KID D'TECH: AN INTERACTIVE ANDROID-BASED AUGMENTED REALITY SYSTEM FOR KINDERGARTEN STUDENTS

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CHAPTER I

INTRODUCTION

In this new normal, augmented reality gathers gaining traction. AR is playing an important role in how people access the metaverse - the next generation of the internet. As hardware devices have become more affordable, a few game-changing use cases, such as gaming, fitness, and social, have seen early consumer adoption. The use of augmented reality in business continues to grow in terms of maintenance, design, and training. These immersive technologies are also being used to make a difference in healthcare, education, and the arts.

AR technologies are more important than ever as societies seek ways to advance during the COVID-19 pandemic. However, as with any revolutionary technology, AR has both advantages and disadvantages (i.e. safety risks, complex data protection, risks of virtual harassment, etc.). (Nassenstein-Zacchi, 2022)

Although Augmented Reality has improved over the past year, it still has a way to go before it is commonly used. Before Pokémon Go's enormous popularity in 2016, which propelled augmented reality (AR) into the public eye, AR was eclipsed by its cousin, virtual reality (VR). Compared to augmented reality, many people were more positive about the potential uses of virtual reality. However, it has become clear that AR offers more real-world daily use cases as AR and VR have developed over the past year. AR is ideally positioned to deliver commercial value across sectors, including manufacturing, education, and retail. (Boyajian, 2017)

Augmented reality in education serves a variety of functions. It makes it easier for students to acquire, process, and remember information. Furthermore, AR makes learning more engaging and enjoyable.

Playing a game or learning something on a screen is no longer a one-dimensional experience. Anyone can experience digital worlds in new ways with augmented and virtual reality apps. While virtual reality (VR) requires a headset and immerses you in an immersive environment, augmented reality (AR) is a little different. The screen serves to augment or supplement the real world. Aside from entertainment, augmented reality can help children and adults learn science, simulate experiences, and bring books to life.

According to an OpenGov article, The Philippines' Department of Education (DepEd) has announced that the agency is currently utilizing various technology-based projects as part of education's new normal as a result of the COVID-19 pandemic.

The agency's undersecretary emphasized the government's initiatives to ensure learning continuity amid the pandemic, including DepEd TV, DepEd Commons, and DepEd Radio, during the first Asia Pacific Public Sector Digital Summit. If there are no face-to-face classes, the education department must devise all means to reach out to students and provide them with basic education, according to the agency.

As a result, allowing this technology to be used in the educational sector will allow the learning process to be completed using augmented reality. Teachers will be able to see the value of students not only reading and listening in the classroom but also interacting and creating within their surroundings using Augmented Reality, especially during lockdowns. (Hani, 2021)

The 3D nature of AR encourages children to work together in groups, it creates genuine cooperation and improves communication. The overlay of reality and fantasy also gets children to think critically as to how it works and where the augmented object is. It is easy to use which empowers children and gives them the satisfaction that they are in control of their learning, at home or school. This self-directed learning increases their focus and information retention. It motivates and engages children of all abilities to learn. (Youdale, 2019)

The teachers of San Pablo 2nd Elementary School, Lubao, Pampanga used traditional methods in teaching kindergarten students, the proponents proposed the capstone project entitled "KID D'TECH: An Interactive Android-based Augmented Reality System for Kindergarten Students" This project is a system that can display visuals in the real world and provide artificial audio feedback that is not present in the environment. It also allows users, particularly children, to interact more to stimulate their imaginations and make them enjoy learning. This simplified version of augmented reality is accessible through the same tools that most students use every day – a smartphone. Smartphones, in particular, can create an augmented reality experience.

Conceptual Framework

The proposed conceptual framework consists of 3 main components, namely: Input, Process, and Design. To cope with emerging technology these days, these elements participate in a continuous cycle process that can be modified over time to meet changing needs.

For the Input box, by evaluating, addressing the problems, and offering solutions through interviews and observation, the proponents acquired data for its target school.

The proponents' method of software development is shown in the second box. The system's effectiveness and compatibility were tested throughout these phases since the proponents chose to use a specialized programming language as their main instrument for launching the system. The deployment of school staff, specifically the teacher, to operate the system and direct the kids through their lessons is also part of it. The evaluation and analysis come after the target respondents which includes the school personnel and the kindergarten students.

KID D'TECH: An Interactive Android-based Augmented Reality System for Kindergarten Students was completely developed as the last box illustrates. It was both beneficial for the teacher and the students not only in terms of innovation but also in terms of bridging the gap between formal education and new normal learning. Furthermore, as it is now known that enjoyable learning plays a significant role in a child's mental stability, this approach will surely mold their creativity and imagination without compromising their academics.

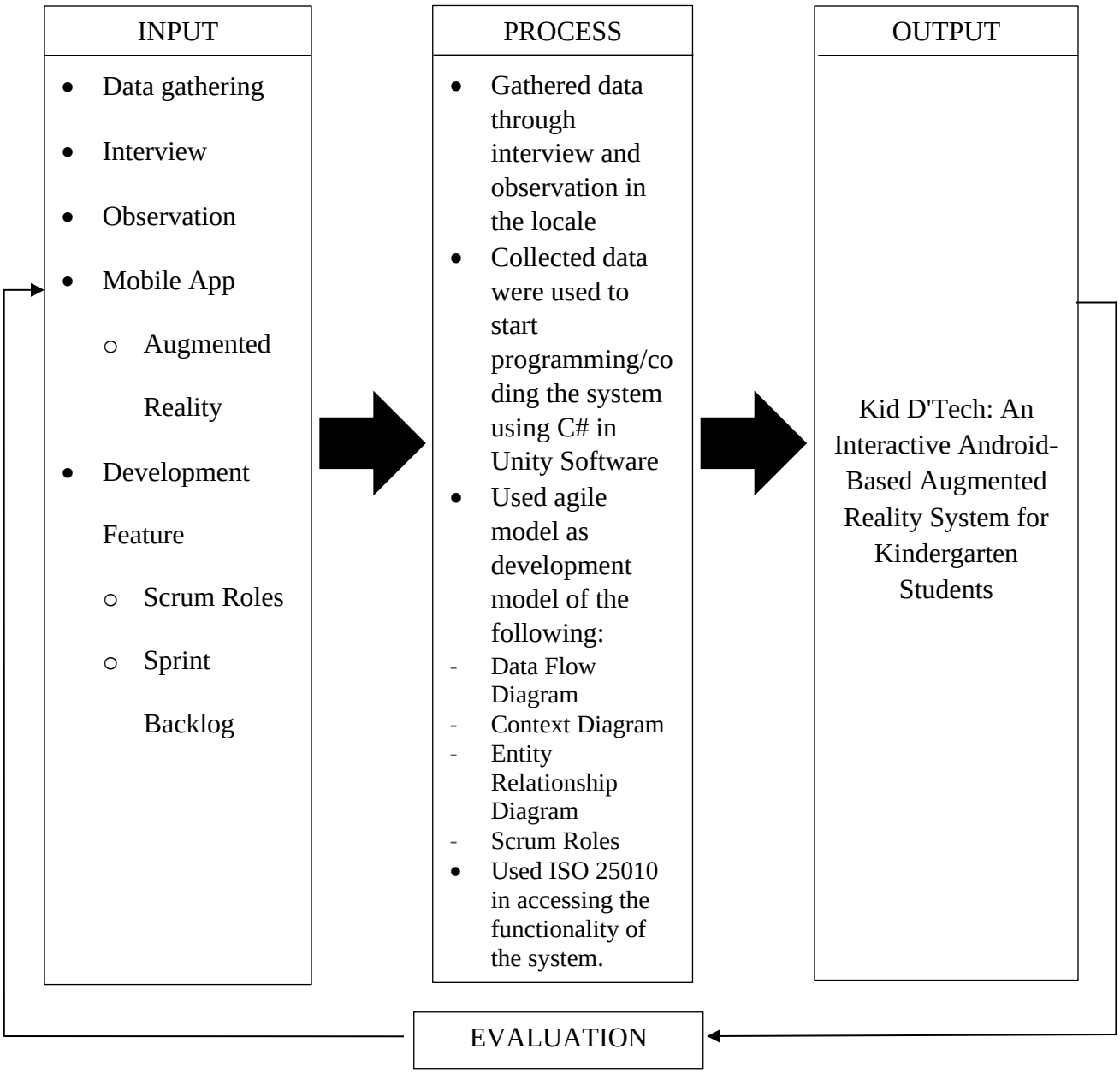

Figure 1: Conceptual Framework of the Study

Objectives of the Study

The main goal is to build and design an Android-based Interactive Augmented Reality System for Kindergarten Students. Specifically, this study aims:

1. To provide a more flexible and interesting learning environment for students by making the system a child-friendly application through its 'click & display' features making it easy to use.
2. To bridge the gap between formal and new normal learning for the students to encourage and learn collaboratively by honing their creative minds through visualizing the lessons with the help of the application's features.
3. Conduct a weekly assessment to test the knowledge and the improvement of the students.
4. To boost the eagerness and willingness of the student to learn by adding a leaderboard to enhance their competitive side.
5. Securing their information and organizing their data by assigning an admin and providing a verification method for every user.

Scope and Limitation of the Study

Every technology has limitations, and AR is no exception. The system only allows the teacher to manage Augmented Reality shows using 3D representations of lessons. The scope of the study is limited to interactive lessons such as color, numbers, letters, and shapes. The proposed system aimed to provide interactive lessons and fun learning to Kindergarten students at San Pablo 2nd Elementary School in Lubao, Pampanga.

The system's proponents restricted it to Kindergarten students at San Pablo 2nd Elementary School in Lubao, Pampanga, and it could only be used on an android phone.

The proposed system can be used both offline and online.

Significance of the Study

The proposed system entitled "KID D'TECH: An Interactive Android-based Augmented Reality for Kindergarten Students" will be significant for the following:

Learners: To improve the students learning with fun and interactive visuals. It will expand their imagination through image-tracking AR. It will also improve their knowledge by answering the assessment of the proposed system.

Teachers: To help the teachers improve their teaching methods. It will make their lessons more exciting and fun.

Future Researchers: Future researchers can use this proposed system as their reference if they want to build a system like this one. This study will help in making research more efficient.

Definition of Terms

Augmented: make (something) greater by adding to it; increase

Augmented Reality (AR): is an enhanced version of the real physical world that is achieved through the use of digital visual elements, sound, or other sensory stimuli and delivered via technology.

Interactive: allowing a two-way flow of information between a computer and a computer user; responding to a user's input.

One-dimensional: lacking depth; superficial.

Real-world: the existing state of things, as opposed to one that is imaginary, simulated, or theoretical.

CHAPTER II

METHODOLOGY

The discussion of the specific methods chosen and used in a research paper is referred to as methodology. The methodology includes theoretical concepts that provide additional information about method selection and application.

It emphasizes how theoretical concepts are linked with methods in a larger knowledge framework and explains relevance in examining the study's purpose, problem, and questions. Thus, the discussion that constitutes an academic article's research methodology also includes a comprehensive literature review of similar methods used by other Authors to investigate a specific research subject. (How to Write a Research Methodology for Your Academic Article, 2017)

Research Design

The proponents utilized a quantitative approach to measure the progress of the students using data from the proposed system that utilizes image-tracking AR, as well as the assessment data by the system. The proponents also used descriptive techniques to properly explain the process of creating the system. Using this technique, the proponents will be able to communicate with the system's users, define and analyze the user's needs, and provide better information about what is included and not included in the system.

Research Instrument

The proponents employed a quantitative survey questionnaire as a means to collect the study's necessary data. All of the study's intended participants will be asked to complete a set of written questions as part of the questionnaire. Furthermore, one of the strategies employed by the proponents to finish the KID D'TECH system was the information gleaned from the interviews and questionnaire responses.

Data Gathering

The proponents visited the locale of the respondents after securing permission through a letter. After this, the research instrument was administered that covered the modules taught to the students in every lesson. In crafting the questionnaire, the researchers used ISO 25010 in testing the accessibility of the system being undertaken.

Interview

To analyze the typical teaching style, the proponents spoke with the kindergarten teachers and school principals of San Pablo 2nd Elementary School. This is to guarantee that the learners would benefit from the suggested system. According to Ma'am Maya Pamintuan and Ma'am Charmaine Adube, the current method of teaching has been challenging during the pandemic because there has been limited access to learning materials for the students to visualize and digest their lessons well, and it is time-consuming when they tend to re-discuss the lessons simply because students have a hard time visualizing some lessons. Ma'am Maya also expressed her concern about utilizing test papers for assessments, which students frequently lose, and about maintaining student records, which have previously been kept manually using sheets and folders, which has led to inconvenience and a lack of security. A significant influence was made on how the proponents will support the client's needs and align their goals by doing this interview with the principal and kindergarten teachers.

Observation

This approach is a reliable tool for this study since the proponents require it and because it is a technique for acquiring data. The proponents observed how the teachers at

San Pablo 2nd Elementary School taught throughout the observation. To make the lesson more engaging and enjoyable for kindergarten pupils, teachers frequently utilize colorful visual aids and other teaching tools like paper and crayons. They also try to be creative, through a few sketching and coloring-related activities.

Questionnaire

Questionnaires were used as a tool by the proponents to collect data for the study. It is a set of questions prepared by the proponents and the data collected from the responses were also used by the proponents to improve the system.

Online Research

The proponents use their expertise in web research to build a solid foundation for their system through online links to articles.

Evaluation Instrument or Criteria

The proponents created the evaluation based on the content of the ISO 25010 that focus on different criteria given performance efficiency, usability, portability, reliability functionality, and security. It will be used to evaluate the final product system by the Alpha and Beta Tester.

Statistical Analysis of Data

The proponents employed statistical analysis to find the best interpretation after obtaining the questionnaires, and the formula below was used to calculate the weighted mean to assess the value of the items under evaluation.

Weighted Mean

$$WM = \frac{\sum \mathbf{wv}}{N}$$

Where:

WM = Weighted Mean

WV = Weighted Value

$\sum$ = Symbol for the summation process

N = Number of respondents

Table 1: In accessing the criteria of the system, the proponents use the following rating scales with related values:

Rating Scale	Descriptive Rating
4	Strongly Agree
3	Agree
2	Disagree
1	Strongly Disagree

System Development Procedure

Design Methodology

Agile development methodology anticipates the need for flexibility to deliver the finished product. This method focuses on delivering individual pieces or parts of the software development life cycle. The proponents used the agile methodology that is suitable for system development strategy.

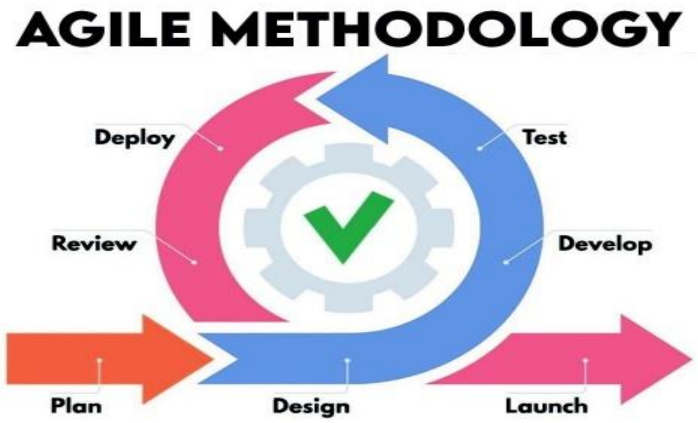

Figure 2: Agile Development Methodology

Planning

The study's proponents organized a meeting to brainstorm ideas for developing a system that will aid kindergarten students gain more knowledge through a fun and exciting method of learning via augmented reality. The proponents also watched videos for references, so their goal is to create an interactive and user-friendly system. Refer to *Appendix A (page 33)*

Requirements Analysis

The system requires an android phone version 4.4 KitKat up to the latest and at least 4GB RAM. In making this system the proponents used Unity 3D version 2020.3.37f1and a computer wins 10 OS installed. The system login requires an internet connection to save the data but using image tracking and assessment can be accessed offline.

Requirements Analysis and Specification

Table 2: Hardware

Computer	
Components	**Specification**
Processor	Intel(R) Pentium® Gold 7505
RAM	4GB
Storages	1TB of HDD storage
Graphic Card	Intel Integrated UHD
Mouse	USB
Camera	720p HD
Router	25mbps speed of a network

Smartphone	
Components	**Specification**
Processor	Octa-core 1.5 GHz Cortex-A53
RAM	4GB
ROM	64GB
Display	720 x 1280 pixels and 16:9 ratio
Camera	13MP

Table 3: Software

Computer	Smartphone
Windows 11	Android 8.1 Oreo
C# and firebase	Octa-core 1.5 GHz Cortex-A53
Unity 3D 2020	4GB
VS 2020.3.37f1	

Design Phase

The third phase is the designing phase, in which all of the system's requirements must be identified. The design of the system is interactive and user-friendly for kindergarten students. Under this, the proponents began to develop a system design based on module material appropriate for kindergarten students. Refer to *Appendix B (page 34)*

Develop

The design is carried out and used to build the system. Every feature has been tested. The system was created by the proponents using a specific app for creating 3D AR called Unity 3D.

Test

The proponents focus solely on how to execute the system's assessment and image tracking without errors so that users can utilize it smoothly and without problems, as well as to ensure that the system worked as intended.

Deploy

The system will be set to release after testing it, along with the interface and assessment, which is the most important part. During this point, the system has been deployed to San Pablo 2nd Elementary School, students and teachers could use it.

Review

To guarantee that the system will function as intended, the proponents prepare a methodical implementation of the lessons and assessments throughout the system. Additionally, it will serve as a quality check for any possible system lapses or flaws.

Launch

In this phase, the application will be made available to the clients so that they can test the system and investigate its features, specifically image tracking and 3D AR. The clients will conduct an evaluation or assessment to ascertain the system's efficiency and functionality following the testing. The various testing procedures that the proponents used to evaluate and weigh the system's functionalities are listed below.

Unit Testing

The proponents perform a unit testing to assess the system, determine whether it produces accurate results and also to spot some system flaws or lapses if they were any.

Integration Testing

The proponents did a monitoring to validate the system's functionalities when it comes to convenience, dependability and performance.

System Testing

The proponents inspected to authenticate the system's features and determine whether the system's functionalities are compatible with the proponent's objective. During this phase, the system testing will finally be implemented to sight if the intended outcome has already been reached.

To determine whether the application was accurate per what was specified, the proponents wanted to determine flaws and problems inside the system. The system may be prepared for deployment once testing has been completed and any flaws, including errors, have been addressed.

Acceptability Testing

During the phase of beta testing, the assigned users or clients will now run a test to the program in real-life. It will now give them the privilege to explore the system's features and choose among predetermined categories

Organization Assessment

Technical Feasibility

The proponents of this study must demonstrate internal capability sufficient to meet the project's requirements. The technology used to create the proposed system will clearly show whether or not the project is technically feasible. This is to ensure that the proponents are performing well in terms of application functionality even after it has been tested, stored, and developed. The features of the proposed system will demonstrate the system's functionality.

Operational Feasibility

The proponents of the system must examine the locale's operational feasibility in a way that can meet users' expectations. This analysis will provide higher quality that is more effective. After development, the system will provide a higher success rate with operational feasibility. The system was thoroughly examined by the proponents through testing, monitoring, and providing recommendations. The information obtained from the area would assist the proponents in fulfilling the expectations of the end users.

Financial Feasibility

The supporters invest both time and money in creating the system. They also spend money on printing and time corresponding with the study's location to submit the necessary paper for the study. As a result, the system's advantages will depend on how feasible it is financially. The primary benefits must complement the expenses of creating and putting the system in place. Users will gain more advantages from it than it costs to produce because anyone can build a system utilizing instructions and the internet.

Participants of the Study

The participants of the study are the teachers and kindergarten students of San Pablo 2nd Elementary School, who completed the questionnaires and surveys as part of the system development process.

Test or Evaluation Plan

Implementation Plan

The information from the previous phases was used to build the system. The proponents must run a test to ensure that it was functional and accurate once it was completed. The improvements continued throughout the system's testing and operation.

CHAPTER III

RESULT AND DISCUSSION

This chapter demonstrates the data analysis, presentation, and interpretation. The outcome is presented in tabular and graphical form.

The data was gathered by distributing questionnaires to selected respondents to determine the functional suitability, performance efficiency, compatibility, usability, reliability, and security of the existing system.

The proponents of the study distributed the questionnaire to one hundred one (111) parents of Kindergarten Students, two (2) Kindergarten Teachers, one (1) Principal of San Pablo 2nd Elementary School Lubao, Pampanga, and four (4) IT experts. The proponents used Slovin's Formula to get the total number of respondents in the study which is 89. The respondent's answers are indicated below. The system has six levels of characteristics. These are; performance efficiency, usability, portability, reliability, functionality, and security.

Table 4: Alpha Testers of the Study

I.T EXPERTS	NO. OF RESPONDENTS
I.T Experts	4
TOTAL	4

Table 5: Assessment of the Alpha Testers in Performance Efficiency of the System.

Performance Efficiency (I.T. Expert)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system's response meets the specifications and accomplishes its function.	4	0	0	0	4	4	Strongly Functional
The system complies with requirements in terms of the types and quantities of resources it uses to carry out its functions.	2	2	0	0	4	3.5	Strongly Functional
The system parameter's maximum limits comply with the specifications	3	1	0	0	4	3.75	Strongly Functional
Weighted Average Mean = 3.75 Strongly Functional							

Table 5 shows the frequency distributions, weighted mean and the descriptive ratings of the I.T experts in the Performance Efficiency of the system.

The total weighted mean for the functionality is 3.75. It means that the application, based from the I.T expert in terms of performance efficiency, was Strongly Functional.

Table 6: Assessment of the Alpha Testers in Usability of the System.

Usability (I.T. Expert)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system can be used by specified users to achieve specified learning goals and to use the system effectively, efficiently, safely, and satisfactorily in a specified context of use.	2	2	0	0	4	3.5	Strongly Functional
The system has features that make it simple to utilize.	4	0	0	0	4	4	Strongly Functional
The system has an interface through which a user can interact in a pleasant and satisfying manner.	4	0	0	0	4	4	Strongly Functional
Weighted Average Mean = 3. 83 Strongly Functional							

Table 6 shows the frequency distributions, weighted mean and the descriptive ratings of the I.T experts in the Usability of the system.

The total weighted mean for the functionality is 3.83. It means that the application, based from the I.T expert in terms of usability, was Strongly Functional.

Table 7: Assessment of the Alpha Testers in Portability of the System.

Portability (I.T. Expert)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system can be effectively and efficiently adapted to different or evolving hardware, software, or other operational or usage environments.	1	3	0	0	4	3.25	Functional
In a specified environment, the system's effectiveness and efficiency can be successfully installed and/or uninstalled.	4	0	0	0	4	4	Strongly Functional
The system can replace another specified software product for the same purpose in the same environment.	0	2	2	0	4	2.5	Functional
Weighted Average Mean = 3.25 Agree							

Table 7 shows the frequency distributions, weighted mean and the descriptive ratings of the I.T experts in the Portability of the system.

The total weighted mean for the functionality is 3.25. It means that the application, based from the I.T expert in terms of portability, was Functional.

Table 8: Assessment of the Alpha Testers in Reliability of the System.

Reliability (I.T. Expert)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system's component is operational and accessible when required for use.	2	2	0	0	4	3.5	Strongly Functional
The system's component operates as intended despite the presence of hardware or software faults.	4	0	0	0	4	4	Strongly Functional
In the event of an interruption or failure, the system can recover the data that was directly affected and restore the system to its desired state.	3	1	0	0	4	3.75	Strongly Functional
Weighted Average Mean = 3.75 Strongly Functional							

Table 8 shows the frequency distributions, weighted mean and the descriptive ratings of the I.T experts in the Reliability of the system.

The total weighted mean for the functionality is 3.75. It means that the application, based from the I.T expert in terms of reliability, was Strongly Functional.

Table 9: Assessment of the Alpha Testers in Functionality of the System.

Functionality (I.T. Expert)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system's functions covers all the specified tasks and user objectives	3	1	0	0	4	3.75	Strongly Functional
The system produces accurate results with the required level of precision.	0	4	0	0	4	3	Functional
The system's functions enable users to complete specific tasks and goals.	0	4	0	0	4	3	Functional
Weighted Average Mean = 3.25 Functional							

Table 9 shows the frequency distributions, weighted mean and the descriptive ratings of the I.T experts in the Functionality of the system.

The total weighted mean for the functionality is 3.25. It means that the application, based from the I.T expert in terms of functionality, was Functional.

Table 10: Assessment of the Alpha Testers in Security of the System.

Security (I.T. Expert)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system ensures that data is only accessible to those who are authorized.	0	4	0	0	4	3	Functional
The system prevents unauthorized access to secure computer programs and data.	0	2	2	0	4	2.5	Functional
The application provides validation of contact information.	0	2	2	0	4	2.5	Functional
Weighted Average Mean = 2.67 Functional							

Table 10 shows the frequency distributions, weighted mean and the descriptive ratings of the I.T experts in the Security of the system.

The total weighted mean for the functionality is 2.67. It means that the application, based from the I.T expert in terms of security, was Functional.

Tables and Figures (BETA)

The tables presented below show the survey result and the opinions of the respondents about the system.

Table 11: Respondents of the study

REPONDENTS	**NO. OF RESPONDENTS**
Respondents of Lubao, Pampanga	89
TOTAL	89

Table 12: Assessment of the Respondents in Performance Efficiency of the System.

Performance Efficiency (Parents and Teachers)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system's response satisfies the requirements and serves its purpose.	61	18	1	0	89	3.79	Functional
The system meets requirements in terms of the types and quantities of resources it employs to carry out its functions.	89	0	0	0	89	4	Functional
The maximum limits of the system variables are within the standards.	60	20	0	0	89	3.77	Functional
Weighted Average Mean = 2.67 Functional							

Table 12 shows the frequency distributions, weighted mean and the descriptive ratings of the kindergarten students in the Performance Efficiency of the system.

The total weighted mean for the functionality is 3.85. It means that the application, based from the respondents in terms of performance efficiency, was Strongly Functional.

Table 13: Assessment of the Respondents in Usability of the System.

Usability (Parents and Teachers)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system can be used to accomplish specific learning objectives and to use the system successfully, effectively, efficiently, safely, and satisfactorily in a specific context of use by the designated users.	76	13	0	0	89	3.85	Strongly Functional
The system has features that make it simple to utilize.	52	37	0	0	89	3.58	Strongly Functional
The system has a user-friendly interface that enables satisfying interactions between users.	61	28	0	0	89	3.70	Strongly Functional
Weighted Average Mean = 3.70 Strongly Functional							

Table 13 shows the frequency distributions, weighted mean and the descriptive ratings of the kindergarten students in the Usability of the system.

The total weighted mean for the functionality is 3.70. It means that the application, based from the respondents in terms of usability, was Strongly Functional.

Table 14: Assessment of the Respondents in Portability of the System.

Portability (Parents and Teachers)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system is adaptable to various or changing hardware, software, or other operational or usage environments, effectively and efficiently.	17	71	1	0	89	3.17	Functional
The system can be successfully installed and/or uninstalled while operating in a specific environment.	63	23	3	0	89	3.67	Strongly Functional
When used in the same environment and for the same purpose, the system can take the place of another specific software product.	75	14	0	0	89	3.84	Strongly Functional
Weighted Average Mean = 3.56 Strongly Functional							

Table 14 shows the frequency distributions, weighted mean and the descriptive ratings of the kindergarten students in the Portability of the system.

The total weighted mean for the functionality is 3.56. It means that the application, based from the respondents in terms of portability, was Strongly Functional.

Table 15: Assessment of the Respondents in Reliability of the System.

Reliability (Parents and Teachers)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
When used, the component of the system is operational and available.	69	20	0	0	89	3.77	Strongly Functional
The system's component operates as intended despite the presence of hardware or software faults.	39	6	44	0	89	2.94	Functional
In the event of an interruption or failure, the system can recover the data that was directly affected and restore the system to its desired state.	69	14	6	0	89	3.70	Strongly Functional
Weighted Average Mean = 3.47 Functional							

Table 15 shows the frequency distributions, weighted mean and the descriptive ratings of the kindergarten students in the Reliability of the system.

The total weighted mean for the functionality is 3.47. It means that the application, based from the respondents in terms of reliability, was Functional.

Table 16: Assessment of the Respondents Functionality of the System.

Functionality (Students)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system's functions covers all the specified tasks and user objectives	55	32	2	0	89	3.59	Strongly Functional
The system produces accurate results with the required level of precision.	58	31	0	0	89	3.65	Strongly Functional
The system's functions enable users to complete specific tasks and goals.	67	18	4	0	89	3.70	Strongly Functional
Weighted Average Mean = 3.64 Strongly Functional							

Table 16 shows the frequency distributions, weighted mean and the descriptive ratings of the kindergarten students in the Functionality of the system.

The total weighted mean for the functionality is 3.64. It means that the application, based from the kindergarten students in terms of functionality, was Strongly Functional.

Table 17: Assessment of the Respondents in Security of the System.

Security (Parents and Teachers)	**4 (SA)**	**3 (A)**	**2 (D)**	**1 (SD)**	**(WV)**	**(WM)**	**(DR)**
The system ensures that data is only accessible to those who are authorized.	45	44	0	0	89	3.50	Strongly Functional
The system prevents unauthorized access to secure computer programs and data.	19	70	0	0	89	3.21	Functional
The application provides validation of contact information.	64	25	0	0	89	3.71	Strongly Functional
Weighted Average Mean = 3.47 Functional							

Table 17 shows the frequency distributions, weighted mean and the descriptive ratings of the kindergarten students in the Security of the system.

The total weighted mean for the functionality is 3.47. It means that the application, based from the respondents in terms of security, was Functional.

Table 18: Overall assessment of the Respondents of the System

Criteria	**ALPHA**	**BETA**	**WM**	**DR**
Performance Efficiency	3.75	3.85	3.80	**Strongly Functional**
Usability	3.83	3.70	3.76	**Strongly Functional**
Portability	3.25	3.56	3.40	**Functional**
Reliability	3.75	3.47	3.61	**Strongly Functional**
Functionality	3.25	3.64	3.44	**Functional**
Security	2.67	3.47	3.07	**Functional**
Grand Mean = 3.51 Strongly Functional				

Table 18 shows the overall assessment, weighted mean, and descriptive ratings of the respondents in the overall evaluation of the system.

Overall, the system grand mean is 3.51 and has a descriptive rating of Strongly Functional. In terms of Performance Efficiency, Usability, Portability, Reliability, Functionality, and Security, the system passed based on the evaluation of Alpha and Beta testers.

CHAPTER IV
CONCLUSIONS AND RECOMMENDATIONS

Conclusion

After discussing how to aid the problem of San Pablo 2nd Elementary School regarding how they can innovate their traditional way of teaching Kindergarten Students, the proponents agreed to make and develop the Kid D'Tech: An Interactive Android-based Augmented Reality System for Kindergarten Students. The data and information from the questionnaires specifically in terms of functionality, sustainability, performance efficiency, usability, reliability, and portability helped to filter and scrutinized all the possible issues.

To aid the current problem and issues of San Pablo 2nd Elementary School, the proponents developed an android application that will help the kindergarten students to make their lessons more interactive and fun in terms of helping them to visualize the lessons thoroughly, interactive lessons, test their learning progress through the assessment panel and give them a sense of convenience.

The "Kid' D'Tech: An Interactive Android-based Augmented Reality System for Kindergarten Students" program, which was developed by the proponents, was found to have the ability to address problems and issues such as disorganized assessments, difficulties in understanding the lessons, and a lack of teaching resources. The application will help the teachers (admin) to make the kindergarten students visualize, interact and understand the lessons more. That way, it will be beneficial for both.

Recommendations

The recommendations for the improvements of the system are the following:

1. Build the software available on multiple platforms including Android and iOS for wider accessibility and usability.

2. Screen resolution must be compatible with every user for convenience and have no difficulty with it

3. Optimize assets and minimize the loading time

4. Implement more settings like multiple language options and audio that can improve other facets of the system

5. Improve security measures that will capture users' comfortability and certainty on the system

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APPENDICES

APPENDIX A

(Gantt Chart)

Month of June	Week 1	Week 2	Week 3	Week 4	Week 5
Title Preparation					
Planning					
Searching for Locale					
Brainstorming					
Capstone Paper					
Consultation with the Adviser					

Month of July	Week 1	Week 2	Week 3	Week 4	Week 5
Planning					
Requirement Analysis					
Brainstorming					
Create the System					
Capstone Paper					
Consultation with the Adviser					

Month of August	Week 1	Week 2	Week 3	Week 4	Week 5
Brainstorming					
Updating the System					
Updating the Capstone Paper					
Scheduled meeting for updating the system					

Month of September	Week 1	Week 2	Week 3	Week 4	Week 5
Brainstorming					
Updating the System					
Updating the Capstone Paper					
Scheduled meeting for updating the system					

Month of October	Week 1	Week 2	Week 3	Week 4
Brainstorming				
Updating the System				
Updating the Capstone Paper				
Data Gathering/ Survey				

APPENDIX B

(Context Diagram)

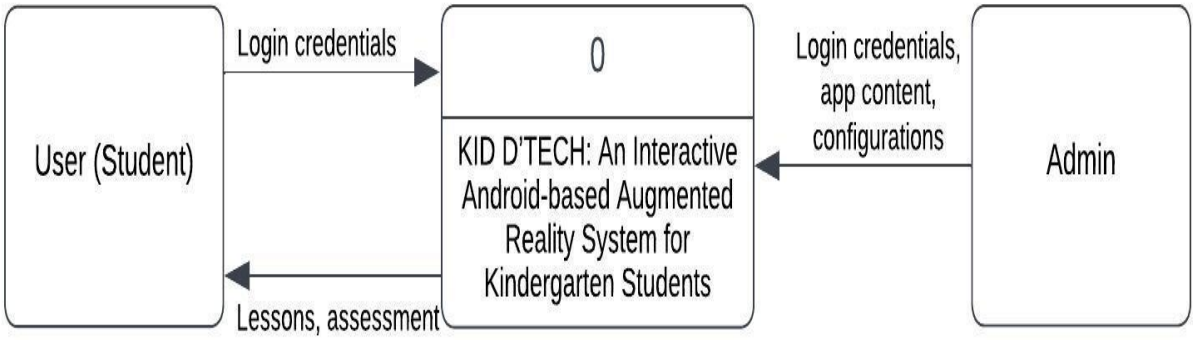


Figure 3: Context Diagram of the proposed system

APPENDIX C

(Entity-Relationship Diagram)

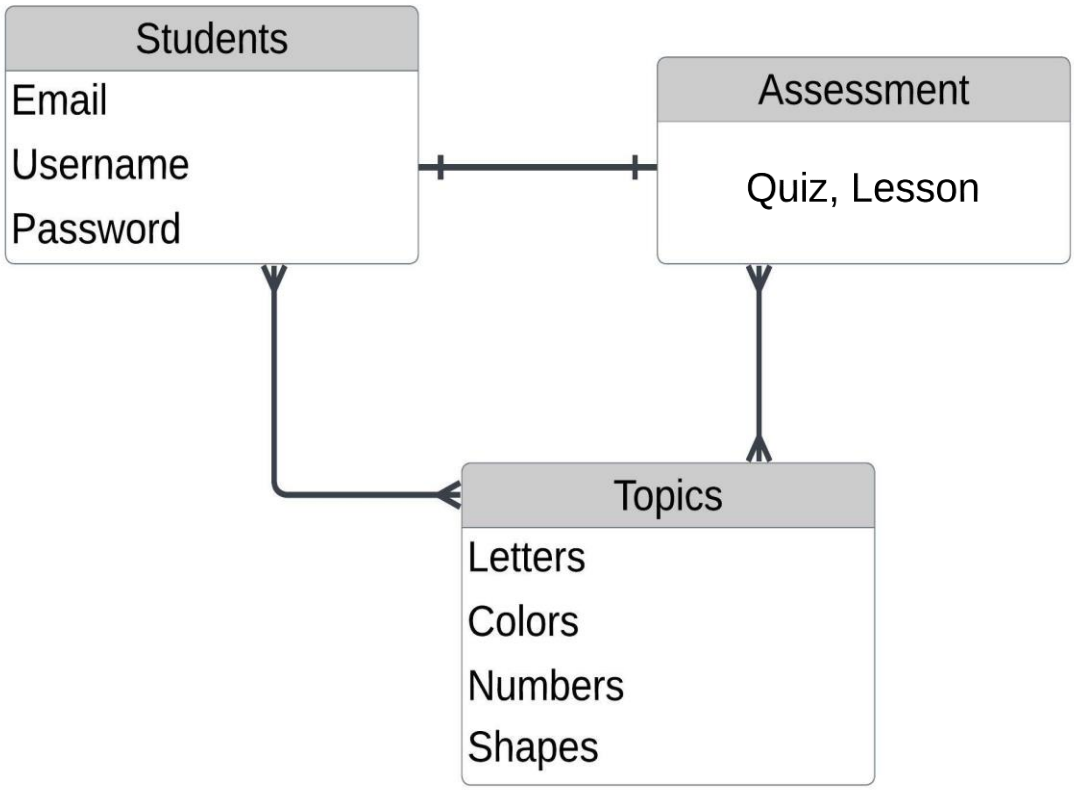


Figure 4: Entity-Relationship Diagram of the proposed system

APPENDIX D

(Case Diagram)

KID D'TECH: AN INTERACTIVE AUGMENTED REALITY SYSTEM

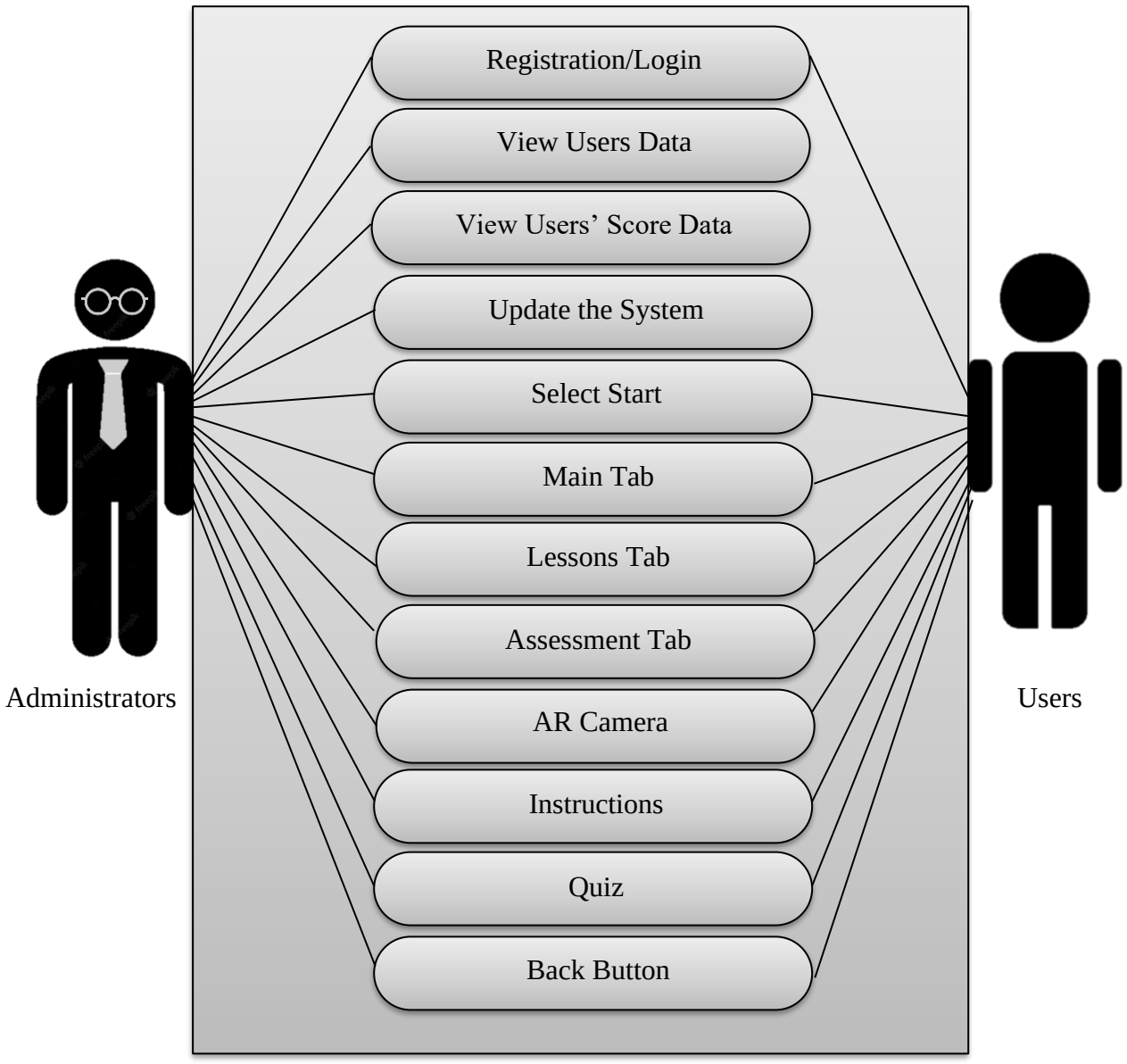
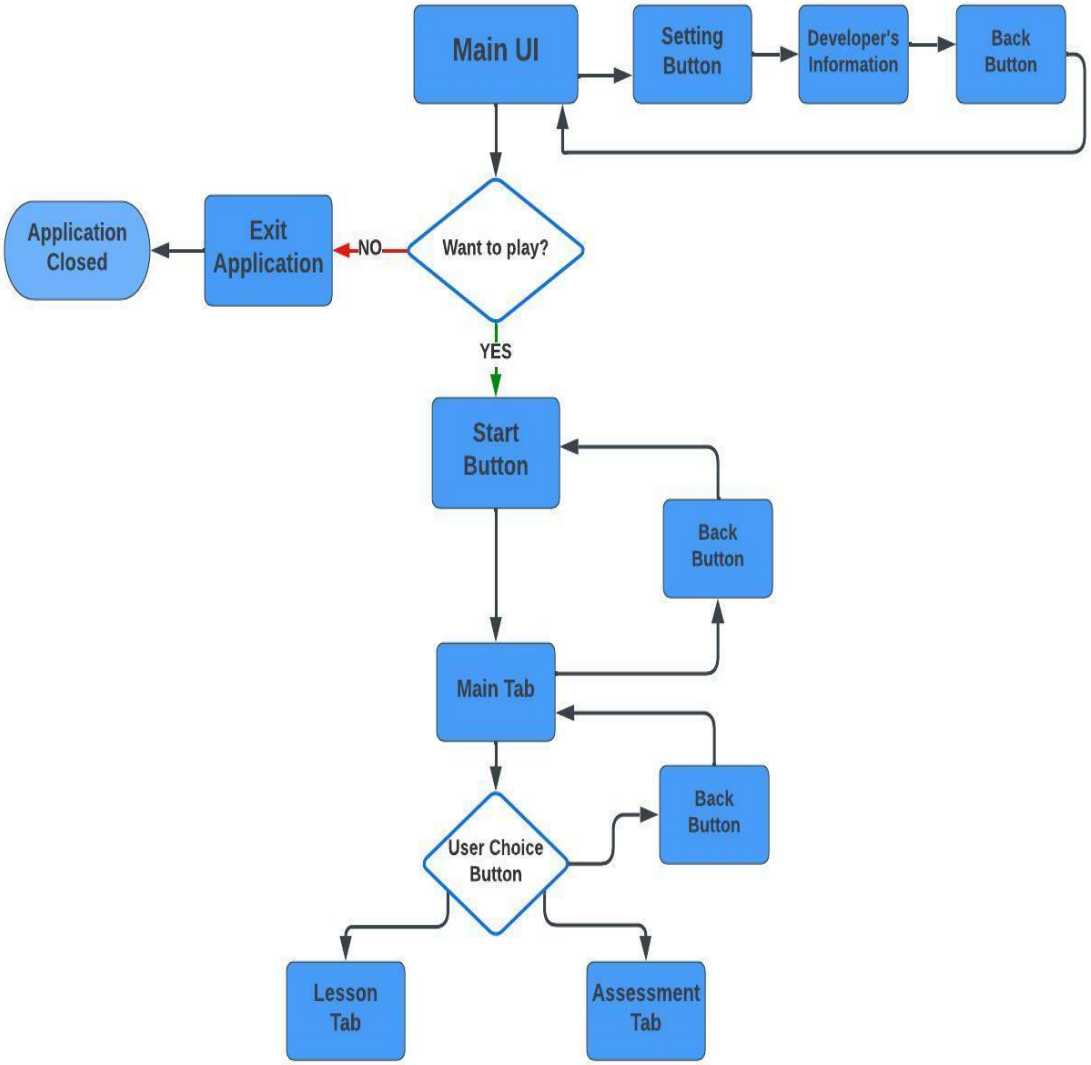


Figure 5: Case Diagram of the proposed system

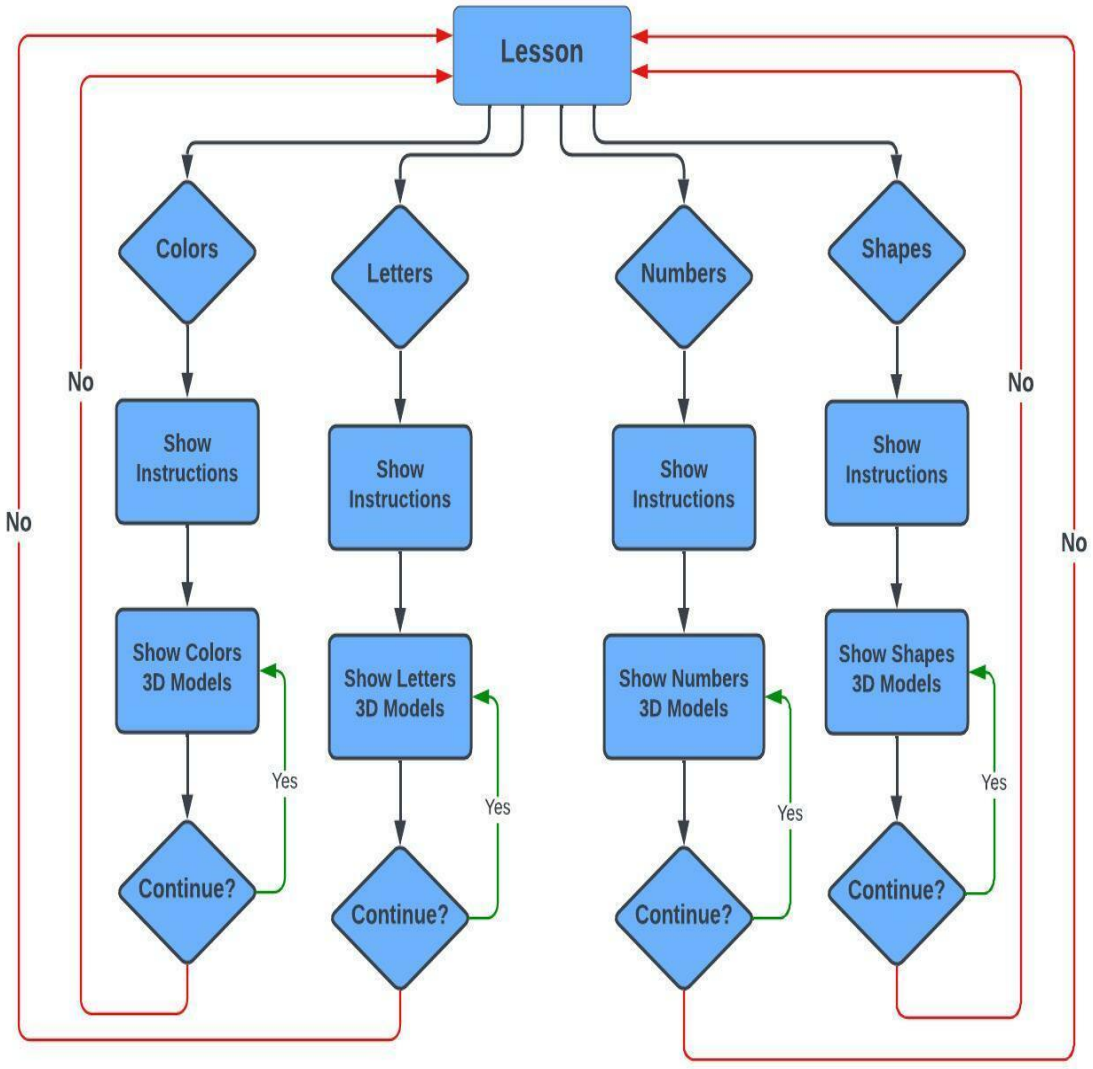
APPENDIX E

(System Process Flowchart)

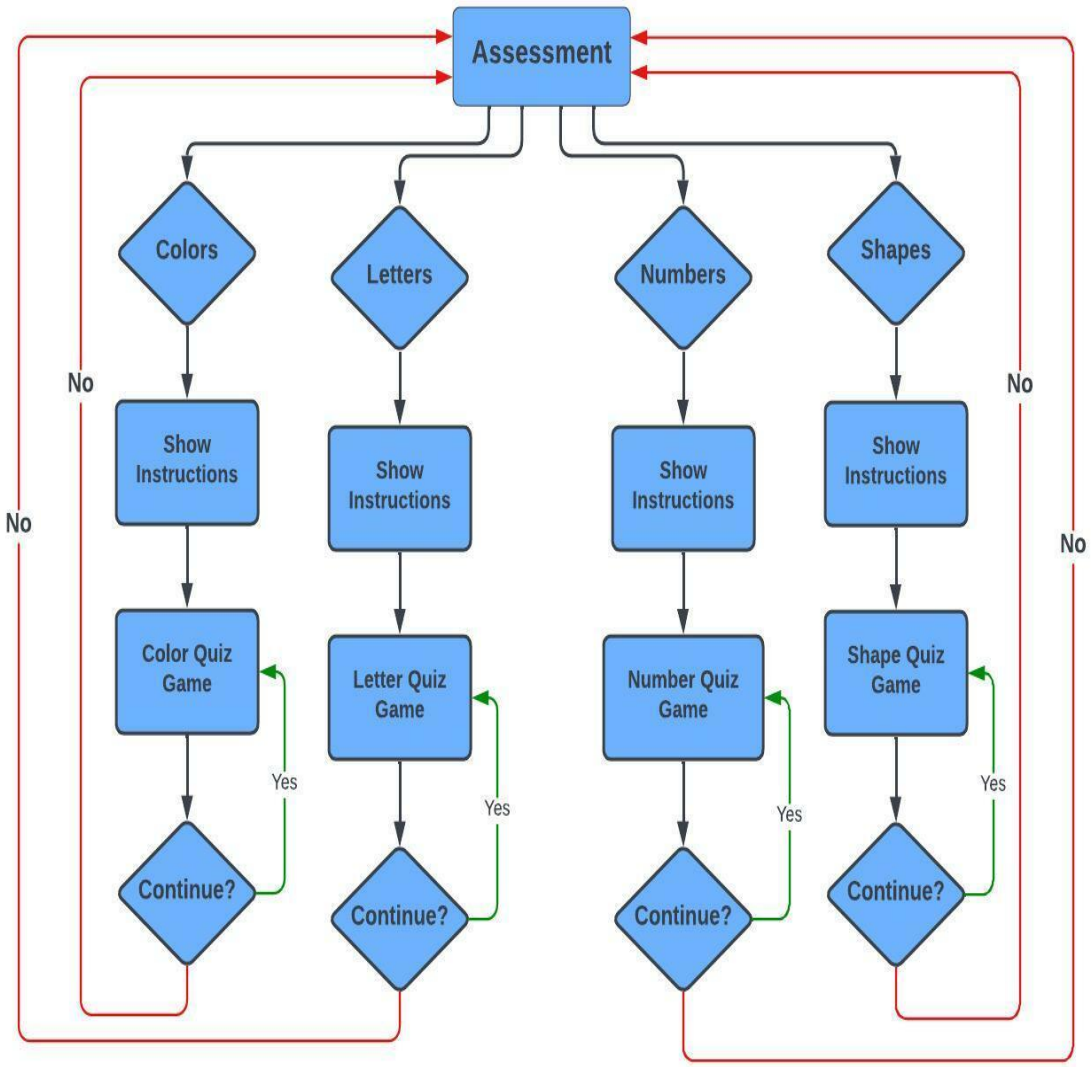
Main Menu Panel



Lesson Tab Panel

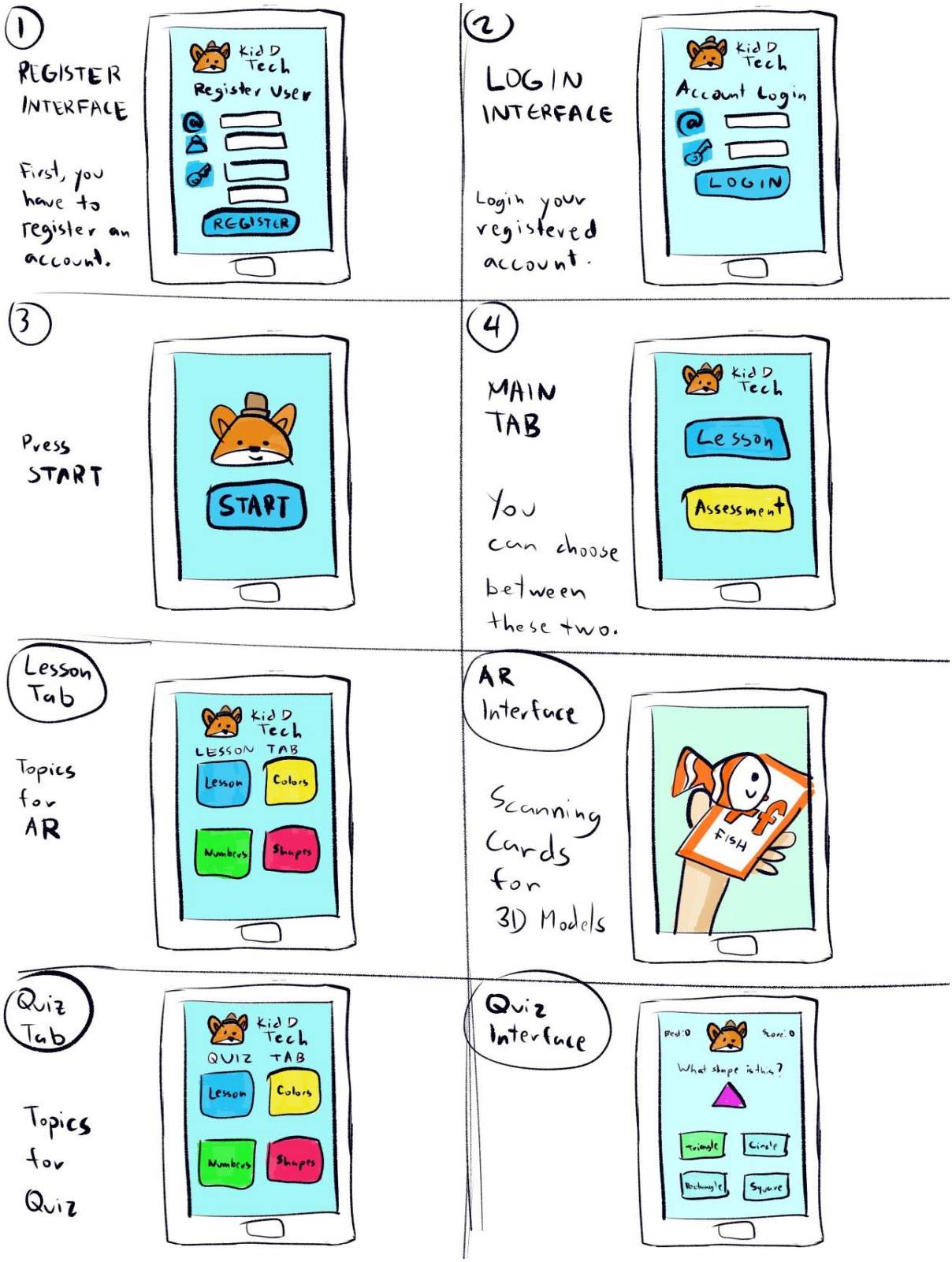


Assessment Tab Panel



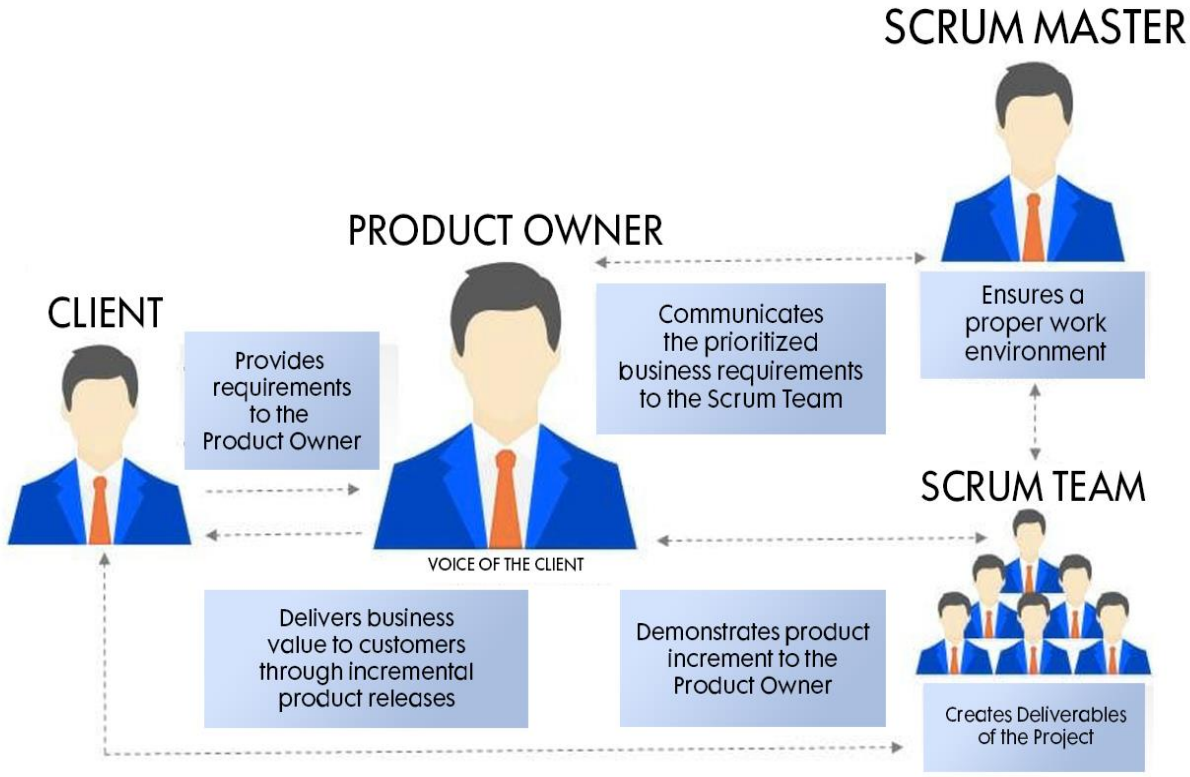
APPENDIX F

(Story Board)



APPENDIX G

(Scrum Roles)



APPENDIX H

(Alpha Test Questionnaire)

Republic of the Philippines
DON HONORIO VENTURA STATE UNIVERSITY
Sta. Catalina, Lubao, Pampanga

Greetings!

The proponents of the study entitled **"KID D'TECH: An Interactive Android-based Augmented Reality System for Kindergarten Students"** would like to ask you to spare some of your time to evaluate the system**,** to answer the questionnaire and to give your recommendations. Rest assured that all information provided will be kept with the utmost confidentiality. Thank you and have a nice day.

Name (Required)**:** _____

Profession / Designation: _____

Device Requirements	Mobile	PC
Operating System	At least Lollipop android version	Windows 7 and Windows 10, 64-bit version only
RAM	2GB	4GB
Processor	OPPO F1S full specs	PC specs requirement
Network Speed	At least 3GB	At least 10mbps

Instruction. Please indicate a check mark (✓) under the column for your response. Please use the following 4 rating scale for evaluation.

4	**3**	**2**	**1**
Strongly Agree	**Agree**	**Disagree**	**Strongly Disagree**

Performance efficiency	**4**	**3**	**2**	**1**
The system's response meets the specifications and accomplishes its function.				

The system complies with requirements in terms of the types and quantities of resources it uses to carry out its functions.				
The system parameter's maximum limits comply with the specifications				
Comment(required):				
Recommendation(required):				
Usability				
The system can be used by specified users to achieve specified learning goals and to use the system effectively, efficiently, safely, and satisfactorily in a specified context of use.				
The system has features that make it simple to utilize.				
The system has an interface through which a user can interact in a pleasant and satisfying manner.				
Comment(required):				
Recommendation(required):				
Portability				
The system can be effectively and efficiently adapted to different or evolving hardware, software, or other operational or usage environments.				
In a specified environment, the system's effectiveness and efficiency can be successfully installed and/or uninstalled.				
The system can replace another specified software product for the same purpose in the same environment.				
Comment(required):				
Recommendation(required):				
Reliability				
The system's component is operational and accessible when required for use.				
The system's component operates as intended despite the presence of hardware or software faults.				
In the event of an interruption or failure, the system can recover the data that was directly affected and restore the system to its desired state.				
Comment(required):				
Recommendation(required):				
Functionality				
The system's functions covers all the specified tasks and user objectives				

The system produces accurate results with the required level of precision.				
The system's functions enable users to complete specific tasks and goals.				
Comment(required):				
Recommendation(required):				
Security				
The system ensures that data is only accessible to those who are authorized.				
The system prevents unauthorized access to secure computer programs and data.				
The application provides validation of contact information.				
Comment(required):				
Recommendation(required):				

DATA PRIVACY STATEMENT: All Information provided herein will be treated utmost confidentiality and protected under the DATA PRIVACY ACT of 2012. By supplying the information you provided, you authorize The Proponents to collect, process, and store your personal and other information you will provide herein.

☐ Agree

☐ Disagree

_____ _____

Signature of Respondent Evaluation Date

APPENDIX I

(Beta Test Questionnaire)

Republic of the Philippines
DON HONORIO VENTURA STATE UNIVERSITY
Sta. Catalina, Lubao, Pampanga

Greetings!

The proponents of the study entitled **"KID D'TECH: An Interactive Android-based Augmented Reality System for Kindergarten Students"** would like to ask you to spare some of your time to evaluate the system**,** to answer the questionnaire and to give your recommendations. Rest assured that all information provided will be kept with the utmost confidentiality. Thank you and have a nice day.

Name (Optional): _____

Profession / Designation: _____

Instruction. Please indicate a check mark (✓) under the column for your response. Please use the following 4 rating scale for evaluation.

Device Requirements	Mobile	PC
Operating System	At least Lollipop android version	Windows 7 and Windows 10, 64-bit version only
RAM	2GB	4GB
Processor	OPPO F1S full specs	PC specs requirement
Network Speed	At least 3GB	At least 10mbps

Instruction. Please indicate a check mark (✓) under the column for your response. Please use the following 4 rating scale for evaluation.

4	3	2	1
Strongly Agree	**Agree**	**Disagree**	**Strongly Disagree**

Performance efficiency	**4**	**3**	**2**	**1**
The system's response satisfies the requirements and serves its purpose.				

The system meets requirements in terms of the types and quantities of resources it employs to carry out its functions.				
The maximum limits of the system variables are within the standards.				
Usability				
The system can be used to accomplish specific learning objectives and to use the system successfully, effectively, efficiently, safely, and satisfactorily in a specific context of use by the designated users.				
The system has features that make it simple to utilize.				
The system has a user-friendly interface that enables satisfying interactions between users.				
Portability				
The system is adaptable to various or changing hardware, software, or other operational or usage environments, effectively and efficiently.				
The system can be successfully installed and/or uninstalled while operating in a specific environment.				
When used in the same environment and for the same purpose, the system can take the place of another specific software product.				
Reliability				
When used, the component of the system is operational and available.				
The system's component operates as intended despite the presence of hardware or software faults.				
In the event of an interruption or failure, the system can recover the data that was directly affected and restore the system to its desired state.				
Functionality				
The system's functions covers all the specified tasks and user objectives				
The system produces accurate results with the required level of precision.				
The system's functions enable users to complete specific tasks and goals.				
Security				
The system ensures that data is only accessible to those who are authorized.				
The system prevents unauthorized access to secure computer programs and data.				
The application provides validation of contact information.				

Comments and suggestions:

_____

_____

_____

DATA PRIVACY STATEMENT: All Information provided herein will be treated utmost confidentiality and protected under the DATA PRIVACY ACT of 2012. By supplying the information you provided, you authorize The Proponents to collect, process, and store your personal and other information you will provide herein.

☐ Agree

☐ Disagree

Signature of Respondent	Evaluation Date

APPENDIX J

(Alpha Test Result Summary)

Performance efficiency	**T1**	**T2**	**T3**	**T4**	**Mean (x)**	**Verbal Interpretation**
The system's response meets the specifications and accomplishes its function.	4	4	4	4	4	Strongly Functional
The system complies with requirements in terms of the types and quantities of resources it uses to carry out its functions.	3	4	4	3	3.5	Strongly Functional
The system parameter's maximum limits comply with the specifications	4	4	4	3	3.75	Strongly Functional
Weighted Average Mean	3.75					Strongly Functional
Feedbacks from Alpha Testers: • Optimize assets and minimize the loading time. • Enhance client-server interaction. • Update the app continuously. • Collect and read bug reports from the users and have an app maintenance.						
Usability	**T1**	**T2**	**T3**	**T4**	**Mean (x)**	**Verbal Interpretation**
The system can be used by specified users to achieve specified learning goals and to use the system effectively, efficiently, safely, and satisfactorily in a specified context of use.	4	3	4	3	3.5	Strongly Functional
The system has features that make it simple to utilize.	4	4	4	4	4	Strongly Functional
The system has an interface through which a user can interact in a pleasant and satisfying manner.	4	4	4	4	4	Strongly Functional
Weighted Average Mean	3.83					Strongly Functional
Feedbacks from Alpha Testers: • Add more interactive features and details. • Implement more settings like multiple language option and audio. • Add more sign in method • Consistent app design and user interface						

Portability	**T1**	**T2**	**T3**	**T4**	**Mean (x)**	**Verbal Interpretation**
The system can be effectively and efficiently adapted to different or evolving hardware, software, or other operational or usage environments.	3	3	4	3	3.25	Functional
In a specified environment, the system's effectiveness and efficiency can be successfully installed and/or uninstalled.	4	4	4	4	4	Strongly Functional
The system can replace another specified software product for the same purpose in the same environment.	2	3	2	2	2.5	Functional
Weighted Average Mean	3.25					Functional
Feedbacks from Alpha Testers: • Screen resolution must be compatible to every user • Build the software available in multiple platforms including Android and iOS. • Apply Graphic Settings preference for any specific device. • Publish the application in multiple app stores.						
Reliability	**T1**	**T2**	**T3**	**T4**	**Mean (x)**	**Verbal Interpretation**
The system's component is operational and accessible when required for use.	3	4	4	3	3.5	Strongly Functional
The system's component operates as intended despite the presence of hardware or software faults.	4	4	4	4	4	Strongly Functional
In the event of an interruption or failure, the system can recover the data that was directly affected and restore the system to its desired state.	4	4	4	3	3.75	Strongly Functional
Weighted Average Mean	3.75					Strongly Functional
Feedbacks from Alpha Testers: • Improve user experience and device's memory management. • Make the app available for low-end device. • Keep your app prepared for high traffic. • Have an Auto-Login feature.						

Functionality	**T1**	**T2**	**T3**	**T4**	**Mean (x)**	**Verbal Interpretation**
The system's functions cover all the specified tasks and user objectives	4	3	4	4	3.75	Strongly Functional
The system produces accurate results with the required level of precision.	3	3	3	3	3	Functional
The system's functions enable users to complete specific tasks and goals.	3	3	3	3	3	Functional
Weighted Average Mean	3.25					Functional
Feedbacks from Alpha Testers: • Implement a Health System for the assessment. • Improve the optimization and 3D Rendering. • Apply a Reward System for the assessment. • Set a unique marker point in every flash card to avoid inaccurate 3D model.						
Security	**T1**	**T2**	**T3**	**T4**	**Mean (x)**	**Verbal Interpretation**
The system ensures that data is only accessible to those who are authorized.	3	3	3	3	3	Functional
The system prevents unauthorized access to secure computer programs and data.	2	2	3	3	2.5	Functional
The application provides validation of contact information.	2	2	3	3	2.5	Functional
Weighted Average Mean	2.67					Functional
Feedbacks from Alpha Testers: • Two step verification can be added to the system. • Include a forgot password feature. • Add Terms and Conditions for the users. • Engage back end more secure.						

APPENDIX K

(Beta Test Result Summary)

Performance efficiency	**Mean (x)**	**Verbal Interpretation**
The system's response satisfies the requirements and serves its purpose.	3.75	Strongly Functional
The system meets requirements in terms of the types and quantities of resources it employs to carry out its functions.	4	Strongly Functional
The maximum limits of the system variables are within the standards.	3.77	Strongly Functional
Weighted Average Mean	3.85	Strongly Functional
Usability		
The system can be used to accomplish specific learning objectives and to use the system successfully, effectively, efficiently, safely, and satisfactorily in a specific context of use by the designated users.	3.85	Strongly Functional
The system has features that make it simple to utilize.	3.58	Strongly Functional
The system has a user-friendly interface that enables satisfying interactions between users.	3.70	Strongly Functional
Weighted Average Mean	3.70	Strongly Functional
Portability		
The system is adaptable to various or changing hardware, software, or other operational or usage environments, effectively and efficiently.	3.17	Functional
The system can be successfully installed and/or uninstalled while operating in a specific environment.	3.67	Strongly Functional
When used in the same environment and for the same purpose, the system can take the place of another specific software product.	3.84	Strongly Functional
Weighted Average Mean	3.56	Strongly Functional

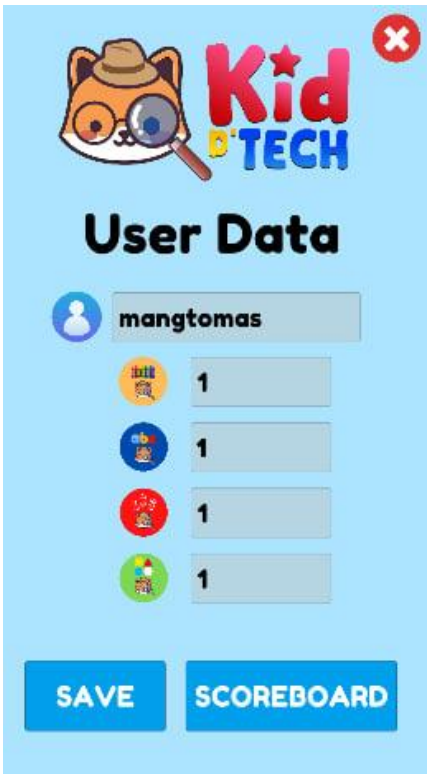
Reliability		
When used, the component of the system is operational and available.	3.77	Strongly Functional
The system's component operates as intended despite the presence of hardware or software faults.	2.94	Functional
In the event of an interruption or failure, the system can recover the data that was directly affected and restore the system to its desired state.	3.70	Strongly Functional
Weighted Average Mean	3.47	Functional
Functionality		
The system's functions covers all the specified tasks and user objectives	3.59	Strongly Functional
The system produces accurate results with the required level of precision.	3.65	Strongly Functional
The system's functions enable users to complete specific tasks and goals.	3.70	Strongly Functional
Weighted Average Mean	3.64	Strongly Functional
Security		
The system ensures that data is only accessible to those who are authorized.	3.50	Functional
The system prevents unauthorized access to secure computer programs and data.	3.21	Functional
The application provides validation of contact information.	3.71	Strongly Functional
Weighted Average Mean	3.47	Functional

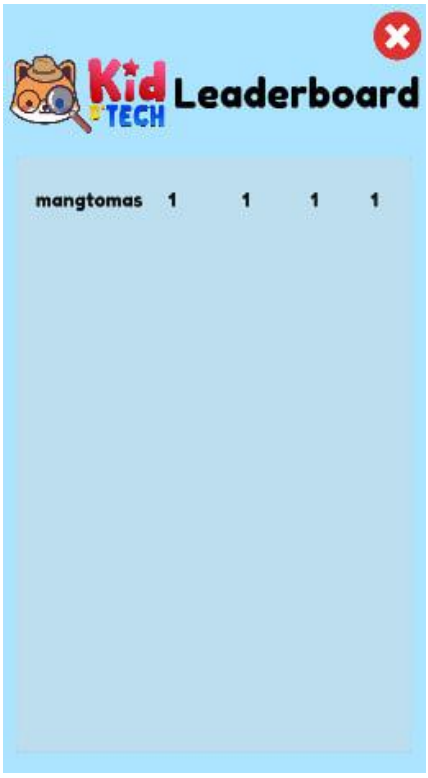
Feedbacks from Beta Tester:

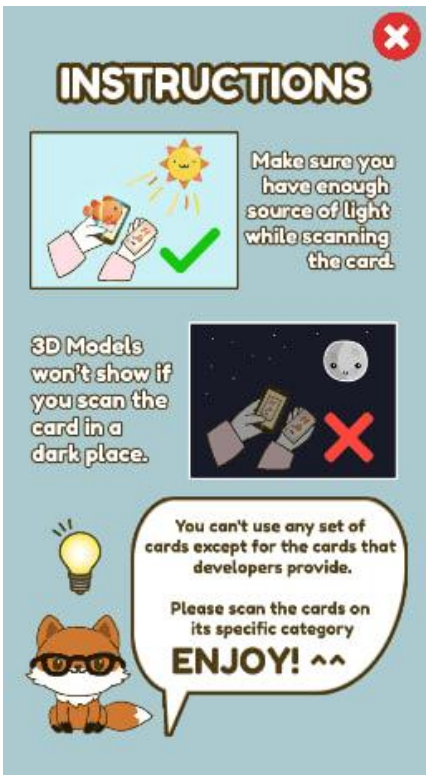
- More choices of background music
- More interactive colors especially on the assessment

APPENDIX L

(System Screenshot)

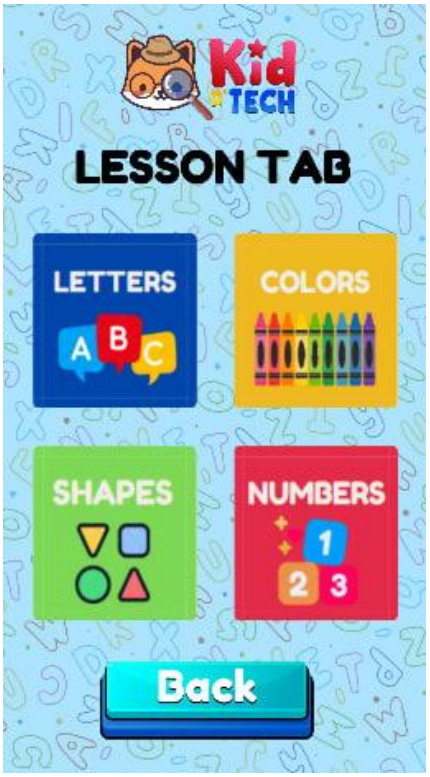


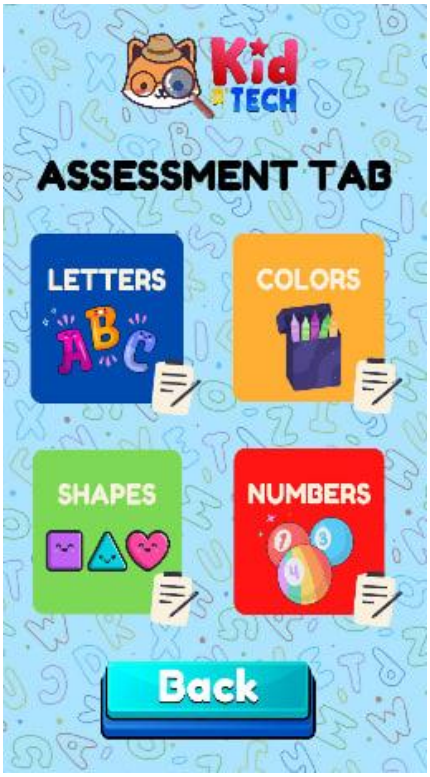


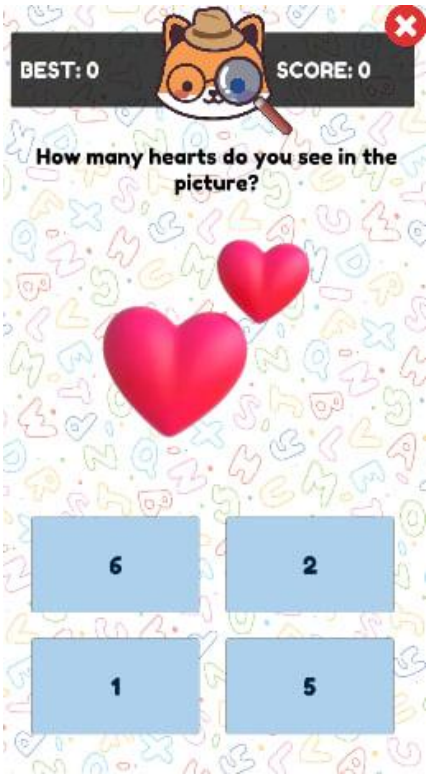

INSTRUCTIONS
Make sure you have enough source of light while scanning the card.
3D Models won't show if you scan the card in a dark place.
You can't use any set of cards except for the cards that developers provide.
Please scan the cards on its specific category
ENJOY! ^^


Back


Kid TECH
Loading...
QUIZ TIME!
Answer the following questions to get high scores and top the leaderboard. Fighting!
Note: Questions can be repeated.


Kid TECH
LESSON TAB
LETTERS
COLORS
SHAPES
NUMBERS
Back

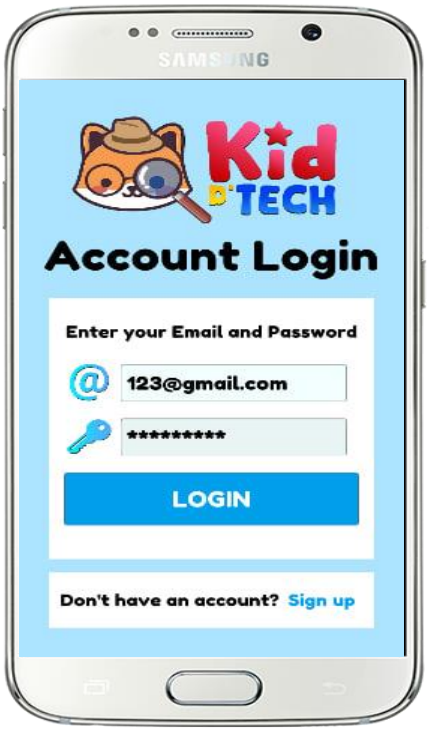

Kid TECH
ASSESSMENT TAB
LETTERS
COLORS
SHAPES
NUMBERS
Back


BEST: 0
SCORE: 0
How many hearts do you see in the picture?
6
2
1
5

APPENDIX M

(User Manual)

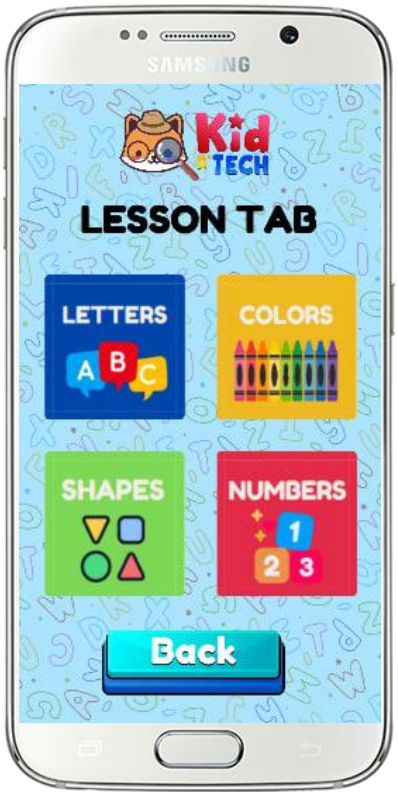
This is where you need to register your account.



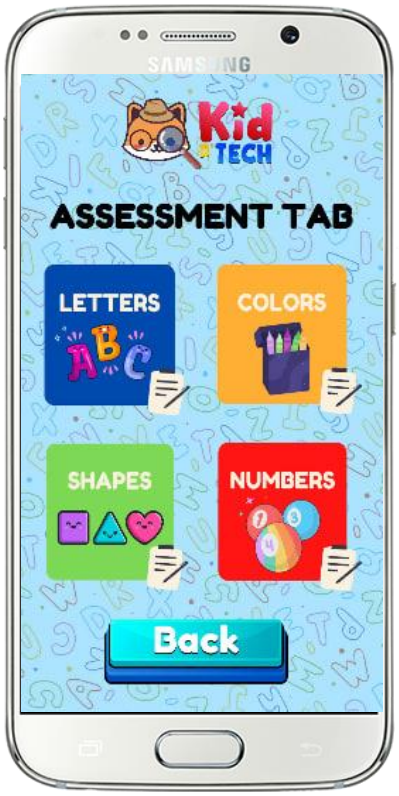
This is where you need to login your account.

This is the front page of the application. There's a start button in it.

This is the Main Tab where you choose between Lesson Tab and Assessment Tab.



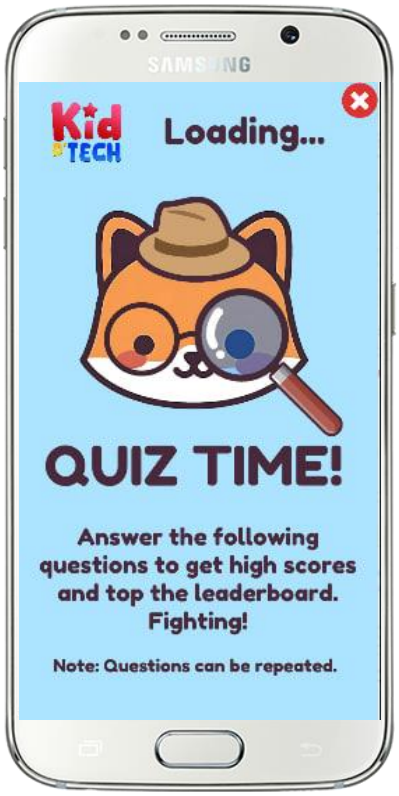
This is the Lesson Tab where you choose a category



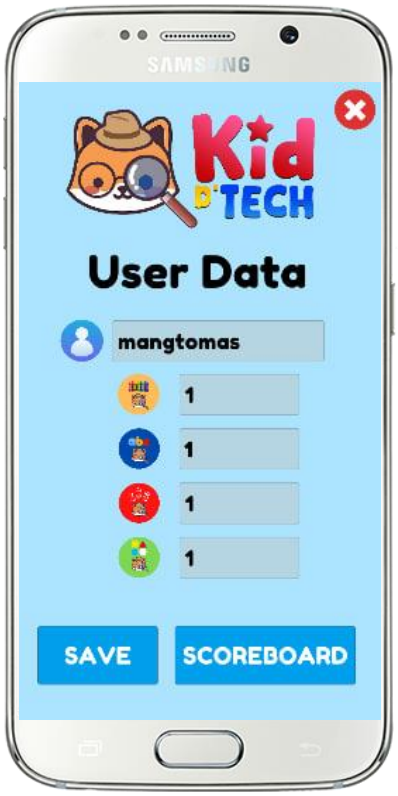
This is the Assessment Tab where you choose a category

This is the instructions for Augmented Reality Camera.

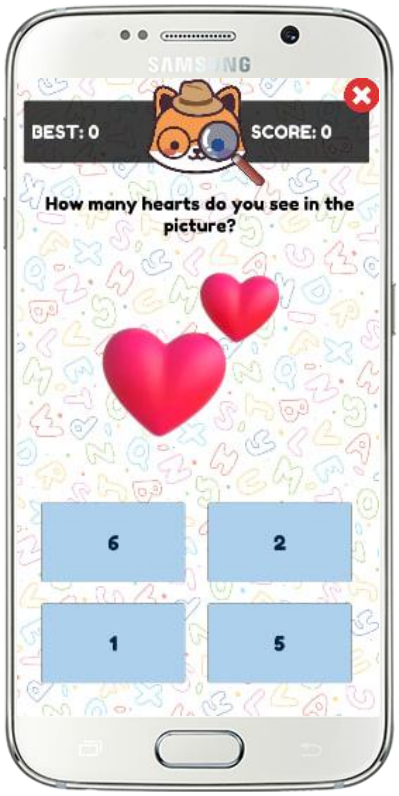
This is an example of a 3D Model.



This is the instructions for the Assessment.



This is the User Data interface; this includes the username and all the scores of all the Assessment Category.



This is an example of a question in a quiz.

This is the leaderboard interface where the users can know their record and their rank

APPENDIX N

(Source Code)

Assessment Scripts

```
using System.Collections;
using System.Collections.Generic;
using UnityEngine;
using UnityEngine.UI;

public class ColorQuestionDisplay : MonoBehaviour
{
    public GameObject screenQuestion;
    public GameObject AnswerA;
    public GameObject AnswerB;
    public GameObject AnswerC;
    public GameObject AnswerD;
    public static string newQuestion;
    public static string newA;
    public static string newB;
    public static string newC;
    public static string newD;
    public static bool pleaseUpdate = false;

    void Update()
    {
        if (pleaseUpdate == false)
        {
            pleaseUpdate = true;
            StartCoroutine(PushTextOnScreen());
        }
    }

    IEnumerator PushTextOnScreen()
    {
        yield return new WaitForSeconds(0.25f);
        screenQuestion.GetComponent<TMPro.TextMeshProUGUI>().text
= newQuestion;
        AnswerA.GetComponent<Text>().text = newA;
        AnswerB.GetComponent<Text>().text = newB;
        AnswerC.GetComponent<Text>().text = newC;
        AnswerD.GetComponent<Text>().text = newD;
    }
}
```

APPENDIX O

(Expert Profile)

CHARLES REY TORRES

Bryant Tower, East Bay Residences, Sucat Muntinlupa ·
+63915 8973918
crtorres1838@gmail.com

Charles has overall 16 years of IT experience, starting up as a Mainframe developer, designer, production support and moving up to the Project Management role. He was a part of various start-up projects under the Financial services and has experience in transformation of waterfall to Agile methodology.

EXPERIENCE

SEPTEMBER 2021 – PRESENT

PROJECT MANAGER, ACCENTURE INC., LEADING SWISS BANK

- Manages a start-up team across different disciplines and locations in delivering a new functionality for the bank.
- Presented a realistic timeline, organized the needed start-up tasks, formed and mobilized a team, presented and negotiated a year's release plan to stakeholders in order to achieve the client's targets.
- Worked in parallel as a PM for 14 solutions to deliver a bank initiative to increase productivity of the IT service by 25% at the end of the year.

SEPTEMBER 2019 – AUGUST 2021

PROJECT LEAD/SCRUM MASTER, ACCENTURE INC., LEADING SWISS BANK

- As Project lead / Scrum Master for a leading European Bank, primary role is to manage the end-to-end operations and delivery of requirements in a release from requirements analysis to deployment and drive the team to deliver on time, with quality, and within budget.
- Took on a specialized role of an over-all scrum master for 4 teams, facilitates ceremonies, coordinates with the Product owner regarding the capacity and scoping for the releases, and drives the agile mindset within the team
- Coordinates with the release train and other scrum teams to ensure dependencies are realized and actioned, to ensure the correct scheduling of the deliveries.

JULY 2016 – AUGUST 2019

PROJECT LEAD, ACCENTURE INC., LEADING SWISS BANK

- Performed project management tasks at the application team level, responsible for its day-to-day operations.
- Clearly communicate the application team goals, organizational philosophies, and policies and procedures to the application team.

- Plan and manage work request fulfillment based on priority.
- Manage workload and availability of each team member.
- Manages and reports the financials of the team, generating the metrics and KPIs, reporting the status and risks and issues of the team to the key stakeholders and resource and talent management of the team.
- Resolve issues that affect work request scope, quality, schedule, budget, and resources.
- Review work requests to ensure they adhere to analysis and design standards.
- Assure that technical, functional and process skills of team members are developed.
- Define team member roles and expectations and ensure timely feedback.

JANUARY 2010 – JULY 2016

LEAD DESIGNER AND DEVELOPER, ACCENTURE INC., LEADING SWISS BANK

- Responsible for coordinating and managing the tasks and deliverables of the team, ensuring that they are completed on time, with quality, and within budget.
- Communicates the application team goals, organizational philosophies, and policies and procedures to the application team.
- Assures that technical, functional and process skills of team members are developed.
- Coordinate work with other teams, other functional areas within the unit, and other operational domains.
- Review and manage all changes to the requirements through a formally defined scope change process.
- Ensure that project processes, procedures, and standards are followed.

DECEMBER 2005 – DECEMBER 2009

DEVELOPER, ACCENTURE INC., BRITISH BANK

- Provided design, code, and test work to the bank's Application
- Development team member for two new projects developed (Customer Identification Systems)
- Resolve issues that affect work request scope, quality, schedule, budget, and resources.
- Review work requests to ensure they adhere to analysis and design standards.

EDUCATION

AUGUST 2002 - JULY 2005

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

MAPUA INSTITUTE OF TECHNOLOGY

SKILLS

- Agile (SAFe) Methodology – SAFe 5 Practitioner certified, PSM1 Certification
- Agile Team Practices
- Program and Project Management
- Client and Stakeholder Management
- Planning and Estimation
- Scope Management
- Financial Services
- COBOL z/OS programming, MF/COBOL Development Tools
- TOAD for DB2, Changeman, JCL, and IBM debugger
- People Engagement Management

CHARLES REY TORRES
Applicant

MELCHIZEDEK P. CASI
B6 L7A- Apitong Villa Cristina Homes,
Marikina Heights, Marikina City
Mobile Number: 0928-734-7561
Email Address: Casimelchizedek5@gmail.com

Career Objective:
To use my skills in the best possible way for achieving the company's goal and to enhance my professional.

PERSONAL INFORMATION

Date of Birth: May 03, 1998
Place of Birth: Quezon City
Gender: Male
Age: 24 yrs. old
Civil Status: Single

EDUCATIONAL INFORMATION

Tertiary

ICCT COLLEGES
Bachelor of Science in Information Technology
A.Y. 2015 – 2020
Major in Information Technology
V.V Soliven Avenue, Cainta Rizal

Secondary

Marikina Heights High School
A.Y. 2010 – 2014 65 Champagnat Ave, Marikina City

Primary

Kapitan Moy Elementary School
A.Y. 2009 – 2010
15 Champagnat Ave, Marikina City

SEMINARS/ TRAININGS ATTENDED

ROBOTHINKS (WORKSHOP)
ICCT COLLEGE
ICCT COLLEGES V.V Soliven Avenue, Cainta Rizal ICCT Theatre 2018

ROBOTHINKS ver.3.0 (SEMINAR)
ICCT COLLEGE
ICCT COLLEGES V.V Soliven Avenue, Cainta Rizal ICCT Theatre 2019

Work Experience

IBEX GLOBAL
Solution.
System support engineer
June 2020 – November 2020
Desktop Support
April 2021 – July 2021

- Supported customers with basic technical support for current and past software releases.
- Assisted clients with general support for hardware, peripherals, network connections, and external software.

INDRA

Deskside Support role
FEB 2022 – JULY 2022

- Address customer requests for installation, configuration, test, maintenance of hardware and software components.
- Analyze and troubleshoot customer hardware and software problems.
- Perform root cause analysis of equipment problems and provide effective diagnosis.

PERSONAL SKILLS

- Positive Attitude
- Support W@H Agent
- New Account implementations
- Asset inventory
- PC Deployment
- Assist in Printer access and network
- Assisted in workstation issue
- Lan configuration
- PC Disposal
  *Resolution of PC
  *Network Issue
  *Application

.

Melchizedek P. Casi

Applicant

Santos, Edrie Pascua
162 Ambuklao St. Brgy. Ibayo City of Balanga, Bataan 2100 edriesan@gmail.com | (+63) 0916 593 2887

Experience/s:

****Junior IT Specialist | Botkeeper (July 25, 2020 - Present)***
~ IT Support Ticketing System (Jira)
~ Device Maintenance
~ IT Inventory Daily Task
~ Re-format of Employee Devices
~ Repair of Desktops and UPS
~ Updating of Apps and Security Compliances
~ Network Firewall and Device Security Checking

****IT Staff | Balanga Rural Bank Inc. (February 14, 2022 – June 21, 2022)***
~ Format, Repair, and Network Commissioning
~ Printer Repair and Cleanup
~ Loans and Insurance Encoding
~ Computer Unit Maintenance
~ System Backup and Maintenance ~ System Administration

****Freelance | Computer Technician (January 2020 – Present)***
~ Format, Repair, Custom Builds and Network Commissioning

****Inbound Assistant – Finished Goods (Logistics) (July 17, 2017 – December 20, 2019)***
~ Bataan2020, Inc. (Warehouse and Logistics Department)
~ Inventory and Daily Production Reports
~ Outside Trucking Monitoring ~ Coal Deliveries Report

****OJT (IT Staff) – Ace BPO (June 2016 – October 2016)***
~ Computer Maintenance, Repair, Update and Commissioning
~ Daily Reports
~ Server Maintenance
****Computer Shop (Family Owned) (December 2015 – October 2017)***

~ Network Commissioning (15 Units)
~ Computer Custom Build
~ CCTV Commissioning
~ Customer Service (PC Format, Maintenance and Repair)

Education and Certification/s:

****Bachelor of Science in Information Technology Major in Network Engineering (June 2013 – April 2017)*** ~ Colegio de San Juan de Letran – Bataan

****PC Troubleshooting (Training) (June 2012 – September 2012)***
~ TESDA | Eastwood Professional College

****ISO 9001 QMS Internal Auditor Training (February 19 – 20, 2019)*** ~
Bataan2020, Inc.

****Basic Occupational Safety and Hazzard Training (BOSH) (November 13-16, 2019)***
~ AVIETCS Training and Consultancy Services

****Computer Systems Servicing (CSS NCII) (December 2020 – February 2021)***
~ TESDA | Philippine Women's University CDCEC Bataan

****Foundation of CERT Operation (June 24 – 25, 2021)***
~ DICT LC2 | ICT

****Project Management Foundations: Requirements (September 28, 2021)*** ~LinkedIn Learning

Skill/s:

~ Computer Technician, Network Commissioning, CCTV Commissioning, Photoshop, Remote Technician
~ Data Encoding, Database Management, Server Maintenance, System Maintenance, Hardware Maintenance

Eduardo Yambao Jr.
Bachelor of Science in Computer Science
ISO Trained & Certified

Q1-1A Mt. Samat St. Mariveles, Bataan, Philippines
Mobile No. : +639088922136 / +639178874429
Email : eduardoyambaoJr@gmail.com
SSS No.: 02-2067232-8 TIN No.: 227-421-772

Work Experiences:

Systems Application Head / Business Systems Department
Bataan2020, Inc.
Samal, Bataan

June 1, 2017 – Present

Duties and Responsibilities:

- Microsoft Dynamics AX Administrator.
- User administration (setup and maintaining account).
- Data Mining using different database.
- Maintaining system.
- Creates custom reports from Microsoft Dynamics AX Verify that peripherals are working properly.
- Creates programs in MS Visual Basic Language, VB.NET, ASP.NET.
- Program Troubleshooting (Foxplus and MS Visual Basic Program)
- Troubleshoots program made from OLD Programming Language (C++, FOXPRO, FOXPLUS, etc.).
- Monitors servers and serves as the Network and Database Administrator of the company. Responsible for BSD reporting.
- Provide technical support for both hardware and software issues our users encounter.
- Respond to and resolve help desk requests.
- Upgrade systems and processes as required for enhanced functionality and security issue resolution.
- Administrate infrastructure, including firewalls, databases, malware protection software and other processes.
- Install and test computer-related equipment.
- Assists in audit process, address findings and provides recommendations.

- Performs other duties assigned.

IT Specialist / MIS Supervisor
Bataan2020, Inc.
Samal, Bataan

July 15, 2016 – May 31, 2017

Duties and Responsibilities:

- Install devices connecting to PC and installation of Network Cables. Build servers (Firewall, File server, etc.).
- Repairing PC, installing software needed, i.e. Operating System, MS Office (Any Version), other software Creates programs in MS Visual Basic Language, VB.NET, ASP.NET.
- Program Troubleshooting (Foxplus and MS Visual Basic Program)
- Troubleshoots program made from OLD Programming Language (C++, FOXPRO, FOXPLUS, etc.).
- Monitors servers and serves as the Network and Database Administrator of the company.
- Makes Group Policy through Active Directory.
- Responsible for MIS reporting.
- Coordinates to all production department help desks in order to identify possible risks, reports accordingly and provides contingency plans.
- Prepare reports in order to support evaluation and decision making process for system related transactions.
- Monitor and maintain electronic copy of documents such as production reports and other confidential documents stored in company server.
- Collate, check, review and analyze submitted quotations of different suppliers for the quotations of computer related supplies used in company's whole operations. Issues and monitors department's supplies.
- Assists in audit process, address findings and provides recommendations.
- Performs other duties assigned.

IT Technician / MIS
Medtecs Group of Companies
FAB, Mariveles, Bataan

May 12, 2014 – July 13, 2016

Duties and Responsibilities:

- IT support (Computer Repair, Software Installation)
- Build and monitor servers (Firewall, Accounting server, etc.) and serves as Network and Database Administrator of the company.
- Application developer (Programming using MS ACCESS, MS Visual Basic, MS Visual Basic.NET, ASP.NET).
- Installs devices connecting to PC and installation of Network Cables.
- Ensures maintenance of important and confidential electronic documents stored in company server.
- Knowledge on Telephone Installation on PABX
- Assisting Timekeeper for Data Processing used in Payroll Process (Biometric data)

Accounting Assistant
Yummi Yummi Catering and Hospitality
Muscat, Oman

September 26, 2012 –January 15, 2014

Duties and Responsibilities:

- Serves as time keeper and maintains biometric attendance for all employees.
- Collate, analyze and report financial and operational information in system so to support the business decision making process, particularly in budgeting, forecasting and actual reporting to Management.
- Responsible for MIS reporting. Establish, maintain and coordinate the implementation of Accounting and Accounting control. Performs key function in identifying risks and report accordingly.
- Implement and manage strong internal control procedure and ensure compliance to safeguard the company's assets and interest. Address audit findings and recommendations.
- Assists Payroll Process.
- Payables in charge.

Systems Engineer
Mitsumi Philippines, Inc.

AFAB, Mariveles Bataan, Philippines February 2007 – September 25, 2012

Duties and Responsibilities:

- Install devices connecting to PC and installation of Network Cables.
- Build servers (Firewall, File server, etc.).

- Repairing PC, installing software needed, i.e. Operating System, MS Office (Any Version), other software Creates programs in MS Visual Basic Language, VB.NET, ASP.NET.
- Program Troubleshooting (Foxplus and MS Visual Basic Program)
- Troubleshoots program made from OLD Programming Language (C++, FOXPRO, FOXPLUS, etc.).
- Monitors servers and serves as the Network and Database Administrator of the company.
- Makes Group Policy through Active Directory.
- Responsible for MIS reporting.
- Coordinates to all production department help desks in order to identify possible risks, reports accordingly and provides contingency plans.
- Prepare reports in order to support evaluation and decision making process for system related transactions.
- Monitor and maintain electronic copy of documents such as production reports and other confidential documents stored in company server.
- Collate, check, review and analyze submitted quotations of different suppliers for the quotations of computer related supplies used in company's whole operations. Issues and monitors department's supplies.
- Assists in audit process, address findings and provides recommendations.
- In charge in monthly updating and annual processing of the company and all employees withholding tax.
- Payroll sub in charge and technical support.
- Performs other duties assigned.

Systems Developed (Programs)

- Logbox System (Timekeeping – Link to Barcode Scanner)
- Payroll System
- Production System
- Labor Cost (Based on Employee Attendance)
- Inventory System
- Purchasing System
- Human Resource Information System
- Timekeeping System (Linked to Biometric Device)

Educational Background:

College	**BACHELOR OF SCIENCE IN COMPUTER SCIENCE Bataan Heroes Memorial College** BalangaCity, Bataan, Philippines March 2003
High School	**Saint Catherine of Siena Academy** Samal, Bataan, Philippines 1995 – 1999
Elementary	**Samal North Elementary School** Samal, Bataan, Philippines

Personal Background

Age	:	36	Height	:	5'8
Sex	:	Male	Civil Status	:	Married
Birthday	:	April 12, 1982			

Skills

- Knowledgeable in Microsoft Dynamics AX 2012 (ERP Enterprise)
- Can work with MS Office Package application such as MS Word, MS Excel, MS Power Point and MS Outlook.
- Knowledgeable in setting-up computer and network. Hardware installation - from assembling to upgrading hardware devices and installing previous to latest version of WINDOWS OS, LINUX.
- Knowledgeable in programming (Visual Basic, Foxplus Programming Language, VB.NET, ASP.NET) and building servers (File server, Firewall server, Database server).
- Fast learner, good planning and time management skills.
- Hardworking, energetic, flexible and adapts easily to change of environment and work schedule.
- Matured, willing to grow and passionate about achieving a challenging position that allows meaningful contribution for the success of business.
- Willing to take responsibility and highly efficient in working under strict time constraints.

- Sound decision-making with good communication and interpersonal skills.
- Knowledgeable in composition of correspondents and/or memorandum type of letters .
- Free-lance photographer, knowledgeable in photo editing and trouble shooting for camera problems.
- Knowledge on Telephone Installation on PABX

Trainings / Seminars Attended:

- Basis of Internal Compliance Program
- ISO 9001:2000 Training
- ISO 14001 Training
- 7 Habits of Highly Effective People
- Environmental Management Training
- Product Safety Training
- 5s Training
- Electro Static Discharge Training
- TS16949 Training
- Microsoft Dynamics AX 2012 Development.

I hereby certify that the above statements herein are true and correct to the best of knowledge and belief.

EDUARDO YAMBAO JR.
Applicant

APPENDIX P

(Plagiarism Checker Certificate)

DON HONORIO VENTURA STATE UNIVERSITY

VILLA DE BACOLOR, PAMPANGA, PHILIPPINES 2001

GRADUATED SCHOOL RESEARCH LABORATORY

Certificate of Plagiarism Scan

This certify that the capstone entitled

"KID D'TECH: An Interactive Android-based Augmented Reality System for Kindergarten Students"

By Carcuevas, Rain Karyll P.
Lansangan, Kristine Dapnie A.
Lingad, Kenneth Paolo R.
Perayra, Clarisse D.
Serrano, Juvy Ann D.

BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

Scanned and reviewed by the
Graduated School Research Laboratory
On January 30, 2023.

CHARLIE K. PADILLA, MIT
Plagiarism and Grammar Review Coordinator

PGR-00080-2023

ORN-1698891

APPENDIX Q

(Grammar Check Certificate)

Republic of the Philippines
DON HONORIO VENTURA STATE UNIVERSITY
Escuela de Artes y Oficios
LUBAO CAMPUS
Sta. Catalina, Lubao, Pampanga 2005 Philippines

CERTIFICATE OF GRAMMAR REVIEW

This is to certify that the capstone project titled **"KID D'TECH: An Interactive Android-based Augmented Reality System for Kindergarten Students"** prepared and submitted by **Rain Karyll P. Carcuevas, Kristine Dapnie A. Lansangan, Kenneth Paolo R. Lingad, Clarisse D. Perayra,** and **Juvy Ann D. Serrano** was grammatically checked by the undersigned. It was assured that the paper was checked in the areas of grammar, coherence, unity, style, and mechanics of technical paper writing.

Signed and issued this 2nd day of February 2023.

Chris L. Kabiling, LPT, MAED

Grammarian

APPENDIX R

(Curriculum Vitae)

CARCUEVAS, Rain Karyll P.
Guagua Ville Lambac, Guagua, Pampanga
☎+639 15 075 0034
✉ rainkcarcuevas@gmail.com

EDUCATIONAL BACKGROUND

UNIVERSITY

SCHOOL	:	DON HONORIO VENTURA STATE UNIVERSITY
ADDRESS	:	Lubao, Pampanga
COURSE	:	BS Information Technology

SENIOR HIGH SCHOOL

SCHOOL	:	SAN VICENTE NATIONAL HIGH SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR GRADUATED	:	2019

JUNIOR HIGH SCHOOL

SCHOOL	:	SAN VICENTE NATIONAL HIGH SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR COMPLETED	:	2017

ELEMENTARY

SCHOOL	:	LUBAO ELEMENTARY SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR COMPLETED	:	2013

PERSONAL INFORMATION

BIRTHDAY	:	December 1, 2001
AGE	:	21
GENDER	:	Female
NATIONALITY	:	Filipino
RELIGION	:	Iglesia Ni Cristo
CIVIL STATUS	:	Single
HEIGHT	:	5'
WEIGHT	:	58 kg.

WORK EXPERIENCE

CSS Freelancing/ Graphic Designer/ Photographer Assistant
2018-Present

STRENGTH AND SKILLS

- Graphic Designing
- Computer Skills
- Highly organized and efficient
- Ability to work independently or as part of a team
- Patient and willing to learn new things
- Attention to details
- Analytical and Problem Solving Skills

I hereby certify that the above information is true and correct to the best of my knowledge and belief.

RAIN KARYLL P. CARCUEVAS
Applicant

LANSANGAN, Kristine Dapnie A.
Sta. Tereza 2nd Lubao, Pampanga
+639 45 268 4070
kristinedapnie.a.lansangan@gmail.com

EDUCATIONAL BACKGROUND

UNIVERSITY

SCHOOL	:	DON HONORIO VENTURA STATE UNIVERSITY
ADDRESS	:	Lubao, Pampanga
COURSE	:	BS Information Technology

SENIOR HIGH SCHOOL

SCHOOL	:	STA. CRUZ HIGH INTEGRATED SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR GRADUATED	:	2019

JUNIOR HIGH SCHOOL

SCHOOL	:	STA. TEREZA 2ND NATIONAL HIGH SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR COMPLETED	:	2017

ELEMENTARY

SCHOOL	:	STA. TEREZA 2ND ELEMENTARY SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR COMPLETED	:	2013

PERSONAL INFORMATION

BIRTHDAY	:	December 17, 2001
AGE	:	21
GENDER	:	Female
NATIONALITY	:	Filipino
RELIGION	:	Born Again, Christian
CIVIL STATUS	:	Single
HEIGHT	:	5'4"
WEIGHT	:	70 kg

WORK EXPERIENCE

Traveler's Stopover
San Roque Arbol Lubao, Pampanga
Service Crew
2018

STRENGTH AND SKILLS

- Computer Skills
- Highly organized and efficient
- Ability to work independently or as part of a team
- Patient and willing to learn new things
- Attention to details
- Analytical and Problem Solving Skills

I hereby certify that the above information is true and correct to the best of my knowledge and belief.

KRISTINE DAPNIE A. LANSANGAN
Applicant

LINGAD, Kenneth Paolo R.
Hermosa, Bataan
☎+639 63 042 2060
lingadkennethpaolo24@gmail.com

EDUCATIONAL BACKGROUND

UNIVERSITY

SCHOOL	:	DON HONORIO VENTURA STATE UNIVERSITY
ADDRESS	:	Lubao, Pampanga
COURSE	:	BS Information Technology

SENIOR HIGH SCHOOL

SCHOOL	:	HERMOSA NATIONAL HIGH SCHOOL
ADDRESS	:	Hermosa, Bataan
YEAR GRADUATED	:	2019

JUNIOR HIGH SCHOOL

SCHOOL	:	HERMOSA NATIONAL HIGH SCHOOL
ADDRESS	:	Hermosa, Bataan
YEAR COMPLETED	:	2017

ELEMENTARY

SCHOOL	:	MAMBOG ELEMENTARY SCHOOL
ADDRESS	:	Hermosa, Bataan
YEAR COMPLETED	:	2013

PERSONAL INFORMATION

BIRTHDAY	:	March 24, 2001
AGE	:	21
GENDER	:	Male
NATIONALITY	:	Filipino
RELIGION	:	Iglesia Ni Cristo
CIVIL STATUS	:	Single
HEIGHT	:	5'7"
WEIGHT	:	70 kg

WORK EXPERIENCE

JOK's Enterprises
Palihan, Hermosa, Bataan
Graphic Designer
December 2019
May 2021

fiverr.com
Freelancer/ Digital Artist/ Graphic Designer
2021-Present

STRENGTH AND SKILLS

- Graphic Designing
- Video Editing
- Digital Art
- Computer Skills
- Highly organized and efficient
- Ability to work independently or as part of a team
- Patient and willing to learn new things
- Attention to details
- Analytical and Problem Solving Skills

I hereby certify that the above information is true and correct to the best of my knowledge and belief.

KENNETH PAOLO R. LINGAD
Applicant

PERAYRA, Clarisse D.
San Jose Apunan Lubao, Pampanga
☎+639 10 821 0788
clarisse.d.perayra@gmail.com

EDUCATIONAL BACKGROUND

UNIVERSITY

SCHOOL	:	DON HONORIO VENTURA STATE UNIVERSITY
ADDRESS	:	Lubao, Pampanga
COURSE	:	BS Information Technology

SENIOR HIGH SCHOOL

SCHOOL	:	SAN VICENTE NATIONAL HIGH SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR GRADUATED	:	2019

JUNIOR HIGH SCHOOL

SCHOOL	:	SAN VICENTE NATIONAL HIGH SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR COMPLETED	:	2017

ELEMENTARY

SCHOOL	:	SAN JOSE APUNAN ELEMENTARY SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR COMPLETED	:	2013

PERSONAL INFORMATION

BIRTHDAY	:	October 6, 2000
AGE	:	22
GENDER	:	Female
NATIONALITY	:	Filipino
RELIGION	:	Roman Catholic
CIVIL STATUS	:	Single
HEIGHT	:	4'11"
WEIGHT	:	37 kg

WORK EXPERIENCE

CSS Freelancing/ Digital Artist/ Photographer Assistant
2019-Present

STRENGTH AND SKILLS

- Graphic Designing
- Video Editing
- Digital Art
- Computer Skills
- Photographer Skills
- Highly organized and efficient
- Ability to work independently or as part of a team
- Patient and willing to learn new things
- Attention to details
- Analytical and Problem Solving Skills

I hereby certify that the above information is true and correct to the best of my knowledge and belief.

CLARISSE D. PERAYRA
Applicant

SERRANO, Juvy Ann D.
Sta. Lucia Lubao, Pampanga
☎+639 66 869 4217
juvyannserrano@gmail.com

EDUCATIONAL BACKGROUND

UNIVERSITY

SCHOOL	:	DON HONORIO VENTURA STATE UNIVERSITY
ADDRESS	:	Lubao, Pampanga
COURSE	:	BS Information Technology

JUNIOR HIGH SCHOOL

SCHOOL	:	HOLY ROSARY ACADEMY
ADDRESS	:	Lubao, Pampanga
YEAR COMPLETED	:	2015

ELEMENTARY

SCHOOL	:	LUBAO ELEMENTARY SCHOOL
ADDRESS	:	Lubao, Pampanga
YEAR COMPLETED	:	2011

PERSONAL INFORMATION

BIRTHDAY	:	July 11, 1999
AGE	:	23
GENDER	:	Female
NATIONALITY	:	Filipino
RELIGION	:	Roman Catholic
CIVIL STATUS	:	Single
HEIGHT	:	4'11"
WEIGHT	:	50 kg

WORK EXPERIENCE

Lubao Municipal Hall
Sta. Catalina Lubao, Pampanga
Encoder
2019-2022

STRENGTH AND SKILLS

- Computer Skills
- Creative Thinking
- Writing Skills
- Adaptability
- Communication
- Professionalism
- Interpersonal Skills
- Eye to details
- Compassionate and receptive in acquiring new knowledge

I hereby certify that the above information is true and correct to the best of my knowledge and belief.

JUVY ANN D. SERRANO
Applicant

APPENDIX S

(Documentation Pictures)


a e i o u
ba be bi bo bu
ka ke ki ko ku
da de di do du
ga ge gi go gu
ha he hi ho hu
la le li lo lu
ma me mi mo mu
na ne ni no nu
nga nge ngi ngo ngu
pa pe pi po pu
ra re ri ro ru
sa se si so su
ta te ti to
wa we wi wo
ye yi yo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EXIT