

Development of Learning Media Uno Dare Card on Human Digestive System Material to Improve Students Learning Motivation

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Abstract: Motivation plays a crucial role in the integrated science learning process. Low learning motivation is often not due to limited ability but rather to a lack of encouragement. In integrated science learning, the human digestive system presents complex material that is difficult to visualize, resulting in decreased student learning motivation. This research aims to develop the Uno Dare Card learning media, which is feasible (valid, practical, and effective), to enhance students' learning motivation in the human digestive system material. The research method employed the ADDIE development model with 29 eighth-grade students from class VIII I of SMP Negeri 1 Martapura Kota as research subjects. The instruments used to collect data included test and non-test instruments. The research results show that the Uno Dare Card learning media is highly valid across content, presentation, language, and media feasibility, with an overall score of 0.943 in the highly valid category. The Uno Dare Card is also highly practical, and the Uno Dare Card learning media has been proven effective in enhancing learning motivation, with N-gain values in the high category. The Uno Dare Card learning media is valid, practical, and effective for teaching material on the human digestive system and for enhancing students' motivation to learn.

Keywords: Human Digestive System; Learning Media; Learning Motivation; Uno Dare Card.

Introduction

Teaching media plays a vital role in supporting the teaching and learning process, serving as an intermediary to convey information from teachers to students more clearly and effectively. Media can boost students' thinking, emotions, focus, and learning motivation, helping them achieve learning objectives more effectively [1]. Learning media has several advantages, including stimulating motivation, facilitating understanding, and encouraging active participation. Media development by integrating gaming elements is a form of innovation to enhance science education [2].

Based on initial research findings, students experience difficulties learning material on the human digestive system, as indicated by low motivation and limited participation when entering this complex topic. This is caused by several factors: first, the material involves many unfamiliar scientific terms, such as digestive organs, enzymes, mechanical and chemical digestion processes, and component functions [3]; second, the concepts are abstract and difficult to visualize, as the digestion process occurs inside the body and cannot be observed directly.

Motivation represents a crucial aspect in the learning process, often determining students' success or failure in completing complex learning tasks. High learning motivation fosters active student participation and has positive impacts on academic achievement, as motivation provides enthusiasm, direction, and behavioral persistence [4]. Multiple factors influence learning motivation, including internal factors (interest, needs, goals, expectations) and external factors (learning environment, methods, media, and

the roles of teachers, parents, and peers) [4]. Creating a pleasant learning environment can enhance enthusiasm and serve as a driving force toward success [5].

This condition indicates the need for alternative educational tools enabling active student participation. Game-based learning media presents a promising solution, as learning packaged in a game format can create more attractive atmospheres and provide direct experience in understanding material [6]. This type of media integrates game elements into the delivery of learning materials, making the learning process more engaging and enjoyable for students [7].

Playing games has positive impacts, helping students build positive peer relationships and fostering collaboration, self-confidence, and active participation. Students tend to develop better attitudes and increased motivation through play-based learning methods [8], particularly when movement-based activities engage them physically [9]. Educational gaming provides opportunities for immediate instructor feedback, supporting sustained curiosity, engagement, and continued education while enabling educators to fully utilize student learning abilities and enhance learner passion toward academic work [10].

Uno Dare Card is a card game with four specially printed colors requiring strategic gameplay that can be adapted as learning media. This game suits learning needs due to its attractive characteristics and diverse visual variations [6]. Uno card media has various advantages: easy to carry, make, present, and store; suitable for both large and small groups; involves all students; creates pleasant atmospheres; increases interaction and thinking abilities; and enhances learning motivation. The UNO Card game is very

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easy for students to understand, requiring no special skills [11].

Multimedia Learning Theory explains that students learn better from combinations of words and images than from words alone [12]. Uno Dare Card media combines text, images, and animations to improve understanding and memory retention. The visually appealing presentation helps students retain content effectively while enhancing memorization ability. This approach creates a comfortable learning environment that encourages motivation, engagement, and discussion throughout the educational experience [13]. Games are usually designed with appropriate difficulty levels, which help students work toward goals, make decisions about gameplay, and experiment with various tactics they encounter while playing. In doing so, they can discover answers to challenges organically, promoting interactive education rather than traditional lecture-based learning [10].

Based on the research background, the objectives of this development research are to 1) produce Uno Dare Card learning media products on human digestive system material in increasing student learning motivation; 2) validate the feasibility of Uno Dare Card learning media products; 3) analyze the practicality of using Uno Dare Card learning media; 4) analyze the effectiveness of using Uno Dare Card learning media; 5) determine student learning motivation using Uno Dare Card learning media on digestive system material.

Research Methods

The research is categorized as a Research & Development study, commonly known as developmental research methodology. This investigation leverages the ADDIE development framework. This method is considered appropriate because it is based on the purpose of developing learning media on the human respiratory system material. The ADDIE stages for developing the Uno Dare Card learning media are Analysis, Design, Develop, Implement, and Evaluate [14].

In the analysis stage, it was found that student motivation is low for complex material, such as the human digestive system, which has abstract characteristics and many scientific terms that are difficult for students to understand, in line with the problems identified in the research background. In addition, the media are inadequate.

After the analysis stage, the design stage began, during which the researcher took several important steps. Starting with determining the topic of the human digestive system, the researcher compiled media usage instructions that include game rules, card types, and how to play.

During the design stage, the researcher also compiled instruments to assess the developed media. The instruments were created by considering assessment aspects with several indicators. The instruments are used to measure product performance as validation instruments [15].

In the development stage, the process begins by realizing the design of the Uno Dare Card learning media into a physical product or draft that will be implemented. Where the learning media underwent a validation process first, involving five validators: three lecturers from the Science Education Study Program FKIP ULM and two science subject teachers from SMPN 1 Martapura City.

Subsequently, a small-group trial was conducted with 5 students as the sample. Small group trials usually involve 4-14 participants [16], so 5 people already meet the minimum criteria to obtain an initial overview of product readability. Small-group testing is conducted to describe the extent to which the media help students understand complex material and increase learning motivation [17].

In the implementation stage, it was conducted with grade VIII I students at SMP Negeri 1 Martapura City who were studying the human digestive system. In this stage, the researcher also conducted research data collection by providing practicality questionnaire sheets for Uno Dare Card media, pre-test and post-test sheets for learning outcomes related to media effectiveness, and student motivation questionnaire sheets.

In the evaluation stage, which occurs at every step of the ADDIE process. Each stage is carefully examined and evaluated so that the collected data can be used directly to improve the learning media. In this way, the learning media are continuously improved during the development process to ensure the results meet media feasibility standards.

This research was conducted at SMP Negeri 1 Martapura City, located at Jalan Ahmad Yani No. 10, Martapura, Banjar Regency, South Kalimantan. This research was conducted in the odd semester of 2024/2025 on November 25-29, 2024.

This research involved two groups of subjects. The first subject consisted of 5 validators who assessed the products and research instruments developed, while the second subject comprised grade VIII I students of SMPN 1 Martapura City who participated in the research.

Data analysis is a design of steps to be taken, while this research consists of validation analysis, student response questionnaire analysis, and student pre-test and post-test sheets to ensure the feasibility, practicality, and effectiveness of the developed media.

The validity of the Uno Dare Card media development is measured by the feasibility of the learning media developed. The assessment is conducted using Aiken's V formula. The validity assessment criteria based on the predetermined Aiken's V scale for learning media are as follows:

Table 1. Media validity assessment criteria

Validity Score	Validity Criteria	Category
$0.8 < V \leq 1$	Very Valid	Can be used without revision
$0.4 < V \leq 0.8$	Sufficiently Valid	Can be used with minor revision
$V \leq 0.4$	Less Valid	Can be used with major revision

[18].

In the small group, a readability test of the Uno Dare Card learning media was conducted. In addition, implementation was carried out with a large group to assess the practicality of the Uno Dare Card media. The questionnaire data analysis was conducted using the following criteria:

$$X = \sum (\text{score obtained}) / n$$

Where n = total number

The readability and practicality assessment criteria for the media are as follows:

Table 2. Media readability and practicality assessment criteria

Interval	Category
$X > 3.25$	Very Good
$2.5 < X \leq 3.25$	Good
$1.75 < X \leq 2.5$	Sufficiently
$X \leq 1.75$	Poor

[19]

The effectiveness of Uno Dare Card learning media using Hake's (1998) equation for normalized gain analysis $\langle g \rangle$. The formula for calculating normalized gain score is as follows:

$$g = \frac{\text{posttest score} - \text{pretest score}}{\text{max score} - \text{pretest score}}$$

Effectiveness based on normalized gain values can be seen in the criteria table below.

Table 3. Normalized gain assessment criteria

Interval	Category
$g > 0.7$	High
$0.3 \leq g \leq 0.7$	Medium
$g < 0.3$	Low

[20]

The improvement in learning motivation with the Uno Dare Card learning media on the human digestive system material for students in this research is analysed using scoring data. It is expressed with the formula:

$$\text{Score} = \frac{\text{total score obtained}}{\text{total overall score}} \times 100$$

Motivational values can be seen in the student learning motivation criteria table shown below.

Table 4. Learning motivation assessment criteria

Score Range	Category
0 - 20	Very Low Learning Motivation
21 - 40	Low Learning Motivation
41 - 60	Sufficient Learning Motivation
61 - 80	Good Learning Motivation
81 - 100	Very Good Learning Motivation

[21]

Results and Discussion

The development of Uno Dare Card learning media using the ADDIE research model developed by Robert Marible Branch. This model consists of five systematic stages, namely analysis, design, development, implementation, and evaluation, as follows:

Analysis Stage

The analysis results indicate that the low student motivation for material on the human digestive system is complex and requires a targeted approach. This finding aligns with research [6], which shows that game-based

learning can create a more engaging atmosphere and provide direct experience in understanding the material. Student characteristics indicating low learning motivation support the theory [4] that low learning motivation negatively impacts student involvement in the learning process and academic achievement. Where student behavior tends to be passive, unfocused, and less participatory in learning, it shows characteristics of behavior that is not driven by motivation. Interesting findings on students' interest in Uno games provide strong justification for developing card-game-based learning media. This aligns with research [11], which states that UNO Card games are very easy for students to understand and do not require special skills to play.

Design Stage

In the design stage of the Uno Dare Card learning media, the researcher took several important steps. The design was carried out systematically, based on the results of the needs analysis and student characteristics from the previous stage. The effectiveness of combining words and images in learning is successfully demonstrated by Uno Dare Card, which integrates various attractive elements. Action card variations (Skip, Block, Reverse) create game dynamics, and the card-shuffling system makes learning less monotonous [12].

Starting with determining the topic of the human digestive system, the researcher compiled media usage instructions that include game rules, card types, and how to play. The design stage of basic game rules, including the turn system and game flow, and the compilation of easy-to-understand playing guides.



Figure 1. Uno Dare Card Usage Instructions

Compilation of learning materials to be integrated into game cards, considering the organization of human digestive system material into a format suitable for game cards, simplification of important concepts. Visual card planning where the researcher utilized the Canva application, with a size of 9 x 5 cm. The planning considers clarity, attractiveness, and suitability with the material. Icons and images were added to enhance the visualization of the concept.



Figure 2. Basic Card Framework

The layout of each element is arranged systematically, considering the functional and aesthetic aspects of the cards.



Figure 3. Visual Aspects of Cards

Card visualization is designed with an attractive color scheme selection that suits learning characteristics. Action card symbols such as +2, +4, Skip, Block, and Reverse are specifically designed to maintain the characteristics of Uno cards while being adapted to the learning context.



Figure 4. Graphic elements and action card symbols

In addition, instruments were compiled to assess the developed media. The instruments were created by considering assessment aspects with several indicators. The instruments are used to measure product performance as validation instruments [15].

Development Stage

In the development stage, the process begins by realizing the design of the Uno Dare Card learning media into a product. This learning media is printed in accordance with previously developed design specifications, which have been validated to assess their feasibility. The validity results for the Uno Dare Card media in this research are 0.943, indicating that the media are valid.

This is in line with findings [22], which show the effectiveness of Uno card media in improving students' conceptual understanding, and with research [23], which validated Uno card media at 88.22% in the "very valid" category, based on teaching methods that suit current student needs. The utilization of visual media shows that there are concepts that make the utilization of visual media effective by simplifying the form of visual media. Consequently, the visual materials employed are easily comprehensible to the audience [24]. Proper language use is a primary criterion for determining the viability of educational media [25].

Learning media that are communicative are indeed closely related to ease of use [26]. This includes clarity in

technical learning instructions and ease in understanding the systematic learning flow. Uno Dare Card media have met these criteria very well, as evidenced by very high validity values.

Table 5. Uno Dare Card media validity results

Assessment Aspect	Validation Score	Description
Content Feasibility	0.987	Very Valid
Material	0.917	Very Valid
Presentation		
Language	0.973	Very Valid
Media Design	0.896	Very Valid
Feasibility		
Average	0.943	Very Valid

Therefore, the validity value indicates that the media design meets the standards set by expert validators, including appearance, material suitability, and the practicality of media use [27]. In addition, a small-group trial stage was conducted to determine students' initial responses to the learning media's readability, with a score of 3.6, indicating a very good level. This indicates that the text, instructions, and visual elements on the cards are easy for students to read and understand. This aligns with [11], which states that language clarity in games is supported by cognitive development theory, which holds that children's language and thinking patterns differ from those of adults.

Implementation Stage

In this implementation stage, a trial was conducted on grade VIII I students at SMP Negeri 1 Martapura City. The practicality test of the Uno Dare Card learning media was conducted through a questionnaire distributed to 29 students, yielding an average score of 3.64, indicating a very practical category.

Table 6. Practicality test results for the Uno Dare Card learning media

Aspect	Assessment	Criteria
Relevance	3.74	Very Practical
Understanding	3.67	Very Practical
Usage	3.52	Very Practical
Language	3.64	Very Practical
Motivation	3.64	Very Practical
Average	3.64	Very Practical

The media practicality test results indicate that this learning media is appropriate and effective in increasing student motivation to learn. This is supported by research [28], which developed UNO Math with a validity of 3.21, and highlights the importance of an attractive card design in improving understanding and learning motivation. Research [10] on U-NO-ME card games further demonstrates that game-based approaches with appropriate language can produce significant improvements in student knowledge acquisition, particularly in language-learning contexts, enabling students to focus on the material content without being hindered by difficulties in understanding instructions or information.

The effectiveness of instruction serves as a benchmark for successful interactions among students and

their peers, as well as between students and teachers, in educational contexts to achieve learning targets [29]. The improvement in learning outcomes was also very good, with an average pre-test score of 37.41 rising to an average post-test score of 90.34. The average N-Gain was 0.85, indicating that overall learning effectiveness is in the high category.

The high value of students who achieved a high category N-gain shows that the Uno Dare Card learning media. Games are important as learning strategies to facilitate learning and improve student effectiveness in the learning environment [30]. This shows that Uno card games make students remember material faster. Consequently, learners feel more comfortable in the gaming environment, which stimulates increased engagement, active participation, and motivation to join academic conversations [13].

The use of learning tools also significantly improves student motivation to learn. The learning media successfully exceeded two categories simultaneously: initial learning motivation was at a "sufficient" level (56.63), then increased to 92.24 in the "very good" category. This success can be attributed to several factors, including game elements that create a fun learning atmosphere, positive competition that stimulates learning enthusiasm, supportive social interactions during learning, and learning challenges that motivate students. The motivated learning process is a crucial aspect of learning, as many cases show that students who are not optimal learners are not due to low ability but rather to a lack of motivation that prevents them from deploying their full potential [7].

There are five main indicators for measuring learning motivation [31], namely: 1) the presence of desire and willingness to succeed; 2) the presence of drive and need in learning; 3) the presence of hope and future aspirations; 4) the presence of interesting activities in learning; 5) the presence of a conducive learning environment. Based on this, the results of measuring student learning motivation after the implementation of the uno dare card learning media can be described as follows:

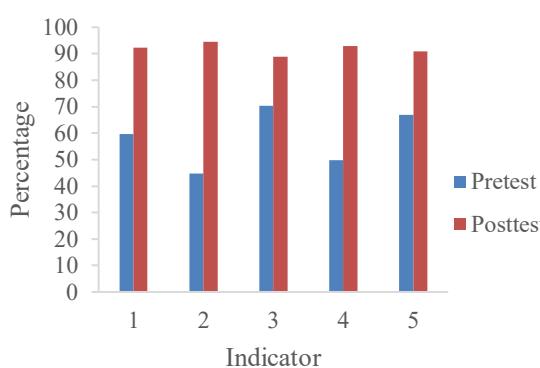


Figure 5. Diagram of student learning motivation results

Educational gaming is a method of learning that encourages students to find answers themselves through procedures, steps, and game rules that must be followed. Games in learning are closely related to the essence of presenting challenging problems so that players (students) can find solutions [7]. The system in Uno Dare Card serves as a driving force, providing direction for learning activities. The continuous point accumulation system encourages students to continuously improve their performance, even

after experiencing difficulties [32]. Persistence in understanding the material is shown through students' positive responses to the random card system, which allows material to appear repeatedly, and to the challenge system in the game. Learning through repetition, experiencing defeat, and achievement are game principles [10]. The concept of using games in educational curricula can help students work toward goals, choose their actions, and explore and test strategies they encounter while playing.

Uno card games create a fun learning atmosphere and generate student interest in exchanging ideas. Providing 30 seconds of discussion time also encourages students to actively explore their knowledge [33]. The reward point system is important for educators to carefully consider when using rewards in education, and to ensure that the rewards given match student achievements and support intrinsic motivation and positive student development [34]. This generates student interest in solving problems and enthusiasm for participating in learning through Uno Dare Card games. The presence of drive and need in learning is evident in students' curiosity and motivation. The competitive yet collaborative game system, through group discussions, successfully creates an intrinsic need to deepen understanding of the human digestive system material [13]. As found in research, this is also supported by [35], which shows that using game elements such as point-giving, levels, competition, and challenges in learning significantly increases student engagement in class. Students show higher levels of motivation.

Game-based learning is a form of learning that encourages students to find answers themselves through procedures, steps, and game rules. Games in learning are closely related to the essence of presenting challenging problems so that players (students) can find solutions [7]. Multimedia Learning [12] regarding the effectiveness of combining words and images in learning, Uno Dare Card successfully integrates various attractive elements. Action card variations (Skip, Block, Reverse) create game dynamics; the card-shuffling system makes learning less monotonous; and the combination of dare challenges and picture guessing provides variety that keeps students engaged and motivated.

Overall, the Uno Dare Card media were developed as a concrete response to problems in science learning identified during Teaching Assistance activities at junior high school, particularly students' low motivation to learn complex topics, namely the human digestive system. This game has characteristics that align with learning needs because it is considered engaging and has diverse visual variations, so students optimize their learning motivation in studying the human digestive system material. In line with [4], high learning motivation will increase student involvement in the learning process and have a positive impact on academic achievement, motivation as a process that provides enthusiasm, direction, and persistence of behavior.

Digestive system material involves many scientific terms that sound unfamiliar [3], and states that the UNO Card game is very easy for students to understand so it does not require special skills to play it. This media has various advantages, including being easy to carry, make, present, and store [11].

Learning packaged as games can create a more engaging atmosphere and provide direct experience with the material [6]. Learning media can stimulate students' thoughts, feelings, attention, and learning motivation to achieve learning objectives [36]. Therefore, the Uno Dare Card media can play a strategic role in supporting the learning process, especially by increasing students' motivation to learn when delivering information on the human digestive system.

Evaluation Stage

The evaluation stage in the Uno Dare Card learning media development research occurs at every step of the ADDIE process. Evaluation is conducted systematically by analyzing data collected from each ADDIE stage to ensure the learning media have met the expected media feasibility standards.

Based on the initial needs analysis, several fundamental problems in science learning were identified. Teachers found it difficult to deliver abstract material, particularly on the human digestive system. From the students' perspective, monotonous learning caused boredom and passive attitudes in class. This was evident from the low student response during learning.

Some students even showed signs of lack of focus and drowsiness, especially when dealing with scientific terms in material on the human digestive system. Evaluation at this stage showed the need for interactive, easily accessible learning media to increase student motivation.

The learning media design for the Uno Dare Card combines game elements with learning content. The card design was created with attention to visual aspects, information clarity, and compatibility with the human digestive system learning material. Design evaluation was conducted through a review with supervisors, which showed that the media design was appropriate to the needs identified in the analysis stage and was ready for development.

From the development aspect, the Uno Dare Card learning media has gone through a validation process and obtained a valid assessment from expert validators, namely 0.943 with a very valid category. Based on validation results, validators provided revision suggestions regarding card packaging materials and game card size to improve durability and ease of media use. The validity value indicates that the media design meets the standards set by expert validators, including appearance, material compatibility, and the practicality of media use [27].

The small-group trial conducted with 5 students yielded very good results, with a score of 3.6. The clarity of language in the game is supported by cognitive development theory, which holds that children's language and thinking differ from those of adults [11]. Evaluation at this stage showed that the media met valid and practical criteria after improvements were made in line with validator suggestions, making it suitable for implementation in learning. This is supported by research showing that 88.22% of students reported positive reactions, indicating that good readability contributes to student acceptance and learning motivation [23].

Media implementation went well, where students showed enthusiasm for learning. At this stage, this media successfully created a more enjoyable learning environment

and increased students' motivation to learn. The implementation evaluation found no technical obstacles to media use. Game-based approaches with appropriate language can produce significant improvements in student knowledge acquisition, particularly in language-learning contexts, enabling students to focus on the material content without being hindered by difficulties in understanding instructions or information [37].

Overall, Uno Dare Card media is valid, practical, and effective for the human digestive system and helps increase student motivation to learn. A comprehensive evaluation shows that Uno Dare Card learning media successfully overcame initial challenges and achieved its development goals, namely, increasing student learning motivation. Educational efficiency is a benchmark of achievement resulting from the interactions among learners and between learners and teachers in instructional situations to achieve learning goals [29].

The Uno card game makes students remember material faster. Thus, they are more at ease in playing and can make pupils more involved, dynamic, and eager to converse in the teaching process. Hence, Uno Dare Card resources can enhance learner motivation and engagement in the educational process.

Conclusion

Based on the research findings, the *Uno Dare Card* learning media for human digestive system material has demonstrated exceptional feasibility across all evaluation criteria. Expert validation yielded a highly valid score of 0.943, indicating strong adherence to academic standards, while the practicality assessment scored 3.64, reflecting excellent usability for students. The media's effectiveness was confirmed with a high score of 0.85, and most notably, student learning motivation showed remarkable improvement with a total score of 92.24, categorized as very good across all motivation indicators. These comprehensive results demonstrate that game-based learning approaches can substantially enhance student engagement and learning outcomes. Therefore, future research should consider expanding the *Uno Dare Card* format to other science topics, particularly those involving complex formulas, diagrams, and challenging scientific terminology.

Author's Contribution

K. Nida: contributions include developing the learning media, conducting the research, and analyzing the data. Sauqina: contributed through evaluation and support during the research process, as well as manuscript review. E. Hafizah: contributed to the writing and improvement of the manuscript to enhance its quality.

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