordance with the standards of the college. No ethical approval was required, as the research followed all applicable ethical guidelines, ensuring respect for the respondents' privacy and confidentiality

Statement of informed consent

I affirm that the respondents voluntarily agreed to participate after being fully informed about the purpose, nature, and potential implications of the study. Their responses have been collected with utmost respect for their privacy and confidentiality, in accordance with ethical research guidelines.

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