

## Design and Development of the RPG Game Novus: A Sole Remnant as a Stem Learning Media Focused on Basic Mathematics Using Godot Engine

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### ABSTRACT

The integration of Science, Technology, Engineering, and Mathematics (STEM) education has become increasingly important in developing students' critical thinking, problem-solving, and innovation skills. However, elementary school students often experience difficulties in mathematics learning due to conventional teaching methods, low engagement, and mathematics anxiety. This study aims to design and develop Novus: Sole Remnant, a narrative Role-Playing Game (RPG) built with the Godot Engine, as a STEM-oriented learning medium focused on basic mathematics for elementary school students. The research employed a hybrid methodology combining Research and Development (R&D) and Research through Design (RtD) approaches. Data were collected through observations, in-depth interviews, documentation, and qualitative evaluations involving elementary school teachers, students, and casual gamers using purposive sampling techniques. The findings indicate that the game successfully integrates mathematical concepts into gameplay through diegetic learning, allowing students to engage with arithmetic and number pattern challenges naturally within the narrative context. The implementation of visual scaffolding features effectively supported independent learning and enhanced conceptual understanding, while the checkpoint and respawn mechanisms reduced mathematics anxiety and encouraged a growth mindset. Teachers also confirmed the game's alignment with the Independent Curriculum and its potential as an alternative homework medium. In conclusion, Novus: Sole Remnant demonstrates strong potential as an engaging, pedagogically effective, and technologically feasible digital learning tool for improving elementary mathematics learning and supporting STEM education.

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### Keywords:

*Digital Game-Based Learning,  
Elementary Mathematics,  
Narrative RPG, Godot Engine,  
Qualitative Evaluation.*

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## INTRODUCTION

Science, Technology, Engineering, and Mathematics (STEM) education has become a fundamental pillar in the global educational discourse in the 21st century. Many countries, including Indonesia, place STEM education as a national strategic priority to prepare competent human resources to face the dynamics of the Industrial Revolution 4.0 and welcome the era of Society 5.0 (Dou, 2019; Wahono et al., 2020). This urgency is based on the belief that the integration of STEM disciplines is capable of training high-level cognitive skills, such as critical thinking, creativity, collaboration, and complex problem-solving skills, all of which

are absolute prerequisites for the birth of technological and scientific innovations in the future (Li et al., 2016; Wahono et al., 2020). However, behind the big narrative about the importance of STEM, there is a reality on the ground that shows that there are fundamental barriers, especially at the basic education level. The main foundation of the entire STEM discipline is Mathematics. Without a strong understanding of mathematical logic, mastery of science (Physics, Chemistry, Biology) and Technology and Engineering becomes impossible. Unfortunately, Math is often a terrifying scourge for elementary school students. Conventional classroom learning that tends to focus on memorizing formulas, working on routine problems without context, and one-way lecture methods makes these subjects considered dry, boring, and detached from the reality of daily life (Gao et al., 2020).

This condition is exacerbated by the phenomenon of "math anxiety" that students often experience from an early age. The fear of making mistakes, the fear of being scolded by teachers or parents when they can't answer questions, and the pressure to get perfect grades often kill a child's natural curiosity. As a result, students' motivation to delve into calculating logic such as multiplication, division, ranking, and basic iteration logic becomes low. When this mathematical foundation is fragile, students will experience greater difficulties when dealing with more integrated STEM concepts at the next level of education. Limited time and facilities at school also cause students to gain less exploratory experience to understand abstract mathematical concepts in a fun way (Klopfer & Thompson, 2020). This issue signals a "red light" for the world of education, signaling the need for radical innovation in the method of delivering material (Klopfer & Thompson, 2020). A medium is needed that not only transfers knowledge, but is also able to change students' perception that math is scary into something fun and challenging. In addition, learning cannot depend solely on school hours. Synergy is needed between learning at school and at home. Parents need tools to accompany children to learn mathematics at home without creating a tense atmosphere, and teachers need homework methods that are not burdensome, but rather motivate students to learn independently (Cohen, 2020; Harmon, 2017; Sivile, 2020).

As technology advances, Digital Game-Based Learning (DGBL) has emerged as a promising pedagogical approach to bridging these gaps (Kukulka-Hulme et al., 2021). Digital game-based learning offers unique advantages over traditional methods (Ishak et al., 2021). Research has consistently shown that educational games are able to create an immersive, interactive, and fun learning environment, which can significantly increase students' intrinsic motivation and interest in learning (Ball et al., 2020; Ishak et al., 2021). In the gaming environment, the concept of failure is redefined. If in conventional exams mistakes lead to poor grades and punishment, in games, mistakes are part of the learning process. Players have the freedom to try new strategies, make mistakes, and immediately see the consequences of their decisions in a safe environment (Plass et al., 2020). This is very crucial in learning mathematics. Games provide a space where students can practice problem-solving skills and think logically without fear of being judged (Kayan-Fadlelmula et al., 2022; Klopfer & Thompson, 2020).

The effectiveness of this approach is supported by strong empirical evidence. A comprehensive meta-analysis by Yang et al. (2023) of 86 previous studies found that STEM learning including mathematics with the help of digital games resulted in much higher learning outcomes than conventional methods, with an average effect size of 0.62. These findings

confirm that the integration of well-designed (content-oriented) game elements is more effective in improving students' conceptual understanding than mere entertainment elements (Yang et al., 2023). This principle is in line with the concept of Serious Games, which are games designed with the main purpose other than pure entertainment, such as education (Zyda, 2005). The biggest challenge in the development of Serious Games is balancing the "fun" aspect (entertainment) and the "learning" aspect (Michael & Chen, 2006). If it is too heavy on the material, the game will be as boring as a "digital textbook"; If you focus too much on entertainment, the learning goals are not achieved. Therefore, narrative or story plays a vital role. Lester et al. (2013) emphasized that narrative-based learning environments are very potential for STEM because stories provide meaningful context. Jarrah et al. (2024) also found that story elements in gamification significantly improve students' knowledge retention.

Based on this premise, this research designed and developed a cyberpunk-themed Role-Playing Game (RPG) entitled "Novus: Sole Remnant". The development of this game has a long-term vision (Grand Design) as a comprehensive STEM learning medium, covering Science, Technology, Engineering, and Mathematics in its entirety. However, within the scope of this thesis research, development is focused on the Alpha Test stage with a concentration of special material on Mathematics at the elementary school (SD) level. The choice of focus on Elementary Mathematics at the Alpha stage is based on strategic and pedagogical reasons. Mathematics is the universal language of science and technology (Achuonye, 2015; Mahmoud, 2023; Sarı & Bostancıoğlu, 2018). Before students are invited to understand the physics of motion or chemical reactions (which are planned for future Contender to Legendary levels), they must first have a strong grasp of basic logic, arithmetic operations (multiplication, division, traction), and iteration patterns. Therefore, the Aspirant (beginner) level in this game is dedicated entirely to strengthening that foundation.

The target user of Novus: Sole Remnant at this stage is designed to be more inclusive. In addition to targeting elementary school students as the main learning subjects, the game also targets casual gamers who want to enjoy the storyline and combat mechanics, as well as teachers and parents. For casual gamers, math material is inserted organically as a mechanism to open gates or solve puzzles, so they can enjoy the story without feeling patronized, yet still sharpen their brains. For elementary school teachers, this game is designed as an alternative tool to give fun homework (homework); Teachers can assign students to reach a certain level, and in-game questions can be discussed in class the next day. For parents, this game is an interactive means to accompany children to study at home, turning usually rigid learning moments into productive playtime together.

To ensure the effectiveness of learning and minimize student frustration, this game applies a pedagogical feature in the form of scaffolding. With every math challenge that arises for example, when players have to hack a locked door with a math code the system won't immediately give you a hard problem all of a sudden. The game will first present examples of problems and how to work through character dialogue or terminal interfaces. This ensures that players who have not mastered the material have the opportunity to learn by example before being tested. This approach aims to build students' confidence before they face the actual challenges.

In addition, to overcome math anxiety, the game implements a system of consequences that is fair but does not over-punish. Incorrect answers will have an impact on the character's

Health Point (HP) reduction, giving a sense of urgency and seriousness. However, if the character dies due to a miscalculation, the player does not need to repeat the game from the beginning (Game Over total). Players will respawn at the nearest checkpoint from the location of the question. This mechanism is designed so that students do not feel stressed or hopeless, but are encouraged to try again (retry) with better strategies or calculations. It instills a growth mindset, that mistakes are part of the learning process, not the end of everything.

From a technological point of view, this game is built using Godot Engine, an open-source game engine that is lightweight, multi-platform, and has a large community of developers (Holfeld, 2023). The selection of Godot allowed the game to be developed in a cost-efficient manner while still having capable visual and mechanical qualities, and was easily distributed to students who may have various specifications of computer devices at home. Through the development of Novus: Sole Remnant in the Alpha stage which focuses on Elementary Mathematics, it is hoped that a prototype of learning media will be created that is not only technically valid, but also pedagogically effective. This research aims to prove that the integration of basic math material into a strong RPG narrative can be a solution to the low interest in learning mathematics, as well as a bridge between the world of children's games and the academic demands of schools. Thus, Novus: Sole Remnant is expected to be a concrete first step in realizing the grand vision of fun, contextual, and humanist STEM learning.

## **METHOD**

The design of this research adopted a hybrid framework that integrates the procedural structure of the *Research and Development* (R&D) model with the philosophical foundation of *Research through Design* (RtD). The R&D approach provides a systematic workflow for producing and validating educational products, while RtD provides an epistemological justification that the creative process of designing and developing artifacts (games) is itself a method of generating new knowledge. This combination was chosen to answer two research objectives: to produce a product in the form of a functional and validated educational game prototype, as well as to contribute knowledge about design principles in effectively integrating narrative, RPG *gameplay*, and STEM content.

This research result not only in the prototype of the game that has been evaluated (R&D goals), but also in the form of knowledge contributions in the form of design *principles* that can be applied to the development of other narrative STEM educational games (RtD goals).

### **Research Flow**

To visualize the framework of this research more clearly, the following flowchart illustrates the sequential and iterative relationships between the adapted R&D phases:

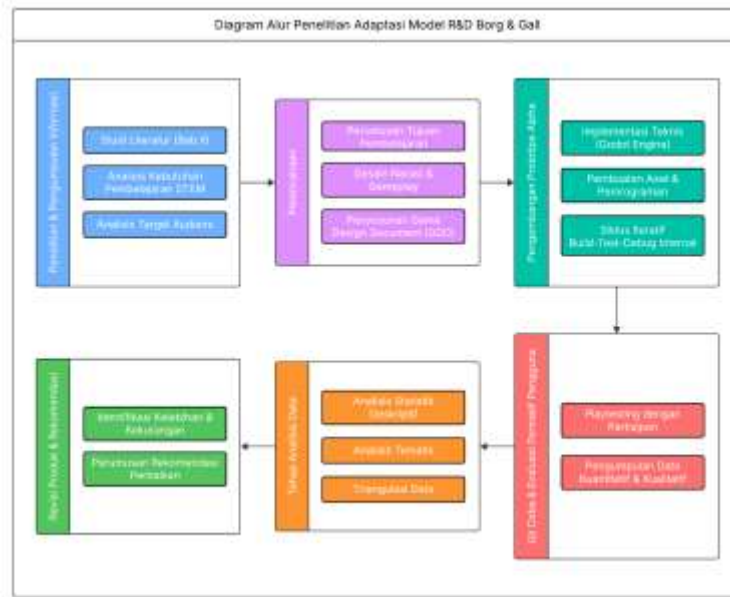


Figure 1: Research Flow Diagram of Adaptation of Borg & Gall R&D Model

### Product Development Procedure: Spiral Model

1. Phase 0: Needs Analysis and Initial Conceptualization
2. Phase 1: Requirements and Planning Specifications
3. Phase 2: Game Concept Design
4. Phase 3: Design Validation and Initial Prototype
5. Phase 4: Design Revision and Finalization
6. Phase 5: Prototype Development (Alpha Production)
7. Phase 6: Internal Testing (Alpha Testing)
8. Phase 7: Prototype Repair and Refinement
9. Phase 8: External Testing and Prototype Evaluation
10. Phase 9: Final Revision and Product Finalization

### Data Collection Instruments

Within the framework of this research methodology, data collection instruments are systematically compiled to support a qualitative approach that is naturalistic and interpretive. In contrast to rigid test instruments, the instruments in this study are flexible and developed according to conditions in the field to capture the reality of the phenomenon in its *entirety* (*holistic*). The key *instrument* in this study is the researcher himself. The researcher acts as a planner, data collection implementer, analyzer, data interpreter, and ultimately a reporter of research results.

The presence of the researcher as a key instrument cannot be replaced by other tools because only humans are able to interact with the research subject, understand body language, dive into the feelings of the respondents, and assess the context of the situation directly during the *trial of the Novus: Sole Remnant* game. However, to ensure objectivity and simplify the data collection process in the field, researchers are assisted by a series of supporting instruments that have been standardized. These supporting instruments include *In-depth Interview Guide*, *Observation Checklist*, and *Documentation*. The following is a

comprehensive description of the instrument specifications, informant criteria, and measurement grids used in this study:

### **Determination of Informants and Sampling Strategies (*Purposive Sampling*)**

The determination of data sources in this study was carried out by *the Purposive Sampling technique*, which is a sampling technique of data sources with certain considerations. Informants were selected not based on the principle of probability or statistical representation of the population, but were deliberately selected based on the capacity and relevance of their knowledge to the object being studied, namely the development of RPG-based mathematical educational games. The principle of determining the number of informants follows the principle of Data Saturation. Data collection is not limited by a fixed number of numbers, but will continue to be carried out until the data obtained reaches a saturation point, where no more new information emerges and the data obtained has formed a consistent pattern.

Based on a case study conducted at the research site of State Elementary School Cakung Barat 08 Pagi and an analysis of development needs, informants are grouped into three specific categories with the following inclusion criteria:

#### **1. Group of Informants of Material and Pedagogy Experts (Elementary Teachers)**

This informant acts as an expert *judgment* validator who has authority in assessing the suitability of educational content.

- a. Total: 2 teachers.
- b. Criteria Inclusive:
  - 1) Permanent teachers who teach at State Elementary School Cakung Barat 08 AM.
  - 2) Have at least 2 years of teaching experience, so as to understand the psychological characteristics of students and the applicable curriculum.
  - 3) Understand basic mathematics (arithmetic) material taught at the elementary school level.
- c. Data Mining Focus: The validity of the teaching material, the accuracy of the delivery method (*scaffolding*), and the feasibility of implementing games as homework (PR) media.

#### **2. Main User Informant Group (Elementary School Students)**

This informant is the *end-user* or end-user who is the main target of the product being developed.

- a. Estimated Initial Number: 4 students.
- b. Criteria Inclusive:
  - 1) Active students of State Elementary School Cakung Barat 08 AM.
  - 2) Be at a medium grade level or have studied basic calculation operation material.
  - 3) Heterogeneously selected represents students with high, medium, and low math abilities to test the inclusivity of games.
- c. Data Mining Focus: User *experience*, *engagement* level, *anxiety* level when facing questions, and understanding of game instructions.

#### **3. Comparative Informant Group (Casual Gamer)**

This informant serves to provide a technical and aesthetic perspective of games as an entertainment product, outside the context of formal education.

- a. **Estimated Initial Number:** 4 people.
- b. **Criteria Inclusive:**
  - 1) Age range 13 to 40 years (adolescents to adults).
  - 2) Have good digital literacy and are used to operating computers/PCs.
  - 3) Have played RPG games or the like.
- c. **Data Mining Focus:** The quality of the game mechanics (*gameplay mechanics*), the comfort of the controls, the visual and audio quality, and the appeal of the story's narrative.

### **Data Triangulation Technique**

To ensure the validity and credibility of the data obtained, this study applied a triangulation technique. Triangulation is defined as checking data from various sources in various ways and at various times.

1. **Source Triangulation:** The researcher compared data obtained from Students, Teachers, and Gamers. For example, comparing students' claims that "easy questions" with teachers' assessments of "question weight" and the results of observations in the field.
2. **Triangulation Technique:** The researcher compares the interview results (what the informant said) with the observation data (what the informant did). If there is a discrepancy between speech and action, the researcher will conduct further excavation to find the reason behind the discrepancy.

All of these instruments are designed to work synergistically in producing rich, in-depth, and scientifically accountable descriptive data to answer the formulation of research problems.

### **Data Analysis Techniques**

Data analysis in this qualitative research is carried out inductively and continuously, not waiting for all the data to be collected, but goes hand in hand with the process of implementing studies in the field. Referring to the interactive model qualitative data analysis framework from Miles, Huberman, and Saldaña (2014), data analysis activities consist of three activities that occur simultaneously: *data condensation*, *data display*, and *conclusion drawing/verification*.

Given that the main data is sourced from direct interactions (interviews and observations) that are recorded manually by the researcher, the accuracy and depth of the analysis are highly dependent on the discipline of the researcher in compiling *Field Notes*.

### **Final Output Methodology**

The methodological process outlined in this section will result in three main *deliverables* that are at the core of this research's contribution:

1. *Alpha Game Novus prototype: Sole Remnant:* A functional and playable software artifact, which is the main object of this research.
2. Comprehensive Formative Evaluation Report: An in-depth analysis detailing the findings of the trial process, supported by qualitative data.
3. Revised Design Document: An updated version of the *Game Design Document* (GDD) or a separate document that contains a list of prioritized improvement recommendations. This document will serve as a solid and evidence-based foundation for the next development cycle, both for further research and for the game's potential development towards beta or future commercial releases.

Thus, this methodology ensures that research does not only stop at the manufacture of products, but also generates valuable knowledge for the refinement of those products, effectively closing the R&D cycle.

## **RESULT AND DISCUSSION**

### **Diegetic Integration: Bridging the Gap between "Fun" and "Learning"**

One of the biggest theoretical challenges in the development of *Serious Games* or *Digital Game-Based Learning* (DGBL) is the phenomenon referred to by Bruckman (1999) as "*Chocolate-Covered Broccoli*", which is a condition in which educational materials (broccoli) are only thinly coated by games (chocolate), so that students still feel burdened and game players feel distracted. This research proposes a solution in the form of Diegetic Integration, where mathematics is not presented as a foreign entity, but as a natural law or technological mechanism within the game world itself.

Based on the results of interviews with Casual Gamers (GK) and Students (SW) groups, this design strategy has proven to be effective. Respondent Meissie Calista (GK-01) stated that the math puzzle felt "*natural, like a real hack,*" while student Ananda Putra (SW-03) said it felt "*like a real spaceship.*" These findings confirm the Flow theory from Csikszentmihalyi (1990) which became the cornerstone of game design. *Flow* occurs when challenges and skills are in balance. In *Novus: Sole Remnant*, mathematics is positioned as a "*tool*" for overcoming narrative challenges. When players are faced with a locked door (Challenge), they use the ability to count (Skill) to open it. Because the context is "saving the character" (Narrative Urgency), the cognitive load when counting is not perceived as an academic burden, but rather as a burden of a fun game (*eustress*).

Unlike conventional educational games that often separate "study" and "play" sessions (e.g., answer quizzes first before you can play), *Novus: Sole Remnant* brings the two together simultaneously. This can be seen from the response of Astrilia Valentina (GK-04) who said that math puzzles are "*relevant to the story.*" Implicitly, Aspirant's level design manages to create a strong cohesion between game mechanics (*ludology*) and narrative content (*narratology*), making math an essential gameplay element rather than just a patch.

### **The Effectiveness of Visual Scaffolding in Proximal Development Zones (ZPD)**

Vygotsky's theory of *the Zone of Proximal Development* (ZPD) is used as the basis for designing assistive features. ZPD is the distance between what students can do on their own and what they can do with help. In the context of this game, the role of "supervisor" (*More Knowledgeable Other*) is not taken by the teacher physically, but is delegated to the game system through the "Sample Pre-Challenge Questions" feature (Scaffolding Visual).



Figure 2: Sample Question Dialog Flow Design

The results of field trials provide strong empirical validation of this design. The respondent teacher Putri, S.Pd (GR-01) specifically praised this feature as the adoption of *the "worked-example"* principle that effectively reduces *cognitive load*. This validation was reinforced by the honest confession of students Muhammad Arya (SW-01) and Zavier Adrian (SW-04) who stated that they *were "initially confused"* but *"became understanding after seeing the examples in the terminal."* This phenomenon shows that the *designed scaffolding* mechanism has functioned according to its purpose.

1. Observation Phase: When students interact with the example terminal (NPC/Log), they are building a mental model of how the logic of series or multiplication works.
2. Imitation Phase: When they try to work on the real problem, they don't guess, but rather apply the pattern they just learned.
3. Internal Phase: The success of opening the door provides confirmation that their understanding is correct.

Without these features, games risk becoming too difficult and triggering frustration. With this feature, the game manages to keep students inside the "ZPD Corridor" not too easy (boring) and not too difficult (worrying). This proves that even RPG games without human instructors are capable of facilitating *self-regulated learning*, as long as the instructional design provides adequate visual assistance before giving the exam.

### **Deconstructing Mathematical Anxiety through a "Fail-Safe" Mechanism**

One of the main problem formulations in this study is the high level of math *anxiety* in elementary school students, which is often triggered by fear of failure and punishment. *Novus: Sole Remnant* offers a radical approach by changing the meaning of "failure" through the Respawn and Checkpoint systems. Analysis of student interview data revealed very significant findings. When asked how he felt when the character died due to a miscalculation, Rizki Pratama (SW-02) replied: *"I was shocked, but I wasn't afraid. In fact, I'm even more excited to try again."* In line with that, Zavier Adrian (SW-04) said *"I was surprised, but not afraid."* The emotional shift from "Fear" (which usually appears in class when answering incorrectly on the

board) to "Shocked and then Excited" is an indicator of the success of the game's psychological design.

1. *Shock*: Caused by visual (red screen) and audio feedback ("Bzzzt"). This is important to let students know that their answer is wrong (Concept Validation).
2. *Fearless*: Caused by the fast and close *Respawn* mechanic. Students know that even fatal mistakes can be corrected in a matter of seconds.
3. *Persistence*: Arises due to the intrinsic motivation to overcome obstacles.

In the perspective of Carol Dweck's motivational theory, this mechanism fosters a Growth Mindset. Students learn that mathematical skills are not static innate talents, but skills that can be improved through *trial and error*. This game provides a *safe space* for students to make mistakes something they rarely get in a formal exam. Guru Yulmini, S.Pd (GR-02) confirmed this by calling the system "*psychologically safe*."

### **Curriculum Validity and Implementation Potential in the Era of Independent Curriculum**

Evaluation from the perspective of educators (Teachers) confirms the relevance of this product in the current formal education ecosystem. State Elementary School Cakung Barat 08 Morning implements the Independent Curriculum, which emphasizes contextual learning and character development. Teacher respondents (GR-01 and GR-02) assessed that the material at the Aspirant Level (Multiplication, Division, Number Pattern) was in accordance with Phases B and C of the Independent Curriculum. Furthermore, this game is considered to support the strengthening of the Critical Reasoning profile because students not only calculate, but also analyze situations (e.g.: *resource management*).

The biggest potential identified from this discussion is the use of *Novus: Sole Remnant* as a Gamification Homework (PR) instrument. The teacher expressed his willingness to recommend this game because it was able to change the perception of PR from "burden" to "adventure". Students also enthusiastically welcomed this idea (100% positive response). This indicates that this game has the potential for scalability to be applied not only as a supplement medium in schools, but also as a bridge *for parental engagement* at home, where parents can accompany children to play while learning.

### **Technical and Aesthetic Evaluation: Balancing Performance and Immersion**

Finally, the discussion of the technical aspects answers the limitations of the problem regarding hardware specifications. The decision to use Godot Engine and Low-Poly Cyberpunk's visual style proved to be spot on. Casual gamers (GK-03 Yuan Arthanza) compared the game to popular titles like *Hades* or *Celeste* on a simpler scale, admitting that the visuals *were "pleasing to the eye"* and the performance *was "stable"*. There are no significant complaints regarding *lag* or *crashes*, even on mid-spec devices. This validates the technical decision to use *baked lighting* optimization techniques and modular assets.



Figure 3 Novus Game Environment: Sole Remnant

While there are notes about the stiffness in *the dodge* mechanic when fighting bosses (conveyed by Sabrina GK-02), this is more of a *polishing* issue in the Beta stage, not a fundamental design flaw. Overall, *the cyberpunk aesthetic* managed to attract the interest of students and gamers to "enter" the world of *Novus*, proving that locally made educational games are capable of having competitive visual quality standards.

## CONCLUSION

This research aims to design and validate a prototype of a narrative RPG game as an effective and fun basic math learning medium. Based on the results of field trials involving the active participation of elementary school students, teachers, and casual gamers, it can be concluded as follows: **Validity of Mathematical Integration in Narrative Structure (Diegetic Learning)** The development of *Novus: Sole Remnant* has succeeded in proving that basic math material (arithmetic and number patterns) can be organically integrated into RPG gameplay without disrupting the flow of the game. Findings from the Casual Gamers and Students group show that the presentation of math problems as a "terminal hack" or "generator fix" mechanism is accepted as a story-relevant challenge (contextual learning), not as an external distraction. This overcomes the chocolate-covered broccoli phenomenon that is often a weakness of conventional educational games, where the teaching material feels separate from the fun of playing. **The Effectiveness of the Visual Scaffolding Feature in Independent Learning** The application of the Zone of Proximal Development (ZPD) principle through the "Example-First Design" feature has proven to be the most crucial pedagogical element. Validation from the Teacher and direct recognition from the student confirm that this feature effectively bridges the student's knowledge gap. Students who are initially confused are able to build independent understanding through example observation before executing on the core problem. Thus, this game has been proven to be able to facilitate self-regulated learning without the presence of a physical instructor in person. **Math Anxiety Reduction through Fail-Safe Mechanism** The design of psychological security systems in the form of Checkpoint and Instant Respawn mechanisms succeeded in deconstructing students' fear of failure. The emotional response of

students that shifts from "fear of being wrong" to "the spirit of trying again" indicates the formation of a Growth Mindset. In-game punishment (HP reduction) is seen as reasonable corrective feedback, not a verdict of academic failure. This concludes that a safe game environment (safe space) is able to increase students' resilience in facing math problems. Curriculum Suitability and Acceptance of Teaching Aids Curricularly, the material presented at the Aspirant Level is assessed by educators (Teachers of SD Negeri Cakung Barat 08 Morning) to be in accordance with the Learning Outcomes of Phases B and C of the Independent Curriculum, especially in strengthening critical reasoning and numeracy literacy. The positive reception from teachers, who expressed their willingness to make this game an alternative to Homework (PR), indicates that Novus: Sole Remnant has a high feasibility of implementation in today's formal education ecosystem. Technical Performance and Visual Appeal The technical implementation of Godot Engine with Cyberpunk's Low-Poly visual style proved to be spot on. The game is able to run stably on standard devices without significant technical constraints, while presenting an aesthetic that appeals to students and young gamers alike. Although there are minor notes on the flexibility aspect of combat mechanics (combat dodge), the technical foundation of the game is stated to be solid as an Alpha prototype.

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