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The Effectiveness of the SATUSIK Application to Improve Learning Motivation and Mastery of the Concept of Junior High School Digestive System Material

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Abstract

Learning media plays a very important role in the learning process, especially in the digital era. Students are used to using technology in their daily activities, so it is necessary to get used to using technology as well as in learning. Based on the results of initial observations conducted in 5 schools, it is known that the motivation to learn and mastery of the concept of grade VIII students is still relatively low, so learning media that can train these skills to students is needed. The purpose of this research is to analysis the effectiveness of SATUSIK Application to increase students' motivation to learn and master concepts. The test subjects in this study are students of grade VIII MTs Darul Ulum Semarang and SMP N 2 Tengaran for the 2023/2024 academic year. The data analysis techniques used include analysis of learning motivation and concept mastery using the N-gain test. The mastery of the concept is also determined by the success of students in achieving scores above the Minimum Completeness Criteria (KKM). The results of the study showed that the effectiveness of the SATUSIK Application on students' learning motivation was seen from the N-gain score of 0.84 with high criteria. The effectiveness of the SATUSIK Application on the mastery of concepts was seen from 86% of students were able to pass the KKM and after being tested N-gain got a score of 0.72 with a high category.

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INTRODUCTION

The development of the times has shifted towards digital technology which of course has a major impact on all aspects of life, including the field of education (Bakri, 2018;Refmianti et al, 2023). Students who are used to using technology in their daily lives, of course, will not be suitable if they are forced to learn without utilizing technology. Therefore, it is not enough for teachers to rely only on the teaching skills of students, teachers are also required to utilize information and communication technology to enrich their teaching skills (Rihani, 2022). Teachers can use technology to create quality learning, one of which is by developing learning media that are interesting and in accordance with the needs of students (Tarigan et al, 2023).

Learning media plays a very important role in the learning process (Delkisyarangga, 2017). Learning media can make it easier for teachers to deliver material. In addition, learning media can also make it easier for students to understand the material delivered by the teacher. Learning media can also stimulate students' curiosity, new interests, and motivation during the learning process (Nurmadiah, 2016). Therefore, choosing learning media that suits the needs of students is something that must be done to achieve learning goals.

Learning science is actually easy because it only discusses related to nature and the surrounding environment. However, according to research conducted by Fardinelly et al. (2024), the material "Digestive System and Its Disorders" is included in the material that is difficult for students to understand, especially related to the detailed nature of the physiological processes involved. Meanwhile, according to Aydin (2016), the material on the digestive system and its disorders is difficult to learn because the physiological processes cannot be seen directly, and the understanding obtained by students is often not in accordance with the concept. Therefore, it is very important in science lessons to use the right media to make it easier for students to understand the material.

Based on the theory of learning motivation according to Uno (2016), the essence of learning motivation is an external and internal encouragement in students who are learning to make behavioral changes, in general with several supporting indicators or elements. Without motivation to learn, a student will not learn and will ultimately not achieve success in learning. Learning motivation has several indicators, namely: (1) desire and desire to succeed, (2) encouragement and need in learning, (3) hopes and aspirations for the future, (4) appreciation in learning, (5) interesting activities in learning (6) conducive learning environment. According to Safitri et al. (2021), the mastery of concepts is influenced by the students' learning interests.

Meanwhile, according to Bloom, mastery of concepts is the ability to capture meaning, such as being able to express material in a form that is easier to understand, being able to provide explanations and being able to apply it. According to Anderson & Krathworl (2014) the indicators of concept mastery are remembering, understanding, applying, analyzing, evaluating and creating. This is in line with research conducted by Aryani (2019) that students who have a great interest tend to study the lesson seriously so that it will affect students' understanding of the subject of interest. Ausubel's theory of meaningful learning (Rochim, 2019) also states that students' interest in the learning process greatly determines the motivation or enthusiasm in students to learn to understand a concept. To increase students' mastery of concepts, it is necessary to choose appropriate learning media (Astuti, 2022).

Observations were carried out on October 3-10, 2023 at MTs Darul Ulum Semarang, SMP N 2 Tengaran, SMP Muhammadiyah Jambu, MTs NU Ungaran and MTs Ar Rois Cendekia Semarang. Based on a questionnaire given to 90 students at the observed schools, 74.2% of students are still learning using Student Worksheets (LKS) and package books. 18% of students who learn use videos and learning apps. The lack of variety of learning media used can affect students' motivation to learn and mastery of concepts related to the material of the digestive organ system and its disorders. This is known from the results of observations related to learning motivation, the result was obtained that 51% of students stated that they were not motivated to take science lessons. 50.6% of students stated that they often talk to friends, do assignments from other subjects or play games during science lessons. 57.5% of students are not interested in science lessons because they have never read material that has not been taught. Meanwhile, 50.6% of students stated that they did not re-read the material that had been taught. The results of observations related to the mastery of concepts can be known from the learning outcomes of grade VIII students, only 47.5% of students get a score above the Minimum Completeness Criteria (KKM), while the others must take part in the remedial program first.

One of the learning media that suits the needs of students is the learning media in the

form of the SATUSIK application (Science Is Asik). This application is developed with the help of Microsoft power point, ispring and website 2 apk. This application is based on android so that it makes it easier for students to learn anytime and anywhere. The research was conducted at SMP Negeri 2 Tengaran and MTs Darul Ulum Semarang. This study was conducted to determine the effectiveness of the SATUSIK application in increasing learning motivation and mastery of the concept of junior high school digestive system material.

METHOD

The effectiveness of the Satusik Application is known from test and non-test data related to students' motivation to learn and mastery of concepts. The non-test data in question is a learning motivation questionnaire given to students. The questionnaire contains 24 statements that are in accordance with 6 indicators of learning motivation according to Uno's opinion (2016). Test data in the form of pretest and posttest questions done by students before and after being given treatment in the form of using the SATUSIK application. The question consists of 10 multiple-choice questions.

The calculation of the validation score by the SATUSIK application material and media experts is calculated using the V-Aiken formula (Azwar, 2012).

$$\mathbf{V:}\ \frac{\sum(\mathbf{ri-lo})}{[\mathbf{n(c-1)}]}$$

Information:
V : formula Aiken's V
R : the number given by the assessor
Lo : Lowest validity assessment number
c : the highest validity assessment rate
n : The number of experts and practitioners who conduct assessments
i : integers from 1,2,3 to n

After the calculation is carried out and the V index is generated, it can be known whether the item is valid or not. An item can be said to be valid, if the result of the calculation V > Vtable.

The results of the student learning motivation questionnaire and concept mastery test were analyzed using N-gain. N-gain-ternumalization can be expressed by the following formula:

$$\langle g \rangle = \frac{\%\langle Sf \rangle - \%\langle Si \rangle}{Smaks - \%\langle Si \rangle}$$

Information:
%(Sf) : final score (post-test)
%(Si) : initial score (pre-test)
Smax : the maximum possible score

The N-gain test criteria have the same criteria as in Table 1.

Table 1. N-gain Criteria

Normalized Gain Range	Criteria
(g) < 0,30	low
0,70 > (g) 0,30	medium
(g) 0,70	high

RESULT AND DISCUSSION

The validity of the SATUSIK Application was obtained from the results of the media and material validity tests by material experts and media experts. The validation of the material and media was carried out by 7 people consisting of 2 lecturers and 5 science teachers. The validators consisted of (1) Lecturers of Faculty of Mathematics and Natural Sciences Universitas Negeri Semarang; (2) Professor of Science Education Management UIN Salatiga; (3) Science Teacher MTs Darul Ulum Semarang; (4) Science Teacher of Ar Rois Cendekia Junior High School; (5) Science Teacher MTs NU Ungaran; (6) Science Teacher of SMP N 2 Tengaran; (7) Science Teacher of Muhammadiyah Jambu Junior High School. and the discussion can be written on the same section to avoid long quotes.

Table 2. Media Validation Assessment

Indicator	V	Category
Auxiliary information	0.910714	high
Affective consideratons	0.928571	high
Interface	0.921429	high
Navigation	0.940476	high
Pedagogy	0.935714	high
Invisible feature	0.982143	high
Effectiveness	0.988095	high

Table 3. Material Validation Assessment

Indicator	V	Category
Auxiliary information	0.94898	high
Presentation of information	0.940476	high
Deepening of the material	0.934524	high
Effectiveness	0.952381	high

The validity test score of material experts and media experts on the SATUSIK Application shows a value above 0.9 so that it is in the high

category (very valid) in every aspect of the assessment. This shows that the SATUSIK Application is very good to be applied in learning activities.

The effectiveness of the SATUSIK Application in increasing students' learning motivation is measured based on the results of questionnaires filled out by students before and after learning. The student learning motivation questionnaire consists of several sub-indicators that are adjusted to the learning motivation indicators according to Uno (2016). The number of items is 24 questions consisting of 12 positive items and 12 negative items.

Table 4. Results of the N-gain Test for Learning Motivation

Learning Motivation Indicators	Pretest (%)	Posttest (%)	N-gain	Category
Desire and desire to succeed	49	91	0.83	High
Motivation and need to learn	50	93	0.85	High
Future hopes and aspirations	51	92	0.84	High
Rewards in learning	51	93	0.85	High
Interesting activities in learning	49	93	0.85	High
Conducive learning environment	50	92	0.84	High
Average	50	92	0.84	High

The posttest percentage score of 92 and the N-gain score showed a figure of 0.84 so that it showed a high category. This proves that the use of the SATUSIK application in learning is able to increase students' motivation to learn. The statement about the effectiveness of learning applications in increasing students' learning motivation is also supported by research conducted by Khasanah (2022) which states that the use of learning applications is proven to be positively correlated with better learning outcomes by making the learning process more interactive and interesting. This helps students feel more involved in the learning process and can make the material more relevant and memorable. Digital learning media can also increase student motivation by making learning more interactive and visually interesting, so that it can improve learning outcomes (Puspitarini, 2019). In addition, Android-based interactive learning media can make education more active and interesting, leading to increased student motivation (Saebani, 2023; Zuleni & Riri, 2022).

The effectiveness of the SATUSIK Application in improving students' mastery of concepts is measured based on students' learning outcomes in the form of multiple-choice questions that are done before and after teaching. The multiple-choice question of students' concept mastery consists of several sub-indicators that are adjusted to the concept mastery indicators According to Anderson & Krathworl (2014).

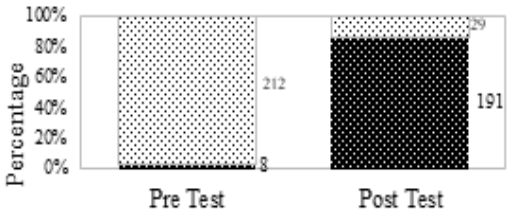

Figure 1. Graph of Concept Mastery Results Based on KKM

Based on the graph above, it can be seen that there has been a significant increase in the results of pretest and post test of students. Before the use of the SATUSIK Application, the number of students who could pass the KKM was only 8 out of a total of 220 students. Meanwhile, after learning using the SATUSIK Application, the number of students who can pass the KKM is 191. This can certainly be a solution to students' problems. Based on the results of pre-research observations, information was obtained that only 47.5% of students got a score above KKM. Meanwhile, after using the SATUSIK Application, more than 86% of students can pass the KKM.

Table 5. Results of the N-gain Test for Concept Mastery

Concept Mastery Indicators	Pretest (%)	Posttest (%)	N-gain	Categori
Remember	51	81	0.60	medium
Understand	61	88	0.75	high
Apply	48	87	0.70	high
Analyze	32	91	0.86	high
Evaluate	16	76	0.71	high
Average	41.6	84	0.72	high

The posttest percentage value of 84 and the N-gain score showed a number of 0.72 so that it showed a high category. This proves that the use of the SATUSIK application in learning is able to increase students' mastery of concepts.

The increase in students' mastery of concepts is certainly supported by the existence of effective and interesting learning media. Many learning apps adapt to individual learning styles and paces, ensuring that students receive content tailored to their needs, which can lead to bet-

ter retention and understanding (Ghifary, 2022; Afrini et al, 2024). According to Fitriyaningsih (2023), incorporating multimedia elements such as videos, animations, and interactive diagrams, learning applications can make the learning process more interesting and easier to understand.

If examined further, the ability of the SATUSIK Application to improve the mastery of concepts is also based on the ability of the Application to increase students' motivation to learn. In other words, if the learning application is designed to be attrctive and able to increase students' motivation to learn, then the application can certainly increase students' mastery of concepts. This is supported by research conducted by Sulistiyanto (2023), he said that the application provides interactive elements such as quizzes, simulations, and games that make learning interesting and can reinforce the understanding of complex concepts.

CONCLUSION

Based on the results, it can be concluded that the SATUSIK application is effective in increasing students' motivation to learn and mastery of the concept of the digestive system. This is known from the n-gain value of learning motivation of 0.84 with high criteria. The increase in concept mastery and critical thinking skills is known from the increase in the percentage of passing the KKM by 86 and it is also supported by an n-gain value of 0.72 with high criteria.

REFERENCES

Anderson, L. W. (2014). Kerangka Landasan untuk Pembelajaran, Pengajaran, dan Asesmen: Revisi Taksonomi Pendidikan Bloom. Yogyakarta: Pustaka Pelajar.

Afriani, G., I Soegiarto, Suyuti S., Ahmad A., & Aristanto. 2024. "Transformasi Guru sebagai Fasilitator Pembelajaran di Era Digital." Global Education Journal, 91–99.

Aryani, P. I. (2019). Penerapan Model Pembelajaran Inkuiri Terbimbing Berbentuk Augmented Reality pada Peserta Didik untuk Meningkatkan Minat dan Pemahaman Konsep IPA. Unnes Physics Education Journal, 8(2), 90-101.

Astuti, D. (2022). Pengaruh Pendekatan Interactive Conceptual Instruction (ICI) dengan Media Pembelajaran Terhadap Penguasaan Konsep Ditinjau dari Gaya Belajar. Kalam Cendekia (Jurnal Ilmiah Kependidikan), 10(2), 423-433.

Aydin, S. (2016). To What extent do turkish high school students know about their body organs and organ system? International of Human Science, 13(1), 1094-1096.

Azwar, S. (2012). Reliabiltas dan validitas (4th ed.). Yogyakarta: Pustaka Pelajar.

Bakri, F. M. (2018). Website ELearning Berbasis Modul: Bahan Pembelajaran Fisika Sma Dengan Pendekatan Discovery Learning. WaPFi (Wahana Pendidikan Fisika), 3(1), 90.

Delkisyarangga, B. (2017). Pengembangan Media Pembelajaran Berbasis Android pada Kompetensi Dasar Mengidentifikasi Komponen Elektronika Daya (Elda) di SMK. Jurnal Pendidikan Teknik Mekatronika, 7(1), 43.

Fardinelly, S. A. (2024). Electronic Liveworksheet-Based LKS Teaching Materials for Middle School Science Learning. Journal of Educational Sciences, 8(1), 119-120.

Hakim, Y. &. (2022). The Development of Android-Based Mobile Learning on Materials for Preparation and Proclamation of Indonesian ndependence for Class VIII Blind Students at MTs Yaketunis Yogyakarta. Jurnal Teknologi Pendidikan, 24(1), 94-96.

Khasanah, .. M. (2022). Improving Student Learning Outcomes Through The Use Of Android-Based Media And Learning Motivation. Jurnal Teknologi Pendidikan, 11(1), 1-3.

Nurmadiah. (2016). Media Pendidikan. Jurnal Islam & Peradaban, 5(1).

Puspitarini, Y. D. (2019). Using Learning Media to Increase Learning Motivation in Elementary School. Anatolian Journal of Education, 4(2), 54-57.

Rochim, F. F. (2019). Identifikasi Profil Miskonsepsi Siswa pada Materi Cahaya Menggunakan Metode Four Tier Test dengan Certainty of Respinse Index (CRI). Natural Science Education Research, 2(2), 140-149.

Rihani, A. L. (2022). Studi Literatur: Media Interaktif Ispring Suite Terhadap Hasil Belajar Peserta Didik Kelas V Sekolah Dasar. (JKPD) Jurnal Kajian Pendidikan Dasar, 7(2), 127–128.

Refmianti, W., Syamsurizal, Fitri A., & Helsa R. 2023. "Validasi Pengembangan Modul Ajar Pola-Pola Hereditas Berbasis Problem Based Learning." Journal On Teacher Education, 4: 19–28.

Saebani, S. N. (2023). Development of Android-based Interactive Learning Media for English Report Text Material in Senior High School. Journal of Curriculum Indonesia, 6(1), 35-37.

Safitri, L. K. (2021). Faktor Penting Dalam Pemahaman Konsep Siswa SMP: Two-Tier Test Analysis. Jurnal Natural Science Educational Research, 4(1), 45-55.

Tarigan, Nuraini N., & Zulkarnein. 2023. "Strategi Guru Bahasa Arab dalam Mengatasi Kesulitan." Jurnal Pendidikan dan Teknologi, 3: 105–112.

Uno, H. (2016). Teori Motivasi dan Pengukurannya. Jakarta: Bumi Aksara.

Zuleni, Elva, & Riri M. 2022. "Pengaruh Motivasi terhadap Pemahaman Konsep Ilmu Pengetahuan Alam Siswa." Educativo: Jurnal Pendidikan, 1(1): 244–250.