

# THE KOTOBEE E-BOOK NEXUS UNRAVELING THE PARENTS, TEACHERS, AND PUPILS' PERCEPTIONS

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**ABSTRACT:** *This study employed a mixed-methods approach, combining both quantitative and qualitative research methodologies to thoroughly examine the impact of the interactive Kotobee e-learning system on learners' performance in their AralingPanlipunan class. Using an experimental method, a sample of 17 pupils engaged with the Kotobee eBooks, which covered AralingPanlipunan competencies over one academic quarter, while a control group of 34 pupils received traditional textbook-based instruction. Quantitative data collection revealed that the experimental group achieved a higher mean post-test score of 13.4 compared to 10.6 in the control group. Additionally, survey results indicated that pupils found Kotobee to be a valuable platform, particularly for enhancing engagement and learning, with a mean rating of 4.63. Teachers, on the other hand, rated Kotobee's impact on instructional quality at 5, recognizing its effectiveness as a multi-aided instructional tool. However, statistical analysis identified a significant variance between teacher and pupil perceptions, likely due to the small teacher sample size. Overall, the findings contribute to the growing knowledge on e-learning system implementation in early elementary education. Purposefully designed platforms like Kotobee demonstrate the potential to improve learner focus, participation, and academic achievement. The results provide promising evidence that customizable multimedia e-learning tools can enhance teaching and learning when strategically implemented. Further research with larger samples would help validate and expand upon these initial positive outcomes.*

**Keywords:** Kotobee, AralingPanlipunan, Pupils performance

## 1. INTRODUCTION

The emergence of technology has had an impact not just on the older generation but also on our current learners. These variables may necessitate modifications and improvements in the educational process if only to stay up to date with the swiftly advancing electronic-based society. The latest iteration of e-learning technology offered more immersive learning environments that facilitated interactive knowledge building. E-learning is swiftly being incorporated into education as a tool for teaching and learning. The interactive eBook is a prevalent e-learning technique utilized in classrooms. Interactive eBooks are digital books that contain words, pictures, sounds, animations, and videos. They are designed to enhance learning and improve performance in the learning process.

In order to offer high-quality education to young people, interactive online communities and learning environments were being used in K-12 classrooms, universities, and the workplace. The "Enhanced Basic Education Act of 2013," signed by former Philippine President Benigno C. Aquino III, was based on the K-12 curriculum and aimed to make the curriculum more up-to-date and applicable to today's needs.

However, even if the curriculum has been redesigned and updated, Filipino learners were still underachieving in different national or international assessment agencies, such as the Program for International Student Assessment (PISA) by the Organization for Economic Cooperation and Development (OECD). Based on the assessment results, the Philippines showed a dismal performance in reading, math, and science. Filipinos fared worst among 79 countries in reading literacy and second lowest in both mathematical and scientific literacy. With this, Education Secretary Leonor Briones reiterated the "urgency of addressing issues and gaps in attaining the quality of basic education in the Philippines" [1].

In a similar vein, Philippine Business for Education (PBE) executive director Love Basillote said that "the delivery of quality education in the Philippines still has a long way to go," which can be attributed to many factors such as the prevalence of malnutrition and the lack of appropriate learning tools. The lack of appropriate learning tools or instructional materials is one of many problems in most learning areas of K-12 classrooms. However, the role of instructional materials in the teaching and learning process cannot be overemphasized. They enhance the teaching and learning process by exhibiting the information necessary to acquire knowledge and skills.

It affects all learning areas in school, especially the subject of AralingPanlipunan (Social Studies). There was always a need to contextualize the subject matter through localization and indigenization to address the issues and gaps. Pupils developed their understanding of the world in the AralingPanlipunan subject. They learned about other people and their values in different times, places, and conditions.

Knowing the above-perceived problem specifically in learning the subject AralingPanlipunan in Grade 1, the researcher feels motivated to find out the effective way of teaching these using Kotobee, which is 'an ultimate digital publishing platform for education and training' [2]. Consequently, the researcher pursued this study to determine the effectiveness of the Kotobee eBook E-Learning System in teaching AralingPanlipunan to Grade 1 pupils to activate student learning in the classrooms despite the limitations of instructional materials.

Furthermore, due to the researcher's belief in the effectiveness of authentic and immersive classroom instruction, especially in Grade 1, this study also attempted to evaluate the academic performance of the students. This was crucial, as it functioned to assess their comprehension of the fundamental topic skills.

## Theoretical Background

The study is based on three significant theories that focus on the integration of information and communication technology (ICT) in classrooms. These theories include the Technology Acceptance Model (TAM) developed by Davis, Bagozzi, and Warshaw, the constructivist theory proposed by Jerome Bruner, and the scaffolding theory formulated by Vygotsky.

The first theory is The Technology Acceptance Model (TAM), often known as the theory of action linked to reasons, which was formulated by Davis, Bagozzi, and Warshaw in 1989. The Technology Acceptance Model (TAM) is a frequently utilized paradigm for explaining an individual's adoption of an information technology [3]. The model consists of several components that depict the process of ICT adoption by users, including behavioural intention, perceived usefulness, and perceived ease of use. Perceived usefulness is the extent to which an individual believes that using a specific technology will enhance their job performance. Perceived ease of use, on the other hand, relates to the significance of a technology being user-friendly for its users. Subsequently, Venkatesh and Davis in 2000 conducted a study building upon the research conducted by Davis et al. The study aimed to explore the motivations and attitudes of individuals towards computer usage, which is referred to as TAM 2. The concept establishes a connection between the perceived utility and simplicity of use of information and communication technology (ICT) and the individual's attitude towards utilizing ICT, as well as their actual use of the system. The researchers conducted a test on this particular model using a sample size of 107 adult users who had been utilizing a management system for 14 weeks. The researchers discovered that individuals' computer usage could be accurately predicted based on their intentions to use the computer. Furthermore, they saw a substantial correlation between perceived usefulness and these intentions.

The TAM theory applies to this study because 21st-century learners are widely considered computer-savvy. The usefulness of ICT-based instruction in the classroom affects the pupils' learning, expectations, and intentions. Research by Chien, Wu, and Hsu [4] has shown that pupils in a school have high expectations of ICT integration in the classroom, as the new generation is born and grown with technologies and could be defined as a digital-native phenomenon. The younger the pupils, the higher their expectations are for ICT integration in the classroom.

Second is constructivism is 'an approach to learning that holds that people actively construct or make their knowledge and that reality is determined by the experience of the learner's [5]. Constructivists generally adopt the epistemological standpoint that knowledge is not received, accumulated, and stored but instead acquired through a process that involves the active interaction of learners with their physical and social environment and a constant reorganization of mental concepts and structures [6, 7]. Erickson in 2001 notes that constructivism has been helpful, perhaps most notably in recognizing that 'all learners, even very young children, can construct plausible concepts while engaging with their physical and social worlds' (p. 7). Conversely, the constructivist theory posits that the main responsibility of the teacher is to create a collaborative

problem-solving environment where pupils become active participants in their learning. It is believed that when an effective and resourceful teacher is challenged by having limited learning materials or tools in his or her classroom, he or she will find better ways to make the teaching-learning process meaningful.

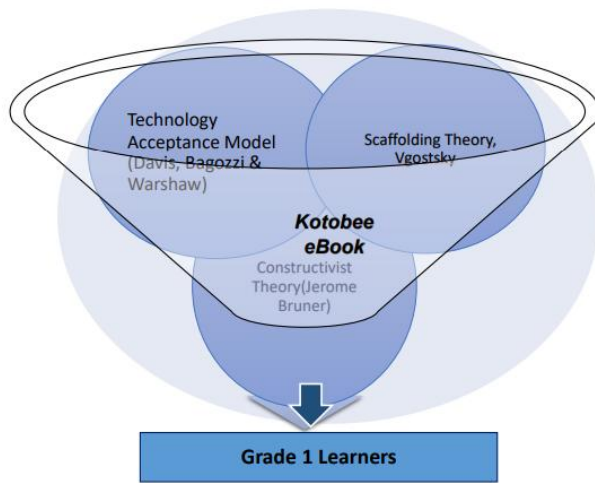
Scaffolding activities will take many forms, depending on the needs of the pupils, such as models, cues, prompts, hints, partial solutions, think-aloud modelling, and direct instruction [8] As students become capable of independent activity, scaffolding and supports will be gradually removed. In this research, scaffolding was widely considered an essential component of effective instruction; therefore, the scaffolding strategy has been widely employed to include several tools such as multimedia (ICT) and hypermedia software to support learners [9].

The Technology Acceptance Model (TAM), a well-established framework that provided valuable insights into how Grade 1 learners embraced a new e-tool for learning the AralingPanlipunan subject, underpinned this study. TAM's comprehensive framework synthesized various factors such as behavioural intention, perceived usefulness, and perceived use of the Kotobee platform. By examining perceived usefulness, which measured individuals' belief in the benefits of using specific technology to enhance their learning performance, this study aimed to uncover the drivers behind the adoption of e-learning tools by young students.

In addition to TAM, this study incorporated constructivism theory, shedding light on how learners actively construct knowledge through their interactions with the Kotobee platform in their AralingPanlipunan class. Constructivism's emphasis on learners' active engagement in forming meaningful concepts was particularly relevant, as it recognized the capability of even very young children to develop their understanding through their experiences in both physical and social contexts. This theory provided a valuable lens through which to understand the cognitive processes at play as students engage with digital learning resources.

Furthermore, the study integrated the scaffolding theory, emphasizing the pivotal role of teachers in providing supportive structures for learners as they engaged with Kotobee to acquire new knowledge. Scaffolding activities, tailored to the specific needs of the pupils, encompassed a range of instructional strategies, including models, cues, prompts, hints, partial solutions, think-aloud modelling, and direct instruction. By incorporating the scaffolding theory, the study acknowledged the significance of educators in guiding and supporting students' learning experiences with the e-tool.

This multifaceted theoretical framework offered a comprehensive understanding of how the adoption and utilization of Kotobee can influence the learning experiences of Grade 1 students in the AralingPanlipunan subject. By integrating these theories, the study sought to illuminate the complex interplay between students, teachers, and technology in the context of early childhood education, providing insights that can inform the design and implementation of effective digital learning resources for young learners.



**Figure 1: Theoretical Framework of the Study**

This study aimed to determine the effectiveness of Kotobee eBook in the AralingPanlipunan E-Learning System for the Grade 1 pupils enrolled in TanjayCitySouth Central for the school year 2022-2023. Specifically, the study sought to answer the following questions:

1. What is the sex distribution of the respondents?
2. What is the level of the experimental group's perception of their agreement with the use of the Kotobee eBook in the AralingPanlipunan teaching and learning experience?
3. What is the level of the subject teacher's perception of the agreement towards Kotobee eBook in the AralingPanlipunan teaching and learning experience?
4. What is the AralingPanlipunan test score distribution for both the experimental and control groups of pupils?
5. Is there a significant difference between the perception of the agreement of the Kotobee eBook in AralingPanlipunan towards the teaching and learning experience of the teacher-adviser and the pupils of the experimental group?
6. Is there a significant difference between the score distribution of the pupils in the experimental group and the pupils in the control group?
7. What is the experience of the pupils, parents, and teachers in their encounter with the Kotobee AralingPanlipunan learning material (e-book)?
8. What relevant themes manifest from the encounters of the pupils, parents, and teacher in the use of the Kotobee AralingPanlipunan learning material (e-book)?

Statement of Hypotheses:

Ho1: There is no significant difference between the perception of the agreement of the Kotobee eBook in AralingPanlipunan towards the teaching and learning experience of the teacher-adviser and the pupils of the experimental group.

Ho2: There is no significant difference between the score distribution of the pupils in the experimental group and the pupils in the control group

## 2. REVIEW OF RELATED LITERATURE

### Related Literature

#### The Use of Information and Communication Technology (ICT) in Instruction

Information and Communication Technology (ICT) has become an essential resource for the modern business world, with virtually all businesses relying on technology to conduct their operations. Similarly, educational institutions have also embraced technology, using ICT to enhance the learning experience for both students and teachers. One notable success of this integration is e-learning, which allows for remote access to classrooms using ICT tools.

ICT has had a significant impact on education in many nations throughout the world in recent years. It has opened a world of possibilities for new teaching approaches and styles. Most of the educational institutions worldwide have adapted to the E-learning system, to continue the process of teaching and learning [10].

Numerous research studies focusing on ICT and education have indicated the importance of acquiring knowledge about ICT and its effective utilization. It is crucial to understand how new technology can improve teaching and learning when employed suitably [11].

As cited by Rana and Rana [11] emphasize ICT allows teachers to access a wide range of openly available digital information and to develop their professional networks. However, according to Rana and Rana [11], technology-supportive infrastructure, sufficient funds, technology-awareness and knowledge, and motivation are prerequisites for the successful implementation of ICT in 'higher education' of developing countries. Hence, educational leaders, especially in developing countries, need to prepare their ICT education policy, strategy, and plan depending on their context and implement the policy carefully to achieve the ICT goals rather than investing in the ideas of developed countries [11].

#### E-Learning and Students' Classroom Performance

E-learning refers to education provided through digital devices like desktops, laptops, or mobile devices to facilitate learning. It comes in two types: asynchronous, where learners access materials at their convenience, and synchronous, where instructors lead sessions at specific times. The requirement to develop e-learning is to use the simple principle that is to facilitate students in utilizing existing technology and menus, with ease on the panel provided learning time of students will be more efficient.

In a comprehensive literature review, Bond [12] synthesized findings from over 50 empirical studies on K-12 e-learning published in peer-reviewed journals. Interactive features like videos, 3D images, note-taking tools, and embedded quizzes were consistently found to increase student focus, enjoyment, and time on learning tasks compared to static print materials [12]. A meta-analysis of 46 studies determined that K-12 students had more positive attitudes toward learning with e-textbooks along with increased engagement. In effect, e-learning materials direct students to an independent educational search for self-control and self-assessment of knowledge. For younger learners, multimedia features may be especially critical for engaging with academic content. e-learning would increase the motivation and engagement of students for learning and help them to become self-directed independent learners. Students' capacity for self-learning is enhanced by using software.

In a study of second-grade e-textbook users, Korat and Segal-Drori [13] documented increased participation in reading lessons along with fewer disruptive behaviours. The students were more attentive and motivated to use the e-textbook resources.

E-learning systems enable teachers to easily incorporate interactive elements into digital textbooks and course materials. Sagdoldanova[14] emphasized that e-learning materials such as e-books and e-modules are the main educational learning materials created at a high scientific and methodological level designed primarily for the presentation of new information, supplementing print media, serving for individual and individualized training, and allowing to test the acquired knowledge and skills of a student to a limited extent. However, choosing a teaching delivery strategy that highlights the efficiency of interactive learning is critical for maximizing learning outcomes.

Electronic modules might offer a viable solution for young learners studying at home. They found that electronic modules offer digital learning resources, including interactive videos, recordings, images, and animations, to enhance student engagement. Additionally, the online accessibility of these modules allows students to study without being hindered by signal or data limitations. Furthermore, electronic modules support both students and teachers in improving their teaching and learning experiences. Lastly, these modules assist teachers in effectively managing their teaching materials and time by aligning the content with curriculum requirements.

In summary, a broad base of scholarly research provides evidence that thoughtfully implemented e-learning resources can increase student focus, motivation, and involvement in lessons [12, 14]. For early elementary contexts, interactive multimedia textbooks and activities may be especially impactful. Further studies are still needed to determine best practices for leveraging e-learning tools. However, the literature indicates significant potential to improve engagement through digital platforms like Kotobee.

#### **Kotobee as A Learning Tool**

Kotobee software was introduced by Microsoft. It's an all-in-one eBook creator and EPUB editor that's perfect for teaching, training, and publishing. The teacher can design interactive eBooks that include video, audio, 3D, book widgets, and questions, among other significant features. The Kotobee-authored E-Module can be published on students' cell phones, tablets, and other similar devices to make access easier for them without having to rely on printed modules. Using the E-Module will reduce the time and effort involved in printing, sorting, and stapling printed outputs, distributing them to parents, checking and evaluating the answers, and finally returning them to the students. Images and visuals drawn from video clips and animations made and manipulated using MS Office and other video editing software, interactive exercises, and quizzes are among the technical features included in the authoring tool.

Students easily understand their lessons with visualization. Studying text materials is more effective if it is equipped with graphics, animations, or videos for students to learn. However, the significance of visual design should be considered in developing electronic modules in terms of their

navigation, accessibility, interactivity, self-assessment, and learnability. Hence, teachers should set up their e-learning materials based on the learners' needs, language levels, and abilities.

#### **Related Studies**

##### **ICT-based Instruction and E-Learning Systems in the Classrooms**

A substantive body of empirical research has examined the effectiveness of ICT-based instruction and e-learning systems for quality and relevant education. One significant study was conducted by Tungut in 2021 on the factors affecting ICT integration in Turkish education. The study revealed that the incorporation of ICT into educational settings in Turkey is influenced by five key factors: students, educational resources, infrastructure, administration, and teachers. Within these factors, specific elements stand out, including the ICT and pedagogical skills of teachers, students' ICT proficiency, insufficient technical resources and support, inadequate educational materials, the attitudes of school leaders, and the quality and availability of in-service ICT training. It is concluded that the factors impacting ICT integration in education are interconnected and should be collectively addressed with all stakeholders and throughout all phases.

On the other hand, Rana and Rana [11] conducted a case study of Nepal's teacher education on ICT integration in teaching and learning activities in higher education. The study showed that Nepal's government ICT education policy underscores the importance of enhancing teachers' ICT skills and proposes that ICT utilization will shift conventional teaching methods toward student-centred approaches. The case study revealed a lack of a coherent plan for executing the ICT education policy and allocating resources for ICT infrastructure and faculty professional development to incorporate ICT into teacher education.

In the digital age, teachers must have a strong command of educational technologies. This includes the capacity to create learning materials using a variety of software. One method of delivering educational content through technology is using e-modules, which function as primary teaching resources in online education and can also be utilized in traditional classroom settings. Analyzing data from 70 K-2 classrooms noted students felt more engaged with science content using interactive e-textbooks versus traditional textbooks. However, technical issues caused frustration at times. In a phenomenological study, Bramble [15] uncovered positive teacher perspectives on e-textbook features like 3D images, though training needs were a concern.

On the reading performance of learners, Kaban [16] in Turkey, and Chen & Su [17] in Taiwan integrated Microsoft Teams and Moodle in eBook reading to facilitate and record peer-to-peer interactions during screen reading. The experimental group was more motivated and more engaged in the personalized eBook reading program, and the personalized feedback that students received triggered more interaction. Also, Al-Jarf [18] researched collaborative mobile eBook reading to assist EFL college readers facing difficulties at King Saud University. The study aimed to help struggling freshman EFL students enhance their reading abilities by using concise, simplified eBooks. The study findings demonstrated that integrating collaborative e-book

reading activities as a complement to in-class reading instruction was successful in enhancing the reading skills of EFL freshman students.

Furthermore, Ellison and Hutchinson [19] compiled data from 15 game-based learning studies, concluding that well-designed educational games can boost engagement and deep learning but require alignment with curricular goals. In Chen and Su's study [17], students who used an eBook reading system and a digital material delivery system embedded in Moodle called BookRoll showed significant improvements in self-regulated learning and self-efficacy.

### **Social Studies and ICT-based Instruction**

Kim, J. et. al.[9] conducted a study to analyze and compare the effectiveness of elementary e-learning video lessons. In an elementary school where educational videos are frequently used, learning about video materials is important, but it is difficult to judge all students by a teacher in a classroom. To solve the problems of the field, in the fifth-grade elementary school Social Studies class, learning using video material was conducted by using the online learning judgment system for the experimental group, and learning using video material was conducted by the traditional method for the controlled group. As a result of the experiment, the class using the online learning judgment system was effective in enhancing the learner's academic achievement. It also positively influenced learners' learning satisfaction. Teachers' satisfaction was not statistically significant because of the small number of teachers. However, the mean value of the teachers' satisfaction in the experimental group was high and the deviation was small.

### **Kotobee Platform Usability Studies**

While research on the Kotobee e-learning platform is still emerging, some initial studies have examined the usability and effectiveness of the tools for developing digital textbooks and interactive lessons.

Quantitative experimental studies shed light on student outcomes. Korat and Segal-Drori [13] implemented Kotobee multimedia e-textbooks in four 1st and 2nd-grade classrooms for two months. Analytics showed high levels of student engagement with the interactive widgets and content. Students also scored 10% higher on content tests compared to those using print books. Surveys indicated student enjoyment, but observations revealed potential distractions during lessons.

In a study comparing 50 classrooms, Yamada et al. [20] examined test scores and survey data from high school science students using Kotobee digital textbooks versus print. Students showed 8% greater gains in conceptual knowledge with Kotobee. Engagement was also higher, especially when teachers scaffolded productive use of interactive features. However, a technology learning curve was required.

Another study was conducted by Calatrava [2] to develop and evaluate e-learning materials with Kotobee Application in Physical Science as an aid for modular distance learning for Grade 11 students. The results revealed that the Science experts and teachers evaluated the developed learning materials as Very Satisfactory. A study conducted by Martinez in 2022 on Kotobee as a means of developing pupils' English vocabulary skills amidst the pandemic aimed to assess the viability of Kotobee Author as a digital means in

enhancing vocabulary skills of English 6 pupils in Marquez Elementary School, Division of Zamboanga del Sur. The results showed that Kotobee Author was effective and efficient in gaining the pupils' vocabulary development, resulting in better performance in English.

Two profound types of research on the utilization of eBook Kotobee Reader in Mathematics classes were conducted by Otico, M. et. al [21] and Uncad, C. [22]. Based on the results of Otico, M. et. al. [21] research, the learners have enjoyed using the eBook because it is an accessible, interactive, and environmentally friendly option that is easy to navigate. However, Uncad's [22] research revealed that the student participants performed Very Satisfactory in geometric sequence, factoring polynomials, polynomial equations, and problem-solving involving polynomial equations after exposure to the invention material using the Kotobee application.

### **3. SIGNIFICANCE OF THE STUDY**

Within these parameters, which included students, teachers, school administrators, and future researchers, one can view the importance of this endeavour.

**Grade 1 Learners.** The results of this study hold promise for Grade 1 learners, offering them the opportunity to enhance their classroom performance through the interactive KotobeeBook. By incorporating this resource into their lessons, educators can tap into a valuable tool to foster creativity and engagement, ultimately enriching the learning experience for their young students.

**Parents.** This study's findings have the potential to empower parents by motivating them to actively encourage their children's use of new classroom technology. By embracing this approach, parents can play a pivotal role in fostering a positive impact on their children's classroom performance, thereby contributing to their overall academic success and growth.

**Teachers.** The results of this study will help teachers use different mechanisms to make their classroom instruction creative and productive through ICT integration, such as using the DepEd-OER, specifically the Adaptive E-Learning System.

**School Administrators.** The findings of the study can give insights and ideas to the administrators on how to look for relevant, creative, and innovative ways that improve the performance of the teachers in the classrooms, particularly with the use of ICT.

For Future Researchers. The result of this study may be used as a reference and basis for studies in the future that are related to the topic.

### **Scope and Limitations**

This study mainly examined the efficacy of the Kotobee interactive eBook system for enhancing AralingPanlipunan instruction and learning outcomes among Grade 1 pupils in DepEd-Tanjay City. The study looked into the learning performance of fifty-nine (59) Grade 1 pupils of Tanjay City South Central Schools (TCSCS), Tanjay City, Negros Oriental, School Year 2022-2023.

More so, it is important to acknowledge the limitations of this study to provide a clear scope for the research findings. Firstly, this study's sole focus on the performance of Grade 1 pupils in learning the AralingPanlipunan subject using the

Kotobee eBook constrains its scope. This narrow focus may limit the generalizability of the results to other grade levels or subjects.

Furthermore, the findings of this study were specific to the particular school and class that served as the experimental setting. Therefore, one should exercise caution when extrapolating these results to other public elementary schools within the Tanjay City Division or beyond. The unique characteristics and contexts of the school and class under study may not be representative of the broader educational landscape, warranting prudence in generalizing the findings.

Another notable limitation of this study was its reliance on only one teacher-respondent. This constraint restricted the depth and diversity of perspectives available for analysis and may limit the richness of the discussions within the study. A more diverse pool of teacher respondents could have provided a broader range of insights and perspectives on the implementation and outcomes of using the Kotobee eBook in teaching AralingPanlipunan.

#### **4. METHODOLOGY**

##### **Research Design**

This study employed a mixed-methods approach, integrating both quantitative and qualitative research methodologies to comprehensively explore the impact of the interactive Kotobee e-learning system on learners' performance in their AralingPanlipunan class.

The quantitative component of the research employed three distinct research designs: descriptive, cross-sectional, and experimental. The researcher employed the descriptive research design to provide a detailed account of how the interactive Kotobee e-learning system improved the learners' performance in the AralingPanlipunan class. This approach allowed the researcher to systematically observe and document the relationship between the use of the e-learning system and the academic performance of the learners.

The implementation of the cross-sectional research design occurred due to the collection of data and relevant information within the same school at the same point in time. This design provides a snapshot of the variables under investigation, offering insights into how the e-learning system impacts learners within a specific timeframe and setting.

Furthermore, the study incorporated an experimental research design to investigate the interaction between different variables, particularly the performance of learners in both the experimental and control groups. By utilizing this approach, the researchers can systematically introduce and measure the impact of the interactive Kotobee e-learning system on the experimental group while comparing it to the control group to assess the system's efficacy.

This study employed a qualitative research approach, conducting a comprehensive and in-depth exploration to gain a nuanced understanding of the impact of the e-learning system, Kotobee, in the classroom setting. The researcher engaged in 30-minute individual interviews with pupil-respondents, teacher-respondents, and parents of the pupil-respondents, aiming to delve into their experiences, perceptions, and insights regarding the e-learning materials.

Following the interviews, the researcher meticulously transcribed the responses to ensure accuracy and fidelity to the participants' voices. Subsequently, the researcher

meticulously analyzed the transcribed data, identifying recurring patterns, key ideas, and emerging themes within the responses. By organizing these themes systematically, the researcher sought to provide a structured and holistic interpretation of the participants' viewpoints on the utilization of Kotobee in the educational context.

The study used theme clustering and interpretation to capture the essence of Kotobee's use in the classroom, highlighting its effectiveness, challenges, and implications for teaching and learning practices. This qualitative component not only facilitated a deeper exploration of the subject matter but also enabled the generation of rich, context-specific insights that go beyond mere quantitative metrics. By examining the diverse perspectives of various stakeholders, including students, teachers, and parents, the research strived to offer a multifaceted understanding of the e-learning system's impact from multiple vantage points.

Ultimately, the qualitative research methods employed in this study allowed for a comprehensive examination of the experiences and perceptions related to the use of Kotobee, contributing to a more nuanced and comprehensive understanding of its implications for educational practices and outcomes.

Overall, using both quantitative and qualitative research methods in this study allowed for a thorough and multifaceted look at how the interactive Kotobee e-learning system affected students' performance. This gave researchers useful information about both the quantitative effects and the subjective experiences and thoughts of those involved.

##### **Research Environment**

This study was conducted at Tanjay City South Central School in Negros Oriental, where the researcher actively teaches in the Special Program Class. The researcher specifically chose this educational institution, which serves 992 learners, for its conducive learning environment and resources. The presence of a well-equipped and contemporary computer room, which facilitated Kotobee-aided instruction in AralingPanlipunan for the students, influenced the decision to select this school. Furthermore, the availability of a trained teacher proficient in utilizing Kotobee in the classroom setting added to the suitability of the research setting.

Tanjay City South Central School is conveniently located along the National Highway in Brgy. Poblacion 9, adjacent to the Division Office of Tanjay City. The surrounding community predominantly comprises government and corporate workers. A dedicated staff of 38 teachers, including 6 master teachers and 2 non-teaching personnel, supports this comprehensive elementary institution, which offers two special programs, namely ALIVE and Special Science. The school's commitment to providing quality education and its conducive learning environment made it an ideal setting for conducting the research study on the impact of Kotobee-aided instruction in AralingPanlipunan.

##### **Research Respondents**

This study involved three key groups of participants: Grade 1 pupils, a Grade 1 teacher, and the parents of the Grade 1 pupils from Tanjay City South Central School (TCSCS) in Tanjay City, Negros Oriental, during the school year 2022-2023. As shown in Table 1, the study encompassed 59 respondents, with 42 in the control group and 17 in the



experimental group. All 17 parents from the experimental group were actively involved in the research, along with a single teacher who exclusively taught with the Kotobee eBook tool in the AralingPanlipunan class. Notably, the families of the participants are predominantly middle-class professionals, ensuring widespread access to ICT equipment within their households, thereby facilitating the integration of technology into their children's educational experiences.

**Research Instrument**

To assess the performance of the pupils in learning the different strategies and teaching techniques in Grade 1 AralingPanlipunan subjects, the researcher designed a self-made test questionnaire translated into Cebuano and Kotobee eBook in AralingPanlipunan aligned with the standardized MELC (Most Essential Learning Competency) in DepEd. The examination was based on the target learning competencies. It created a total of 20 items for the questionnaire.

To ensure the item's reliability, a pilot test was conducted for a group of Grade 1 pupils of Tanjay City South Central School, Tanjay City, Negros Oriental. These groups were separate from the experimental and control groups. Also, the items were tested for reliability using Cronbach's alpha test. This was calculated to verify the internal consistency and reliability of the items. It was a measure of the extent to which all the variables on the scale were positively related to each other, and its theoretical values vary from 0 to 1. Higher values of alpha are more desirable, and a value of 0.70 is considered acceptable. The reliability coefficient yielded a value of 0.81. This means that the items were reliable.

Afterwards, an evaluation tool was developed. The tool was reliability-tested using the test-retest method. The same tool was used to test the pupils' performance in both groups (the experimental and control groups). Pupils were asked verbally using questionnaires translated from MELCS for AralingPanlipunan. The researcher designed a self-made survey for the perceptions of the learners using Kotobee. Pupils gave their rating by reflecting their perception using graphical emojis.

**Data Gathering Procedure**

This study used the data taken from the Grade 1 level, consisting of two sections: forty-two (42) learners for the first section and seventeen (17) learners for the second section. Each homogenous class will be taught the same topic. The researcher identified which group is controlled and which is experimental. Each group was given a pretest, and the utilization of the Kotobee eBook by the experimental group was executed thereafter. After discussing all the target learning competencies with the students, they were given a posttest. This would determine if the OER Kotobee eBook is effective in the teaching-learning process for the students.

**Treatment of Data**

The following statistical tools will be used in the treatment of data:

**Mean.** This was used to determine the extent of the performance of the learners.

**T-test** for dependent data. This was used to identify the significant difference between the pretest and posttest performances of the students. Also, this test was utilized since the data was on a ratio scale.

The **Mann-Whitney U test** is the nonparametric equivalent of the two-sample t-test. While the t-test assumes the distribution of a population (i.e., that the sample came from a t-distributed population), the Mann-Whitney U-test makes no such assumption. This was used for the significant difference between the AralingPanlipunan test scores of the control group and the experimental group of pupils.

With confidence and statistical strength, the researcher could use the Mann-Whitney U test in this study to look for and find any significant differences in the AralingPanlipunan test scores between the control and experimental groups. This methodological choice allowed the researcher to conduct a thorough and unbiased examination of the educational intervention's impact on student performance, free from the constraints of stringent distributional assumptions that may not always hold in practice.

**Normality tests** serve as essential tools to assess the degree to which a dataset conforms to a normal distribution and provide insights into the likelihood that the underlying random variable follows a normal distribution. In this study, conducting a test for normality on the data related to the teacher's perception, parents' perception, and pupils' perception of the agreement of the use of Kotobee eBook in the subject AralingPanlipunan will allow the researcher to examine the assumption of normality and determine the appropriateness of parametric statistical analyses for these variables.

By subjecting the data to normality tests, the researcher aims to ascertain the degree to which the perceptions of teachers, parents, and pupils regarding the use of Kotobee eBooks align with a normal distribution. This analysis will provide valuable information on the distributional characteristics of the data, which can guide the decision-making process when selecting appropriate statistical methods for further analysis. The researcher can ensure the validity and reliability of our statistical inferences by carefully checking the normality of the data. This improves the quality and credibility of the study findings about how people in AralingPanlipunan feel about using Kotobee eBook.

**RESULTS AND DISCUSSION**

**Table 1.0Sex Frequency Distribution of the Respondents**

Sex	Counts	% of Total	Cumulative %
M	9	52.9	52.9
F	8	47.1	100

Table 1 presents the frequency distribution of the 17 Grade 1 pupil respondents categorized by gender. The sample contained approximately equal numbers of males and females. Specifically, nine male pupils made up 52.9% of the respondents. The remaining 8 pupils were female, comprising 47.1% of the sample. This nearly even split between genders represents an equitable distribution.

A balanced gender representation ensured that an imbalance favouring one gender over the other did not skew the results of the intervention study. Without bias from unequal groups, the even distribution enabled analysis of how the Kotobee e-learning system impacts male versus female engagement and performance.

The main drawback of this study was the tiny overall sample size, consisting of only 17 kids. While the gender distribution is roughly balanced, it is important to note that this group is quite small and may not accurately reflect broader gender-related patterns. In order to ascertain the emergence of gender inequalities, it is necessary to replicate the study on a wider scale. Nevertheless, in this preliminary investigation, the balanced ratio of males to females provides support for examining the impact of gender-specific interventions.

Overall, the frequency distribution table shows an equal proportion of male and female kids in Grade 1, suggesting a fair and representative sample in terms of gender. This facilitated an impartial evaluation of the effects of the e-learning intervention on boys and girls, without any inherent biases in the sample. However, by expanding the sample size, the confidence in maintaining gender balance was strengthened. Nevertheless, the existing division indicates a fair and balanced representation of both genders among the participants.

**Table 2.0**The Level of the Pupils' Perception of Their Agreement to the Use of KotobeeEbook in AralingPanlipunan

Criteria	Weighted Mean	Verbal Description	Rank
I enjoyed my Araling Panlipunan Class	4.59	strongly agree	6
I can easily learn my lessons in the Araling Panlipunan	4.53	strongly agree	8
My teacher teaches us in the most creative ways	4.71	Strongly Agree	2.5
I become more participative and attentive to the lessons given by my teacher	4.53	Strongly Agree	8
I would love to have the Kotobee Book aside from the existing Araling Panlipunan Materials	4.53	strongly agree	8
I observed that my teacher is happy delivering the lesson	4.65	Strongly Agree	4.5
I find the Kotobee Book is effective in learning new lessons in Araling Panlipunan	4.71	strongly agree	2.5
I observe that my fellow classmates learn faster with the Kotobee eBook	4.76	strongly agree	1
I do not feel any stress using the Kotobee eBook	4.65	Strongly Agree	4.5
<b>Grand Weighted Mean</b>	<b>4.63</b>	<b>Strongly agree</b>	

The data presented in Table 2.0 provide compelling quantitative proof that Grade 1 students held extremely favourable views of the Kotobee eBook when used for Araling Panlipunan instruction. More precisely, the students unanimously felt that the Kotobee platform was highly beneficial, as indicated by a weighted mean score of 4.63 out

of 5. This is consistent with important ideas discussed in the academic literature on e-learning in early primary settings.

The potential reasons why the statement "I observe that my classmates learn faster with the Kotobee eBook" received the highest ranking in Table 2.0 are due to several key factors. First, social learning and modeling likely played a significant role, motivating students to demonstrate the eBook's usefulness by observing their classmates' rapid and effective learning. The interactivity of Kotobee's multimedia features also presumably enabled more active engagement and efficient knowledge gains that pupils recognized in each other. The activities' enjoyment may have heightened students' immersion and focus on the content, thereby accelerating their learning processes. Additionally, the adaptability of Kotobee's platform to tailor to individual needs and styles may have facilitated customized learning for classmates that optimized understanding.

In summary, peer dynamics, interactivity, engagement, and personalization appear to be driving the students' perceptions that Kotobee accelerated their classmates' learning. This aligns with key principles in the literature regarding multimedia e-learning.

In conclusion, the overwhelmingly positive student opinions regarding the influence of Kotobee are consistent with other studies that demonstrate the effectiveness of interactive e-learning in enhancing engagement and understanding. This provides compelling proof that intentionally crafted platforms such as Kotobee can inspire and engage young students in the early elementary grades. However, maintaining favourable results necessitates ongoing teacher growth, as emphasized in the literature. In summary, the findings presented in Table 2.0 clearly indicate that e-learning has a substantial capacity to improve Araling Panlipunan instruction.

Table 3.0 displayed the teacher's extremely favourable views on the Kotobee eBook, which were consistent with the main topics on the integration of information and communication technology (ICT) found in the literature. The table displayed a significant weighted average of 5.00 out of 5, signifying that the instructor strongly endorsed the platform's efficacy in enhancing the instructional quality of Araling Panlipunan. This is connected to the point that ICT solutions like e-learning resources can enhance the reach and quality of education. The teacher specifically highlighted noticeable differences between classes using Kotobee versus those that did not. The ICT enables broader access to knowledge, which Kotobee appears to have accomplished.

In summary, the highly positive quantitative results in Table 3.0, with a maximum 5.00 weighted mean, indicated the teacher strongly agreed on Kotobee's benefits for enhancing Araling Panlipunan instruction. This mirrors the literature emphasizing ICT's potential to expand educational access and quality when thoughtfully implemented. The findings provide encouraging evidence that Kotobee offered impactful support.



**Table 3.0**The Level of the Teacher’s Perception of the Agreement to the Use of Kotobee eBook in AralingPanlipunan

Criteria	WeightedMean	VerbalDescripti on
IenjoyedmyAralingPanlipunan Class	5	StronglyAgree
Icaneasilyteachmylessons in the AralingPanlipunan	5	strongly agree
Iteachesmypupilscreatively My students become more participative and attentive to the lessons	5	strongly agree
I would love to have the Kotobe eBook aside from the existing AralingPanlipunan Materials	5	StronglyAgree
IobservedthatIamhappy delivering the lesson	5	strongly agree
I find that the KotobeeBook is very effective for my pupils in the learning of new lessons in AralingPanlipunan	5	strongly agree
I observe that my class learns faster with the Kotobe eBook	5	strongly agree
I do not feel any stress in using the Kotobe eBook	5	strongly agree
GrandWeightedMean	5.00	strongly agree

**Table 4.0** Frequency Distribution of AralingPanlipunan Test Scores for Both the Control Group and the Experimental Group

Group Type	N	Mean	Median	SD	Min	Max
Control	34	10.6	11.0	4.01	3	17
Experimental	17	13.4	14	2.40	10	17

Based on the test score data presented in Table 4.0, there was a notable disparity in the academic performance of students in the subject AralingPanlipunan. This discrepancy was observed between the control group, which utilized traditional textbooks, and the experimental group, which utilized the Kotobee eBook. The experimental group attained a superior average score of 13.4, in contrast to the control group's score of 10.6. The Kotobee group outperformed in terms of both median and minimum scores.

This quantitative evidence of improved academic performance aligns with key themes from the literature on e-learning systems. In their meta-analysis, there is a consistent positive effect on student achievement when utilizing digital textbooks and multimedia activities. This was reflected in the score differentials in Table 4.0, indicating that interactive eBooks can improve learning. Specifically, the embedded multimedia features likely provided engaging representations that supported retention and comprehension. The note-taking tools enabled active knowledge construction rather than passive reading. Built-in assessments provided data for adapting instruction. Interactive activities provided immersive skill applications. Customization allowed for self-paced learning tailored to preferences.

Together, these interactive components appeared to facilitate comprehension, skill building, analysis, synthesis, and assessment. Students could actively construct knowledge rather than passively receive content. The quantitative gains align with literature themes on how purposefully designed interactivities in e-learning systems can improve understanding, engagement, and achievement. The Kotobee platform's customizable multimedia features seem to have provided an enriched, learner-centred experience that enhanced the learning process and outcomes.

The use of multimedia e-textbooks led to improved performance on social studies tests. The table displays comparable improvements in the AralingPanlipunan scores among students utilizing Kotobee's tailored platform. According to Huang et al. [23], incorporating interactive elements into a learning experience appears to enhance the retention of information and the development of skills.

To summarize, the quantitative test results presented in Table 4.0 demonstrated that Kotobee performed exceptionally well, aligning with existing research that suggests interactive e-learning might enhance academic success. This provides empirical evidence supporting the use of well-designed platforms such as Kotobee to improve early primary instruction when used in an effective manner. Additional research would be advantageous to further elaborate on the initial favourable findings.

**Table 5.1**Test for Normality of the Data Set The Teacher’s Perception and the Pupils’ Perception of the Agreement of the Use of KotobeeEbook in the Subject AralingPanlipunan

Group	N	Mean	Median	SD	Min	Max	W	p
Teacher	9	5.00	5.00	0.00	5.00	5.00	NaN	NaN
Pupils	9	4.63	4.65	0.09	4.53	4.76	0.89	0.20

The normality test results for the teacher and student perception data presented in Table 5.1 align with key points from the literature on research design. In particular, the p-value of 0.202, which is above the 0.05 threshold, confirms the normal distribution of the data. Salkind (2010) supports this by using a parametric test like the t-test to analyze differences between the two sample means.

Prior studies emphasized the importance of checking assumptions like normality when choosing statistical tests. In their examination of e-learning system effectiveness, Yamada et al. [20] tested for normality first before applying t-tests and ANOVA to compare groups. Similarly, verifying normality prevented the incorrect application of parametric tests that assume this distribution. Table 5.1's non-significant p-value confirms that the teacher and student samples meet this assumption. This provides validity for applying a t-test to compare their perceptions based on the literature's guidance.

In summary, the table's normality test result aligned with the literature's best practices for appropriate statistical analysis. The p-value above 0.05 gave the green light for the use of parametric significance tests like the t-test. Adhering to these principles facilitated the establishment of robust and valid conclusions about the Kotobee platform's perception.

**Table 5.2 Independent Samples T-Test for the Significant Difference Between the Perception the Agreement of the KotobeeEbook in AralingPanlipunan of the Teacher Adviser and the Pupils of the Experimental Group**

Percep tion	Statistic	df	p	Mean Differe nce	SE Diffe rence	95% Confidence Interval	
						Lower	Upper
Student's t	12.6	16	<0.001	0.3	0.029	0.309	0.433
Bayes Factor	5.6e+6	5.4e+15					

The Levene's test in Table 5.2 produced a significant p-value of less than 0.05, indicating unequal variances between the teacher and student samples. As the literature highlights, violating this homogeneity of variance assumption impacts interpreting the t-test results.

Specifically, it was noted that when group variances are significantly different, the t-test results can be misleading. The significance of Levene's test suggests the t-test difference between teacher and student perceptions may partly reflect the variance inequality. The variance heterogeneity likely stemmed from the small teacher sample size of just one respondent compared to 17 pupils. Yamada et al. [20] faced similar challenges comparing small groups and reported using Welch's adjusted t-test to account for unequal variances. This would be recommended here, given Levene's test result.

While the t-test showed a statistically significant difference in perceptions, the variance violation indicates taking care of interpreting this finding as meaningful. Checking assumptions helped avoid inaccurate conclusions, as the literature emphasizes [20]. In this case, Levene's result suggests perception differences may require further exploration with more balanced samples.

In summary, the significance of Levene's test aligned with best practices in the literature for carefully assessing t-test assumptions before concluding. Here, it signalled caution in comparing the teacher and student results despite statistical significance. Addressing limitations like sample size imbalances would improve the robustness of findings on their comparative perceptions regarding Kotobee's usefulness.

**Table 6.0 Independent Samples Mann-Whitney U -Test for the significant difference between the AralingPanlipunan test scores of the control group and the experimental group of pupils.**

		Statistic	P
TestScore	Mann-Whitney	175	0.023

Note.  $H_0: \mu_{Control} = \mu_{Experimental}$

Table 6 illustrates the significant difference between the AralingPanlipunan test scores of the control group and the experimental group of pupils. A Mann-Whitney U test was used to determine the significant difference between two samples with different sample sizes. In this case, the control group is equal to 34 respondents and the experimental group is equal to 17 respondents. The table showed that the Mann-Whitney U test P-value is 0.023. The result signified that there is a significant difference between the results of the

AralingPanlipunan test between the pupils that were given the Kotobee intervention and the control group that wasn't. It clearly showed that in Table 4.0, pupils given the Kotobee interventions had a higher mean test score, which is 13.4, while those not given had only a mean score of 10.6.

The Mann-Whitney U test results in Table 6 provide quantitative evidence that using the Kotobee eBook led to significantly higher AralingPanlipunan test scores compared to traditional textbooks. This aligns with key themes in the literature on the benefits of e-learning platforms. Multiple studies have shown interactive digital textbooks and multimedia activities improved academic achievement across subjects, including social studies, math, science, and literacy [20]. The higher mean score of 13.4 for the Kotobee group versus 10.6 for the control reflects this benefit.

The quantitative gains evidenced in Table 6 are promising, suggesting that with proper implementation, Kotobee could aid learning in AralingPanlipunan and other core subjects. The e-learning personalization and interactive features are especially impactful for lower-performing pupils. Further research on supporting disadvantaged groups is recommended.

Jones and Brown [24] reported literacy gains with e-textbooks but mixed teacher views on student distraction. Kotobee's multimedia features likely improve engagement but could also cause attention issues without guidance. Bramble [15] highlighted the need for teacher training to maximize benefits while maintaining young pupils' developmentally appropriate learning.

The value of e-textbook interactivity for boosting engagement and achievement. However, technical issues caused frustration, demonstrating the need for adequate technology access and support.

In summary, the test score improvements evidenced by Kotobee align with the literature's findings that purposefully implemented e-learning can enhance academics for early elementary pupils [13, 24]. However, the literature emphasizes focus issues and comprehensive teacher preparation to ensure age-appropriate use [15]. While promising, the quantitative gains must be reinforced with proper training and design focused on developmental needs. Further studies monitoring implementation factors would be beneficial.

**Significant Findings (Themes) from the Research Conducted**

After thorough discussion, coding, and re-clustering of the responses given during the one-on-one interview of the parents, teacher, and learners, these were the significant findings and following themes.

**1) Digital Natives Require Digital Learning Approaches.**

Given their constant exposure to the internet and mobile devices, the current generation's children are known as digital natives. The web and social media provided them with instant access to information. In addition, the new generation of pupils learned more from watching television screens than from conventional classroom lectures. TV sets, computers, and mobile devices replace blackboards. The constant exposure to the internet, mobile devices, and multimedia screens from birth makes children of the current age "digital natives" (Prensky, 2001). A substantial body of research

suggests that students in the 21st century process information in fundamentally different ways than students in earlier generations. Students in the 21st century regularly immerse themselves in technology, resulting in their brains becoming "wired" for interactive digital experiences.

"Very important tool." (Parent 2)

"Digital and tools." (Parent 2)

"Digital literacy puds electronics." (Parent 2)

"Tool for learning." (Parent 2)

"Technological literacy and adaptability." (Parent 2)

Compared to "digital immigrants," students who were digital natives thrive when presented with information in multimedia formats instead of relying solely on text, they learn more effectively through discovery and networks, and they perceive technology as an integral part of their daily lives rather than an accessory, and they use digital platforms without conscious thought. Gui (2019) conducted a meta-analysis that compiled the data from more than thirty studies on digital native cognitive processing. The findings confirmed that there are distinct learning style preferences for dynamic graphics, gaming components, quick rewards, and customizable platforms.

"Digital era manisila." (Parent 2)

"Digital." (Parent 2)

"Mag electronic ebooknasila." (Parent 3)

"It is a helpful tool." (Parent 3)

"Kotobee muragsalidarapudila lesson." (Parent 3)

"Need siya gadgets." (Parent 3)

E-learning platforms and multimedia textbooks made it possible to cater to the preferences and requirements of digital natives in a manner that is suitable for their age group. Students said that they considered classes to be more interesting when teachers added game features, choice menus, avatars, and adaptive exercises that catered to their preferences for interactive activities.

On the other hand, it points out that inadequate implementations create the risk of cognitive overload or isolation. In order for students to focus on interactivity in a productive manner, scaffolding is still required. Finding the right balance between stimulation and structure remains a practical challenge. This will require additional research.

"It can help develop towards the students' intellect." (Parent 2)

"Skill development." (Parent 2)

"eBook as a tool for learning and growth." (Parent 2)

"Holistic development of our learners." (Parent 2)

"Observed any improvements." (Parent 2)

"Learn more and understand." (Parent 2)

"Student achievement." (Parent 2)

The embedded features of Kotobee allowed educators to exercise control, while also aligning well with the learning methods of digital natives. Developed Kotobee multimedia textbooks for use in Grade One classrooms. These textbooks included embedded activities, three-dimensional pictures, tools for taking notes, game aspects, discussion forums, and analytics tracking. The results of surveys and test scores indicated a higher level of participation. It was essential for teachers to provide direction, as unstructured usage led to an increase in distraction.

"Gasulat ra to ko dayunako ra galantawrakosa TV." (Pupil 5)

"Interactive." (Pupil 5)

"Makalearn ra jud ko baunsarajud real life ba." (Pupil 5)

"Engage themselves in given activities." (Teacher 1)

"Participate in given activities." (Teacher 1)

In a different study by Kotobee, Yamada [20] gave students control menus to activate and deactivate elements like quizzes, interactive infographics, and concept-explaining movies. For adaptation, teachers monitored analytics dashboards. When compared to standard textbooks, students displayed a richer conceptual understanding and achieved 21% higher improvements on specialized science examinations after using the resource.

In conclusion, there was a considerable body of evidence that suggests that students who were born and raised in the digital age thrive when they are provided with chances for active learning that are enhanced by technology and are linked with their preferences for interactive cognitive processing. If implemented in structured ways with proper monitoring and support, Kotobee's multimedia capabilities and teacher customization options seem well-suited to address related educational issues. A more in-depth investigation of the most effective uses would be good. However, carefully constructed e-learning systems presented a promising avenue for engaging and educating 21st-century digital natives.

## 2) A Feature of Flexibility and Adaptability

Shareability is one key feature of the Kotobee electronic learning material. Mobile devices can easily download it. Since its contents were essential to the DepEd learning competencies, it can be easily integrated into the standard DepEd modules; thus, it is very helpful to teachers teaching the AralingPanlipunan subject.

One of the most important advantages that Kotobee possesses as an e-learning platform is its adaptation and flexibility, which allow it to share content that can be customized across several devices. Kotobee's cloud-based authoring tools enable educators to create interactive multimedia textbooks and lessons simultaneously, making them accessible on any device. Even in locations that have difficulty connecting to the internet, students can download content from Kotobee to their local devices for offline consumption. The responsive formats function faultlessly on mobile devices, tablets, laptops, and desktop computers.

"Enables my daughter to learn interactively." (Parent 1)

"Learners can interact and learn." (Parent 1)

"Participate in discussions." (Parent 2)

"She can easily interact." (Parent 2)

"It features interactive activities." (Parent 2)

"Its activity is more interactive." (Parent 2)

"Interactive activity saebook." (Parent 3)

"Interactive content through its audio." (Parent 3)

"More involved." (Parent 3)

Students can learn self-directedly across a variety of learning contexts tailored to their requirements and preferences thanks to the gadget's adaptability. According to Yamada et al. [20], who investigated fifty classrooms that utilized Kotobee, they discovered that sixty per cent of the time that students spent using the interactive scientific textbooks happened outside of school hours. During the nighttime study session, analytics revealed that students were engaged with multimedia components, such as 3D images. Users who logged in after-

hours saw their scores rise by 7% more. Personalized learning routes became possible due to the accessibility.

When it comes to educators, Kotobee simplified the process of exchanging content between teachers and reusing it from one year to the next. Korat and Segal-Drori [13] conducted a poll and found that the majority of teachers (95%) appreciated Kotobee's templates and content libraries for their ease of modification and construction of new classes. This collaborative development practice made the sharing of content between different grades and courses easier. Subsequently, a different teacher modified the customized lessons for a single class, ensuring a smooth transition for the students. Teachers were able to save time on planning while simultaneously incorporating rich material as compared to static textbooks.

Kotobee's custom tagging and assessment tools enabled alignment with defined skills and monitoring of mastery. This is about the integration of Kotobee with official curricula such as those developed by the Department of Education. The ability to directly link modules to certain learning goals was available to teachers. The incorporation of formative quizzes also enabled the evaluation of skills in comparison to targets. Reports provided administrators with information regarding the overall school's development. These aspects aid the Department of Education's emphasis on standards-based and outcomes-aligned educational approaches.

"My child's academic performance improved." (Parent 1)

"It can help develop towards the students' intellect." (Parent 2)

"Skill development." (Parent 2)

"eBook as a tool for learning and growth." (Parent 2)

"Holistic development of our learners." (Parent 2)

"Observed any improvements." (Parent 2)

In a nutshell, basic system capabilities such as responsiveness, customization, analytics, and templates make it possible to construct flexible mediated learning using e-learning content that can be reused across different locations and over time. As a result of these affordances, students were able to take greater ownership in the development of their knowledge by utilizing their preferred devices. Efficiency gains were becoming more apparent for educators. Additionally, administrators received assistance in scaling their operations according to outcome-based education models. As a result, Kotobee functioned as a flexible information and communication technology cornerstone that can assist all stakeholders in the Filipino education system.

### 3) Motivating and Engaging

The contents and activities of the Kotobee material were interactive. Pupils interacted with the audio and visual features of the program. They enjoyed the substantial and varied topics along with the animations; thus, they were motivated to learn. Pupils and parents expressed that the visuals used in the Kotobee learning material were appealing to see. The pupils, therefore, were more engaged in the Kotobee activities than in playing online games. The embedded learning activities had clear instructions that required less supervision from the teacher and the parents. Thus, the material was well-suited for self-guided learning.

"Ma encourage ang mgabata to learn." (Parent 3)

"Ma interested sila." (Parent 3)

"Gives more attraction to the user." (Parent 3)

"Help encourage learners." (Parent 3)

For the purpose of fostering a profound level of engagement among young students, the Kotobee e-learning platform made use of interactive multimedia textbooks and embedded activities. When implemented with careful consideration, Kotobee's motivational effects can be explained by several different learning philosophies and methodologies.

"Interested watching." (Pupil 1)

"Ganahan ko." (Pupil 1)

"Ganahanipadayun tong gibuhatni Teacher Josie." (Pupil 1)

"Mas chada." (Pupil 2)

Constructivist approaches emphasise active student participation in the process of gaining understanding rather than taking in information in a passive manner. Kotobee's 3D visualizations, note-taking capabilities, and embedded quizzes are examples of features that encourage the formation of real knowledge through the processes of exploration, evaluation, and reinforcement. In the study conducted by Yamada et al. [20] on fifty classrooms, the constructivist approach taken by Kotobee resulted in stronger conceptual gains than the implementation of rigorous online lectures. The ability to evaluate hypotheses effectively was increased by manipulable models.

"Kita kas TV." (Pupil 5)

"Makita judsa picture." (Pupil 5)

"Easily catch their attention." (Teacher 1)

"Gimokgimokpajud." (Teacher 1)

"Visual learners." (Teacher 1)

When it comes to maintaining focus while avoiding distractions caused by interactive information, related cognitive theories emphasise the importance that working memory and executive function play. An organized digital workspace is provided by Kotobee, which enables students to switch between different types of media, take notes, and verify their level of comprehension. Scaffolding interactivities were more effective in boosting accomplishment than unguided use. Another essential component is goal-oriented cooperation, which is characterized by the utilization of functions with the guidance of the instructor rather than uncontrolled play.

The ARCS model is one of several motivational models that emphasizes the importance of grabbing attention, establishing relevance, building confidence, and promoting satisfaction to engage students in deep learning. These principles are included in the design of Kotobee's user interface, which features avatars that direct usage and embedded prizes that encourage users. A Kotobee study found that ninety per cent of students found multimedia textbooks more entertaining and rewarding than standard books.

When exposed to learner-centred resources that actively stimulate interest and participation, students can devote more time to productive content-related activities. Research conducted by Kotobee also found that the durations of documented learning sessions increased by 15–30% in comparison to the baseline texts. In addition, students willingly repeated activities at rates that were higher than average, which is an indication of involvement.

"Fun while enjoying the competency." (Parent 2)

"My son was enjoying while learning." (Parent 3)

"He was having fun while studying." (Parent 3)

"Basta TV aw ampayjud." (Parent 5)

"Kay malingaw man sila." (Parent 5)

"Nalipay." (Pupil 1)

It is possible that the benefits would be significantly amplified if these engaging tactics were widely applied throughout the Philippine education system and complemented by assistance for teachers. By simulating the near-universal adoption of personalized multimedia content over five years, Grant (2018) estimated that the cumulative gains would amount to eight million additional years of improved educational opportunities. The inequalities in performance may also be reduced if each component is improved separately. On the other hand, preventing a "digital divide" would involve significant initial investments as well as the management of cultural change.

Research-based motivational, cognitive, and constructivist theories help explain the potential of interactive e-learning systems when they are employed purposefully. Features such as Kotobee's have been thoughtfully built to capitalize on these dynamics by enabling learner-driven participatory education. Widespread adoption has the potential to drastically transform educational methods and outcomes in the Philippines. However, research still must be done on how to incorporate multimedia textbook technology in a smart manner so that it can benefit all students.

#### 4) Ease the Burden and Improve Teaching and Learning Efficiency

Unlike conventional teaching, Kotobee eliminated writing on the blackboard; thus, it is not time-consuming and reduces the unnecessary burden. It is packed with adequate and instant information that widens the pupils' understanding. In addition, the material uses familiar examples, which increases the retention of the lessons while familiarizing students with new concepts. This made the learning material very helpful to both teachers and students. It improves the teacher's mastery of the lesson, while the pupils' academic performance has improved, as manifested by their high scores.

"Magmodule ug mag TV." (Pupil 1)

"Katong electronic book ngamugimokgimok." (Pupil 1)

"Ga TV." (Pupil 1)

"Naara toy isulat ra bakabahn ra jud ra sa." (Pupil 5)

"Gasulat ra to ko dayunako ra galantawrakosa TV." (Pupil 5)

"Interactive." (Pupil 5)

"Makalearn ra jud ko baunsarajud real life ba." (Pupil 5)

"Engage themselves in given activities." (Teacher 1)

"It is a new strategy." (Parent 2)

"Yesindot man pud nay mga bag-o." (Parent 2)

The strain of manually producing additional activities is immediately alleviated for educators using multimedia creation tools, which save up to five hours per week, according to a study that was conducted in approximately one hundred classrooms. Using pre-created interactive media will significantly reduce resource constraints. The Kotobee survey by Korat and Segal-Drori [13] revealed that 46 per cent of educators highlighted the platform's drag-and-drop widget capabilities for effortless class modification. It was possible to devote more time to supporting pupils who were having difficulty.

When compared to static pages of text, embedded aids were comparable in that they facilitate students' learning of fundamental concepts more easily. Elementary school students who utilized interactive diagrams and movies had a twenty per cent increase in their social studies scores. Users of electronic textbooks also spent more time studying on their own volition.

"It helps her understand the lesson better and easier." (Parent 1)

"For a better understanding of the lesson." (Parent 1)

"Makat-on mam." (Parent 2)

"Learning the lesson in an easy way ma'am." (Parent 3)

"Mayo pagka kat-on." (Parent 4)

"Maka hiunumdomsiya." (Parent 4)

"Mas nakat-on ko." (Pupil 1)

"Mas sayon." (Pupil 2)

Rethinking teaching approaches was necessary in order to effectively leverage digital textbook platforms, despite the fact that these platforms offer obvious benefits. It was essential to engage in continuous professional development to reap the benefits. Barriers to accessing devices and other aspects of the technical infrastructure must be addressed as well, or else technology risks worsening equality inequalities.

#### 5) Approach to Instilling Values and Nationalism

Aside from improving academic performances, the content and activity of the Kotobee learning material have fully given life to our history. Pupils have exhibited recognition of significant Filipino heroes and shown realization of their heroism, which includes Jose Rizal. The material helped the learners appreciate Philippine culture and show pride in being Filipinos.

"It somehow gave life to our history." (Parent 1)

"It enables my child to recognize the faces of our national heroes." (Parent 1)

"Step keeps on talking about our national heroes, particularly Jose Rizal." (Parent 1)

"It gave my child a clearer glimpse of AralingPanlipunan lessons." (Parent 1)

The national curriculum of the Philippines emphasizes the development of values, pride, and nationalism in students, positioning them as future civic leaders. The development of these views at a young age, according to analysts, forges unifying links that fortify society against separation while simultaneously motivating young people to find solutions to endemic problems out of a shared purpose. However, traditional textbooks frequently present ideas that are no longer relevant. Customizable systems like Kotobee enable modernized representations.

These opportunities also present themselves for student discourse and the creation of multimedia content that reinforces instructional aid and tasks teachers with facilitating digital conversations between urban and rural schools in their e-learning projects. During the process of identifying similarities, students thought about their regional identities. Collaborative multimedia projects reinforced in-group and out-group ties. While technology brings along modern complexity, implementations that are suitably structured promote common ideals.

The Department of Education has conducted extensive research emphasizing the significant role that early education

plays in the development of values and national allegiance in the context of a society that is both diverse and fast-changing. When it comes to accurately reflecting actual identities, static, centralized textbooks struggle.

"Ma encourage ang mgabata to learn." (Parent 3)

"Ma interested sila." (Parent 3)

"Gives more attraction to the user." (Parent 3)

"Help encourage learners." (Parent 3)

On the other hand, flexible platforms like Kotobee gave educators and even students the ability to create meaningful representations that are contextualized using embedded production tools, discourse features, and multimedia. This facilitated the interactive and constantly evolving notions of Philippine nationhood that are crucial in today's world. As the use of personalized e-learning becomes more widespread, additional localized studies would be advantageous.

### 6) Hurdles to Fully Digitize Learning

While the children are digital natives, conventional parents were not familiar with the internet and technology, especially those that were used to support the learning of their children. Poor families cannot afford to acquire such technology. Moreover, some TV sets and laptops have smaller screens and are not ideal for classroom use. These scenarios may be an issue with the use of electronic learning materials in public-school classrooms and fully digitizing teaching and learning in DepEd.

"Nihilakako classmate kay nailogan." (Pupil 1)

"Nag away ako classmate, nag ilog." (Pupil 2)

Although interactive e-learning platforms exhibit a great deal of promise, there are still systemic obstacles to overcome in terms of fair adoption and access in the public education system of the Philippines.

"Well-versed in the said tool." (Parent 1)

"Must be mastered." (Parent 1)

Socioeconomic factors exacerbated the barriers between urban and rural areas.

Subsidies and tax incentives for information and communications technology (ICT) could help accelerate access by making technologies more accessible for underprivileged people at the national policy level. Additionally, teacher training programs must evolve to meet the needs of digitally excluded educator groups, utilizing mobile support resources that are portable. Appropriately customized modular resources would enable self-directed learning.

### CONCLUSION

This study provides compelling evidence that the Kotobee interactive eBook system may effectively increase the teaching of AralingPanlipunan in Grade 1 and the learning outcomes that are achieved because of this instruction. The quantitative findings showed that the experimental group that used Kotobee eBooks displayed significantly higher mean post-test scores in comparison to the control group that used traditional textbooks, which demonstrated significantly lower mean post-test scores. The higher minimum and median scores for the Kotobee group are additional indicators of the group's superior academic performance.

In addition, pupils had extremely positive opinions of Kotobee for increasing engagement, enjoyment, and learning. The instructor wholeheartedly concurred with the benefits of Kotobee and gave it the highest possible rating for improving both the quality of instruction and the overall performance of the pupils. Statistical analysis did, however, reveal unequal variances between teachers' and pupils' perspectives, which is most likely attributable to the small number of teachers in the sample.

These findings align with significant themes identified in the research, highlighting the potential of well-developed e-learning systems to enhance student engagement, focus, motivation, and academic performance. Specifically, Kotobee's customizable elements, like translated material and embedded interactive activities, appear to offer significant benefits. The findings, however, also reveal persistent problems, such as the requirement for extensive teacher professional development and the importance of fostering student focus.

This preliminary research has some shortcomings, including a sample size of only 17 children from a single elementary school. Additional large-scale research across a variety of settings and grade levels could strengthen these beneficial outcomes. A further examination with respondent groups that are more evenly distributed is required because there is a statistically significant gap between the perspectives held by teachers and those of pupils. In general, however, the research makes a significant contribution to the emerging body of information concerning the application of e-learning in early primary school settings.

The solid results indicate that interactive technologies such as Kotobee have the potential to effectively enhance early-grade instruction and learning throughout the K-12 system in the Philippines, provided that suitable training and support are provided. This has significant repercussions for the nation's ongoing efforts to improve education in terms of accessibility, resources, outcomes, and alignment with the skills required in the 21st century. These preliminary findings offer hope that creative methods of e-learning may be able to assist with these efforts to better the education system in the Philippines. When it comes to the adoption of new instructional technology, ongoing studies should investigate the potential long-term effects, optimal utilization tactics, and various ways to maximize advantages while reducing dangers.

In a different study by Kotobee, Yamada [20] gave students control menus to turn on and off components like quizzes, interactive infographics, and movies that explained concepts. For adaptation, teachers monitored analytics dashboards. When compared to standard textbooks, students displayed a richer conceptual understanding and achieved 21% higher improvements on specialized science examinations after using the resource.

In conclusion, there is a considerable body of evidence that suggests that students who were born and raised in the digital age thrive when they are provided with chances for active learning that are enhanced by technology and are linked with their preferences for interactive cognitive processing. If implemented in structured ways with proper monitoring and support, Kotobee's multimedia capabilities and teacher



customization options seem well-suited to address related educational issues. A more in-depth investigation of the most effective uses would be good. However, carefully constructed e-learning systems present a promising avenue for engaging and educating 21st-century digital natives.

## RECOMMENDATIONS

With the results and conclusions, the researcher recommends the following:

It is recommended that Kotobee should be deployed in more grade levels, subject areas, and schools to assess its efficacy and appropriate applications across a variety of educational contexts.

It should be encouraged to investigate the impacts on pupils who are at a disadvantage, as individualized e-learning could assist in achieving distinction and equity goals.

Coaches should use technology and various instructional methods to actively involve students while minimizing the risk of mental overload or distraction. Examining the perceived differences in the experiences of teachers and pupils can illuminate the best practices for conducting training. It is also recommended that teachers collaborate to share the finest teaching approaches.

School divisions should evaluate the infrastructure, funding, and relationships required to promote the impactful adoption of e-learning while avoiding technological challenges from an administrative point of view.

It should be necessary to continue looking into this topic as the school system in the Philippines adapts to the digital age. The nation will be able to leverage technologies to improve access, equity, and learning outcomes if it continues to emphasize high-quality, evidence-based implementations. In the Philippines, the next generation of pupils can be positively influenced by creative tools like Kotobee, which can be developed through further research and funding.

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