Development of an integrated textbook flipbook BUTERI to enhance students' creative innovation and academic resilience

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Abstract. The increasing demand for innovative and character-strengthening learning media in higher education highlights the urgency of this research. This study aims to develop an integrated textbook flipbook BUTERI capable of enhancing students' creative innovation and academic resilience. The research method employed is Research and Development, utilizing the 4D model (Define, Design, Development, and Disseminate). The research sample consisted of 60 fifth-semester students from the elementary school teacher education study program, selected through purposive sampling. Data collection techniques included a creative innovation test and non-test techniques such as observation, interviews, academic resilience questionnaires, and documentation. Qualitative data analysis involved data collection, data reduction, data presentation, and conclusion, while quantitative data analysis employed descriptive and inferential statistical analysis. The research findings indicate: (1) Define: Needs analysis revealed the necessity for innovative media to enhance creative innovation and academic resilience; (2) Design: Interactive technology-based media, materials, and evaluations were designed; (3) Development: The media was validated, tested, and proven effective in improving learning outcomes; and (4) Disseminate: The product was disseminated through FGDs and implemented in lectures, and it was proven to enhance creative innovation and academic resilience with positive responses. This study concludes that the integrated textbook flipbook BUTERI can enhance students' creative innovation and academic resilience.

Introduction

In the era of globalization and the Fourth Industrial Revolution, 21st-century education faces complex challenges and opportunities. Students are no longer sufficiently equipped with only cognitive knowledge but are also required to possess critical thinking skills for problem-solving, creative thinking to generate new solutions, the ability to collaborate in interdisciplinary teams, and effective communication skills in various contexts (Muammar & Alhamad, 2023; Touzard et al., 2023). Higher education plays a strategic role in preparing a young generation ready to compete at both national and global levels by strengthening 21st-century skills in the curriculum, learning processes, and assessment (Göktalay & Özeke, 2015). The rapid development of technology, automation, and industrial dynamics has altered the job market's needs. Companies today prioritize not only competent but also innovative and adaptable workers (Ramli & Yahya, 2019). The ability to generate new ideas, solve problems with unconventional approaches, and adapt to technological advancements is a crucial added value (Fajari et al., 2020; Sarwanto et al., 2020).

Education plays an essential role as a platform for developing students' creativity and innovation. Through meaningful learning processes, students can be trained to think beyond the norm, create original solutions, and produce valuable works (Kim et al., 2019). Educators act as facilitators who foster an open, exploratory classroom atmosphere free from fear of failure (Santos-Meneses & Drugova, 2023). A conducive and participatory learning environment supported by innovative learning approaches helps maximize students' creative potential (Rios et al., 2020).

Creative innovation is a combination of creativity (the ability to generate original new ideas) and innovation (the ability to implement those ideas into practical solutions). According to Astuti et al. (2020), creativity is a thinking process that results in something new and valuable, while according to Kotorov et al. (2024), innovation is the application of creative ideas in practice. Furthermore, creative innovation refers to the ability of students to think originally and concretely implement their ideas in various academic and social activities (Chen et al., 2023; Citrawan et al., 2024). Students with high creative innovation levels tend to take risks, be open to new ideas, combine information in unique ways, and consistently create original and applicable solutions. They are usually active, reflective, and possess high intrinsic motivation in learning. In contrast, students with low creative innovation tend to be passive, follow existing patterns, lack confidence in expressing ideas, and fear new challenges or changes (Alshammari & Thomran, 2023; de Barros et al., 2025; Purbaningrum & Saputra, 2024).

In addition to cognitive and behavioral traits, creative innovation is also influenced by environmental, emotional, and metacognitive factors. According to Amabile's Componential Theory of Creativity (Rennick & McKay, 2018), creative performance arises from the interaction of domain-relevant skills, creativity-relevant processes (such as flexible thinking and risk-taking), and intrinsic motivation, all of which are shaped by the surrounding social environment. Supporting this, Keleş (2022) highlight the importance of classroom climate, psychological safety, and encouragement from educators in fostering students' willingness to explore novel ideas and persist through challenges. Moreover, metacognitive awareness of students' ability to plan, monitor, and evaluate their own creative processes has been shown to play a critical role in refining and applying original ideas effectively (Zolfaghari et al., 2011). These perspectives emphasize that creative innovation is not solely a product of individual ability but is nurtured through supportive pedagogical practices and self-regulatory strategies.

Various international reports, such as from the World Economic Forum (2015), indicate that creative innovation remains one of the top ten most needed yet most difficult competencies to find in 21st-century education and the workforce. At the national level, a study by the Indonesian Ministry of Education, Culture, Research, and Technology revealed that the majority of students tend to rely on memorization, are not accustomed to divergent thinking, and are rarely trained to develop original solutions in real-world contexts (Santi et al., 2019). Furthermore, higher education learning environments in Indonesia are still predominantly one-way and provide limited space for idea exploration (Murwaningsih & Fauziah, 2020). This condition highlights a gap between the demand for innovative competencies and current educational practices, underscoring the need for research that enhances creative innovation skills through effective media and learning approaches.

In addition to creativity and innovation, academic resilience is also a crucial aspect that students must possess in order to face various challenges in their studies. This resilience helps students to persist and thrive even when facing multiple obstacles during the learning process (Ahmed et al., 2018). Students often encounter significant academic pressures, including overwhelming assignments, exams, and performance demands, as well as social pressures such as peer environments and personal issues (Uicheng & Chobphon, 2024; Ye et al., 2021). Therefore,

academic resilience is essential for students to maintain learning motivation, manage stress, and stay productive even when facing failure or difficulties (Ramadhani & Sagita, 2022).

Academic resilience is the ability of an individual to recover from academic difficulties and consistently maintain learning motivation (Putri & Nursanti, 2020). This resilience includes a positive attitude towards challenges, emotional management skills, and adaptive strategies to overcome learning barriers. Students with high academic resilience are typically optimistic, persistent, able to manage stress effectively, and proactive in seeking solutions when facing academic challenges. Conversely, students with low academic resilience tend to give up easily, become quickly stressed, lack confidence when facing difficulties, and often lose motivation when encountering failure (Ahmed et al., 2018; Suud et al., 2024).

Academic resilience is not only shaped by individual traits but also by environmental and relational factors. According to Habibi et al. (2024) academic Buoyancy Theory, resilience in the academic context emerges from students' ability to effectively deal with everyday academic setbacks, such as low grades, exam pressure, or negative feedback, through self-efficacy, control, persistence, and task management. Furthermore, the Self-Determination Theory (Salikhova et al., 2020) emphasizes that students' resilience is strengthened when their psychological needs for autonomy, competence, and relatedness are met within the learning environment. Supportive teachers, meaningful peer relationships, and a sense of belonging are key contributors to the development of academic resilience. These theoretical frameworks show that resilience is a dynamic process involving the interaction between individual capacity and contextual support.

The COVID-19 pandemic severely disrupted educational systems globally, exposing the fragility of students' academic resilience. Studies conducted in various countries, including Indonesia, revealed that prolonged online learning led to increased stress, decreased motivation, and reduced emotional engagement among students (Majumdar et al., 2021; Prasetyo et al., 2020; Wang et al., 2020). Many students struggled to adapt to self-directed learning environments, experienced digital fatigue, and lacked the social support necessary for coping with academic pressures. In Indonesia, these challenges were more pronounced in regions with limited access to technology and internet connectivity, exacerbating learning inequality and emotional strain (Andriana et al., 2023; Zutiasari & Kuncahyono, 2021). This alarming reality underscores the urgent need for educational innovations that can strengthen students' academic resilience, especially in preparing them to face uncertain or disruptive learning conditions in the future.

The development of innovative teaching materials is a strategic step to support learning that fosters creativity and resilience. One of the best options is the integrated textbook (BUTERI). BUTERI is designed to provide knowledge and guide students in comprehensively learning a subject. The book's content can include texts, illustrations, learning materials, learning media (such as images, videos, audio, and augmented reality), student worksheets, and evaluation sheets to assess students' understanding. An integrated textbook refers to a learning resource that presents learning materials by combining various media and interactive elements (Atmojo et al., 2022; Fayanto et al., 2023). In this book, written texts are combined with illustrations, images, audio, video, and digital elements, all of which support a specific educational concept. The purpose of these elements in BUTERI is to create a more in-depth and relevant learning experience by accommodating various student learning styles (Erol et al., 2021; Huang et al., 2020).

In terms of its substance, BUTERI offers a comprehensive and cohesive structure that aligns with the curriculum and instructional objectives. Each unit is organized systematically, starting with clear learning goals, conceptual explanations, contextual examples, interactive exercises, and integrated digital content, all designed to deepen students' understanding and engagement. The

implementation of BUTERI in the classroom can be done through blended learning approaches, where teachers combine face-to-face instruction with multimedia-based activities. For example, during classroom sessions, teachers can present core concepts using the textbook's illustrations and QR-linked videos, while assigning augmented reality (AR)-based activities or digital worksheets as independent tasks. Supporting factors for the use of multimedia books include the increasing accessibility of mobile devices among students, the availability of internet connectivity, and the growing familiarity of both teachers and students with digital platforms (Arzak & Prahani, 2023). The advantages of multimedia books lie in their ability to cater to multiple learning styles, visual, auditory, and kinesthetic, while promoting self-paced exploration, critical thinking, and collaborative learning (Atmojo et al., 2022; Bozkurt & Bozkaya, 2015; Adnyana, 2023). Moreover, the interactive nature of the textbook enhances student motivation, reduces cognitive overload through multimodal explanations, and ultimately supports the development of creative innovation and academic resilience in a more meaningful and personalized learning experience (Hamimah et al., 2020; Ridho et al., 2021).

Several studies have shown that BUTERI can be integrated with the concept of character education through the presentation of materials that promote positive values and ethical behavior (Erika, 2019; Erol et al., 2021; Huang et al., 2020). Other research also indicates that BUTERI can be combined with project-based education concepts that include numerous project worksheets and interactive activities in real-life contexts (Amalia et al., 2020; Çetinkaya et al., 2019; Fayanto et al., 2023; Özen Altınkaynak, 2019; Sun, 2020; Victoria et al., 2018). BUTERI can also be integrated with specific models or methods as found in research by (Amalia et al., 2020; Atmojo et al., 2022; Prastyana et al., 2023; Ridho et al., 2021; Sodiq, 2015). However, there has not been a study that examines BUTERI and its influence on creative innovation and academic resilience.

This research is crucial because in today's digital era, the need for innovative and interactive learning media is increasing to support effective learning processes. The BUTERI flipbook, as a digital medium, provides a more engaging learning experience and allows students to access materials flexibly. Moreover, the development of an integrated textbook with multimedia features is expected to stimulate students' creativity and innovation in facing academic and workplace challenges. Based on the above background, this study aims to develop an integrated textbook flipbook capable of enhancing students' creative innovation and academic resilience as well as analyzing the quality and effectiveness of the flipbook as an innovative teaching material. Based on this focus, the following research questions are formulated: (1) how is the development process of the integrated textbook-based flipbook (BUTERI) carried out?, (2) how practical is the integrated textbook-based flipbook (BUTERI) when implemented in the learning process?, (3) how effective is the integrated textbook-based flipbook (BUTERI) in improving students' creative innovation?, (4) how effective is the integrated textbook-based flipbook (BUTERI) in improving students' academic resilience?, (5) how do users respond to the use of the BUTERI flipbook in terms of content, media, usefulness, and engagement?

Method

Research Design
This study employed a Research and Development (R&D) design, with the primary objective of developing an integrated textbook flipbook aimed at enhancing students' creative innovation and academic resilience. The R&D approach combines theoretical and practical elements, allowing the study to address both academic inquiries and the production of tangible learning materials. Through validation and trials, the R&D method ensures the developed product has undergone rigorous evaluation for its quality, feasibility, and effectiveness.

Sample and Sampling Technique

The sample in this study comprised 60 fifth-semester students from the Primary School Teacher Education (PGSD) program at Universitas Bina Bangsa during the odd semester of the 2024/2025 academic year. The participants were divided into two groups: 30 students in the experimental group who used the integrated textbook flipbook, and 30 students in the control group who used conventional learning materials. The sampling technique employed was purposive sampling, a non-probability sampling method that selects participants based on specific criteria relevant to the study's objectives. The criteria for participant selection were as follows: (1) willingness to participate in the study, (2) enrollment in the "Instructional Media" course during the current semester, and (3) active attendance in lectures, with no academic violations that could impact their engagement in the learning process.

Data Collection Techniques and Instruments

Data were collected using both test and non-test techniques. The test technique involved open-ended assessments designed to measure students' creative innovation abilities. Non-test techniques included observations, interviews, questionnaires, and documentation. Observations were conducted using a non-participant approach, guided by a structured observation framework that focused on two main aspects: the implementation of classroom instruction and the analysis of media needs. The observation examined the methods lecturers use to deliver course content, the types of media utilized during instruction, as well as student responses and engagement throughout the learning process. In-depth interviews were conducted using a semi-structured interview guide specifically designed to explore the needs for media development from both lecturers' and students' perspectives. Interview questions covered perceptions of the learning media currently in use, obstacles to adopting digital media, and expectations for more relevant and innovative learning tools. Document analysis was also conducted to collect supporting data, such as curriculum documents, course syllabi (RPS), midterm exam scores, and other learning records, to serve as comparative data against the field findings.

A questionnaire was developed to measure students' academic resilience using a five-point Likert scale (1 = Strongly Disagree to 5 = Strongly Agree). The formulation of questionnaire items was based on relevant theoretical dimensions and indicators. The questionnaire blueprint referred to constructs derived from established theories and previous studies, which were then translated into measurable statements representing each indicator. The table below presents the dimensions and indicators of the *creative innovation* variable.

Table 1. Dimensions and Indicators of Creative Innovation and Academic Resilience Variables

No	Variable	Dimension	Indicator
1	Creative Innovation	Originality	Ability to generate unique and unconventional ideas
		Fluency	Ability to express multiple ideas to solve problems
		Flexibility	Ability to shift perspectives and approaches when solving problems
		Elaboration	Ability to refine, expand, and develop ideas in detail
2	Academic Resilience	Perseverance	Persistence in learning despite difficulties
		Emotional Regulation	Ability to manage stress and negative emotions in academic situations
		Positive Academic Beliefs	Confidence in one's academic abilities
		Help-Seeking Behavior	Proactiveness in seeking help when facing academic challenges

All instruments underwent validity and reliability testing. Content validity was assessed by expert judgment, and construct validity was evaluated through product-moment correlation analysis. Instrument reliability was analyzed using Cronbach's Alpha to determine internal consistency

across items. Here is the recap of the validity and reliability test results for the test and questionnaire instruments.

Table 2. Summary of Instrument Validity and Reliability Testing

No	Instrument Type	Number of Items	Correlation Coefficient Range (r)	Mean r-value	Cronbach's Alpha	General Remarks
1.	Creative Innovation Test (Essay)	10	0.412 – 0.789	0.631	0.812	Valid and Reliable
2.	Academic Resilience Questionnaire	20	0.354 – 0.772	0.598	0.876	Valid dan Reliable

Data Analysis Techniques

Data analysis in this study involved both qualitative and quantitative approaches. The qualitative data were analyzed using the Miles and Huberman model, which includes four stages: (1) data collection through observations and interviews, (2) data reduction by selecting, focusing, simplifying, and transforming raw data into meaningful information, (3) data presentation in narrative or matrix form to facilitate understanding of the findings, and (4) concluding or verifying patterns and themes that emerge consistently. The quantitative data were analyzed using descriptive and inferential statistics. Descriptive analysis involved calculating means, standard deviations, minimum, and maximum scores from the pre-test and post-test results. Inferential analysis began with prerequisite tests, including the Kolmogorov-Smirnov test for normality and the Levene test for homogeneity of variance. Once the prerequisites were met, hypothesis testing was conducted using the independent samples t-test to determine whether there were significant differences between the control and experimental groups. Learning gains were further analyzed using the normalized gain (N-Gain) calculation.

Research Procedure

The research procedure in this study follows the 4D (Define, Design, Develop, Disseminate) model. In the Define stage, a needs analysis was conducted through observations, interviews, and document analysis to identify gaps in media usage and curriculum requirements. The Design stage involved preparing a blueprint for the integrated textbook flipbook, including content structure, learning activities, and digital features that were aligned with the course objectives. BUTERI is an integrated textbook-based flipbook designed to support students' creative innovation and academic resilience in the instructional media course. Developed using the Heizebook platform, it features interactive elements such as videos, audio narration, clickable navigation, and downloadable worksheets, along with reflective prompts, learning activities, and self-assessments.

In the Development stage, the initial product was created, validated by experts (media, content, language), and revised based on feedback. A limited trial was then conducted to assess the practicality and effectiveness of the product. Quantitative and qualitative data were collected through pre-test, post-test, questionnaires, and student responses. The Disseminate stage included presenting the product in FGDs, integrating it into lectures, and uploading it to the university's LMS for broader access. This structured development model ensured that the product was not only valid and practical but also effective in achieving learning goals. The 4D model provided a systematic framework to guide the development process based on empirical needs and theoretical foundations.

Results and Discussion

Define

In the Define stage, three key analyses were conducted: media analysis, curriculum analysis, and analysis of student characteristics. The media analysis revealed that most lecturers still rely on outdated printed textbooks with minimal digital elements in the learning process. Classroom observations showed that the majority of learning materials were delivered through printed books and simple presentations, with little use of interactive digital media. Interviews with lecturers indicated that time and resource constraints hindered the optimal use of digital learning media. One lecturer stated, "We still rely on printed books because the available digital media do not sufficiently support the learning materials, and students are not yet fully accustomed to using them." This finding highlights the pressing need to develop more modern and digital learning media to enhance the learning process and make it more engaging and effective.

Furthermore, the curriculum analysis indicated that the instructional media course must incorporate digitalization as a central focus. The curriculum demands the use of innovative digital learning media as part of the teaching and learning process to support students' competence development in facing the challenges of 21st-century education. Lastly, the student characteristics analysis revealed that while students are generally digitally literate, their primary use of technology is for social media and entertainment rather than for learning purposes. Based on observations and group discussions, it appears that most students are not yet familiar with using advanced digital learning tools, such as augmented reality, virtual reality, or educational game applications. Interviews with several students indicated that they felt unfamiliar and lacked confidence in using these technologies to support their studies. One student expressed, "I use social media a lot, but when it comes to using advanced digital learning apps, I'm still confused and don't know how to use them." These findings suggest the need for digital learning media tailored to students' abilities and interests, making the learning process more engaging and effective.

The analysis in the Define stage revealed that the use of digital learning media in higher education remains suboptimal. This finding aligns with Rivasintha Marjito & Hidayat (2024) who state that interactive digital learning media can enhance motivation and learning effectiveness, but its implementation requires readiness from both lecturers and students. The media analysis revealed a dominant reliance on printed books and basic presentation media, lacking innovative digital features, which highlights a gap between 21st-century curriculum demands and conventional teaching practices. According to Anggraini et al. (2023) & Haniah et al. (2023), technology-rich learning media should be designed to foster student creativity and innovation, enabling them to adapt to the ever-evolving fields of knowledge and technology. Additionally, the curriculum analysis emphasizes the need for integrating digitalization as a core focus in instructional media courses. This is in line with UNESCO's recommendations (Febianti et al., 2023), which stresses the importance of developing digital literacy within higher education curricula to prepare students for global challenges and the rapidly changing job market. Furthermore, the analysis of student characteristics, which shows familiarity with technology but limited use in learning contexts, presents both a challenge and an opportunity. According to Forutanian (2021) in the theory of Digital Natives, the current generation grows up with technology but does not necessarily understand how to use it optimally for learning.

Design

The design stage focused on developing the integrated textbook-based flipbook (BUTERI) to enhance students' creative innovation and academic resilience. The process began with aligning the content to the instructional media course curriculum, ensuring that the material supported core competencies and emphasized digitalization. A detailed blueprint was then created, outlining the

structure of the flipbook, including topic sequences, key concepts, learning objectives, and integrated assessments. Various learning activities, including quizzes, case studies, and creative assignments, were designed to foster divergent thinking, originality, and problem-solving skills. To support academic resilience, the flipbook included reflection prompts, motivational content, and self-assessment tools to strengthen students' persistence and emotional regulation. The flipbook was developed using the Heizebook (Heize) platform, which enabled the integration of multimedia elements, including QR codes linked to instructional videos, audio narration, clickable navigation buttons, and downloadable worksheets. Texts were composed and formatted before being converted to PDF and uploaded to the Heize system, where interactive features were embedded to increase engagement and accommodate different learning styles. Visual and aesthetic design aspects such as consistent layout, font choice, and illustrations were also considered to ensure clarity and appeal. The initial draft of the flipbook was reviewed internally by content experts to verify its suitability before proceeding to the development stage.

Image 1. BUTERI Design Display

Development

The development stage in this study involved creating and refining the integrated textbook flipbook based on the previous analysis and design results. Before validation, the flipbook was in its initial draft form. It had not yet undergone in-depth testing, making it necessary to evaluate the content, media, and language to ensure alignment with learning needs. After the draft was completed, validation was conducted by several experts: a media expert to assess technical and visual aspects of the flipbook, a content expert to review its alignment with the curriculum and learning objectives, and a language expert to ensure linguistic accuracy and clarity of communication in the flipbook. Additionally, validation was carried out by user students, as User 1, to assess readability and ease of use, and by lecturers, as User 2, to provide feedback from the instructor's perspective. The validation results were used to revise and improve the flipbook, ensuring the final product is more valid, relevant, and user-friendly. The following is a summary of the validation data, showing the level of product feasibility across various aspects.

Table 3. Recapitulation of Expert Validation Results

Validator	Aspect Evaluated	Maximum Score	Average Score	Validity Category
Media Expert	Appearance & Function	100	89	Very Valid
Material Expert	Content Relevance	100	92	Very Valid
Language Expert	Language	100	87	Valid
User 1	Ease of Use	100	85	Valid
User 2	Relevance and Practicality	100	90	Very Valid

Diseminate

The dissemination stage is the final step in the development model, aimed at distributing the developed and validated product for broader use. In this study, after the integrated textbook-based flipbook product was developed, validated by experts (media, material, and language), and tested with students, the product was distributed as a form of research utilization. Dissemination was carried out through several activities. First, a presentation of the development results was conducted during an FGD within the PGSD Study Program. Second, the flipbook product was uploaded to the university's learning platforms, such as the Learning Management System (LMS), so that it could be accessed by students and other lecturers. Third, communication and discussions were held with lecturers of the Learning Media course to integrate the flipbook into the learning process on a continuous basis.
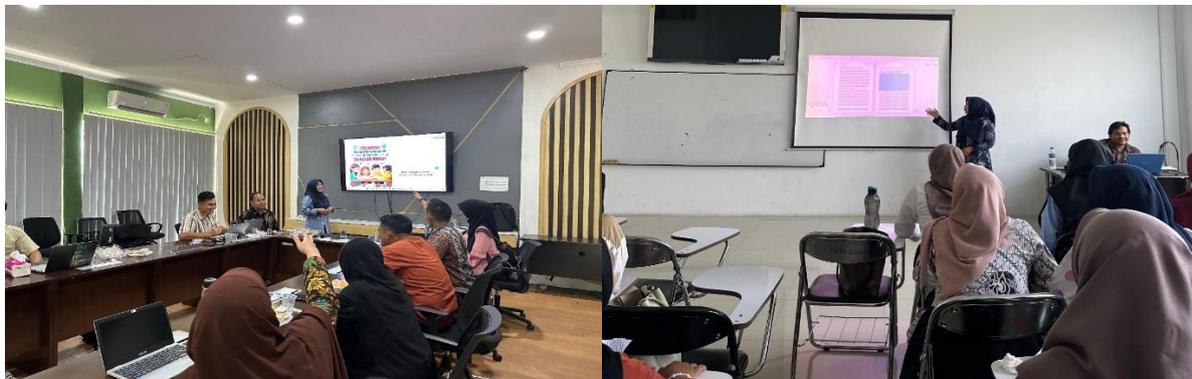

Image 2. FGD and Implementation of the BUTERI Flipbook in Lectures

To maintain internal validity, a pre-test was administered to students prior to the treatment being given. The pre-test results were analyzed using homogeneity and t-tests to ensure equal baseline abilities across groups. The treatment was conducted using the same learning modules and instructional guidelines across all groups to maintain consistency. Additionally, the product was validated by content, media, and language experts prior to testing. Furthermore, external validity was ensured by providing a detailed description of the subject characteristics and learning context. The sample was selected purposively based on its relevance to the product development objectives. The research findings were compared with previous studies to examine alignment and generalizability.

The implementation of this study was conducted in two classes within the same academic program: the experimental class and the control class, both taught by the same lecturer. This approach was taken to maintain teaching consistency and minimize instructional bias. To ensure fairness in delivery, the lecturer used a standardized lesson plan (RPS) that was identical across both classes, covering the same topics, learning objectives, and time allocations. The only difference between the two classes lay in the learning media: the experimental class used the integrated textbook

flipbook (BUTERI), while the control class used conventional printed teaching materials. The learning activities in both groups were integrated with the Direct Instruction model, which follows a structured and sequential process: introduction of objectives, explanation of content, guided practice, independent practice, and feedback. In the experimental class, this model was enriched with interactive features embedded in the BUTERI flipbook, such as multimedia content, QR code access to videos, and digital worksheets. To reinforce understanding and mastery, the drill method was also applied, particularly in follow-up exercises and independent assignments that encouraged students to practice key skills related to instructional media development repeatedly.

To ensure the initial equivalence of the two groups, the mid-semester examination scores were analyzed prior to the intervention. The average scores of the experimental and control classes were found to be relatively similar, with no significant difference. This indicated that students' academic abilities were comparable prior to treatment. Based on the pre-test and post-test data from the experimental and control groups, the students' creative innovation profiles showed a significant change in the experimental group after using the integrated textbook-based flipbook. Before the treatment (pre-test), most students in the experimental group were in the low category, with a percentage of 86.7%, only 13.3% were in the medium category, and none were in the high category. However, after the treatment (post-test), there was a drastic improvement: 60% of students were in the high category, 36.7% in the medium category, and only 3.3% remained in the low category. In contrast, the control group showed no significant improvement. Before the treatment, 66.7% of students were in the low category, 33.3% in the medium category, and none in the high category. After the treatment, only 10% of students reached the high category, 53.3% were in the medium category, and 36.7% remained in the low category. This comparison shows that using the flipbook as a learning medium had a greater positive impact on improving students' creative innovation skills compared to the conventional methods used in the control group. Below is a recap of the pre-test and post-test scores for students' creative innovation.
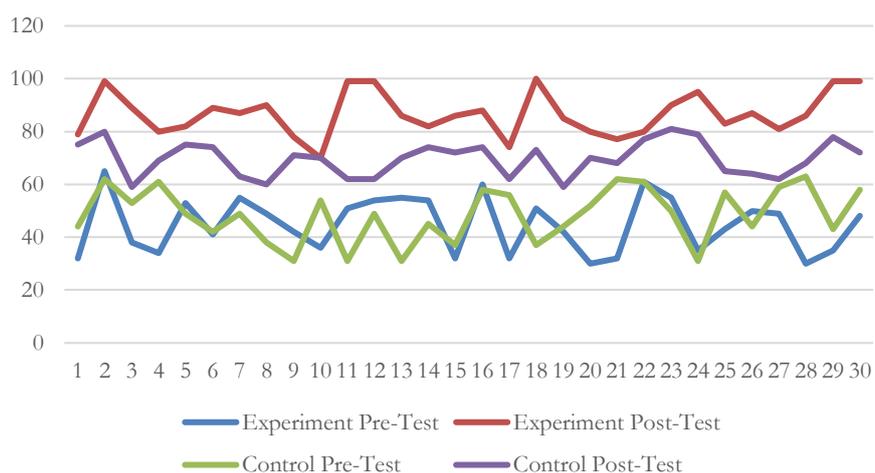

Image 3. Creative Innovation Pre-Test and Post-Test Data for Experimental and Control Classes

Furthermore, based on the pre-test and post-test data for academic resilience, it was observed that students in the experimental group experienced a significant increase in their resilience after receiving the treatment with the integrated textbook-based flipbook. Before the treatment, 76.7% of students were in the low category, 23.3% in the medium category, and none in the high category. After the treatment, there was a notable shift, with 66.7% of students in the high category, 30% in the medium category, and only 3.3% remaining in the low category. Meanwhile, in the control group, the improvement was relatively slower and less significant compared to the experimental

group. During the pre-test, 60% of students fell into the low category, 40% into the medium category, and none into the high category. After the treatment, only 23.3% of students reached the high category, 60% were in the medium category, and 16.7% remained in the low category. Below is a recap of the students' academic resilience pre-test and post-test scores.
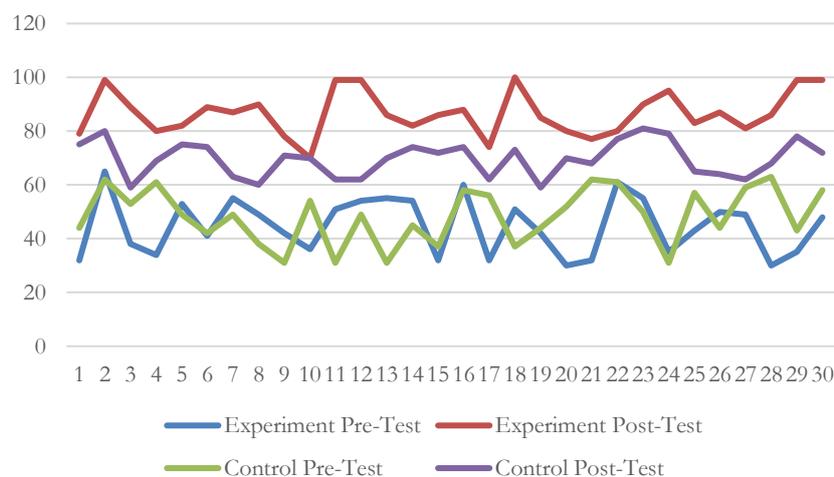

Image 4. Academic Resilience Pre-Test and Post-Test Data for Experimental and Control Classes

Next, a normality test was conducted on the pre-test and post-test data from both the experimental and control groups using the Kolmogorov-Smirnov test. This test aimed to determine whether the data were normally distributed, a requirement for parametric statistical analyses, such as the t-test. Data are considered normally distributed if the significance value (Asymp. Sig.) is > 0.05. Conversely, if the significance value ≤ 0.05, the data are not normally distributed.

Table 4. Recapitulation of Normality Test Results

No	Data	Normality Test (p-value)	Status
1	Pre-Test Experimental Creative Innovation	0.200	Normal
2	Post-Test Experimental Creative Innovation	0.167	Normal
3	Pre-Test Control Creative Innovation	0.188	Normal
4	Post-Test Control Creative Innovation	0.096	Normal
5	Pre-Test Experimental Academic Resilience	0.177	Normal
6	Post-Test Experimental Academic Resilience	0.112	Normal
7	Pre-Test Control Academic Resilience	0.192	Normal
8	Post-Test Control Academic Resilience	0.089	Normal

Based on the table above, all data have significance values greater than 0.05, indicating that all data are normally distributed. After the normality test, the next step is the homogeneity test to determine whether the data in the experimental and control groups have the same variance. The homogeneity test was conducted using the Levene Test. Data are considered homogeneous if the significance value (Sig.) is > 0.05. If the Sig. value ≤ 0.05, the data are considered non-homogeneous (heterogeneous).

Table 5. Recapitulation of Homogeneity Test Results

No	Data	Homogeneity Test (p-value)	Status
1	Pre-Test Homogeneity of Creative Innovation	0.174	Homogeneous
2	Post-Test Homogeneity of Creative Innovation	0.138	Homogeneous

3	Pre-Test Homogeneity of Academic Resilience	0.181	Homogeneous
4	Post-Test Homogeneity of Academic Resilience	0.125	Homogeneous

Based on the results above, all Levene Test significance values are greater than 0.05, indicating that the data have homogeneous variance. Therefore, the data are suitable for analysis using parametric tests such as the t-test. The Independent Samples t-test was used to determine whether there were significant differences between the experimental and control groups after the intervention. The following table presents the t-test results of this study.

Table 6. Recapitulation of t-Test Results

Variable	Mean of Experimental Group	Mean of Control Group	t-value	Sig. (2-tailed)
Creative Innovation	84.0000	60.1667	7.4125	0.000
Academic Resilience	86.6333	69.6000	8.9119	0.000

Based on the independent t-test results, the significance value (Sig. 2-tailed) is 0.000 for both variables, namely Creative Innovation and Academic Resilience. Since this value is less than 0.05, it can be concluded that there are significant differences between the experimental and control groups after the intervention. The average post-test score for the experimental group in Creative Innovation is 84.00, much higher than the control group's 60.17. For Academic Resilience, the experimental group achieved an average of 86.63, also higher than the control group's 69.60. These results show that the intervention or treatment given to the experimental group is efficacious in improving students' Creative Innovation and Academic Resilience. To determine the level of effectiveness of the intervention or treatment in this study, the N-Gain (Normalized Gain) calculation was used. The following table summarizes the N-Gain results.

Table 7. Recapitulation of N-Gain Results

Variable	Group	Mean N-Gain	Category
Creative Innovation	Experimental	0.74	High
Creative Innovation	Control	0.24	Low
Academic Resilience	Experimental	0.76	High
Academic Resilience	Control	0.39	Moderate

The intervention/treatment given to the experimental group effectively improved both Creative Innovation and Academic Resilience, with a high category based on the N-Gain scores. Meanwhile, the control group only experienced a low to moderate improvement, indicating that the intervention contributed significantly to enhancing both aspects compared to learning without specific treatment. Therefore, it can be concluded that the BUTERI Flipbook is efficacious in improving Creative Innovation by 74% and Academic Resilience by 76%.

These findings align with the explanation that creative innovation can be enhanced through exposure to interactive learning media that encourage free exploration of ideas. Media can provide visual stimulation and interactive activities that trigger students' divergent and creative thinking abilities (Alshammari & Thomran, 2023; de Barros et al., 2025). These findings align with previous research that emphasizes the role of interactive and multimedia-based learning tools in promoting students' creative innovation. Hadi & Kamarullah (2024) have demonstrated that digital media, when integrated with engaging content and interactive features, significantly contribute to stimulating divergent thinking and originality in learners. Similarly, Mashitoh et al. (2021) found that when students are allowed to explore, create, and express ideas using flexible digital tools, their ability to generate and apply innovative solutions increases.

Furthermore, the research results show that the BUTERI Flipbook not only serves as a material delivery medium but also as a learning tool that enhances students' academic resilience, consistent with the definition of academic resilience by Suud et al. (2024). They state that academic resilience is the ability to endure and thrive under academic pressure, which can be improved through engaging and motivating learning media. The research findings on academic resilience align strongly with previous studies and established theories. The significant increase in students' resilience after using a multimedia-rich learning medium supports the idea that learning tools that are engaging, varied, and interactive can foster students' ability to persist through academic challenges (Ahmed et al., 2018; Liaqat et al., 2024). Studies such as Marta et al. (2024) and Julaihah et al. (2024) confirm that students who are exposed to motivating and stimulating learning environments tend to develop stronger emotional control, motivation, and problem-solving strategies in the face of academic pressure.

Additionally, a questionnaire was distributed to assess responses to the media in terms of Media, Material, Benefit, and Interest. This response questionnaire measured students' perceptions of the learning media in terms of media quality, clarity, and relevance of the material, perceived benefits, and level of interest when using the media. Its purpose was to evaluate the effectiveness of the media in supporting learning processes and enhancing motivation. The questionnaire results serve as a basis for evaluating and developing future learning media and materials.

Table 8. Recapitulation of Responses on Flipbook Practicality

No	Aspect	Percentage	Criteria
1	Media	92%	Very Practical
2	Material	85%	Very Practical
3	Benefit	88%	Very Practical
4	Interest	88%	Very Practical
Mean		88.25%	Very Practical

The high percentages in these four aspects reflect the effectiveness of this media in supporting learning processes and increasing students' learning motivation. According to (Rivasintha & Hidayat, 2024), effective learning media are those that present material clearly and attractively, thereby facilitating understanding while enhancing students' cognitive engagement. Attractive learning materials can increase students' interest and participation, which in turn positively impacts learning outcomes. Several studies also support these findings, showing that practical and engaging digital learning media can enhance students' learning interest and positive perceptions of course materials (Anggraini et al., 2023; Haniah et al., 2023; Heri Hidayat et al., 2023).

The uniqueness of this research lies in the development and application of an integrated, multimedia-rich digital textbook specifically designed to enhance both creative innovation and academic resilience among prospective primary school teachers, two competencies that are rarely addressed simultaneously in instructional media. Unlike conventional textbooks or digital modules that focus solely on content delivery, the flipbook developed in this study incorporates interactive features, including videos, audio, illustrations, AR links, case-based assignments, and reflective questions. These components are cohesively structured to foster higher-order thinking, emotional engagement, and motivation. The novelty also lies in the systematic use of the 4D development model to produce an accessible, relevant, and validated product tailored to the digital learning needs of Indonesian higher education students.

Theoretically, this research contributes to the growing body of literature on instructional media development by demonstrating how digital integration can simultaneously support cognitive and affective learning outcomes, specifically creative innovation and academic resilience. It reinforces

theories of multimedia learning (Mayer), self-efficacy (Bandura), and resilience (Martin & Marsh), offering empirical evidence on their interrelation through media-based interventions. Practically, this study provides a concrete and replicable model for designing digitally integrated textbooks that align with 21st-century learning demands. It offers lecturers a validated tool to enrich classroom experiences and provides policymakers with a direction for curriculum reform that combines digital fluency with character building in higher education settings.

Conclusion

Based on the results and discussion of the study above, it can be concluded: (1) Define: The needs analysis reveals the necessity for innovative media to improve creative innovation and academic resilience; (2) Design: An interactive technology-based media was designed along with its content and evaluation; (3) Development: The media was validated, tested, and proven effective in improving learning outcomes; and (4) Disseminate: The product was disseminated through FGD and implementation in lectures, and it was proven to improve creative innovation and academic resilience with positive responses. This research concludes that the integrated textbook flipbook can improve students' creative innovation and academic resilience. The results of this study suggest that developing an integrated textbook flipbook can be a novel solution to enhance students' creative thinking and academic resilience.

This research is limited to the development and implementation of an integrated textbook flipbook in a single course within the PGSD study program, utilizing student subjects from a single higher education institution. The effectiveness test was conducted on a limited scale and has not yet covered variations in student characteristics across different academic backgrounds and institutions. In addition, the involvement of lecturers in media use remains partial and has not yet involved cross-course or cross-program collaboration. Based on these limitations, several recommendations are provided. For media developers and researchers, it is recommended to expand the scope of research to various study programs and institutions to obtain more general results. For lecturers, it is recommended to integrate the flipbook into various courses and adapt its content to meet the needs of interdisciplinary learning.

Bibliography

Adnyana, M. E. (2023). Implementation of flipbook learning media to improve motivation and achievement in biology learning in class XII MIPA2 students of SMAN 1 Kuta Selatan. *Indonesian Journal of Educational Development (IJED)*, *4*(1), 23-31. https://doi.org/10.59672/ijed.v4i1.2764

Ahmed, U., Umrani, W. A., Qureshi, M. A., & Samad, A. (2018). Examining the links between teachers support, academic efficacy, academic resilience, and student engagement in Bahrain. *International Journal of Advanced and Applied Sciences*, *5*(9), 39–46. https://doi.org/10.21833/ijaas.2018.09.008

Alshammari, A. E. A., & Thomran, M. (2023). Towards enhancing creativity and innovation in education system for youth in hail region. *Advanced Education*, *10*(22), 122–136. https://doi.org/10.20535/2410-8286.279776

Amalia, S., Darvina, Y., Asrizal, & Desnita. (2020). Pembuatan buku ajar terintegrasi pembelajaran kontekstual dan literasi lingkungan materi gelombang dan alat optik untuk siswa sma kelas xi (Development of an integrated textbook on contextual learning and environmental literacy for the topic of waves and optical instruments for 11th grade senior high school students). *Pillar of Physics Education*, *13*(2), 313–320.

Andriana, E., Yuliana, R., Setiawan, S., Noviyanti, T. E., Ulfahmi, K. I., Evasufi, L., & Fajari, W. (2023). Students' scientific ability through contextual scientific-based learning tools during

covid-19 outbreak. *International Journal of STEM Education for Sustainability*, *3*(2). https://doi.org/10.53889/ijses.v3i2.184

Anggraini, H., Hayati, R., Pitaloka, N., & Maharrani, D. (2023). Need analysis on developing of teaching materials on the basis of students' learning styles in higher education. *Proceedings of the 2nd International Conference on Advances in Humanities, Education and Language*, 1–17. https://doi.org/10.4108/eai.7-11-2022.2329344

Arzak, K. A., & Prahani, B. K. (2023). Practicality of augmented reality books in physics learning: a literature review. *JPPS (Jurnal Penelitian Pendidikan Sains)*, *12*(2), 138–154. https://doi.org/10.26740/jpps.v12n2.p138-154

Astuti, A., Waluya, S. B., & Asikin, M. (2020). The important of creative thinking ability in elementary school students for 4.0 era. *International Journal of Educational Management and Innovation*, *1*(1), 91. https://doi.org/10.12928/ijemi.v1i1.1512

Atmojo, I. R. W., Saputri, D. Y., & Fajri, A. K. (2022). Analysis of steam-based tpack integrated activities in elementary school thematic books. *Mimbar Sekolah Dasar*, *9*(2), 317–335. https://doi.org/10.53400/mimbar-sd.v9i2.49131

Bozkurt, A., & Bozkaya, M. (2015). Evaluation criteria for interactive e-books for open and distance learning. *International Review of Research in Open and Distributed Learning*, *16*(5), 58–82.

Çetinkaya, F. Ç., Ateş, S., & Yıldırım, K. (2019). Effects of interactive book reading activities on improvement of elementary school students'; Reading skills. *International Journal of Progressive Education*, *15*(3), 180–193. https://doi.org/10.29329/ijpe.2019.193.13

Chen, S., Wu, J., Huang, J., & Cao, J. (2023). Retracted: The impact of college students' creativity on their innovation behavior in the "internet+" era: The mediating role of creative self-efficacy. In *Security and Communication Networks* Vol. 5193764, pp. 1–7. Hindawi Limited. https://doi.org/10.1155/2023/9873060

Citrawan, I. W., Widana, I. W., Sumandya, I. W., Widana, I. N. S., Mukminin, A., Arief, H., Razak, R. A., Hadiana, D., & Meter, W. (2024). Special education teachers' ability in literacy and numeracy assessments based on local wisdom. *Jurnal Ilmiah Ilmu Terapan Universitas Jambi*, *8*(1), 145-157. https://doi.org/10.22437/jiituj.v8i1.32608

de Barros, R., Resende, L. M., & Pontes, J. (2025). Exploring creativity and innovation in organizational contexts: A systematic review and bibliometric analysis of key models and emerging opportunities. In *Journal of Open Innovation: Technology, Market, and Complexity 11*(2), 1–15. Elsevier B.V. https://doi.org/10.1016/j.joitmc.2025.100526

Erika, C. N. (2019). Pengembangan buku ajar bahasa indonesia terintegrasi pendidikan karakter berdasarkan pendekatan komunikatif (Development of an indonesian language textbook integrated with character education based on the communicative approach). *Jurnal Pendidikan Bahasa Dan Sastra*, *19*(2), 267–279. https://doi.org/10.17509/bs_jpbsp.v19i2.24832

Erol, M., Köstekçi, Ş., & Erol, A. (2021). Perception of turkish primary school students towards syrian students: The role of educational activities integrated with children's books. *Shanlax International Journal of Education*, *9*(4), 91–101. https://doi.org/10.34293/education.v9i4.4070

Fajari, L. E. W., Sarwanto, & Chumdari. (2020). The effect of problem-based learning multimedia and picture media on students' critical-thinking skills viewed from learning motivation and learning styles in elementary school. *Ilkogretim Online - Elementary Education Online*, *19*(3), 1797–1811. https://doi.org/10.17051/ilkonline.2020.735165

Fayanto, S., Wedi, A., Takda, A., & Fadilah, M. (2023). Exploration of integrated science-physics textbooks based on science literacy indicators: A case study in kendari city indonesia. *Anatolian Journal of Education*, *8*(1), 159–172. https://doi.org/10.29333/aje.2023.8111a

Febianti, Y. N., Herawan, E., & Safitri, A. L. (2023). Digital literacy and student creativity through e-resources on the quality of learning in college. *Journal of Education Technology*, *7*(1), 25–33. https://doi.org/10.23887/jet.v7i1.436

Forutanian, S. (2021). Digital literacy, competence, identity and intelligence: The four teachers essential skills in 21st century. In *International Journal of English Language Studies*, *3*(1), 9–16. Al-Kindi Center for Research and Development. https://doi.org/10.32996/ijels.2021.3.1.2

Göktalay, Ş. B., & Özeke, S. (2015). Essential skills for 21st century teachers in turkey: Uludag university example. In *e-Pedagogium 15*(2), 100–110. Palacky University Olomouc. https://doi.org/10.5507/epd.2015.020

Habibi, M., Ahman, Sunarya, Y., & Ferianti. (2024). Systematic literature review: The role of academic buoyancy on academic achievement in high school students and its implications for guidance and counseling. *Bisma The Journal of Counseling*, *8*(2), 123–138. https://doi.org/10.23887/bisma.v8i2.78232

Hadi, W., & Kamarullah. (2024). Students' creative thinking ability using project-based learning based on Augmented Reality (AR). *Vietnam Journal of Educational Sciences*, *20*(1), 72–82. https://doi.org/10.15625/2615-8965/22410106

Hamimah, Arlis, S., Arwin, Chandra, Anita, Y., Kenedi, A. K., & Kharisma, A. (2020). Thinking the most convenient analysis of alpha generation by using social science story digital books. *Elementary Education Online*, *19*(1), 316–331. https://doi.org/10.17051/ilkonline.2020.654895

Haniah, H., Mahira, M., & Djuaeni, Muh. N. (2023). The development of interactive e-book-based teaching materials for senior high school students. *Arabiyatuna: Jurnal Bahasa Arab*, *7*(1), 55–67. https://doi.org/10.29240/jba.v7i1.6690

Heri Hidayat, Kawuryansih Widowati, Dikha Puspitasari Zakiyya, Luthfiyah Hasna, & Luthvia Nur Sa'diyyah. (2023). Student response to the innovation of creating steam-based e-books in the early childhood creativity development course. *Jurnal Pendidikan Anak Usia Dini Undiksha*, *11*(1), 122–132. https://doi.org/10.23887/paud.v11i1.59807

Huang, C.-H., Cheng, F.-L., & Teng, C.-Y. (2020). Teaching practices: Integrating positive thinking in picture book creation for economically disadvantaged children. *Problems of Education in the 21st Century*, *78*(6A), 1081–1095. https://doi.org/10.33225/pec/20.78.1081

Julaihah, U., Laily, I., Achmad, R., Sasi, W., & Zahro, N. (2024). Academic resilience among undergraduate students: The analysis of psycho-social and religious aspects. *J-PIPS (Jurnal Pendidikan Ilmu Pengetahuan Sosial)*, *10*(2), 128–136. https://doi.org/10.18860/24360

Keleş, T. (2022). Investigation of high school students' creative problem-solving attributes. *Journal of Pedagogical Research*, *6*(4), 66–83. https://doi.org/10.33902/JPR.202215433

Kim, S., Raza, M., & Seidman, E. (2019). Improving 21st-century teaching skills: The key to effective 21st-century learners. *Research in Comparative and International Education*, *14*(1), 99–117. https://doi.org/10.1177/1745499919829214

Kotorov, I., Krasylnykova, Y., Pérez-Sanagustín, M., Mansilla, F., & Broisin, J. (2024). Supporting decision-making for promoting teaching and learning innovation: A multiple case study. *Journal of Learning Analytics*, *11*(1), 21–36. https://doi.org/10.18608/jla.2024.8131

Liaqat, F., Islam, M., Azim, M. U., & Lodhi, A. S. (2024). Investigating academic resilience in learning English: An ecological context of undergraduate students. *Frontiers in Psychology*, *15*(1467544), 1–10. https://doi.org/10.3389/fpsyg.2024.1467544

Majumdar, R., Flanagan, B., & Ogata, H. (2021). E-book technology facilitating university education during COVID-19 : Japanese experience. *Canadian Journal of Learning and Technology*, *47*(4), 1–27.

Marta, E., Cahyani, D., & Setiyani, R. (2024). The influence of academic resilience and academic self efficacy on student engagement with achievement motivation as mediation in accounting education. *Pedagogik Jurnal Pendidikan*, *11*(1), 94–115.

Mashitoh, N. L. D., Sukestiyarno, Yl., & Wardono, W. (2021). Creative thinking ability based on self efficacy on an independent learning through google classroom support. *Journal of Primary Education*, *10*(1), 79–88. https://journal.unnes.ac.id/sju/index.php/jpe/article/view/45248

Muammar, O. M., & Alhamad, K. A. (2023). Soft skills of students in university: How do higher education institutes respond to 21st century skills demands?. In *Journal of Educational and Social Research 13*(2), 174. Richtmann Publishing. https://doi.org/10.36941/jesr-2023-0041

Murwaningsih, T., & Fauziah, M. (2020). The effectiveness of creative problem solving (cps) learning model on divergent thinking skills. *International Journal of Science and Applied Science: Conference Series*, *4*(1), 78. https://doi.org/10.20961/ijsascs.v4i1.49460

Özen Altınkaynak, Ş. (2019). The effect of interactive book reading activities on children's print and phonemic awareness skills. *International Journal of Progressive Education*, *15*(1), 88–99. https://doi.org/10.29329/ijpe.2019.184.6

Prasetyo, M. A. M., Bashori, B., & ... (2020). Strategy of boarding school (pesantren) education in dealing with the COVID-19 pandemic. *Khalifa: Journal of Islamic*, *4*(2), 142–160. https://www.researchgate.net/profile/Novi_Lailisna2/publication/347515865_Strategy_of_Boarding_School_Pesantren_Education_in_Dealing_With_the_Covid-19_Pandemic/links/5fe01a3392851c13fea95e6d/Strategy-of-Boarding-School-Pesantren-Education-in-Dealing-With-

Prastyana, V., Anggoro, S., Prisilawati, D. E., Nazirah, A., & Cyril, N. (2023). Development of canva-based interactive e-book and book creator using the radec learning model to support creative thinking skills. *Dinamika Jurnal Ilmiah Pendidikan Dasar*, *15*(1), 57. https://doi.org/10.30595/dinamika.v15i1.17407

Purbaningrum, A. K., & Saputra, N. N. (2024). Innovation in creative writing skills for mathematics textbooks using the design thinking method. *JMPM: Jurnal Matematika Dan Pendidikan Matematika*, *9*(2), 224–234.

Putri, W. C., & Nursanti, A. (2020). The relationship between peer social support and academic resilience of young adult migrant students in jakarta. *International Journal of Education*, *13*(2), 122–130. https://doi.org/10.17509/ije.v13i2.24547

Ramadhani, D. P., & Sagita, D. D. (2022). Academic resilience of students in the limited face to face learning period (ptm-t). *Journal of Innovation in Educational and Cultural Research*, *3*(4), 519–527. https://doi.org/10.46843/jiecr.v3i4.210

Ramli, R., & Yahya, H. (2019). Effective use of lms in inculcating 21st century skills among university graduates a conceptual success model. In *2019 IEEE International Conference on Engineering, Technology and Education (TALE)*. IEEE. https://doi.org/10.1109/tale48000.2019.9225995

Rennick, C., & McKay, K. (2018). Componential theories of creativity: A case study of teaching creative problem solving. *Proceedings of the Canadian Engineering Education Association (CEEA)*, 1–15. https://doi.org/10.24908/pceea.v0i0.12991

Ridho, S., Wardani, S., & Saptono, S. (2021). Development of local wisdom digital books to improve critical thinking skills through problem based learning. *Journal of Innovative Science Education*, *9*(3), 1–7. https://doi.org/10.15294/jise.v9i1.37041

Rios, J. A., Ling, G., Pugh, R., Becker, D. M., & Bacall, A. N. (2020). Identifying critical 21st-century skills for workplace success: A content analysis of job advertisements. *Educational Researcher*, *49*(1), 80–89.

Rivasintha, E. M., & Hidayat, S. (2024). Development of teaching materials in curriculum studies and history textbooks. *HISTORIA: Jurnal Program Studi Pendidikan Sejarah*, *12*(1), 323–332. https://doi.org/10.24127/hj.v12i1.9127

Salikhova, N. R., Lynch, M. F., & Salikhova, A. B. (2020). Psychological aspects of digital learning: A self-determination theory perspective. *Contemporary Educational Technology*, *12*(2), 1–13. https://doi.org/10.30935/cedtech/8584

Santi, D. H., Prayitno, B. A., & Muzzazinah, M. (2019). Problem solving process and creative thinking of students in ecosystem issue. *JPBI (Jurnal Pendidikan Biologi Indonesia)*, *5*(3), 537–548. https://doi.org/10.22219/jpbi.v5i3.9647

Santos-Meneses, L. F., & Drugova, E. A. (2023). Trends in critical thinking instruction in 21st-century research and practice: Upgrading instruction in digital environments. In *Thinking Skills and Creativity* Vol. 49, p. 101383. Elsevier BV. https://doi.org/10.1016/j.tsc.2023.101383

Sarwanto, Fajari, L. E. W., & Chumdari. (2020). Open-ended questions to assess critical-thinking skills in indonesian elementary school. *International Journal of Instruction*, *14*(1), 615–630. https://doi.org/10.29333/IJI.2021.14137A

Sodiq, S. (2015). Developing language learning textbooks enriched with sense of literacy: The case of junior high school in indonesia. *International Education Studies*, *8*(9), 120–125. https://doi.org/10.5539/ies.v8n9p120

Sun, C.-H. (2020). Using interactive picture-book read-alouds with middle school efl students. *English Language Teaching*, *13*(7), 130–145. https://doi.org/10.5539/elt.v13n7p130

Suud, F. M., Agilkaya-Sahin, Z., Na'Imah, T., Azhar, M., & Kibtiyah, M. (2024). The impact of family social support on academic resilience in Indonesian and Turkish students: The mediating role of self-regulated learning. *International Journal of Adolescence and Youth*, *29*(1), 1–15. https://doi.org/10.1080/02673843.2024.2361725

Touzard, L. I. M., Noriega, M. A. C., & Rugel, L. H. B. (2023). Developing 21st-century skills through PBL in a public university. In *PODIUM* Issue 43, 111–128. Universidad Espiritu Santo. https://doi.org/10.31095/podium.2023.43.07

Uicheng, R., & Chobphon, P. (2024). Factors affecting academic resilience during crises: Cases of secondary school students in phuket, thailand. *International Education Studies*, *17*(3), 51–69. https://doi.org/10.5539/ies.v17n3p51

Victoria, M., Batoon, P., David, L., Morales, G., Antonio, J., & Figueroa, Y. (2018). Instructional design to measure the efficacy of interactive e-books in a high school setting. *Turkish Online Journal of Distance Education*, *19*(2), 47–60.

Wang, X., Chen, H., Liu, L., Liu, Y., Zhang, N., Sun, Z., Lou, Q., Ge, W., Hu, B., & Li, M. (2020). Anxiety and sleep problems of college students during the outbreak of COVID-19. *Frontiers in Psychiatry*, *11*(585693), 1–7. https://doi.org/10.3389/fpsyt.2020.588693

Widana, I. W., Sopandi, A. T., Suwardika, I. G. (2021). Development of an authentic assessment model in mathematics learning: A science, technology, engineering, and mathematics (STEM) approach. *Indonesian Research Journal in Education,* *5*(1), 192-209. https://doi.org/10.22437/irje.v5i1.12992

World Economic Forum. (2015). *New vision for education unlocking the potential of technology*. World Economic Forum. www.weforum.org

Ye, W., Strietholt, R., & Blömeke, S. (2021). Academic resilience: Underlying norms and validity of definitions. *Educational Assessment, Evaluation and Accountability*, *33*(1), 169–202. https://doi.org/10.1007/s11092-020-09351-7

Zolfaghari, A. R., Fathi, D., & Hashemi, M. (2011). The role of creative questioning in the process of learning and teaching. *Procedia - Social and Behavioral Sciences*, *30*, 2079–2082. https://doi.org/10.1016/j.sbspro.2011.10.404

Zutiasari, I., & Kuncahyono. (2021). Development of Digital Sway Teaching Materials for Online Learning in the COVID-19 Pandemic Era. *KnE Social Sciences*, *2021*(1), 200–209. https://doi.org/10.18502/kss.v5i8.9359