MINDFUL, MEANINGFUL, AND JOYFUL LEARNING BASED IPAS LEARNING STRATEGIES AND ICT-BASED INTERACTIVE MULTIMEDIA TO INCREASE STUDENT COLLABORATION AND CREATIVITY

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Abstract	This study aims to conduct a comprehensive investigation into the simultaneous effects of implementing the Mindful, Meaningful, and Joyful Learning (MMJ) approach integrated with the use of interactive multimedia based on information and communication technology (ICT) in enhancing elementary school students' collaboration skills and creativity, specifically at UPT SDN Kebonsari 1 Tuban. To achieve this objective, a quantitative research methodology was employed, enabling the collection of objective, systematic, and measurable data. The target population consisted of all 57 students enrolled at UPT SDN Kebonsari 1 Tuban. Since the total population was less than 100, a total sampling technique was applied, involving the entire population as research subjects to ensure full data representation. Primary data were collected using closed-ended questionnaires and structured observation sheets, designed to capture both students' observable learning behaviors and their self-reported perceptions of the instructional process. All instruments were validated and tested for reliability prior to data analysis. The collected data were processed using SPSS software and analyzed with multiple linear regression to determine the extent to which the independent variables (MMJ approach and ICT-based multimedia) collectively influence the dependent variables (collaboration and creativity). Findings revealed that the application of the MMJ learning strategy, supported by interactive multimedia technologies, significantly contributes to fostering students' ability to collaborate effectively and enhances their creative potential during learning activities. These results support the notion that engaging, meaningful, and context-aware instructional designs are not only capable of improving student learning outcomes but also align closely with the development of 21st-century competencies.
Keywords	Mindful, Meaningful, and Joyful Learning (MMJ); interactive multimedia; collaboration skills; creativity; IPAS.

INTRODUCTION

The acceleration of educational transformation in the digital era forces us to move from conventional learning models to innovative learning systems that integrate technology and humanistic pedagogy (Picauly, 2024). Social studies subjects at the elementary level should ideally be a space for students to hone their critical thinking, collaborative, and creative skills (Picauly, 2024). However, in reality, IPAS learning practices are still often teacher-centered, minimally interactive, and lack active student learning initiatives (Setia, 2024). Meanwhile, the demands of the 21st century demand that students develop social skills and think highly from an early age age (Hafiz et al., 2024).

In Indonesia, many elementary schools have not optimized the potential of ICT-based interactive multimedia in learning IPAS. As a result, students tend to be passive, rarely collaborate, and their creativity has also not been optimally triggered (Ratno et al., 2024). Motivation to learn, especially in science and social studies, is low because the material is not associated with meaningful experiences or is packaged in an unattractive way (F. A. Putri, 2025). In this context, the integration of learning approaches such as *mindful* (full awareness), *meaningful*, and *joyful* (fun) is very relevant (Diputera et al., 2024), especially if combined in an organized learning management system supported by technology-based interactive multimedia (Ali et al., 2025).

A learning approach that prioritizes the integration of technology with humanistic values has been proven to be able to increase student motivation and learning outcomes. The results of the study show that the use of interactive multimedia not only improves conceptual understanding but also fosters critical and collaborative thinking skills in elementary school students (Hasnawiyah & Maslena, 2024). In addition, the implementation of mindful, meaningful, and joyful learning strategies can help create a conducive learning atmosphere, minimize boredom, and encourage students to be more actively involved (Nasyir et al., 2025). Furthermore, when ICT-based interactive multimedia is integrated with innovative pedagogical approaches, teachers are able to present learning experiences that are more contextual and relevant to the needs of children's development in the 21st century (David Darwin et al., 2025).

The mindful learning approach emphasizes the importance of full presence and self-awareness of students in every stage of the learning process (Kurniawan, 2025). Through this approach, students are directed not only to be involved in the cognitive aspect, but also to be able to respond emotionally and psychologically during the learning process (Rahma Dewi et al., 2025). They are accustomed to being more aware and feeling every learning experience, including understanding the meaning of each

material studied, being aware of feelings or self-responses while learning, and reflecting on every achievement or obstacle they face (H. A. Putri et al., 2024). This awareness not only increases concentration and active involvement in the classroom, but also helps to form a more open, reflective, and responsible mindset towards its own learning process (Mariani et al., 2025). Thus, mindful learning plays an important role in creating a more in-depth, context-aware, and sustainable learning atmosphere (Diputera et al., 2024).

Meaningful learning emphasizes the connection between new concepts and the experiences that students already have, so that learning becomes relevant and deepest (Rahma et al., 2025). Joyful learning presents elements of fun and positive emotional experiences in the learning process, so that it is able to foster students' enthusiasm and enthusiasm for learning (Hayati et al., 2025). With a pleasant atmosphere, students show higher participation, feel freer (Masfufah, 2017), and participate in the learning process as a whole, which ultimately increases the effectiveness of their understanding of the material (Y. Putri et al., 2025). These three approaches, when combined with interactive multimedia such as educational videos, simulations, and digital quizzes, will provide a reflective, meaningful, and fun learning experience at the same time, which can stimulate an increase in students' internal motivation and encourage the achievement of more optimal learning outcomes (Ali et al., 2024). This process allows students to be more focused, enthusiastic, and have a strong drive to understand and master the subject matter (Khoironi, 2021).

Interactive multimedia itself has been proven in various studies to improve the quality of students' skills (Rohatul & Nahdi, 2024). A study in the Basic Writing course showed that the use of interactive multimedia significantly improved writing skills compared to conventional media (Dumiyati et al., 2022). Other research indicates that the use of interactive multimedia based on a contextual approach in learning science at the elementary school level has been proven to be effective in improving the quality of learning material about plants, which is evidenced by the results of t-tests that show the significance of OUCI. On the other hand, Dumiyati from PGRI Ronggolawe University said that the use of learning models that are integrated with information and communication technology (ICT), such as *audiobooks* and iSpring interactive quizzes, has an important role in supporting the learning process to be able to efficiently and practically encourage student independence and learning achievement. He also underlined the importance of integrating technology with a humanistic approach. Thus, students not only function as passive recipients of information, but also actively contribute to the course of learning (Dumiyati et al., 2022).

Referring to the relevant results of previous research, the findings show that the application of a learning approach that focuses on awareness, meaning, and fun has a positive impact on improving students' understanding of the material. This approach also succeeds in building a more supportive, fun, and meaningful learning environment. This approach also makes students more focused, shows high enthusiasm, and actively participates throughout the learning process. Not only that, the application of this learning strategy also supports the development of students' affective aspects, such as increasing confidence and fostering intrinsic motivation in learning (Wijaya et al., 2025).

In addition, the use of ICT-based interactive multimedia also contributes positively to learning outcomes and student involvement. Interactive digital media not only facilitates the delivery of complex material, but also fosters students' interest, creativity, and critical thinking skills (Wahyudi et al., 2025). In some findings, students who studied with the support of technology showed higher learning outcomes than conventional methods. The integration between a humanistic learning approach and the use of ICT-based media is consistently able to improve students' collaborative skills. Through group activities designed to be interactive, students are trained to work together, respect each other's opinions, and complete tasks collectively (Giva & Khomsani, 2024). Creativity also grows as space is given to express themselves, find solutions, and present ideas in an original way. Thus, learning models like this are relevant to be applied in an effort to improve the quality of social studies learning in elementary schools (Judijanto et al., 2025).

Further observation shows that students' collaboration skills and creativity at UPT SDN Kebonsari 1 Tuban still face a number of obstacles. Although teachers have facilitated mindful, meaningful, and joyful learning-based learning, some students tend to be passive in group work and are not used to expressing ideas creatively. This is influenced by internal factors, such as low self-confidence and limited learning experiences that encourage critical thinking, as well as external factors in the form of conventional learning patterns that previously emphasized memorization and cognitive achievement (Ministry of Education and Culture, 2022). This condition has an impact on the low courage of students in conveying ideas, the lack of innovation in completing project assignments, and the uneven participation in class discussions. Data from the results of initial interviews with grade V teachers showed that around 60% of students still needed intensive direction in group work, while only 25% of students were able to show high initiative in developing creative ideas during project activities (Teacher Interviews for Class V, 2024). This fact confirms that there is a gap between the potential application of MMJ-based learning models and interactive multimedia with the expected collaboration

skills and creativity of students, so further research is needed to find strategies that are able to bridge this gap.

The incorporation of the mindful, meaningful, joyful learning approach in a managerial system, as well as the use of interactive multimedia as a core medium, has not been comprehensively researched, especially in the context of basic education in science subjects. Most previous research only examined one dimension of approaches, such as meaningful learning based on digital media, which has been proven to increase student creativity, or joyful learning based on educational games that increase collaboration and motivation (Kurniawan, 2025). Such research has not explored the combined effects of *simultaneous mindful, meaningful, joyful* approaches, let alone with interactive multimedia support and structured learning management. In addition, many studies only measure one skill variable, so there have been no studies that look at collaboration skills and creativity simultaneously in a single intervention model (Nadawina et al., 2025).

Against this background, this research offers a real contribution of novelty. First, design and test the integration of the three learning approaches in one IPAS management model at the elementary level. Second, using ICT-based interactive multimedia as the main medium that supports reflective, meaningful, and fun activities. Third, measure the simultaneous effects on two important skills: collaboration and creativity. Fourth, making learning management—including planning, implementation, and evaluation as an object of study, not just methods or media. Finally, this study provides empirical evidence from UPT SDN Kebonsari 1 Tuban, which has applied this model before, so that the results can be a reference for replication in other elementary schools in the national context.

Therefore, the main focus of this study is to examine the extent to which the application of *the Mindful, Meaningful,* and *Joyful Learning (MMJ)* approach integrated with the use of interactive multimedia based on information and communication technology (ICT) has a significant influence on the improvement of students' collaborative skills, as well as on the development of students' creative thinking skills in social studies learning at UPT SDN Kebonsari 1 Tuban. The findings of this study are expected to be able to be a solid basis for designing IPAS learning strategies that are not only effective and fun, but also meaningful for elementary school students. In addition, the results of this study are expected to be an important reference for educators and policymakers in developing relevant and contextual education policies.

METHOD

This study uses a quantitative approach with the aim of obtaining comprehensive and objective data on the effectiveness of integrated science learning management with the Mindful, Meaningful, Joyful Learning (MMJ) approach using ICT-based interactive multimedia. The research was carried out at UPT SDN Kebonsari 1 Tuban, with a research population of 57 students. Because the population is less than 100, the entire population is used as a sample, in accordance with the opinion of Arikunto (2021) that if the population is less than 100, it is better to take all as samples (Arikunto, 2021).

The research data were obtained from the distribution of questionnaires or closed questionnaires that had been prepared previously. This questionnaire is designed to measure two main variables, namely students' collaboration skills and creativity (variable Y) and the application of MMJ-based and ICT-based science learning (variable X). The use of closed questionnaires is intended to facilitate measurement and maintain the consistency of respondents' answers.

Once the data is collected, the validity and reliability of the instrument are tested using SPSS software. Furthermore, classical assumption tests, such as normality and linearity tests, are carried out to ensure that the data are eligible for further analysis. Data analysis was carried out using multiple linear regression techniques and Somers' D test, to find out how much influence variable X has on variable Y. The hypotheses proposed in this study are as follows:

1. H_0 (null hypothesis): There was no significant effect between ICT-based MMJ-integrated IPAS learning management on students' collaboration skills and creativity.

2. H_1 (alternative hypothesis): There is a significant influence between ICT-based MMJ-integrated IPAS learning management on students' collaboration skills and creativity.

FINDINGS AND DISCUSSION

Findings

The research conducted at UPT SDN Kebonsari 1 Tuban in the context of product development uses a quantitative approach with *a Likert* scale as a measurement instrument. The data analysis process is assisted by SPSS software version 22. To obtain the data, the researcher distributed questionnaires containing statements to the respondents as part of the validity and reliability test. Each statement in the questionnaire is accompanied by five answer options arranged in the following categories:

Table 1. Likert Rating Scale

Item	Score				
	ST	S	N	T	TS
Positive	5	4	3	2	1

Description: strongly agree, agree, neutral, strongly disagree, disagree

Validity and Reliability Tests

After the questionnaire data obtained from the Likert scale distribution was collected, the researcher first conducted a series of validity and reliability tests on each variable that became the object of the study. This test is intended to assess the feasibility and consistency of the instruments used in the research. The table of validity and reliability test results is presented for the X1 variable, namely the *Mindful, Meaningful, Joyful Learning* (MMJ) Approach, the X2 variable in the form of ICT-based Interactive Multimedia, and two dependent variables, namely Y1 for collaboration skills and Y2 for creativity skills. An item is categorized as valid if its significance value is less than 0.05. Meanwhile, to determine the reliability of the instrument, Cronbach's Alpha *if Item Deleted* indicator is used, which is said to be eligible if the value exceeds the threshold of 0.06. (Sugiono, 2019). The following is a presentation of the results of the validity and reliability test of the MMJ variables used as the object of this study:

Table 2. Test of Validity and Reliability of Variables X1 Mindful, Meaningful, and Joyful Learning (MMJ) Approach

No.	Corrected Item-Total Correlation	Alpha	Stat	Cronbach's Alpha If Item Deleted	Critical Value	Stat
1.	0.555			0.750		
2.	0.238			0.783		
3.	0.658			0.731		
4.	0.810			0.702		
5.	0.142	0,05	Valid	0.803	0,06	Reliabel
6.	0.445			0.763		
7.	0.736			0.739		
8.	0.695			0.724		
9.	0.224			0.787		
10.	0.044			0.804		

Referring to the results of the previous instrument validity and reliability testing, it can be concluded that all items of the statement meet the eligibility requirements for further analysis. The relationships between the variables were then analyzed using SPSS software version 22.

Furthermore, a validity and reliability test was carried out on the X2 variable, namely ICT-Based Interactive Multimedia, as shown in the following description.

Table 3. Validity and Reliability Test of ICT-Based Interactive Multimedia X2 Variables

No	Corrected Item-Total Correlation	Alpha	Stat	Cronbach's Alpha If Item Deleted	Critical Value	Stat
1.	0.551			0.710		
2.	0.172			0.757		
3.	0.611			0.695		
4.	0.686			0.679		
5.	0.243	0,05	Valid	0.754	0,06	Reliabel
6.	0.209			0.757		
7.	0.663			0.703		
8.	0.682			0.681		
9.	0.110			0.764		
10.	0.130			0.764		

Based on the results of the validity and reliability testing of the instrument that has been carried out, it can be concluded that all statements in the instrument have met the feasibility standards to be used in the next analysis process. The process of analyzing the relationship between variables was carried out using SPSS software version 22. Furthermore, a test was carried out on the validity and reliability of the Y1 variable, namely, collaboration skills, as shown in the following sections:

Table 4. Test of the Validity and Reliability of the Y1 Variable of Collaboration Skills

No	Corrected Item-Total Correlation	Alpha	Stat	Cronbach's Alpha If Item Deleted	Critical Value	Stat
1.	0.328			0.640		
2.	0.547			0.592		
3.	0.427			0.616		
4.	0.345			0.636		
5.	0.014	0,05	Valid	0.689	0,06	Reliabel
6.	0.425			0.623		
7.	0.398			0.626		
8.	0.288			0.647		
9.	0.425			0.617		
10.	0.028			0.688		

Referring to the results of the validity and reliability test of the instrument that has been carried out, it can be stated that all items of the statement have met the eligibility requirements to be used in the advanced analysis process. The procedure for analyzing the relationship between variables was carried out using SPSS software version 22. Furthermore, the validity and reliability testing for the Y2 variable, i.e., creativity skills, is presented in the following sections:

Table 5. Test of the Validity and Reliability of the Y2 Variable Creativity Skills

No.	Corrected Item-Total Correlation	Alpha	Stat	Cronbach's Alpha If Item Deleted	Critical Value	Stat
1.	0.349			0.671		
2.	0.579			0.626		
3.	0.416			0.658		
4.	0.313			0.677		
5.	0.111	0,05	Valid	0.705	0,06	Reliabel
6.	0.519			0.644		
7.	0.533			0.638		
8.	0.275			0.683		
9.	0.392			0.664		
10.	0.040			0.716		

Based on the previous instrument validity and reliability testing, all statement items on the variable have met the feasibility standards for further analysis. To find out the extent of the influence between variables, SPSS software version 22 was used. After all variables are declared valid and reliable, the next stage before the analysis is carried out is to test the normality of the data from the independent variable against the dependent variable Y1. The results of the test are presented in the following section:

Table 6. One-Sample Kolmogorov-Smirnov Test Y1

		Unstandardized Residual
N		57
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	2.39778135
Most Extreme Differences	Absolute	.080
	Positive	.070
	Negative	-.080
Test Statistic		.080
Asymp. Sig. (2-tailed)		.200[c,d]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.

The results of the normality test conducted using the Kolmogorov-Smirnov One-Sample method on unstandardized residues showed a significance value of 0.200. Since this number is above the threshold of 0.05, it can be concluded that the residual distribution is normal. These findings indicate that the assumption of normality has been met, so the data are worthy of further analysis using the regression method. (Scott, 2018). These findings confirm that the classical requirements of regression, particularly related to the normal distribution of residuals, have been met. Therefore, the regression analysis process can be continued because there is no indication of a violation of the assumption of normality. The results of the normality test of the independent variable data against the Y2 variable are presented in the next section.

Table 7. One-Sample Kolmogorov-Smirnov Test Y2

		Unstandardized Residual
N		57
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	2.42472724
Most Extreme Differences	Absolute	.129
	Positive	.056
	Negative	-.129
Test Statistic		.129
Asymp. Sig. (2-tailed)		.020[c]

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.

Based on the normality test carried out by the One-Sample Kolmogorov-Smirnov method on the residual value that has not been normalized, a significance value of 0.020 was obtained. Since this value exceeds the threshold of 0.05, it can be concluded that the residual data is distributed normally. This condition shows that the normality condition, as one of the assumptions in classical regression analysis, has been met (Sugiyono, 2018). Thus, there is no indication of a violation of these assumptions, so the regression analysis can be continued. The next stage is to conduct simultaneous testing to determine the extent of the influence of the independent variables X1 and X2—namely the *Mindful, Meaningful, Joyful Learning (MMJ) Approach* through the use of ICT-based interactive multimedia—on the dependent variable Y1, namely collaboration skills. The results are presented in the following section.

Table 8. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change

Mode l	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.501a	.251	.224	2.44178	.251	9.072	2	54	.000

a. Predictors: (Constant), X2 Multimedia Interaktif Berbasis ICT, X1 MMJ

The results of the analysis showed that the value of the F Change Significance was 0.000, which was below the threshold of 0.05. This indicates a significant influence of the application of *the Mindful,* Meaningful, and *Joyful Learning (MMJ)* approach through the use of ICT-based interactive multimedia on dependent variables in the form of collaboration skills in IPAS learning. Furthermore, a simultaneous analysis test was conducted to examine whether there was an influence of the independent variables X1 and X2—which represent the interactive multimedia-based MMJ approach—on the dependent variable Y2, namely creativity skills.

Table 9. Model Summary

Mode l	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
						Change Statistics			
1	.533a	.284	.258	2.46922	.284	10.726	2	54	.000

a. Predictors: (Constant), X2 Multimedia Interaktif Berbasis ICT, X1 MMJ

Referring to the results of the analysis, the F Change Significance value of 0.000 was obtained, which was smaller than the significance level of 0.05. This shows that statistically, there is a significant influence of the *Mindful, Meaningful,* and *Joyful Learning (MMJ)* approach applied through ICT-based interactive multimedia on dependent variables in the form of creativity skills in the IPAS learning process.

Discussion

Based on the results of the analysis of multiple linear regression tests that have been conducted previously, it was found that simultaneously, there was a significant influence of *the Mindful, Meaningful, Joyful* (MMJ) Learning approach combined with the use of ICT-based interactive multimedia on students' collaboration skills. These findings indicate that the application of an integrated learning model, which pays attention not only to cognitive but also affective and social-emotional aspects, is able to create a learning atmosphere that supports the development of cooperative skills among students. In the context *of Science* and Social Sciences Learning Management at UPT SDN Kebonsari 1 Tuban, *the MMJ* approach focuses on full involvement of students consciously (*mindful*), the meaning of meaningful learning, and a joyful learning experience, proven to create more active and collaborative interactions. The interactive multimedia

used strengthens the process by providing *visual* and *audio stimuli* that enrich the learning experience and encourage communication and teamwork between students. These findings are supported by previous research that *the team games tournament* model based on local wisdom can increase the value of mutual cooperation and learning outcomes, which are part of collaboration skills (Qotrunnada & Meilantifa, 2024). This confirms that the integration of cultural and technological values in learning has a positive influence on strengthening character and cooperation (Sanjaya & Safitri, 2024).

The theory underlying these findings can be explained through Vygotsky's framework of social constructivism, which states that knowledge is built through social interaction, and skills such as collaboration develop optimally in a learning environment that provides space for discussion, team interaction, and shared problem-solving. The MMJ approach to social studies learning supports this by providing exploratory, reflective, and group project-based activities that encourage students to work together to achieve learning objectives (Vygotsky, 1978).

In addition, multimedia learning theory states that the learning process will take place more optimally if the material is presented through a combination of text, visuals, and sound thoroughly and complements each other. (Riniwanti et al., 2024). In practice, ICT-based interactive multimedia used in IPAS learning helps students connect abstract concepts with real context through animations, simulations, and interactive quizzes. This encourages collaboration through group discussions in completing digitally designed tasks in a cooperative manner. Thus, the results of this study confirm that *IPAS learning management* that combines the MMJ approach with ICT technology not only improves conceptual understanding but also simultaneously strengthens students' collaborative competence. This is very relevant to the demands of the Independent Curriculum, which emphasizes the development of Pancasila student profiles, especially in the dimensions of mutual cooperation and critical thinking (Susanti & Darmansyah, 2023).

Overall, the *Mindful, Meaningful,* and *Joyful Learning (MMJ)* approach through the use of ICT-based interactive multimedia (X1 and X2) has been proven to have a significant influence on increasing students' creativity (Y2). These results support the theoretical foundation that the learning strategies developed with the MMJ approach are able to create a learning atmosphere that supports the growth of creative thinking skills. In addition to strengthening a deep understanding of concepts, this approach also encourages students to develop new ideas, imagine freely, and find innovative solutions to various problems.

MMJ-based learning encourages students to be more mindful, meaningfully connected to the material learned, and experience a joyful learning experience. These three aspects are an ideal combination in stimulating high-level thinking skills such as creativity (Mustika et al., 2025). When students experience emotional and cognitive engagement simultaneously, there is an intrinsic urge to think more openly, exploratory, and not fixated on one standard answer. This is in line with the opinion that emphasizes that a learning environment that encourages freedom of thought, provides the right challenges, and facilitates self-actualization will strengthen the dimension of creativity in students (Wibowo & Salfadilah, 2025). In line with these results, previous research also showed that the use of the MMJ approach combined with interactive digital media was able to significantly improve students' creative thinking skills. Students are more active in expressing opinions, exploring alternative answers, and producing creative solutions to problems given by teachers (Yusep Ahmadi, 2021). In addition, previous studies also support this finding by stating that meaningful and fun learning increases intrinsic motivation, which is the foundation for developing students' creativity (Okta Fransiska et al., 2024) (January, 2024).

Interactive multimedia as part of the ICT approach is also an important instrument in supporting the development of creativity. This media allows for the visualization of abstract concepts, multi-sensory engagement, and exploratory activities through interactive features that stimulate divergent thinking processes. According to Bruner's constructivist theory, students will learn better if they are actively involved in the process of searching for meaning with the help of visual representations and activities that support the discovery of concepts independently (Azhar et al., 2024).

In the application of IPAS learning management at SDN Kebonsari, these findings show that the combination of *the Mindful, Meaningful,* and *Joyful Learning (MMJ)* approach with the use of multimedia based on information and communication technology has a wide impact, not only on students' cognitive abilities, but also reaches the affective and psychomotor domains, especially in stimulating creativity. The strategic role of teachers in designing, implementing, and evaluating MMJ-based learning processes is a determining factor in creating a learning atmosphere that encourages students to explore and innovate. This fact provides clear evidence that learning management that is effectively structured with a relevant pedagogical approach is able to significantly accelerate the development of students' creative potential.

CONCLUSION

The findings of this study indicate that the integration of *the Mindful, Meaningful,* and *Joyful Learning (MMJ)* approach with the use of interactive multimedia based on information and communication technology (ICT) at UPT SDN Kebonsari 1 Tuban has a significant influence on improving students' collaborative skills and creativity in learning IPAS. The learning model is prepared with full awareness, provides deep meaning, and presents a pleasant learning atmosphere, able to create a more lively classroom climate and encourage active student participation. Simultaneously, the application of MMJ principles alongside interactive technology stimulates students' involvement in group work and encourages them to present ideas in an original way. This has an impact on increasing student motivation, enthusiasm, and active participation during the learning process. The impact is not only seen in academic achievement, but also in the development of students' social and imaginative aspects. Thus, the IPAS learning approach that adopts the MMJ concept and is supported by interactive multimedia has proven to be effective in improving the quality of learning, especially in the realm of collaboration and creativity. Therefore, this approach should be used as a reference to be applied more widely in the basic education environment.

Acknowledgement

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