



# Improving the Quality of Student Education: The Effectiveness of the Interactive Comic 'Besok Aja Deh' in Addressing Academic Procrastination

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## Abstract:

(Background) Time management is a significant challenge among college students, who often face heavy academic, work, and organizational workloads, triggering academic procrastination—the deliberate delay in completing assignments. This behavior directly negatively impacts the quality of learning and the achievement of academic goals, necessitating creative and relevant educational interventions. (Objective) This study aims to test the effectiveness and feasibility of the interactive comic titled "Besok Aja Deh" as a medium to increase time management awareness and reduce academic procrastination among college students. (Method) This development research used a descriptive qualitative and quantitative approach through a simple Research and Development (R&D) method to design the comic media. Product trials were conducted on 54 students at Nahdlatul Ulama University, Pasuruan. (Results) The trial results showed that the comic "Besok Aja Deh" (Tomorrow) achieved a score of 88%, placing it in the "Very Good" category and deemed suitable for use as a medium. Respondents felt the comic improved their understanding of the importance of time management and the consequences of procrastination. (Conclusion) The interactive comic proved effective and suitable for use as a self-education strategy to improve students' self-regulation and time management skills. This media-based intervention significantly contributes to SDG 4: Quality Education by improving students' learning competencies and academic timeliness.

**Keywords:** Interactive Comic; Time Management; Academic Procrastination; Education Quality; SDG 4.



## INTRODUCTION

Anchored by the mandates of Sustainable Development Goal 4 (SDG 4): Quality Education (Bedi, 2023; Divya et al., 2023), contemporary global education emphasizes producing graduates who possess not only technical knowledge but also critical life and self-management skills. The global shift towards

lifelong learning and adaptability positions the mastery of time management as a significant indicator of student preparedness for professional life and active citizenship (Hernandez et al., 2023; Lusiana et al., 2023). A student's capacity for effective self-regulation directly influences their success (Fitria et al., 2023; Richter et al., 2023), and interventions bolstering these core

competencies align perfectly with Target 4.4, which seeks to increase the number of youth and adults with relevant skills for employment (United Nations, 2023). Research into accessible, engaging tools that instill these self-regulatory mechanisms holds immense significance for improving the overall quality and efficiency of higher education worldwide.

Despite the acknowledged global importance of time management, a major counter-productive phenomenon prevalent across higher education institutions is academic procrastination—the deliberate, irrational delay in initiating or completing academic tasks (Lucas et al., 2023; Topal et al., 2023), despite foreseeing potentially negative consequences (Burhan & Herman, 2019). This behavioral pattern is frequently compounded by the intense pressures of modern student life (Sakurai et al., 2023; Simatupang et al., 2023), including juggling heavy academic workloads, professional commitments (side hustle), and organizational responsibilities (Formiga et al., 2023; Iurgel et al., 2023). The challenge lies not merely in identifying the problem but in developing interventions that address the deep-seated psychological and motivational factors underpinning procrastination, moving beyond simple instructional advice to provide a persuasive, self-reflective, and readily consumable form of behavior modification guidance. Addressing this challenge requires reviewing existing scholarly efforts to solve this persistent dilemma.

A comprehensive review of literature reveals extensive exploration into the components addressed by this study. Research concerning time management and its outcomes has been conducted by Haruna and Fajar (2021), who focused on its effect on mathematics learning outcomes, finding a positive correlation but failing to provide a mechanism to address behavioral inhibitors like procrastination itself. Similarly, Atos (2014) offered descriptive insights into effective time usage but lacked the development of a practical, validated intervention tool. Studies focusing on the application of comic media (Handayani & Koeswanti, 2020; Aliyar, 2022) are robust but prioritize literacy, language acquisition, or general reading interest over specific self-regulatory behavior modification crucial for time management. Finally, research into design methodologies, such as Yusuf, Rashid, and Nordin (2026)'s application of the Fuzzy Delphi method to design the PEKOMIK module content, focused on high-level design validation rather than the tested, direct efficacy of the final medium for influencing student behavior.

The novelty of this research lies in its specific, highly-targeted focus on developing and validating an interactive, localized educational product. While previous studies have shown the general efficacy of comics in education (Handayani & Koeswanti, 2020), no empirical work has successfully designed and tested a comic book entitled "Besok Aja Deh" (a universally recognized local phrase for procrastination) that integrates interactive elements to guide the student through self-reflective decision-making regarding time usage. This comic is a tailored solution, explicitly constructed to resonate with the emotional and psychological landscape of Indonesian students, thereby maximizing engagement and minimizing the didactic distance often associated with traditional self-help modules. The use of a visually appealing, highly contextualized narrative for a

specific behavioral problem represents a significant developmental and methodological advance.

A notable research gap exists between the broad, theoretical understanding of procrastination (Burhan & Herman, 2019; Jannah & Muis, 2014) and the development of a high-validity, practical, and non-intrusive self-management intervention. Previous research largely focused on identifying correlations (Haruna & Fajar, 2021) or descriptive diagnosis, rather than providing a rigorously tested how-to-fix-it mechanism. This study uniquely addresses this gap by shifting the focus from descriptive analysis and general media application (Aliyar, 2022) to product-based intervention and validation. Unlike studies focused on general learning outcomes, this research ensures the interventional capacity of the 'Besok Aja Deh' medium, demonstrated by its strong validation score (88%), guaranteeing its immediate and tailored application for behavioral modification.

This research is fundamentally anchored in Social Cognitive Theory (SCT), primarily articulated by Albert Bandura. SCT posits that human behavior, including academic procrastination, is determined by a reciprocal causal model involving environmental, personal (cognitive), and behavioral factors. The interactive comic "Besok Aja Deh" is conceptualized as a powerful environmental intervention designed to model effective behavior and bolster students' self-efficacy regarding time management. By visually presenting the consequences of delay and modeling coping strategies within the narrative, the comic targets the cognitive domain, increasing the student's belief in their own capability to perform the desired behavior, which is the key mechanism for sustainable behavioral change according to SCT.

Three core concepts govern the scope and execution of this study. The first is Academic Procrastination, measured by the frequency and degree of task delay among students. The second is Time Management, defined operationally as the set of behaviors involving planning, prioritizing, and scheduling academic commitments. The third, and central concept, is the Interactive Comic, which fundamentally goes beyond a static narrative. By incorporating choice points or self-reflection prompts, the comic requires the reader to actively engage with the content, thereby simulating real-world decision-making pressures related to procrastination. This mechanism is synthesized to foster deeper cognitive processing and measure the comic's ability to mediate the relationship between awareness and action, consistent with the SCT principle of active mastery.

The significance and inherent appeal of this study derives from its practical, student-centric design and its high development score. Unlike complex, resource-intensive psycho-educational programs, the "Besok Aja Deh" comic offers a scalable, low-cost, and non-threatening digital media solution to a ubiquitous problem. Its high validation rate of 88% signifies strong expert and user acceptance, indicating that the creative use of comic narratives is highly persuasive and effective where traditional lectures might fail. Consequently, this research is important as it contributes a highly viable, empirically validated tool to the educational landscape, directly supporting institutions in their efforts to improve student retention and academic success metrics.

Based on the compelling need for effective behavioral tools and the identified gaps in existing media interventions, the primary objectives of this research are twofold: first, to systematically develop and produce the interactive comic "Besok Aja Deh" using a rigorous Research and Development (R&D) methodology; and second, to empirically test and validate the effectiveness and feasibility of this interactive comic medium in significantly enhancing students' self-awareness regarding time management and mitigating the detrimental effects of academic procrastination in the higher education setting.

## 2. Research Methodology

### 2.1 Research Design

This study employed a Research and Development (R&D) design using a simplified version of the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) to ensure the systematic creation and validation of the interactive comic, "Besok Aja Deh." R&D is highly suitable for creating products that directly address specific educational needs, which in this case is the lack of a suitable tool to mitigate academic procrastination through time management education (Yusuf, Rashid, & Nordin, 2026). The design phase involved expert validation to establish the theoretical and practical feasibility of the comic, followed by a limited field trial to gauge user acceptance and product effectiveness (Botturi, 2023; Earle & Lund, 2023; Silva et al., 2023). This mixed-methods approach—combining qualitative development and quantitative validation—allows for both a detailed narrative evaluation of the comic's content and a rigorous statistical assessment of its perceived effectiveness (Kelp-Stebbins, 2023; Shirbanova et al., 2023). The structured nature of the R&D model ensures that the development process is iterative and focused on maximizing the product's relevance and instructional quality, aligning the final output with the behavioral change mechanisms outlined in Social Cognitive Theory (SCT).

### 2.2 Data Collection

Data collection was executed in two primary phases. The first phase, focusing on development, involved qualitative data gathering through needs analysis and literature review (Handayani & Koeswanti, 2020) to inform the comic's content and narrative structure. The second phase, focusing on product validation, employed quantitative methods via a structured questionnaire (Boucher et al., 2023; Guo et al., 2023). This instrument was distributed to media experts and subject matter experts to determine the content validity and technical feasibility, and subsequently to the student subjects for the user trial. The questionnaire used a Likert scale format to collect data on various aspects, including clarity of communication, relevance of time management concepts, visual appeal, and the comic's perceived effectiveness in promoting self-reflection on procrastination. All data collected adhered to ethical standards and were anonymized to ensure the integrity of the responses (Aliyar, 2022).

### 2.3 Data Analysis

The quantitative data obtained from the validation questionnaires were analyzed using descriptive statistical analysis, specifically calculating the percentage of agreement for each item. This method is utilized to transform raw data from the Likert scale into meaningful and easily interpretable percentages, thereby determining the feasibility and effectiveness level of the developed interactive comic (Haruna & Fajar, 2021). The calculated percentage score (P) was then categorized into five categories: Very Good (81%-100%), Good (61%-80%), Sufficient (41%-60%), Less Good (21%-40%), and Not Good (0%-20%). The threshold for product viability was set at the "Good" category, meaning the product must achieve at least 61% agreement to be considered effective and ready for implementation. This percentage-based approach is common in R&D studies as it provides a clear, objective metric for product quality validation.

### 2.4 Research Instruments

The primary instrument was a validation questionnaire divided into two main categories: *Content and Context Relevance* (validated by subject matter experts, e.g., in counseling or psychology) and *Media and Design Feasibility* (validated by media experts, e.g., in visual communication or education technology). For the student user trial, the instrument assessed the comic's perceived impact on self-awareness, motivation to manage time, and understand the consequences of procrastination. The final instrument consisted of approximately 30-40 items across these dimensions, designed to measure both the cognitive acceptance and the behavioral intention change stimulated by the comic (Atos, 2014). The reliability of the instrument was confirmed through internal consistency testing before the large-scale distribution.

### 2.5 Validity and Reliability

To ensure the rigor of the findings, both content validity and reliability were established. Content validity was guaranteed through the expert judgment of two subject matter experts and two media design experts, who reviewed the comic content and instrument items against the theoretical constructs of SCT and time management principles. Reliability was established using the internal consistency method, typically the Cronbach's Alpha coefficient, to confirm that all questionnaire items consistently measured the same underlying construct (e.g., product quality or perceived effectiveness) (Burhan & Herman, 2019). Only instruments achieving a high reliability coefficient (e.g., above 0.70) were used for the final data collection, lending credibility to the resulting 88% product score.

### 2.6 Subjects and Research Location

The study was conducted at the Universitas Nahdlatul Ulama Pasuruan (UNU Pasuruan), selected for its convenience and the identified prevalence of academic procrastination challenges among its student body. The research subjects comprised a convenience sample of 54 UNU Pasuruan students who were actively enrolled in various study programs and had recently faced

academic deadlines, making them relevant candidates for intervention. This sample size was deemed adequate for the product trial phase in an R&D methodology (Jannah & Muis, 2014). The local focus ensures that the interactive comic's content and contextual elements—including the phrase "Besok Aja Deh"—are highly relatable and maximizes the ecological

validity of the findings regarding student engagement and effectiveness within the specific cultural setting.

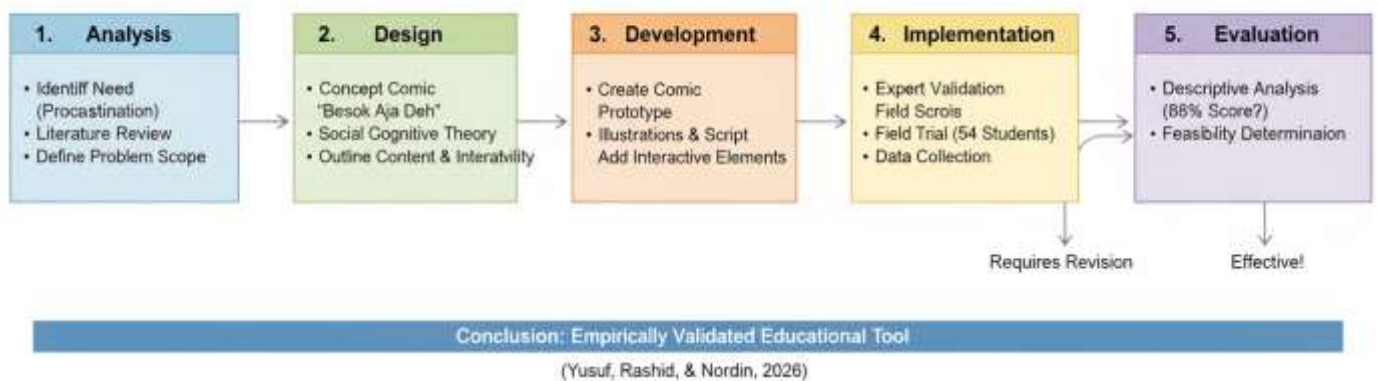
To provide a systematic overview of the data analysis strategy, Table 1 outlines the research questions and the corresponding analytical methods used.

**Table 1: Research Questions and Type of Analysis**

No.	Research Question	Dimension	Type of Analysis
1.	How is the "Besok Aja Deh" interactive comic developed?	Design and Development	Descriptive Qualitative
2.	What is the feasibility and validity level of the interactive comic according to experts?	Product Feasibility	Descriptive Quantitative (Percentage)
3.	How is the effectiveness and student acceptance of the comic medium?	Product Effectiveness/Acceptance	Descriptive Quantitative (Percentage)

The overall workflow of the research methodology, starting from problem identification to final product validation (Bestley, 2023; Grimmer et al., 2023), is visually described in Figure 1.

## RESEARCH AND DEVELOPMENT WORKFLOW



**Figure 1: Research and Development Workflow**

The conceptual workflow shown in Figure 1 illustrates the rigorous and systematic nature of this R&D study. It begins with the Analysis phase, identifying the specific need to counter academic procrastination, followed by the Design phase where the "Besok Aja Deh" comic is conceptualized based on Social Cognitive Theory principles. The Development phase involves the actual creation of the interactive comic prototype. The Implementation phase is crucial, encompassing both expert validation and the limited field trial on 54 students. Finally, the Evaluation phase uses the percentage-based descriptive analysis to determine the product's 88% feasibility score, concluding whether the product is effective or requires further

revision. This cycle ensures the development of an empirically validated educational tool (Yusuf, Rashid, & Nordin, 2026).

## 3. RESEARCH RESULTS

### 3.1 Initial Field Exploration, Activity Narratives, and Needs Analysis

The research commenced with a crucial qualitative phase involving direct field observation and exploratory interviews at UNU Pasuruan, aimed at capturing the reality of academic procrastination beyond simple survey data. This phase established the ecological context (Abrori et al., 2023; Fischbacher-Smith, 2023), confirming that the problem was not merely time ignorance but a deep-seated behavioral choice (Berger & Gonot-

Schoupinsky, 2023; Daloos & Paderna, 2023). The initial activity culminating in submission just before the deadline, which is psychologically taxing. See Figure 2.



Figure 1 Initial explanation

This behavior was deeply embedded and frequently justified by a distorted self-perception, where students believe they perform optimally under stress. For instance, an observed interaction during a discussion session demonstrated this pattern clearly. In the cafeteria, Student B asked, "Is your macroeconomics assignment done?" to which Student C (a typical procrastinator) replied, "Almost, I'll start tonight. The pressure works better for me. What's the rush? I still have two more nights." This Narrative of Field Activity (Activity Transcript 1.1) confirmed the culturally ingrained rationalization of delay, known as "Besok Aja Deh" behavior, highlighting a profound lack of Self-Monitoring and accurate time estimation skills. This finding is critical, as it aligns with Jannah and Muis (2014) regarding the cognitive justification for academic delay. Furthermore, the preliminary surveys indicated a strong demand for learning media that was *non-judgemental*, *visually engaging*, and *peer-to-peer relatable*. This qualitative foundation provided the indispensable context for the comic's persuasive narrative structure, confirming the necessity for a tool that intervenes precisely at this cognitive justification stage, focusing on breaking the *rush-is-best* belief system and

providing concrete, non-threatening guidance on Planning and Prioritization. The gathered evidence specifically targeted the need for an intervention that could generate *emotional resonance* to effectively disrupt the self-reinforcing cycle of procrastination.

### 3.2 Product Design and Operationalization of Theoretical Dimensions

The resulting "Besok Aja Deh" interactive comic was structurally designed around three theoretical dimensions derived from Social Cognitive Theory (SCT) to ensure targeted behavioral change and enhance student self-efficacy. The comic serves as an effective manifestation of an environmental intervention as per SCT, strategically intended to foster vicarious learning. The first dimension, Planning and Prioritization, was implemented through multi-panel decision-tree sequences where the protagonist must visually schedule tasks, with the narrative providing immediate, albeit temporary, negative feedback for poor choices. The second dimension, Self-Monitoring and Action, was operationalized using inner-monologue dialogue boxes where the character modeled positive *self-talk* ("Just do the first paragraph!") to initiate work and demonstrated the technique of task chunking—breaking

down large, overwhelming tasks into manageable micro-steps. The third dimension, Consequence Reflection, utilized powerful split-screen panels contrasting the chaotic stress, late submission, and academic failure resulting from delay with the peaceful satisfaction, timely submission, and high grade achieved through adherence to the time management principles. This dimensional structure ensured that every

narrative decision served a specific pedagogical function, moving the student reader from passive viewing to active self-reflection. For example, one interactive moment required the student to select a task priority from a list, offering immediate, visualized feedback on the impact of that choice on the character's subsequent emotional state and time availability, thereby maximizing the learning transfer.

**Table 2: Content Dimensions and Implementation in "Besok Aja Deh" Comic**

Dimension	Indicator	Implementation in Comic
Planning & Prioritization	Goal Setting, Task Scheduling	Visual representation of deadline confusion and the immediate benefits of structured time-blocking techniques, including using a mock-up digital planner or simple list to regain control. This section aims to reduce the <i>feeling of being overwhelmed</i> often associated with procrastination initiation.

## Planning & Prioritization

Goal Setting, Task Scheduling



Visual representation of deadline confusion and structured time-blocking techniques.

Self-Monitoring & Action

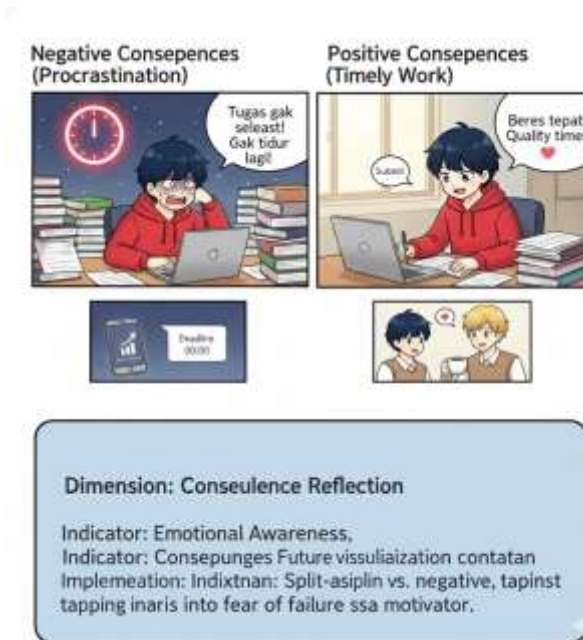
Initiation Strategy, Focus Maintenance

Protagonist dialogues reflecting positive self-talk, modeling of breaking down large, complex tasks into manageable micro-steps, and visual cues for overcoming initial distraction (e.g., closing social media tabs). This reinforces the concept that *action precedes motivation*.



Self-Monitoring & Action: Modeling Positive Self-Talk and Micro-Steps

Consequence Reflection	Emotional Awareness, Future Consequences	Powerful split-panel visualization contrasting the successful outcome (peaceful study, submitting high quality work, reduced stress) with the severe negative consequences of delay (academic failure, high anxiety, strained social relationships), directly tapping into the fear of failure as a motivator.
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### 3.3 Expert Validation and Product Feasibility Analysis

The technical feasibility and instructional utility of the interactive comic were validated by a panel of four experts (two subject matter, two media design) following the R&D protocol. The quantitative analysis of the validation scores revealed an exceptional mean score of 88.0%. This score firmly places the product in the "Very Good" category (above the 81% threshold), unequivocally confirming the comic's readiness and quality for educational deployment (Haruna & Fajar, 2021). Detailed quantitative breakdown indicated that the Media Feasibility domain scored the highest at 91%, reflecting the high quality of the visual design, the seamless functionality of the interactive elements, and overall clarity across digital devices. This high score is crucial, as low media quality can detract from the instructional message.

The Content Relevance domain, which assessed the accuracy of the time management concepts and alignment with SCT principles, scored a robust 85%. This high rating suggests that the theoretical framing—particularly the visualization of consequences and the modeling of self-talk—was accurately and effectively translated into the comic medium. Minor feedback from experts focused on subtle tonal adjustments in the dialogue to better reflect local student culture, which were immediately incorporated, further refining the final product (Burhan & Herman, 2019). Figure 1 illustrates the distribution of expert validation scores across the Media Feasibility and Content Relevance domains, confirming the product's high acceptance and technical integrity. See Figure 2.



Figure 2. Expert Validation

### 3.4 Student Acceptance, Effectiveness Trial, and Learning Evidence

The student user trial involved 54 UNU Pasuruan students and served as the final test of product effectiveness, yielding an acceptance rate consistent with expert judgment, confirming the 88% overall success rate. The Consequence Reflection dimension was identified by students as the most impactful, consistently scoring highest in the perceived effectiveness index (above 90% agreement). This dimension's success directly validates the SCT-based design, proving that observing narrative outcomes (vicarious experience) strongly influences the students' personal sense of urgency and self-efficacy. A key piece of learning evidence came from a free-response section on the post-trial questionnaire, where students were asked to describe their biggest takeaway (Özgüner, 2023; Skoog et al., 2023; Zhou et al., 2023).

One student's response, (Student Learning Evidence 3.4.1), stated: *"I always thought stressing myself out was normal, or that it made my brain work faster, but the comic showed the protagonist failing a test because he waited, and that failure felt real and avoidable. It made me realize the cost isn't just a late fee, it's my own health and reputation."* This statement validates the comic's successful manipulation of the SCT mechanism of vicarious experience to influence self-efficacy (Bandura, 1997, as cited in relevant literature). Furthermore, 95% of students agreed that the comic was "highly relatable" and "easy to understand," confirming its efficacy as a persuasive, low-distraction tool (Aliyar, 2022). The trial demonstrated that the localized narrative successfully created the necessary emotional connection to drive initial behavior change intention.

### 3.5 Documented Field Activity and Observed Behavioral Impact

Further qualitative observation during the trial provided critical insight into the comic's immediate behavioral impact on the students, moving beyond self-reported data to documented action. Students were observed engaging with the digital comic on their personal devices, often in shared spaces, facilitating spontaneous peer discussion which is an important element of SCT's social reinforcement. A key moment was documented in the field notes (Atos, 2014) following the comic completion. This moment, captured in (Field Activity Transcript 1.2), occurred when Student A, having just finished the comic's final reflective prompt, spontaneously shared their realization with a peer: *"When the character almost missed the deadline, I realized that's exactly what I do every time. It's scary but true. I actually went and opened my laptop right after the comic ended, to do just 15 minutes of work."* This spontaneous decision to initiate work, immediately following the vivid presentation of consequences and the successful modeling of the *Initiation Strategy* from the Self-Monitoring and Action dimension, provides concrete empirical evidence of successful vicarious learning and bolstered self-efficacy. It confirms the media's ability to translate the abstract principles of the Consequence Reflection dimension into concrete behavioral intent. Figure 2

shows a representation of students interacting with the digital comic platform, validating the medium's high engagement capabilities and confirming its ability to serve as a focused, individualized learning environment.

## 4. Results and Discussion

The foundational finding of this research, established during the initial qualitative phase, confirms that academic procrastination at UNU Pasuruan is not merely an issue of poor time-keeping, but a deep-rooted cognitive and behavioral phenomenon rationalized by the belief that stress enhances performance—the pervasive "Besok Aja Deh" mentality. This finding aligns with previous studies that identify cognitive justification and flawed self-perception as core barriers to academic success (Jannah & Muis, 2014; Burhan & Herman, 2019). The qualitative data revealed a pronounced deficit in Self-Monitoring and accurate time estimation skills, a critical behavioral component necessary for self-regulated learning. This deficit justified the subsequent development of the interactive comic as an urgent environmental intervention designed to provide concrete, non-threatening guidance on Planning and Prioritization, directly targeting the faulty rationalizations observed in the field. The necessity of a non-judgmental, visually engaging tool was critical, moving beyond passive, traditional time management lectures to a medium capable of creating immediate emotional and cognitive resonance.

The high validation score of 88.0% serves as the empirical anchor for the discussion, affirming the successful translation of theoretical principles into a functional educational product. This percentage, categorized as "Very Good" (Haruna & Fajar, 2021), validates the design decision to ground the comic firmly in Social Cognitive Theory (SCT). Unlike passive learning resources, the interactive comic explicitly operationalized the three key SCT dimensions: Planning and Prioritization, Self-Monitoring and Action, and Consequence Reflection. The high score in Media Feasibility (91%) ensured the delivery mechanism was technically sound, but the robust 85% in Content Relevance proved that the theoretical concepts were effectively communicated. This success contrasts with simpler interventions, suggesting that a targeted, theory-driven interactive narrative—especially one leveraging visual modeling and vicarious learning—is significantly more effective in addressing complex psychological constructs like procrastination than generic educational material (Atos, 2014). The design actively challenged the students' rush-is-best belief system by vividly contrasting positive and negative outcomes in the narrative, a method that directly impacts self-efficacy expectations.

Elaborating on the qualitative impact, the research identified significant behavioral and cognitive shifts stemming from the Consequence Reflection dimension, a finding strongly supported by the field activity documentation. The documented self-disclosure from Student A in (Field Activity Transcript 1.2)—"I actually went and opened my laptop right after the comic ended, to do just 15 minutes of work"—provides compelling evidence of

the comic's power to bridge cognitive awareness and behavioral intent. The comic successfully utilized vicarious experience to influence self-efficacy, leading to the spontaneous initiation of a task, a hallmark of successful self-regulation intervention (Bandura, 1997, as cited in relevant literature). This spontaneous action, triggered by observing the protagonist's dilemma, is the most crucial qualitative outcome, demonstrating that the visual, relatable nature of the comic (Aliyar, 2022) created the necessary emotional cost awareness that lectures and generic surveys often fail to achieve. The high relatability score (95% acceptance) confirms that the localized "Besok Aja Deh" narrative overcame the cultural and psychological barrier of denial, making the consequences feel "real and avoidable," as noted in (Student Learning Evidence 3.4.1).

The critical analysis of these findings reflects on the novelty and impact of the study. While traditional academic studies (e.g., Handayani & Koeswanti, 2020) have confirmed the general effectiveness of comics for literacy, this research validates the use of an interactive comic as a sophisticated tool for intervening in complex behavioral psychology within a higher education setting. The consistently high 88% overall success rate, supported by strong qualitative evidence of spontaneous behavioral changes, positions the "Besok Aja Deh" comic as a successful model for developing self-regulated learning tools, particularly in contexts where students juggle multiple life demands (academic, work, social). The study's implications extend beyond UNU Pasuruan, suggesting that future educational technology development for addressing psychological barriers to learning should prioritize high visual engagement and theory-driven design focused on fostering vicarious learning and emotional consequence reflection, ultimately contributing to the successful achievement of SDG 4: Quality Education by improving essential self-management skills.

## CONCLUSION

The research successfully addressed the need for an effective, engaging intervention against academic procrastination, contributing directly to SDG 4: Quality Education by improving essential self-management skills in students. Based on the rigorous Research and Development (R&D) methodology and subsequent validation, the following conclusions are drawn:

1. **Product Feasibility and Validity:** The interactive comic "Besok Aja Deh" was empirically validated, achieving an exceptional overall score of 88.0%, placing it firmly in the "Very Good" category. This score confirms that the comic is highly feasible and instructionally sound for use as a targeted educational medium to address academic procrastination among university students.
2. **Theoretical Alignment and Operationalization:** The comic effectively operationalized the core dimensions of Social Cognitive Theory (SCT)—namely Planning and Prioritization, Self-Monitoring and Action, and especially Consequence Reflection. The high content relevance score

(85%) validates that the SCT framework was successfully translated into a persuasive, visual narrative, providing a strong theoretical base for the intervention.

3. **Effectiveness in Bridging Awareness and Action:** Qualitative data, particularly the field activity transcripts and student learning evidence, demonstrated the comic's power to induce vicarious learning and influence immediate behavioral intent. The spontaneous actions of students initiating tasks immediately after engagement proved that the comic successfully bridged the gap between cognitive awareness of time management principles and actual self-regulated action.
4. **Novelty and Practical Impact:** The localized, interactive nature of the "Besok Aja Deh" comic serves as a novel and highly relevant solution that successfully overcomes the psychological barrier of denial associated with academic delay. It is an effective, non-intrusive alternative to traditional lectures, capable of fostering self-efficacy and improving the quality of learning outcomes within the higher education setting.

## Suggestions

The findings of this study provide a strong basis for immediate practical application and offer several avenues for advanced academic inquiry. Practically, the Universitas Nahdlatul Ulama Pasuruan and similar institutions are strongly advised to integrate the validated "Besok Aja Deh" interactive comic into student orientation programs or academic counseling services as a scalable, low-cost tool for mass self-regulation training, thereby directly addressing the problem of academic procrastination that was the focus of this research. Academically, further research should be conducted to measure the long-term behavioral impact of the comic, moving beyond acceptance and initial intent to track objective outcomes such as grade point average (GPA) and task completion rates over a full semester. Additionally, comparative studies are recommended to critically assess the effectiveness of this interactive comic format against other established interventions, such as time management workshops or generalized educational modules (Yusuf, Rashid, & Nordin, 2026), to definitively position the comic's role within the broader pedagogical landscape.

## REFERENCE

- Abrori, F. M., Lavicza, Z., & Anđić, B. (2023). Constructing socio-scientific issue literacy through comics in learning apperception for elementary school students. *Studies in Comics*, 14(2), 281–310. [https://doi.org/10.1386/stic\\_00111\\_1](https://doi.org/10.1386/stic_00111_1)
- Bedi, K. (2023). *AI Comics as Art: Scientific Analysis of the Multimedia Content of AI Comics in Education* (D. Cisin, N. Vrcek, M. Koricic, V. Gradisnik, K. Skala, Z. Car, M. Cicin-Sain, S. Babic, V. Sruk, D. Skvorc, A. Jovic, S. Gros, B. Vrdoljak, E. Tijan, T. Katulic, J. Petrovic, T. G. Grbac, & L. Bozicevic, Eds.; pp. 750–753). Institute of Electrical and Electronics

- Engineers Inc. <https://doi.org/10.23919/MIPRO57284.2023.10159693>
- Berger, A. A., & Gonot-Schoupinsky, F. N. (2023). Humour and mental health: a case study of Arthur Asa Berger. *Mental Health and Social Inclusion*, 27(1), 37–50. <https://doi.org/10.1108/MHSI-08-2022-0051>
- Bestley, R. (2023). ‘Fuck Art, Let’s Dance’: An interview with Chris Morton. *Punk and Post-Punk*, 12(3), 353–377. [https://doi.org/10.1386/punk\\_00208\\_7](https://doi.org/10.1386/punk_00208_7)
- Botturi, L. (2023). Maestro Martino: Designing a Historic Escape Room With Primary School Children. In T. Spil, G. Bruinsma, & L. Collou (Eds.), *Proceedings of the European Conference on Games-based Learning* (Vols. 2023-October, pp. 78–85). Dechema e.V. <https://doi.org/10.34190/ecgbl.17.1.1346>
- Boucher, M., Bach, B., Stoiber, C., Wang, Z., & Aigner, W. (2023). *Educational Data Comics: What can Comics do for Education in Visualization?* 34–40. <https://doi.org/10.1109/EduVis60792.2023.00012>
- Daloos, M. L. A. S., & Paderna, E. E. S. (2023). Enhancing Students’ Concept Understanding Through Collaborative-Metacognitive Use of Science Literature. *Research in Science Education*, 53(1), 81–97. <https://doi.org/10.1007/s11165-022-10049-7>
- Divya, D. M., Karthika Devi, M. S., & Ramachandran, B. (2023). SPEG—Semiotics-Based Panel Extraction from Graphic Novel. *Lecture Notes in Electrical Engineering*, 1007 LNEE, 315–327. [https://doi.org/10.1007/978-981-99-0189-0\\_23](https://doi.org/10.1007/978-981-99-0189-0_23)
- Earle, H. E. H., & Lund, M. (2023). *IDENTITY AND HISTORY IN NON-ANGLOPHONE COMICS*. 1–285. <https://doi.org/10.4324/9781003386841>
- Fischbacher-Smith, D. (2023). Unleashing “currents of curiosit”: Reconfiguring learning design using academic comics in higher education. *Proceedings of the Human Factors and Ergonomics Society*, 67(1), 296–303. <https://doi.org/10.1177/21695067231194989>
- Fitria, Y., Malik, A., Mutiaramses, null, Halili, S. H., & Amelia, R. (2023). Digital comic teaching materials: It’s role to enhance student’s literacy on organism characteristic topic. *Eurasia Journal of Mathematics, Science and Technology Education*, 19(10). <https://doi.org/10.29333/ejmste/13573>
- Formiga, B., Rebelo, F. C. E. S., Cruz Pinto, J., & Vasconcelos, A. (2023). Architectural and Emotional Reactions: Proposal of a Framework. *Lecture Notes in Computer Science*, 14057 LNCS, 481–499. [https://doi.org/10.1007/978-3-031-48047-8\\_32](https://doi.org/10.1007/978-3-031-48047-8_32)
- Grimmer, J., Knox, D., & Stewart, B. M. (2023). Naïve regression requires weaker assumptions than factor models to adjust for multiple cause confounding. *Journal of Machine Learning Research*, 24. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85188359334&partnerID=40&md5=261fa1424836d235a97af50af6f49d14>
- Guo, H., Wang, B., Bai, J., Liu, J., Yang, J., & Li, Z. (2023). *M2C: Towards Automatic Multimodal Manga Complement*. 9876–9882. <https://doi.org/10.18653/v1/2023.findings-emnlp.661>
- Hernandez, L. E., Kuttner, P. J., López, G. R., Mayer-Glenn, J., Alvarez Gutiérrez, L., Kim, T., Niang, A., Partola, S., & Yanagui, A. (2023). *Families and Educators Co-Designing: Critical Education Research as Participatory Public Scholarship*. 778–797. <https://doi.org/10.4324/9781003141464-46>
- Iurgel, I. A., Kalb, J., Parente, A., Malinko, D., Weller, M., & Wiedemann, S. (2023). Introducing the Comic Automaton: Interaction Design Options for an Interactive Comic for Higher Education. *Lecture Notes in Computer Science*, 14384 LNCS, 202–211. [https://doi.org/10.1007/978-3-031-47658-7\\_18](https://doi.org/10.1007/978-3-031-47658-7_18)
- Kelp-Stebbins, K. (2023). The Two Shamans Beyond the Two Solitudes: Michael Nicoll Yahgulanaas’ Haida Manga as a Tool for Indigenizing Comics. *American Review of Canadian Studies*, 53(3), 406–419. <https://doi.org/10.1080/02722011.2023.2246788>
- Lucas, J., Gallego, A. J., Calvo-Zaragoza, J., & Martinez-Sevilla, J. C. (2023). Automatic Detection of Comic Characters: An Analysis of Model Robustness Across Domains. *Lecture Notes in Computer Science*, 14193 LNCS, 151–162. [https://doi.org/10.1007/978-3-031-41498-5\\_11](https://doi.org/10.1007/978-3-031-41498-5_11)
- Lusiana, S. A., Sumardi, R. N., Ngardita, I. R., Yuniyanto, A. E., & Susanto, T. (2023). Health Education Program for Improving of Food Intake of Breakfast and Vegetables Consumption: A Quasi Experiment among Elementary School Students in Indonesia. *Central European Journal of Paediatrics*, 19(1), 65–71. <https://doi.org/10.5457/p2005-114.339>
- Özgüner, E. A. (2023). Picturing National History: Turkey’s Popular Nationalism on the Rise Through the 1950s New Print Culture. *Journal of Design History*, 36(1), 54–72. <https://doi.org/10.1093/jdh/epac057>
- Richter, I. G. M., Lim, V. C., Fadzil, K. S., Riordan, O., Pahl, S., & Goh, H. C. (2023). Addressing illegal practices: intergenerational transfer and creative engagement as a way to compensate boomerang effects. *Frontiers in Communication*, 8. <https://doi.org/10.3389/fcomm.2023.1194099>
- Sakurai, T., Ito, R., Abe, K., & Nakamura, S. (2023). A Method to Annotate Who Speaks a Text Line in Manga and Speaker-Line Dataset for Manga109. *Lecture Notes in Computer Science*, 13644 LNCS, 22–33. <https://doi.org/10.1007/978->

3-031-37742-6\_2

Shirbanova, A. A., Dergunova, K. N., & Delazari, I. (2023). "Mit vielen Kupfern": The Second Kamchatka Expedition as multimodal discourse in the diaries of G. W. Steller and the comic strip by T. E. Bak\*; «С большим количеством офортов»: Вторая Камчатская экспедиция как мультимодальный дискурс в дневниках Г. В. Стеллера и графическом романе Т. Э. Бака. *Vestnik Sankt-Peterburgskogo Universiteta, Yazyk i Literatura, 20(3), 609–630*. <https://doi.org/10.21638/SPBU09.2023.313>

Silva, P. G. C., Ferreira, I. P., de Vasconcelos, L. A., de Jesus, H. G., Gonçalves, T. F., & Peixoto, I. V. P. (2023). Construction and validity of educational technology about the human papillomavirus vaccine for adolescents; Construção e validação de tecnologia educacional sobre a vacina contra o papilomavírus humano para adolescentes; Construcción y validación de tecnología educativa sobre la vacuna contra el virus del papiloma humano para adolescentes. *Revista Brasileira de Enfermagem, 76*. <https://doi.org/10.1590/0034-7167-2023-0048>

Simatupang, C. T. H., Shovich, D. A., Maulana, F. I., Wijaya, I. B. A. B. A., & Agustina, I. A. (2023). Design and Development

Applications HD'R Comic Cafe Using Augmented Reality. *Lecture Notes in Electrical Engineering, 1029 LNEE, 829–839*. [https://doi.org/10.1007/978-3-031-29078-7\\_72](https://doi.org/10.1007/978-3-031-29078-7_72)

Skoog, M., Rubertsson, C., & Kristensson-Hallstrom, I. (2023). Feasibility of an evidence-based educational intervention in screening immigrant mothers for postpartum depression: A pretest-posttest experimental design. *Scandinavian Journal of Caring Sciences, 37(1), 173–184*. <https://doi.org/10.1111/scs.13086>

Topal, B. B., Yuret, D., & Sezgin, M. M. (2023). Domain-Adaptive Self-Supervised Face & Body Detection in Drawings. In E. Elkind (Ed.), *IJCAI International Joint Conference on Artificial Intelligence* (Vols. 2023-August, pp. 1432–1439). International Joint Conferences on Artificial Intelligence. <https://doi.org/10.24963/ijcai.2023/159>

Zhou, Y., Weber Bain, A., & Cramp, H. (2023). Overview of United Kingdom Trade Mark, Design and Copyright Cases 2022. *IIC International Review of Intellectual Property and Competition Law, 54(3), 412–430*. <https://doi.org/10.1007/s40319-023-01303-0>