**PHASE RUSH**

**A Math Tutorial Mobile Game for Grade 7 Learners of SPRCNHS**

A Capstone Project Presented to the

Department of Computer Studies of

San Pedro College of Business Administration

San Pedro City, Laguna

In Partial Fulfilment of the Requirements for the Degree Bachelor of Science in Information Technology

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May 2023

**APPROVAL SHEET**

**Phase Rush for Grade 7 Students in San Pedro Relocation Center National Highschool**

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Has been examined and is hereby recommended for approval and acceptance.

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Capstone Project Adviser

PANEL EXAMINERS

Approved by the Committee on Oral Examination with a grade of \_\_\_\_\_\_\_\_\_\_\_.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Panelist Panelist

ACCEPTED AND APPROVED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

**BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY**

**BENJAMIN S. REYES**

College Dean

**CERTIFICATE OF ORIGINALITY**

We certify that this design project entitled “Phase Rush” for Grade 7 students in San Pedro Relocation Center National High School Langgam Campus presented to the faculty of the Department of Computer Studies of San Pedro College of Business Administration in the Second Semester of the Academic Year 2022-2023 is our original idea and our own work except as specified in the references.

We certify that this design project has never been published or presented before to the SPCBA or to any other institution for the completion of an academic degree.

ATIBAGOS, Daryll

DELA PEÑA, Maughn Jacob

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May 2023

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To **Mr. Rodolfo De Guzman**, the researcher’s adviser that gave us enough and valuable information to improve our study. Also provided full support and allocate his time to the researchers to discuss each and every information of our study.

To **Researcher’s Parents, Brothers and Sisters, Friends** and **Loved ones** for their financial support, prayers, love and patience for every help they provided in order to accomplished each of member’s tasks.

And most of all to **God**, the only one who provides everything for the researchers' physical, mental, emotional, and spiritual needs and provides unconditional guidance to the researchers to accomplish the entire task in this study.

**The Researchers**

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**CHAPTER 1**

**THE PROBLEM AND ITS SETTING**

#### Background of the Study

Learning and having entertainment would be rude from the perspective of others. People may see it lame and not take studying seriously or see it only as a play game. Not every one of us perceives studying to allocate time to it because our focus was on different things like much prefer to watch movies, play online game or not studying at all. Early adolescence, ages 10-13 years old was the age where most of them were in “exploring and enjoying things” stage. According to a survey conducted by [Rakuten Insight](https://insight.rakuten.com/inquiry/) in April 2022, 80 percent of respondents in the Philippines stated that they played online games. Meaning that most of us were on our devices or at least had access to technology and based on this survey, online games are a big factor of making a student out of focus on studying. Kids, teenagers, and adults are into online games or having the entertainment through their mobile devices. Based on Child Mind Institute (2023), By the time kids are in middle school, the pressure from kids can be intense, and parents worry that their child will feel isolated if other kids have phones and they don’t. According to [Common Sense Media,](https://www.commonsensemedia.org/sites/default/files/research/report/8-18-census-integrated-report-final-web_0.pdf?utm_source=substack&utm_medium=email) 42 percent of kids have a phone by age 10. By age 12, it’s 71 percent. By 14, it’s 91 percent.

Entertainment can have a good or bad effect depending on how it is used. Learning and having entertainment through a game was a good thing to assess. Since most of us have access to mobile devices, children ages 10-13 years old specifically, it would be easy for them to get into it since most of us were in touch with the technology.

The most effective way to get into the learning phase of a child was through what they are interested in the most, mobile games. Since playing mobile games is so fun and find it entertaining, it will be a big factor for the learning capacity of students. The researchers develop a study entitled “Phase Rush.” A mobile game exclusively for Android devices wherein learning and having entertainment were merged to provide mathematical learnings through modules and by the gameplay itself. Aside from entertainment, it will also provide enhancement for mental sharpness, mathematical IQ because of time allotment for specific questions. The game can be an enhancement tool for Grade 7 students wherein some of the students were not that interested in studying mathematics. But through our mobile game, learning mathematics can be attentive.

San Pedro Relocation Center National High School Langgam Campus is a public school in Barangay Langgam, San Pedro City, Province of Laguna known for having excellent and achiever students up until now with the help of inexcusable teachers and staffs of the school.

The main features of our mobile game are having modules in the library section when a student wants only to read mathematical-related equations, formulas or sample problems. But when a student is interested in playing, a mathematical question will show with a time allotment to answer. If the student gets the correct answer as early possible, the time pressure will lessen to focus on the next question to appear. If you progress on playing, the questions were getting harder and harder.

#### Statement of the Problem

#### General Problem

#### 

#### The researchers are pointed with the problem of developing a mathematical mobile game application that will help the students to enhance their understanding in mathematics.

#### Specific Problems:

* What is the demographic profile of Grade 7 Students in terms of:

Age & Gender

* What is the level of knowledge of Grade 7 Students before using our application

“Phase Rush”?

* What is the level of knowledge of Grade 7 Students after using our application

“Phase Rush”?

* What is the implication/effectiveness of using “Phase Rush” to the level of understanding

of Grade 7 Students in terms of their Math Knowledge?

#### Objectives of the Study

**General Objective.** The purpose of this study is to provide a mathematical mobile game to enhance or improve the students learning in Math. The concept was a mobile game application with library section to read and learn and game section that is effective due to learning while having entertainment provided for the Grade 7 students at San Pedro Relocation Center National High School Langgam Campus.

**Specific Objectives.** The researchers aim to attain the following specific objectives and provide a workaround for the problems in our statement of the problem.

* To determine if the library section of our mobile game will be helpful for the students who only want to read and learn mathematical modules, equations, learning and problems included.
* To determine if our mobile game application Phase Rush will enhance the mathematical learning capacity of the student after reading and playing.
* To determine if the features and gameplay itself of the game would make the student interested in learning mathematical-related questions and problems.
* To develop a mobile game that has a library and game section wherein the student can play, enjoy and at the same time learn mathematics in an entertaining way.

**Theoretical Framework**

#### According to ArXiv (2016), the introduction to mathematical game theory reveals that games can be played on possibly quite general systems, where a move in the game corresponds to a transition of the system from one state to another. This approach highlights a close connection between game theory and fundamental physical systems through the same underlying mathematics. The hope is that mathematical game theory may eventually play a role in real-world games similar to the role of theoretical physics in real-world physical systems. In the mathematical analysis of a game-theoretic model, objects are treated neutrally. Elements and sets have no feelings per se and do not exhibit psychological behavior. They are neither generous nor cost-conscious unless such features are built into the model as clearly formulated mathematical properties.

#### The researcher's main idea is to develop a mobile game Android application that helps students learn mathematics in an easy, understandable, and entertaining way. In addition to the main gameplay, the game includes modules where students can read mathematical-related discussions to learn.

**Conceptual Framework**

## INPUT PROCESS OUTPUT

* **INFORMATION GATHERED DURING RESEARCH**
* **SOFTWARE DEVELOPMENT TOOLS**
* **DATA FROM SAN PEDRO RELOCATION CENTER NATIONAL HIGH SCHOOL - LANGGAM CAMPUS**
  + **PLANNING**
* **DESIGN AND ANALYSING**
  + - * **TEST**
      * **CODING**
      * **EXECUTE**
      * **PHASE RUSH**

***Figure 1: Conceptual Framework***

#### Hypothesis

There is no significant difference between the effectiveness of playing educational mobile game Phase Rush to the traditional way of learning mathematics for Grade 7 students of San Pedro Relocation Center National High School Langgam Campus

**Scope and Limitations**

This research will be conducted at San Pedro Relocation Center National High School, San Pedro, Laguna, where its target users are limited only to the Grade 7 Students of San Pedro Relocation Center National High School. Furthermore, this application will only be limited to students with access to smartphones and tablets. This application will focus on providing educational and entertaining material to the students of San Pedro Relocation Center National Highschool.

This application can be use by any Grade 7 students of San Pedro Relocation Center National Highschool once they downloaded it. the learning materials that will be use is for Grade 7 modules only. the levels of the game will only be easy, medium and hard difficulty.

Furthermore, it's only offline and we have no intention to make it online so they can use it anytime without having the need of internet connection.

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#### Significance of the Study

This study aims to help various set of people that will use the system and will benefit from using is the following:

**San Pedro Relocation Center National Highschool Grade 7 Students:** Grade 7 Students will mainly benefactors of this study, it will help the students to learn and study more about Math in an entertaining way in which they will learn a lot more while having fun.

**San Pedro Relocation Center National Highschool Grade 7 Teachers:** This study will also be beneficial to the Teachers of the San Pedro Relocation Center National Highschool. it will help to them to teach the Math modules of the Grade 7 Students

while catching the student’s attention. they will also have the students more engage to their lessons by simply opening the application

while playing and gaining new information. Teachers can also check the modules in the application for more convenience.

**Future Researchers:** This research study could serve as a guide for future research on this topic and perhaps inspire others to carry out similar research topic.

**Researchers:** This research provides a sense of accomplishment and contribution to the

school and it's staffs.

#### Definition of Terms

**Android** - is a mobile operating system based on a modified version of the Linux kernel and other open-source software, designed primarily for touchscreen mobile devices such as smartphones and tablets.

**Mobile game** - are those created for portable electronic devices including cellphones, feature phones, pocket PC's, PDA's, tablet PC's and portable media players. From simple to complex, there are a variety of mobile games (3D and augmented reality games).

**Phase Rush** - a mobile game and learning application that can be used as a library for Grade 7 math modules and can be used as an entertainment.

**CHAPTER 2**

**REVIEW OF RELATED LITERATURE**

**First Related Literature Topic**

**Effects of Mobile gaming patterns on learning outcomes**

The last five years have witnessed a surge in the number of mobile learning games (MLGs) developed for commercial and scientific use for different target groups and learning contexts (Lilly and Warnes, 2009), including history learning based on roles (Akkerman et al., 2009), principles of digital economy exploration (Markovic et al., 2007), and geometry (Wijers et al., 2010). Young adults can benefit from mobile learning games by enhancing cognitive and socio-affective learning (Mitchell, 2007). Klopfer (2008) argues that mobile learning games provide situated learning opportunities that can meaningfully contribute to the learning process by offering temporal flexibility, natural communication, and situated learning scenarios. However, with the multitude of gaming opportunities available and the complex technologies involved, it is becoming increasingly challenging for educational practitioners to decide on the most suitable game for learning. Additionally, it is challenging to reuse and share games without clear descriptions of their benefits, targeted learning outcomes, and potential impact. Several attempts have been made to establish a common structure and language of games to better comprehend this complex issue (Björk and Holopainen, 2004; Cook, 2010; Kelle et al., 2011; Kiili and Ketamo, 2007). Nevertheless, there is still a lack of scientifically acceptable

methodology to evaluate mobile learning games. Therefore, this paper aims to define a conceptual framework to evaluate and categorize mobile learning games and identify mechanisms that can support design decisions for future mobile learning games.

**Second Related Literature Topic**

**Teaching Mathematics through games**

Mathematics is an integral part of a child's life, and as they grow into adulthood, they continue to engage with mathematical concepts. Regardless of IQ or literacy, mathematical knowledge is an essential skill for both adults and children. While it is often said that learning math requires focus, concentration, and dedication, innovative methods are needed to teach math effectively (Wiersum, 2012). Children enjoy games, finding them mentally stimulating, and associating them with fun. Therefore, incorporating well-designed mathematical games into the curriculum can be an effective way to teach math. Research suggests that game-based math instruction improves teaching effectiveness, enhances practical skills, and promotes motivation, helping learners acquire problem-solving and life skills (Shin, Sutherland, Norris, & Soloway, 2012). However, the success of game-based learning in math is highly dependent on the structure and rules of the games. Games must be engaging and provide opportunities for students to apply math concepts to real-life scenarios, develop mathematical reasoning, and think critically. Math teachers can benefit from using games as a tool for teaching, taking

advantage of the connection between games and children's natural inclination towards fun and competition (Bragg, 2012).

**Third Related Literature Topic**

**Game-Based Learning and Student Motivation in Mathematics**

The utilization of game-based learning (GBL) has been observed to have several advantages in improving the quality of teaching and learning. GBL fosters problem-solving and self-directed learning, which leads to students grasping mathematical concepts without conscious effort. Reviews have shown that GBL helps educators to motivate students and engage them in mathematics by providing challenges, curiosity, and fantasy in problem-solving. The application of GBL has been found to positively impact students' motivation and involvement in mathematics learning. Further research is suggested to investigate the motivational impact of student self-efficacy as previous studies have indicated that student motivation influences their belief in their own abilities and their engagement in learning.

**First Related Studies Topic**

**Aquamoose**

Aquamoose 3D is a computer program that helps students understand parametric equations through designing and constructing 3D graphical forms. It is based on the educational philosophy of constructionism, which emphasizes learning through creating and designing activities. In their study, Elliott and Bruckman (2002) found that the AquaMOOSE project served as proof of concept that 3D graphical environments have the potential to support new forms of mathematical learning. The program provides personal and epistemological connections to new areas of knowledge, and while there are usability challenges with 3D interface design, these can be overcome with careful design work. The authors also gained insight into the benefits and costs of big-picture design thinking, which prioritizes matching the medium's affordances to intellectual ideas over immediate user needs.

**Second Related Studies Topic**

**Thinklets**

According to Jonker and Van Galen's (2004) research, a dedicated website such as KidsKount can provide a platform for mathematical games using applets called "thinklets" that were developed by the Freudenthal Institute. These thinklets are designed as mathematical tools with game-like elements, some of which are exploratory, while others focus on a specific topic. The study aimed to investigate the effectiveness of using these thinklets on the web to support learning at home and in the classroom, as well as to explore ways to connect these two learning environments.

**Third Related Studies Topic**

**E-GEMS**

(Klawe, 1998) study focused on the use of two E-GEMS games, Super Tangrams and Phoenix Quest, to teach mathematics and analyzed their effectiveness. The study emphasizes the importance of combining games with other learning activities for them to be effective in teaching. According to Klawe's findings, computer games can significantly improve children's learning and enjoyment of mathematics, but this depends on various factors such as software design, interface styles and scaffolding, teacher and student expectations, integration with other learning activities, and the pattern and setting of use. The study also revealed gender differences in children's attitudes towards and interactions with computer games.

**Synthesis**

According to the Review of Related Literature and Studies, mobile games designed for educational purposes are being used to aid in learning mathematics. These apps have various features that help students acquire knowledge and improve their ability to solve equations during exams or quizzes. The literature highlights the importance of mobile game-based learning as an effective tool to enhance students' learning capabilities. Based on these studies and literature, the researchers aim to develop a mobile game tool that can provide students with the necessary knowledge to improve their learning abilities.

**CHAPTER 3**

**METHODOLOGY**

**Research Design**

The Qualitative analysis study is an appropriate research design for the Titled study "Phase rush" because it is suitable with the research goals, has the ability to analyze personal perceptions and make relevant perspectives, and has an approved approach for research participants. It is adaptable to evaluate subjective experiences and generate new insights. It also has a research approach that involves individuals. Using qualitative research techniques, the researchers may gather broad and detailed data.

**Study Area**

The "Phase Rush" study will be open to the San Pedro Relocation Center National High School Langgam Campus and will primarily be accessible for students in grade 7 who are currently enrolled in the course of study for mathematics.

**(Procedure 1)**

**Needs Assessment**

Ms. Ana Maria M. Cañedo of administration office and current principal of San Pedro Relocation Center National High School Langgam Campus Mr. Enrique Malimata are interviewed by researchers. The research will plan a way the study will be conducted.

**(Procedure 2)**

**Analyzation of features needed**

A system is made and developed a perfect evaluation of the portion required to guarantee by the San Pedro Relocation Center National High School Langgam Campus and Phase rush. The researcher come up with a planning and analyzing on w3hat qualities does that mathematical android-based game application are lacking. This might differ according to the research, which may or may not add extra capabilities if the application's goal is obtained.

**(Procedure 3)**

**Designing of UI**

San Pedro Relocation Center National High School Langgam Campus and phase rush's User The design of the user interface matters most to its results. A strategically planned user interface improves the advantage, System performance and enhances satisfaction among users. The application guarantees the users can interact with the system with ease and to have fun with it. It also encourages students to engage with the application to the point where they are learning while also enjoying the subject of mathematics.

**(Procedure 4)**

**Phase Rush Mathematical Game for the Grade 7 Students in San Pedro Relocation Center National High School Langgam Campus"**

The researchers obtained all of the data required for the development of system efficiency. It is now available for use to create a mathematical game learning tool for grade 7 students. The researchers gathered all of the data, compiled it, and presented it, and the application is now being developed to execute the application in current time. This might result of enhancing the knowledge of the grade 7 students in mathematics can help them to improve their skill in mathematics this may be useful application for students to become more involved with or interested in math by knowing it and gain knowledge from it.

**Data Gathering and Analysis**

**Phase Rush Mathematical Game for Grade 7 in San Pedro Relocation Center National Highschool**

The researcher multiplied the custom-made questionnaire after it had been validated, making enough copies to accommodate all of the respondents. At the same time, a letter of request was being written for the San Pedro Relocation Center National High School Langgam Campus and the respective school administrators.

The researchers personally delivered the request letter and copies of the questionnaire to the relevant schools. The researcher provided the details to assist the respondents in completing the questions while delivering the letter and copies of the instrument. The questionnaires were collected the same day they were completed.

The findings of the questionnaire's retrieval copies were tabulated. The data were then examined and interpreted using the most suitable statistical method.

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**Brief Background and History of San Pedro Relocation Center National High School Main**

In the early part of 1966, the Carmona Resettlement Project was created; a Priority Project sponsored by the NHA. It is bounded by Tunasan Friar Land of San Pedro, Laguna, a portion of Carmona, Cavite (now known as Gen. Mariano Alvarez) and Dasmariñas, Cavite. The first wave resettlers were the families who lived along the railroad tracks of PNR from Taguig to Tutuban, Manila. This totaled to more or less 6,500 households with an average family member of 5 persons, two of whom are schooling age, either in elementary or secondary. The distance to the nearest school approximately 12 kilometers away from home, hampered the education of these children.

It was approved thus the birth of Laguna Resettlement Community High School in 1970 at United Bayanihan, San Pedro, Laguna with Mrs. Bartolomea E. Pedron as Principal.

Later, the joint effort of the community leaders and the municipal government had paved the way of its conversion to SAN PEDRO RELOCATION CENTER NATIONAL HIGH SCHOOL, a national funded high school thru Republic Act 6026 in 1972 with Mrs. Lourdes Z. Javier as the Principal.

With the population growth, it has given way to its expansion, thus the creation of two campuses – the SPRCNHS Langgam Campus in 1986 and SPRCNHS Cuyab Campus in 1989. Acquisition of lots (5.7 hectares at Langgam by Mr. Emilio S. Ulpindo, Principal May 1981 – July 1, 1999) and (additional 1,000 sq.m. at Cuyab by Dr. Edna V. Perez, principal July 1, 1999 – August, 2000) were made possible.

Presently, the school has moved one step bigger again with the opening of its fourth annex, the Landayan Campus on October 25, 2002. Its operation started this June, 2003. This was realized through a Resolution of the Municipal Council with the Honorable Mayor and federated PTA of San Pedro. This is a part of the organization and administration of the present principal, Dr. Victorio N. Medrano.

**Current Grade 7 Mathematics teachers at San Pedro Relocation Center National High School Langgam Campus:**

1. Daniel M. Macandog
2. Merly B. Antolin
3. Abegial M. Galupo

**Lesson Exemplar in Grade 7 Mathematics Using the IDEA Instructional Process**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Lesson Exemplar** | School | SPRCNHS Main | Grade Level | Seven |
| Teacher | Daniel M. Macandog | Learning Area | Mathematics |
| Teaching Date | May 19, 2023 | Quarter | Fourth |
| Teaching Time | 6:00 am – 11:00am | No. of Days | One |

|  |  |
| --- | --- |
| 1. **OBJECTIVES** | At the end of the lesson learners are expected to:  a. identify the parts and uses of circle graph  b. construct a circle graph to represent and analyze data  c. show accuracy in constructing a circle graph |
| 1. **Content Standards** | The learner demonstrates understanding of key concepts of geometry of shapes and sizes, and geometric relationships. |
| 1. **Performance Standards** | The learner is able to create models of plane figures and formulate and solve accurately authentic problems involving sides and angles of a polygon |
| 1. **Most Essential Learning Competencies (MELC)** | derives inductively the relationship of exterior and interior angles of a convex polygon. |
| 1. **Enabling Competencies** |  |
| 1. **CONTENT** | Types of Statistical Graphs: **Circle Graph/ Pie Chart** |
| 1. **LEARNING RESOURCES** |  |
| 1. **References** |  |
| 1. **Teacher’s Guide Pages** |  |
| 1. **Learner’s Material Pages** | Mathematics 7 Learners Material pages 203 - 204; |
| 1. **Textbook Pages** | Lopez, Eunice Ato, Lopez Virgilio L., Geometry,; Nivera, Gladys C., Grade 7 Mathematics Patterns and Practicalities |
| 1. **Additional Material from Learning Resources** | OneDrive/Desktop/2021-2022/SPRCNHS/Mathematics/ Grade7-LearningMaterials/4thQuarter/7LAA3RD.pdf |
| 1. **List of Learning Resources for Development and Engagement Activities** | https://commons.deped.gov.ph/documents/b38cfbaa-d2e3-4fe8-9f89-3dcaf74a444d |
| 1. **PROCEDURES** |  |
| 1. **Introduction** | **Routinary Activities (5 minutes)**   * Checking of Attendance * Review of the previous lesson   **Review**  **“Who Wants to be a Millionaire”**  Instructions: Read each item carefully and choose the letter of the correct answer.   1. What is 25% of 40? 2. 5 C. 15 3. **10**  D. 20 4. Express 0.75 as percent 5. 0.75% C. **75%** 6. 7.5% D. 750% 7. Express 0.2 as percent 8. 2% C. 25% 9. **20%** D. 200% 10. What is the product of 0.5 and 100? 11. 5 C. 25 12. 15 D. **50** 13. What is the quotient of 6 and 20? 14. **0.3** C. 4 15. 3 D. 4.3     **Spring Board:**   * Let the learners watch a short video clip about “Healthy Eating Plan” * Let the learners answer the following questions   1. According to the short video presentation about healthy eating plan, what is a healthy plate? What are the components of a healthy plate?  2. What is the suggested size of the plate for children? How about in adults?  3. What kind of graph is being illustrated in a plate method?   * The title and the objectives of the lesson will be introduced   **Motivation** (Sing a song)  **Data, Data**  *(In tune of Twinkle, Twinkle Little Star)*  Data, Data What are you?  We COLLECT you, oh it’s true.  ANALYZE you that’s my plan  INTERPRET to understand  Data, Data what are you?  I’ll PRESENT you right on cue. (Repeat) |
| 1. **Development** | **Activity (By Group)**  **“My Heathy Eating Plan”**  **Directions:** Using a plate method, create a healthy eating plan for yourself. Divide the plate according to your preferred healthy eating plan. Choose your prefer food from the box to complete the task. Materials and rubric will be provided.    **Guide Questions:**  1. What are the composition of your healthy eating plan?  2. What food (meat, vegetables, rice/pasta) has the biggest portion in your plate?  3. What food (meat, vegetables, rice/pasta) has the smallest portion in your plate?  4. Based on our activity, how do you describe a circle graph?  [Chart](https://docs.google.com/spreadsheets/d/1GZ5hmqgna3BYJRj4vOOSWLRjJS6lzjVHbfbTfEFnR3E/copy)  **CIRCLE GRAPH**  A circle graph is a pictorial representation of data in the form of a circle or pie where the slices of the pie show the size of the data.  **USES of Circle Graph**   * In school * In business * In Government   **ADVANTAGES of Circle Graph**   * a simple and easy-to-understand method to represent the data visually * provides an effective communication tool visually simpler than other types of graphs. * gives an immediate analysis   Example  Construct a pie chart for the given data below.   |  |  | | --- | --- | | **Type of Movie** | **Number of Vote** | | Science Fiction | 1 | | Comedy | 6 | | Action | 4 | | Drama | 5 | | Romance | 4 | | **Total** | **20** |   **First, divide each value by the total, and multiply it by 100 to get a percent**    **Multiply each part (or percent) by 360° to get the degrees in each sector of the pie graph**    **Use compass to draw the circle and a protractor to draw the pie slices or sectors. Label each sector and write the graph title** |
| 1. **Engagement** | * Let the students answer the practice exercises   Construct a pie chart to visually display the favorite fruits of the students in a class based on the given data below.    **Abstraction:**  **Constructing a Circle Graph**  **Step 1:** Write all the data into a table and add up all the values to get a total.  **Step 2:** To find the values in the form of a percentage divide each value by the total and multiply by 100.  **Step 3:** To find how many degrees for each sector we need, we take a full circle of 360° and use the formula: (Frequency/Total Frequency) × 360°  **Step 4:** Use compass to draw the circle and a protractor to draw the pie slices or sectors. Label each sector and write the graph title |
| 1. **Assimilation** | **Application**  **Directions**  The students will conduct a survey to one another. They shall ask their classmates one by one of the most preferred social media sites they use now a days. These are the following:    Using the data obtained in your survey about the most preferred social media sites. Construct a pie chart and color each sector of the graph  1. Which social media site is the most preferred to use by your classmates now a days?  2. Which social media site is the least preferred to use by your classmates?  3. What is the percentage of the TikTok? |
| 1. **REFLECTION** | The learners in their notebook will write their personal insights about the lesson using the prompts below.  I understand that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  I realized that \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| 1. **Remarks** | * Shakespeare - \_\_\_\_ out of 55 did not reach 75% mastery level. * Hawthorne - \_\_\_\_ out of 54 did not reach 75% mastery level. * Korean - \_\_\_\_ out of 32 did not reach 75% mastery level. * Nihongo - \_\_\_\_ out of 34 did not reach 75% mastery level. * Hemingway - \_\_\_\_ out of 54 did not reach 75% mastery level. * Dickens - \_\_\_\_ out of 49 did not reach 75% mastery level. |

PSYCHOMETRICIAN’S CERTIFICATE

This is to certify that the undersigned has reviewed and validated the statement of the problem and Hypothesis for the requirement for Capstone entitled “PHASE RUSH” from San Pedro College of Business Administration prepared by ATIBAGOS, Daryll , DELA PEÑA, Maughn Jacob and VARGAS, Christopher Jocef.

Signed this 28th day of April, in the year of our Lord, two thousand and twenty-three.

Signed

***, RPm***



***Gaspan, Ginalyn T.***

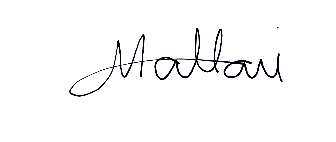
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**GRAMMARIAN’S CERTIFICATION**

This is to certify that the undersigned has carefully reviewed the study entitled “Phase Rush developed by *Atibagos, Daryll; Dela Peña, Maughn Jacob; and Vargas, Christopher Jocef*; with the set of structural rules that govern the composition of sentences, phrases, and words in the English language. Also, all corrections and recommendations made have been done and/or incorporated in the final manuscript.

Issued this 8th day of May , in the year of our Lord, two thousand and twenty-three.

Signed



*Mckhy Styx P. Mallari, CHRA., LPT.*

Grammarian / English Editor