



EFFECTIVENESS OF INTERACTIVE MULTIMEDIA BASED ON ISPRING SUITE 9 METAMORPHOSIS MATERIAL ON STRENGTHENING INDEPENDENT CHARACTER OF ELEMENTARY SCHOOL STUDENTS

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Abstract

The study was conducted to test the effectiveness of interactive multimedia based on ispring suite 9 on students' independent character. The research design was one group pretest-posttest conducted on one group only by providing a pre-questionnaire and post-questionnaire of independent character. The population used was 33 students with a saturated sampling technique. The variables in the study were the use of interactive multimedia ispring suite 9 as the independent variable and students' independent character as the dependent variable. The results of the effectiveness test using the Paired Samples t-Test with a sig. value. (2-tailed) of 0.000 < 0.05, the results showed a significant difference in students' independent character before and after the application of interactive multimedia in class III of SDN Ngampel 1. The use of interactive multimedia based on ispring suite 9 improves students' independent character, as evidenced by the increase in the average value of independent character from 38.73 (pre-questionnaire) to 52.48 (post-questionnaire).

1. Introduction

Learning is a relationship between teachers and students with learning resources in the learning process. According to Inah (2015), it is stated that communication that occurs in learning is carried out by teachers as communicators and students as communicants to achieve learning goals. Teachers as educators who have the responsibility to provide guidance to students (Farih, 2020). Teachers make it easy for students to absorb material in the learning process. Learning materials are an important component that teachers must prepare. According to Alvi et al. (2023), one of the learning materials studied in elementary schools is Science (Natural Sciences). Science is a science that studies the universe and its contents. Science learning in elementary schools includes metamorphosis material, which is a process in which animals experience a development phase starting from birth, growing into adulthood until producing offspring.

Based on the results of observations conducted by researchers at SDN Ngampel 1, it was found that teachers did not utilize learning media and used books more often during learning. In science learning on metamorphosis material, teachers explained the material in the book with lectures and questions and answers without any supporting learning media. The lack of utilization of learning media by teachers is because it takes a long time to prepare the media. Furthermore, the availability of learning media in schools regarding metamorphosis material is also limited. The limited learning media about metamorphosis in schools requires teachers to be more active in explaining the material, so that students become less independent in learning.

During the learning process, students often wait for teacher instructions and are less proactive in exploring the material independently. Many students prefer to play rather than use their free time to learn more about the subject matter. Students tend to rely on teachers and ignore their own abilities, making them hesitant when answering questions from teachers. In addition, students often give up easily in completing assignments given by teachers. When students encounter difficulties while doing assignments, they do not try to find solutions such as asking teachers or friends.

However, students prefer not to do assignments and play with their friends. As a result, students are not used to solving problems creatively and independently.

In line with the results of observations, interviews conducted with grade III teachers of SDN Ngampel 1 found that teachers more often use lecture and question and answer methods. In science learning, teachers stated that the material on the animal life cycle was difficult for students to understand. Where the process of animal metamorphosis takes a long time to observe directly. This is a challenge for teachers to explain the material through lectures without using adequate learning media. As a result, learning using this lecture method is more teacher-centered and causes students to be less independent in learning. Students tend to wait for instructions from the teacher in learning such as orders to read learning materials. Lack of independence is also reflected when students do not want to try to solve problems themselves first and always ask for help from friends. This results in students who always depend on others and cannot find solutions independently.

Science learning implemented in SDN Ngampel 1 is more dominated by the role of teachers in the learning process and does not show learning activities that support student independence. Moreover, the 2013 curriculum implements education with character strengthening. According to Presidential Regulation Number 87 of 2017, regarding the strengthening of character education, there are 18 character values, one of which is independent character. Students are required to have an independent character in learning such as exploring on their own without having to wait for instructions from the teacher and students are able to complete the tasks given with the responsibility to think independently in order to find solutions.

Therefore, to improve the learning process, changes are needed, such as the use of learning media. Learning media is an instrument that can convey learning messages clearly in order to make learning more effective and efficient. One of the learning media that can be used is multimedia. This multimedia is a combination of several media such as images, audio, video, and text which are used to convey messages or information (Aminah, 2019). The use of multimedia in learning is expected to provide better results in the learning process, especially in the independent character of students to explore learning materials on their own (Cahyo Nugroho & Hendrastomo, 2021). Interactive multimedia is a modification to create interaction between students and the media. In addition, interactive multimedia based on Ispring suite 9 can make the media more interesting.

Previous research that supports this research was conducted by Alfahimi (2022) with the title "Development of interactive multimedia based on ispring suite 9 on metamorphosis material for grade IV Elementary School". This study obtained validation results from material experts, namely 100%, media experts got a score of 96.87%, and users got a score of 92.70%. The product assessment got a practical score of 95% and an interesting score of 94.79% so that the interactive multimedia product is very practical and interesting and worthy of use. In addition, research conducted by Handayani and Zainudin (2022) with the title "Analysis of Interactive Powerpoint Learning with Strengthening Independent Character in Grade III Students at SDN Boro 03, Selorejo District" found that 75% of students like learning using powerpoint media and the use of interactive powerpoint learning media can help students understand the material independently and improve students' independent character.

Based on the description above, the researcher is interested in following up on this by conducting a study entitled "The Effectiveness of Interactive Multimedia Based on Ispring suite 9 Metamorphosis Material on Strengthening the Independent Character of Elementary School Students". This study was conducted to determine the effectiveness of the application of interactive multimedia based on Ispring suite 9 on students' independent character in learning.

2. Method

This study uses a quantitative approach with an experimental method that aims to test the effectiveness of interactive multimedia based on ispring suite 9 metamorphosis material on the independent character of elementary school students. The research design is one group pretest-posttest which is conducted on one group only by providing a pre-questionnaire and post-questionnaire on independent character. The population used is 33, the researcher uses all members of the population as a research sample selected using a saturated sampling technique (Sugiyono,

2016). The variables in the study are the use of interactive multimedia ispring suite 9 as the independent variable and the independent character of students as the dependent variable.

The methods used in this study include observation and interviews. The study used instruments, namely independent character questionnaires, observations of students' independent character during the learning process and the practicality of the media. Before the independent character questionnaire instrument was used, a trial of the instrument was first carried out with a validity test and a reliability test. The validity test was carried out by providing a questionnaire validation sheet to the validator to measure the level of validity of the instrument. While the reliability test was carried out so that the instrument could be trusted and consistent which was assisted by the SPSS application.

The data collected from the research will be analyzed with a prerequisite test, namely the normality test with Shapiro Wilk to determine whether the variable data is normally distributed or not. After that, an effectiveness test will be carried out with a paired sample t-test to determine the significance with the help of the SPSS application.

3. Results and Discussion

Validation of the independent character questionnaire instrument conducted on material experts, namely lecturers from the State University of Malang, on the independent character instrument obtained results that can be used without the need for revision. Content validity has also been calculated using Microsoft Excel with the Aiken item validity index formula. The results of the validity test using the Aiken index show that the questions in the pre-questionnaire and post-questionnaire covering questions 1-15 obtained a validity index of 1.00 from validators I and II. This index shows that all of these questions are very valid and indicates that the instrument is able to measure students' independent character.

The questions in this questionnaire are grouped based on five indicators of independent character: self-authority, perseverance, creativity, self-control, and self-confidence. Question items 1-3 are valid because they measure students' ability to make their own decisions, according to the self-authority indicator. According to Widuroyeki et al. (2022), one aspect of independence is the ability to make one's own decisions without being influenced by others.

Questions 4-5 are valid because they reflect students' perseverance in solving problems without giving up. Persistent students are not easily discouraged and always try to find various solutions. Questions 7-9 are valid because they assess students' initiative and creativity in trying new things and finding learning resources. In line with the opinion of Pasani & Pramita (2014), independent students are able to think creatively and take initiative without the need for continuous guidance.

Questions 10-12 are valid because they measure students' self-control in managing thoughts and actions, such as managing study time and focus during learning. Research by Safitri and Purworejo (2021) states that students who learn independently are able to manage themselves and have good learning strategies. Questions 13-15 are valid because they measure students' self-confidence in their ability to solve problems and face difficulties. Self-confidence allows students to believe in their own abilities, which is a key element in independence.

The validity analysis of the instrument shows that each item in the independent character indicator obtains consistent and high, indicating that the questionnaire instrument can be used in this study to measure students' independent character. The existence of a validated instrument allows researchers to effectively measure how much interactive multimedia based on ispring suite 9 influences the development of students' independent character.

The results of the questionnaire showed that 99.3% of students answered "Yes" to the practicality of this media, while only 0.7% of students answered "No". These results indicate that the interactive multimedia obtained a very practical validity category and can be used without further revision. Although there were 0.7% of students who answered "No", this number is very small and insignificant in the overall context. In line with previous relevant research conducted by Alfahimi (2022), the product assessment received a practical value of 95% and an attractiveness of 94.79% so that the interactive multimedia product is very practical and attractive and worthy of use.

The practicality of interactive multimedia can be assessed from several aspects, including the usefulness of the media, the appropriateness of the media, and the content of the material. In terms of usefulness, interactive multimedia is stated to be practical because students prefer and are enthusiastic about watching learning videos with interesting animations, which makes the learning atmosphere fun. Relevant research conducted by Fernandita (2022) found that students were more enthusiastic and less bored when using videos as a learning medium. Interesting multimedia also makes students more motivated and independent in exploring the material without having to rely on teachers.

However, there are indicators in this aspect that have less practical results, namely two students who have difficulty focusing during learning using interactive multimedia. They divert their attention by doing other activities while reading the material, which is likely caused by the background sound in the learning material. Supported by research by Ernal Nofiandri (2021), that the background sound in learning multimedia can affect student concentration, so it is important to choose the right background sound so as not to distract from the material.

Interactive multimedia is also practical in terms of media feasibility, as indicated by students who can easily operate the media without asking the teacher many questions. Clear instructions for use and accessibility without an internet connection add to its practicality. In terms of material content, interactive multimedia is declared valid because the material is presented clearly and coherently, helping students understand concepts better and increasing their insight. Relevant research conducted by Salutri et al. (2023) found that structured presentation of material makes it easier for students to follow information and re-explain the material that has been studied.

Interactive multimedia based on ispring suite 9 is very practical and effective in strengthening the independent character of grade III students of SDN Ngampel 1, although there are still some aspects that need to be improved. The usefulness of this learning media excels in creating a pleasant learning atmosphere and has an attractive and easy-to-use appearance. However, features that can further stimulate student focus and analysis need to be improved.

In testing the effectiveness of students' independent character, it is done based on independent character indicators. Each indicator in this independent character questionnaire can be used as a measure of the level of student independence in the learning process. The following is Figure 1. Percentage of pre-questionnaire and post-questionnaire of students' independent character based on its indicators.

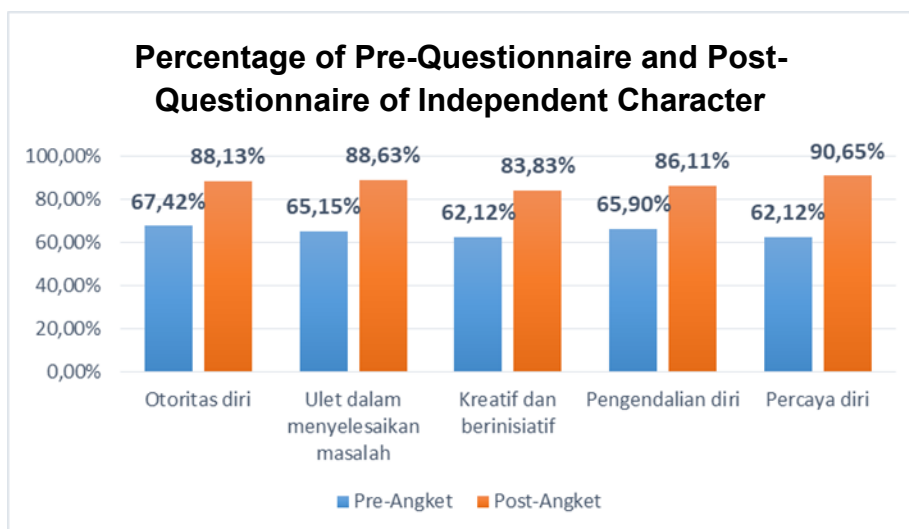


Figure 1.Percentage of Pre-Questionnaire and Post-Questionnaire of Independent Character

Based on Figure 5.1, there is a significant difference between the pre-questionnaire and post-questionnaire of independent character. The self-authority indicator increased from 52.02% in the pre-questionnaire to 88.13% in the post-questionnaire. The use of interactive multimedia based on

ispring suite 9 gives students more control to determine effective content, time, and learning methods, increasing learning effectiveness (Anistalidia, Yuberti, & Pahrudin, 2021).

The indicator of persistence in solving problems also increased from 65.15% to 88.63%. Interactive multimedia with quizzes and worksheets requires students to think critically and find solutions, and provides instant feedback that increases students' motivation to keep trying until they succeed. The indicator of creativity and initiative increased from 65.90% to 86.11%. The content of learning videos, animations, and simulations in interactive multimedia triggers creative ideas and encourages students to seek new knowledge.

The self-control indicator increased from 65.90% to 86.11%. Interactive multimedia allows students to learn at their own pace, develop time management and self-discipline skills, and provide the freedom to repeat the material independently. The self-confidence indicator increased from 62.12% to 90.65%. Interactive multimedia provides more opportunities for students to practice and understand the material independently, increasing their self-confidence when they successfully complete tasks or understand difficult concepts (Prasetya, Kuswandi, & Akbar, 2018).

Supported by observations made by two observers, that the application of interactive multimedia based on ispring suite 9 has a positive impact on independent character during learning. The average value obtained is quite good for each indicator. The use of interactive multimedia not only increases student involvement but also facilitates deeper learning. Student motivation and enthusiasm are very high, making the learning experience more enjoyable and interesting, and making students more active and motivated to explore the subject matter in more depth.

The effectiveness test was conducted to determine significant differences before and after the use of interactive multimedia in learning. Using the Paired Samples tTest with a sig. (2-tailed) value of 0.000 < 0.05, the results showed significant differences in students' independent character before and after the application of interactive multimedia in class III of SDN Ngampel 1. The use of interactive multimedia based on ispring suite 9 improves students' independent character, as evidenced by the increase in the average value of independent character from 38.73 (pre-questionnaire) to 52.48 (post-questionnaire).

The application of interactive multimedia based on ispring suite 9 is closely related to cognitive learning theory and constructivism. Cognitive theory emphasizes the importance of students' ability to manage and control the learning process, with interactive multimedia giving control over learning. Students can process, store, and use information for decision making and self-regulation. Constructivism theory emphasizes active learning where students build understanding through existing experiences and concepts, which are related to independent characters in problem solving, creativity, and initiative. Interaction with media allows students to face challenges, find solutions, and develop innovative problem-solving strategies.

This study shows that interactive multimedia based on ispring suite 9 significantly improves students' independent character. Five main indicators, namely self-authority, perseverance, creativity, self-control, and self-confidence, experienced significant increases after the implementation of this media. The Paired Samples t-Test confirmed a significant difference between the pre-questionnaire and post-questionnaire, proving that the use of ispring suite 9 not only helps students in managing the learning process, but also encourages them to be more active and creative in exploring the material. Thus, interactive multimedia based on ispring suite 9 is proven to be effective in strengthening students' independent character, in accordance with the principles of cognitive learning theory and constructivism.

4. Conclusion

Research on instrument validation shows that the research instrument has met the required quality standards. Validation by material experts ensures the suitability of the instrument to the research objectives, while the calculation of the Aiken item validity index confirms the high validity of the items in the pre-questionnaire and post-questionnaire. The validity index of 1.00 on all items indicates that the instrument is very valid in measuring students' independent character.

The practicality of interactive multimedia based on ispring suite 9 is very practical, with 99.3% of students agreeing and only 0.7% disagreeing. This media is considered effective and interesting, in accordance with the results of previous studies, and successful in increasing student engagement and understanding. Although there is a little disagreement, this does not reduce the effectiveness of multimedia in supporting students' independent character. This multimedia is effective in creating a fun and interesting learning atmosphere, and presenting material clearly and in a structured manner.

The effectiveness of interactive multimedia based on ispring suite 9 on students' independent character significantly increases students' independent character. The effectiveness of this application is proven through the Paired Samples t-Test which shows a significant difference between before and after the application, with an increase in the average value of students' independent character from 38.73 to 52.48. In addition, there is an increase in the average value in each indicator of independent character.

Further research suggestions can develop broader and more diverse materials, not only limited to metamorphosis, but also include other topics in the curriculum. In addition, it is necessary to focus on improving the quality of multimedia, including improving visual design, audio, and interactivity as well as choosing a more appropriate and minimalist background to reduce concentration disturbances need to be considered.

Author Contributions

Credit roles: Reghina Rizky Shofiani: Conceptualization, Data curation, Formal analysis, Investigation, Resources, and Visualization. Candra Utama: Methodology, Roles/Writing—original draft. Sri Estu Winahyu: Writing—review and editing. All authors have equal contributions to the paper. All the authors have read and approved the final manuscript.

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References

- Alfahimi, Ardin. (2022). Development of interactive multimedia based on ispring suite 9 on metamorphosis material for grade IV Elementary School. Retrieved from <http://repository.um.ac.id/eprint/266756>
- Alvi Nanda Choirina, Bintartik, Lilik, & Utama, Candra. (2023). Development of a Booklet of Material on the Relationship between Living Things in the Ecosystem by Strengthening the Independent Character of Elementary School Students. *Journal of Elementary School Thinking and Development (JP2SD)*, 11(2), 209–227. <https://doi.org/10.22219/jp2sd.v11i2.27613>
- Aminah, S. (2019). Development of Interactive Multimedia Based on Adobe Flash CS6 on Ecosystem Theme for Grade V Elementary School/Islamic Elementary School (Raden Intan State Islamic University, Lampung). Retrieved from <http://repository.radenintan.ac.id/id/eprint/8719>
- Anistalidia, Anistalidia, Yuberti, Yuberti, & Pahrudin, Agus. (2021). Development of Interactive Multimedia Based on Ispring suite 9 in Physics Learning. *Physics and Science Education Journal (PSEJ)*, 116–125. <https://doi.org/10.30631/psej.v1i3.972>
- Cahyo Nugroho, Muhamad Khabib, & Hendrastomo, Grendi. (2021). Development of Google Sites-Based Learning Media for Sociology Subjects for Grade X. *Journal of Sociology and Humanities Education*, 12(2), 59. <https://doi.org/10.26418/j-psh.v12i2.48934>
- Ernal Nofiandri. (2021). Application of Interactive Multimedia on Cooling System Material to Improve Student Learning Outcomes. *Indonesian Journal of Educational Development*, 1(4), 661–673. <https://doi.org/10.5281/zenodo.4560768>
- Farih, Muhammad Nurul. (2020). The Role of Teachers as Facilitators in the Learning Process of History Education at SMA Negeri 1 Kajen, Pekalongan Regency (Semarang State University). Retrieved from <http://lib.unnes.ac.id/id/eprint/42774>
- Fernandita, Ardhianti. (2022). The effectiveness of using video as a learning medium for elementary school students. 1.
- Handayani, Eli Dwi, & Zainudin, Zainudin. (2022). ANALYSIS OF INTERACTIVE POWERPOINT LEARNING WITH INDEPENDENT CHARACTER STRENGTHENING IN GRADE III STUDENTS AT SDN BORO 03, SELOREJO DISTRICT. *Elementary School Forum*, 30(1), 11. <https://doi.org/10.17977/um035v30i12022p11-18>

- Inah, Ety Nur. (2015). The Role of Communication in Teacher and Student Interaction. *Al-Ta'dib*, 8(2), 150–160.
- Pasani, Chairil Faif, & Pramita, Mitra. (2014). Improving Independent Character and Students' Mathematics Learning Outcomes Through Cooperative Learning Model Type Think Pair Share (TPS) In Class VIII-C SMPN 13 Banjarmasin. *Journal of Mathematics Education*, 1(2), 17. <https://doi.org/10.18592/jpm.v1i2.48>
- Prasetya, Ade Yama Wahyu Nur, Kuswandi, Dedi, & Akbar, Sa'dun. (2018). Interactive Multimedia in Thematic Learning for Grade IV Elementary School. <https://doi.org/10.17977/jptpp.v3i11.11751>
- Safitri, Selfi Faulina, & Purworejo, Muhammadiyah University. (2021). The Influence of Student Learning Independence and Parental Educational Background on Learning Outcomes of Grade IV at Sdit Al-Madina Purworejo. 2, 114–124.
- Salutri, Gesa, Rokhimawan, Mohamad Agung, & Rahmawan, Setia. (2023). Effectiveness of Using Learning Video Media to Improve Motivation and Learning Outcomes of High School Chemistry. *PENDIPA Journal of Science Education*, 6(3), 839–852. <https://doi.org/10.33369/pendipa.6.3.839-852>
- Sugiyono. (2016). *Quantitative, Qualitative and R&D Research Methods*. Bandung: Alfabeta.
- Widuroyekti, Barokah. Binti Isrofin, Dian Ratu Ayu Uswatun Khasanah. (2022). *Development of academic self-concept & learning independence*. Yogyakarta: Deepublish.