The Influence of Using WhatsApp Media on Motivation and Science Learning Outcomes during Online Learning

Kasman Hasan¹, Mas’ud Badolo², & Rifat Shafwatul Anam³

¹ Magister Pendidikan Dasar, Universitas Terbuka, Indonesia
² Universitas Muhammadiyah Pare-Pare, Indonesia
³ Universitas Terbuka, Indonesia

* Corresponding Author. E-mail: kasmanhasan0903@gmail.com

Abstrak
Motivasi belajar adalah kekuatan penggerak total pada siswa yang menghasilkan aktivitas belajar, memastikan kelangsungan aktivitas belajar, dan memberikan arahan pada aktivitas belajar, sehingga memungkinkan siswa mencapai tujuan yang diinginkan. Tujuan awal dari penelitian ini adalah untuk melihat bagaimana penggunaan WhatsApp mempengaruhi motivasi siswa dalam belajar sains, bagaimana hal itu mempengaruhi hasil belajar sains, dan bagaimana hal itu mempengaruhi motivasi dan hasil belajar siswa sebelum dan setelah menggunakan WhatsApp. Penelitian ini dilakukan pada siswa kelas 5 di wilayah Se'seng, Kabupaten Tana Toraja. Populasi siswa kelas 5 di SDN Gugus Se'seng berjumlah 95 siswa. Penelitian ini dirancang menggunakan model pra-eksperimental dengan desain pretest-posttest satu kelompok. Pretest dilakukan sebelum diberikan perlakuan (treatment), untuk mengetahui kondisi awal kelompok sebelum perlakuan. Kemudian setelah diberikan perlakuan, post-test diberikan untuk menentukan kondisi kelompok setelah perlakuan. Penelitian ini menggunakan dua jenis analisis, yaitu analisis statistik deskriptif dan analisis statistik inferensial menggunakan SPSS 24. Berdasarkan analisis deskriptif motivasi belajar siswa SD kelas 5 di wilayah Se'seng, Kabupaten Tana Toraja dalam pembelajaran online, rata-rata yang diperoleh adalah 54,1667. Dari data ini dapat dilihat bahwa rata-rata siswa masih belum sesuai dengan harapan, yaitu 65. Mengikuti proses pembelajaran dan menganalisis karakteristik kognitif, siswa diberikan hasil belajar dalam bentuk evaluasi. Kemampuan awal siswa ditentukan dengan pretest yang diberikan kepada mereka. Skor pretest memperoleh rata-rata 53,3333 dalam kategori deskriptif. Hal ini menunjukkan bahwa kemampuan pretest siswa masih rendah dan belum mencapai KKM yang ditentukan, yaitu 75. Berdasarkan uji hipotesis motivasi belajar, nilai t adalah -5,801 1,677 yang menunjukkan bahwa penggunaan media WhatsApp dalam pembelajaran online tidak memiliki pengaruh terhadap motivasi belajar siswa. Berdasarkan hasil uji t signifikant, (2-tailed) 0,000 < 0,05, dapat ditentukan bahwa pembelajaran melalui media WhatsApp mempengaruhi hasil belajar siswa kelas 5 SD di wilayah Se'seng.

Kata Kunci: Motivasi belajar, hasil belajar, WhatsApp
Abstract

Learning motivation serves as a significant driving force for students, as it encompasses their engagement in learning activities, ensures the continuity of these activities, and provides direction towards achieving desired goals. The primary objective of this study was to examine the impact of WhatsApp usage on students' motivation to learn science, its influence on science learning outcomes, and its effect on both motivation and learning outcomes before and after using WhatsApp. The research was conducted among 5th grade students in the Se'seng cluster, Tana Toraja Regency. The population consisted of 95 students from SDN Gugus Se'seng. The study employed a pre-experimental model with a one-group pretest-posttest design. Prior to the treatment, a pretest was administered to assess the group's initial condition, followed by a post-test after the treatment to evaluate the group's condition post-intervention. Descriptive statistical analysis and inferential statistical analysis using SPSS 24 were employed in this study. The descriptive analysis of learning motivation among 5th grade students in the Se'seng cluster indicated an average score of 54.1667 during online learning. This average score suggests that students' motivation is still below the desired expectation of 65. In accordance with the learning process and cognitive characteristics, students were evaluated to measure their learning outcomes. The students' initial abilities were determined through a pretest, with an average score of 53.3333 in the descriptive analysis. This demonstrates that students' pretest abilities were still low and did not meet the required minimum passing grade of 75. The results of the learning motivation hypothesis test showed a t-value of -5.801, with a significance of 0.000 (p < 0.05), indicating that the use of WhatsApp media in online learning did not have a significant impact on students' learning motivation. However, based on the results of the t-test, it was determined that learning through WhatsApp media had an effect on the learning outcomes of 5th grade students in the Se'seng cluster.

Keywords: WhatsApp, learning motivation, learning outcomes.

Introduction

Establishing a solid educational foundation is of utmost importance. This endeavor entails meaningful interactions between students and teachers within the classroom, which play a crucial role in achieving effective learning outcomes. The objectives and obligations of education are explicitly outlined in Article 3 of Law Number 20 of 2003 regarding the National Education System of the Republic of Indonesia. This article emphasizes that national education serves to cultivate skills and foster a noble civilization, ultimately enlightening the nation's existence. Education strives to unlock students' potential, enabling them to become knowledgeable, competent, imaginative, and autonomous individuals. Moreover, education also aims to shape responsible and democratic citizens who are held accountable for their actions (Undang-Undang Republik Indonesia Nomor 20 Tahun 2003 Tentang Sistem Pendidikan Nasional, 2003).

The COVID-19 pandemic has spurred the extensive implementation of online learning methods in different educational levels. These methods utilize information and communication technology, including computers, the internet, and online learning platforms, to deliver educational materials to students remotely. Online learning offers notable advantages, particularly in circumstances that limit in-person interactions like a pandemic. It enables students to pursue their education without the need for physical classroom gatherings, thereby reducing the risk of virus transmission. Moreover, online learning provides flexibility in terms of time and location, as students can access course materials at their convenience, as long as they have access.
to devices and an internet connection (Sadikin & Hamidah, 2020). This enables students to learn at their own pace and learning style.

Online learning encounters various challenges as well. Unequal and expensive internet access can impede students' engagement in online learning. Additionally, the absence of face-to-face interaction between teachers and students limits opportunities for direct questioning, meaningful discussions, and prompt feedback (Anugrahana, 2020). Some subjects may also be more difficult to teach online, especially those that require physical interaction or direct practice, such as art or laboratory science.

Despite encountering obstacles, online learning has proven to be an effective solution during emergencies such as the COVID-19 pandemic. This method continues to evolve and improve, with a growing number of online learning platforms and applications available, alongside efforts to enhance accessibility for all students. Among the widely used platforms for communication and interaction between teachers and students is the WhatsApp application.

WhatsApp has become a vital tool for communication and learning in the context of online education. It has opened new avenues for interaction between teachers and students, enabling swift and efficient exchange of information. Through text, voice, and video messaging features, teachers can directly deliver learning materials, assign tasks, and provide real-time feedback to students, thereby fostering effective and timely communication in the modern educational landscape (Daheri et al., 2020). This reduces geographical and time limitations in the learning process, allowing students and teachers to connect and interact without physical boundaries.

WhatsApp also serves as a platform for students to collaborate and interact with their peers in a virtual setting. By creating discussion groups on WhatsApp, students can exchange ideas, share resources, and support each other in comprehending course materials. These groups provide an inclusive and collaborative learning environment where students can pose questions to both teachers and classmates. The use of WhatsApp as a learning medium encourages active student participation and cultivates a sense of closeness with teachers and classmates (Barhoumi, 2020).

Moreover, WhatsApp offers convenient access to a wide range of supplementary learning materials. Teachers can share links to articles, videos, and other resources via WhatsApp messages. This enables students to access these materials at their convenience, facilitating a deeper understanding of the subjects being studied. WhatsApp also allows teachers to promptly send announcements, class schedules, and important reminders to students. This ensures effective communication between teachers and students, keeping students informed about the latest developments in the realm of online learning.

Additionally, aside from utilizing platforms for teacher-student interactions, the online learning process relies on learning motivation to achieve educational objectives. Motivation plays a crucial role in learning as it impacts the level of student engagement and participation in the teaching and learning process (Saputra et al., 2018). When students are motivated, they exhibit greater focus and enthusiasm in their lessons. High levels of motivation drive students to actively pursue knowledge, seek deeper understanding, and approach challenges with a positive mindset. Conversely, reduced motivation may lead to decreased interest and difficulty concentrating, impeding progress in learning.

Motivation also plays a crucial role in developing students' interest and passion for learning (Widiyanti & Ansori, 2021). When students feel motivated, they are more likely to show interest and a desire to learn more about specific topics or subjects. Strong motivation can trigger a high level of curiosity and inspire students to seek knowledge beyond the
classroom environment. When students feel connected to the learning material and see its relevance to their lives, their motivation to learn significantly increases.

High learning motivation also contributes to the development of positive attitudes toward learning and academic achievement (Taufiq et al., 2021). When students feel motivated, they tend to have a more optimistic view of their abilities to succeed. Strong motivation provides the drive to face challenges and difficulties with perseverance, as well as maintaining enthusiasm in the face of failure or mistakes. High motivation also helps students develop a sense of responsibility for their own learning, encouraging them to take initiative and be accountable for their personal learning development.

Overall, motivation plays a crucial role in learning by influencing students' engagement, participation, interest, attitudes, and achievements. Teachers and educators need to pay attention to and develop strategies that can ignite students' motivation, such as providing challenging tasks, offering constructive feedback, and creating a positive and inclusive learning environment. By fostering students' motivation, learning can become more meaningful, strengthen academic achievements, and prepare students to face challenges in the real world.

During the pandemic, low learning motivation among students has been one of the frequently encountered issues. This can be attributed to several factors, including the lack of support and supervision typically provided by teachers and parents (Cahyani et al., 2020). In a limited learning environment at home, students often struggle to stay focused and motivated to learn. Without the presence of teachers to provide direct guidance and monitoring, students may feel too unrestricted and less driven to complete their tasks effectively. Additionally, the lack of direct interaction between teachers and students can also affect students' learning motivation. Direct interactions that occur in the classroom, such as discussions, questions, and direct feedback from teachers, can ignite students' enthusiasm and engagement in learning.

It is also important to consider the learning outcomes in science obtained by students during online learning. Science is one of the subjects that require deep conceptual understanding and practical application. However, in online learning, there are several challenges that may affect students' learning outcomes in science. The lack of direct interaction between teachers and students in online learning can also influence students' learning outcomes in science (Sobron et al., 2019). Discussions, question-and-answer sessions, and practical experiments in the laboratory are often crucial components of effective science learning. However, in online learning, students may not have the opportunity to interact directly with teachers or classmates, resulting in a loss of interactive and practical learning experiences.

This research is highly relevant to the current situation of online learning worldwide, as the use of WhatsApp as a medium can be one solution to enhance students' motivation and learning outcomes during online learning. Based on the aforementioned information, this study aims to examine the impact of using WhatsApp on motivation and learning outcomes in science during online learning.

**Metodology**

The data gathered for this research consists of numerical or statistical information. This study employs a quantitative approach, utilizing a pre-experimental design known as one-group pretest-posttest. A pretest was conducted before administering the treatment to assess the initial condition of the group. Subsequently, after receiving the treatment, a post-test was administered to evaluate the group's condition following the treatment.

This research was carried out among 5th-grade students in the Se'seng cluster, Tana Toraja Regency. The population of grade 5 students at SDN Gugus Se'seng is 95 students. The sampling technique employed was probability sampling, specifically utilizing a
random sampling model. Since the sample size is less than 100 respondents, 50% of the population was selected as the sample.

Questionnaires were utilized to collect data on learning motivation, while test instruments were used to gather data on learning outcomes. The collected data was analyzed using a t-test to compare the average values of motivation and learning outcomes data before and after the instructional intervention.

Result and Discussions

1. Learning Motivation

The students' learning motivation obtained consists of pre-survey and post-survey data in the form of numbers on a scale of 0 to 100. Here is the data of students' learning motivation before and after the learning:

<table>
<thead>
<tr>
<th>Statistik</th>
<th>Preangket</th>
<th>Postangket</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>34.24</td>
<td>67.58</td>
</tr>
<tr>
<td>Median</td>
<td>33.33</td>
<td>68.33</td>
</tr>
<tr>
<td>Std. Dev</td>
<td>11.32</td>
<td>12.81</td>
</tr>
<tr>
<td>Minimum</td>
<td>13.33</td>
<td>43.33</td>
</tr>
<tr>
<td>Maximum</td>
<td>53.33</td>
<td>90.00</td>
</tr>
<tr>
<td>Sum</td>
<td>753.33</td>
<td>1486.67</td>
</tr>
</tbody>
</table>

Based on the data in the table, there is a difference in the average learning motivation before and after the learning process. Before the learning process, the average score of students' learning motivation was 34.24, while after the learning process, it increased to 67.58. This indicates an improvement in students' learning motivation after participating in the learning process. In addition to the difference in averages, there are changes in the minimum and maximum values in the pre-survey and post-survey. In the pre-survey, the minimum value of learning motivation was 13.33, while in the post-survey, it increased to 43.33. This shows that after the learning process, students have a higher level of learning motivation than before. On the other hand, the maximum score of students' learning motivation after the learning process is 90.00, which is much higher than the previous maximum score of 53.33.

Overall, the data shows that learning has a positive impact on students' learning motivation. The average score of learning motivation increases, as does the range between the minimum and maximum values before and after the learning process. This indicates that learning is effective in improving students' learning motivation, helping them achieve higher levels of motivation and expanding the range of achievable scores.

After conducting descriptive analysis of the data, inferential analysis was performed using the t-test. The first test was conducted to analyze whether the data on learning motivation after the learning process meets expectations. The minimum expected score is 65, which is categorized as high. The analysis using a one-sample t-test showed a t-value of 0.946, with a mean difference between the post-survey learning motivation and the expected score of learning motivation in mathematics of 2.58576. The obtained significance value is 0.355, which is greater than 0.05. This indicates that the average learning motivation in mathematics after the learning process does not show a significant difference from the expected score.

Below is the description of the frequency distribution data obtained:

![Diagram 1. Description of the frequency data](image)

The frequency distribution provides an overview of how students are distributed across different categories based on predetermined
criteria. In the "very high" category, 9.09% of students belong to this group. Although this percentage is relatively small, it is significant as it includes students who demonstrate exceptional academic performance or skills.

The "high" category has a higher percentage, accounting for 59.09%. This indicates that the majority of students are performing at a high level according to the criteria being measured. These students show above-average performance but have not yet reached the "very high" level. On the other hand, the "medium" category includes 31.82% of students. This percentage suggests that there is a significant number of students performing at a moderate level according to the measured criteria. This category may consist of students with average performance or those falling in the middle of the rating scale being used. Lastly, there are no students categorized as "low" or "very low," with both categories having a percentage of 0%.

Next, in order to assess whether 75% of the students in the class meet the standard expectations for learning motivation in a classical sense, a proportion test is conducted. The findings reveal that 7 students, or 32%, scored below 65, while 15 students, or 68%, scored above 65. This indicates that the students in the class do not meet the classical expectations for learning motivation.

When comparing the pre-survey and post-survey data using a paired sample t-test, a mean difference of 33.33 is observed. The resulting t-value is 22.913 with a significance score (2-tailed) of 0.00 < 0.05. These findings indicate a significant difference between the average learning motivation before and after utilizing WhatsApp on learning.

Based on the analysis of the motivation questionnaire data, despite not fully meeting expectations, there is a noteworthy improvement in students' learning motivation. This suggests that WhatsApp enhances students' motivation for learning and influences their motivation in the context of learning science.

The use of media in learning stimulates students' interest in the learning process. Through the effects and techniques employed, videos can be a powerful medium in influencing attitudes and emotions. Specifically, positive emotions and feelings of enjoyment in elementary school students can spark curiosity and make them more eager to learn. When students experience joy during learning, it tends to make the learning process more effective and efficient (Idhayani et al., 2020).

The use of WhatsApp in the teaching and learning process offers several advantages. Firstly, it provides unrestricted accessibility in terms of space and time, allowing students to learn anytime and anywhere. Students are not limited by physical constraints or specific class schedules. This flexibility can motivate students as they can manage their own study time and access learning materials more flexibly.

WhatsApp's use in online learning also provides convenience by presenting learning materials in various formats, including text, videos, audio, images, animations, and interactive content. This diversity can enhance students' interest and make the learning experience more engaging. Students can choose the format that best suits their learning style, thereby increasing their motivation to learn.

WhatsApp as a medium facilitates interaction between teachers and students through interactive features such as class groups, online quizzes, and opportunities for peer interaction. These interactions can enhance student engagement in learning and provide direct feedback on their progress. By receiving instant feedback, students can assess their learning outcomes and feel motivated to improve. Through WhatsApp, students can collaborate with their classmates on learning projects that involve cooperation and problem-solving. Such collaboration can boost students' motivation as they feel involved and responsible in achieving shared goals.

The presence of student motivation is evident when students show attentiveness
during the learning process. The use of captivating videos stimulates students to pay continuous attention and focus on the steps of problem-solving. This has a positive impact as students develop a better understanding of the learning materials. When students feel they have grasped the concepts being taught, they exhibit enthusiasm in their learning. They become more actively involved in interactions and discussions related to the subject matter, making the learning experience more meaningful. The use of videos also encourages students to persevere and not give up when facing challenges in their learning. This is evident when students rewatch videos when they encounter difficulties.

2. Learning Outcomes

Prior to commencing learning through WhatsApp, students will undergo an initial assessment to measure their proficiency in the topic of the human and animal digestive system. This assessment aims to evaluate their understanding of the organs involved in digestion and the processes associated with it. The instrument used for the initial proficiency test consists of five open-ended questions that cover various aspects of the topic. Through this test, the goal is to identify the students' level of comprehension regarding the digestive organs and the processes involved. Additionally, the test provides the teacher with an initial overview of the students' ability to grasp basic concepts and helps identify areas that may require further attention during the learning process. By utilizing WhatsApp as a learning tool, it is expected that students can actively participate in discussions, engage in question-and-answer sessions, and enhance their understanding of the digestive system through a more interactive approach.

Table 2. Description of students' learning outcomes before and after the learning

<table>
<thead>
<tr>
<th>Statistik</th>
<th>Pretest</th>
<th>Posttest</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>Mean</td>
<td>53.333</td>
<td>81.5625</td>
</tr>
<tr>
<td>St. dev</td>
<td>12.97843</td>
<td>10.11404</td>
</tr>
<tr>
<td>Max</td>
<td>75</td>
<td>100</td>
</tr>
</tbody>
</table>

From the pretest data, it can be observed that the average student proficiency is 53.333 with a standard deviation of 12.97843. The highest score achieved by a student in the pretest is 75, while the lowest score is 25. The data format and the median for the pretest are both 55. On the other hand, the posttest data shows that the average student proficiency has improved to 81.5625, with a standard deviation of 10.11404. The highest score obtained by a student in the posttest is 100, while the lowest score is 60. The mode for the posttest data is 80, indicating that this number appears most frequently in the data. The median for the posttest also has a value of 80.

In the hypothesis analysis using the paired sample t-test, a mean difference of 28.22917 between the pretest and posttest was found. Since the significance value (sig.) is 0.000<0.05, it can be concluded that the hypothesis is accepted. This indicates a positive influence of using WhatsApp as a learning tool on the learning outcomes of grade 5 students in the Se'seng cluster.

The use of WhatsApp as a learning tool provides better accessibility, allowing students to access learning materials anytime and anywhere as long as they have internet access. This enables students to learn flexibly according to their individual schedules and needs. WhatsApp allows students to communicate with their teachers and classmates in real-time. They can share ideas, ask questions, and engage in
discussions about the learning topics. This creates a collaborative environment that enhances students' understanding and critical thinking.

WhatsApp enables teachers to quickly share additional materials, learning resources, and relevant links with students. This enriches students' learning experience with supplementary information that can help them grasp difficult concepts. In the class WhatsApp group, students can ask questions or seek help directly from the teacher. Teachers can provide individual support and explain challenging concepts when needed. This can improve students' understanding and assist them in overcoming learning difficulties. The use of WhatsApp as a learning tool can enhance students' engagement and motivation in the learning process. Interactive communication and prompt feedback from teachers can help students feel more involved and motivated in their learning.

Simpulan

Based on the analysis of t-test data, the obtained t-value is 11.509 > 1.677 with a significance value (2-tailed) of 0.000 < 0.05. Therefore, it can be concluded that the use of WhatsApp as a learning media has a positive and significant effect on the motivation to learn science in distance learning for grade 5 students in Taleppon Elementary School cluster.

Based on the description of the pretest scores, the average score obtained was 53.333, while after learning through WhatsApp, it increased to 81.5625. Based on the test results mentioned above, the t-value is 4.495 > 1.677, indicating that the average learning outcomes of grade 5 students after learning through WhatsApp are greater than or equal to the minimum passing score (KKM) of 75. Based on the analysis of the obtained t-value of 28.753 and the significance value of 0.000 < 0.05, it can be stated that the hypothesis is accepted, indicating that there is an influence of learning using WhatsApp on the learning outcomes of grade 5 students in the Se'seng cluster.

References


Profil Penulis

Kasman Hasan was born in Rembon on March 9, 1978. He resides in Lembang Buttu Limbong, Vittuang District, Tana Toraja Regency, South Sulawesi Province.

The author's formal education includes graduating from SD Negeri 177 Se'seng in 1990, SMP Negeri Rembon in 1993, and SMK Kr Rantepao in 1996. In 2010, the author successfully obtained a Bachelor's degree in Primary School Teacher Education (PGSD) from Universitas Terbuka. The author also has experience as an educator. Additionally, the author worked as a teacher at SDN 335 Inpres Kandua' from 2010 to 2016. Since 2016, the author has been a teacher at SDN 206 Taleppon.