



The Student Worksheet Based on Reading, Questioning and Answering (RQA) on Circulatory System Materials

Anna Syarifah, Nugrahaningsih WH^{1✉}

¹Biology Department, FMIPA, Universitas Negeri Semarang, Indonesia

Article

Information

Article History:

Received : July 2022

Accepted : July 2022

Published : August 2022

Keywords:

LKPD, Reading Questioning & Answering, Circulatory System.

Abstract

The research was motivated by the tight timing for learning biology due to the impact of the Covid-19 pandemic. The learning is carried out in a hybrid learning manner with a short period (30 minutes) per meeting. This causes students to unable to freely actively ask questions, answer questions, or be active in discussions. In addition, there are problems in the form of the low level of classical mastery of students in the material of the circulatory system. Based on the problems faced, we need a learning media for circulatory system material that can help students in learning while simultaneously providing space for students to be active in asking and answering questions. This study aims to produce LKPD based on Reading, Questioning & Answering (RQA) that is valid and effective in improving student learning outcomes on the material of the circulatory system class XI MIPA at SMA Negeri 2 Kendal. The development method used in this research is the modified Research & Development (R&D) method according to Sugiyono. The results of the LKPD material and media validity test were obtained from a lecturer in the Department of Biology, Universitas Negeri Semarang. The effectiveness test is obtained from the learning outcomes of students. The results obtained show the validity of the RQA-based LKPD is very valid with a material validity percentage of 91.6% and 95.3% for media validity. The acquisition of student learning outcomes has reached classical completeness reaching the MMC (MMC 75) with a percentage of 88% and the results of the N-gain test obtained g 0.3 of 92% in the medium-high category. Thus, it can be concluded that the RQA-based LKPD material on the circulatory system developed is valid and effective in improving student learning outcomes.

© 2022 Universitas Negeri Semarang

✉ Correspondence Address:

D6 Building 1st Floor Jl Raya Sekaran Gunungpati Semarang

E-mail: nugrahaningsihwh@mail.unnes.ac.id

p-ISSN 2252-6579

e-ISSN 2540-833X

INTRODUCTION

The change in the Indonesian curriculum per-unit level of education (KTSP) to the 2013 curriculum requires students to be more active in teaching and learning activities. Teachers should act as facilitators with students as the center of learning. However, the COVID-19 pandemic has changed various government policies in Indonesia, including the education sector. Learning which generally is done offline/face-to-face has begun to be replaced with online/distance learning. The new policy is enforced by the government under the conditions of the city/district per region. Kendal Regency, which has entered PPKM level 3, applies the policy of limited face-to-face meetings. The time used for face-to-face activities is also cut, causing a lack of time for students to be active in learning activities.

Based on the results of interviews with biology teachers at SMA N 2 Kendal, the problem faced was the limited time for learning biology which only took place in one meeting with no more than 30 minutes. This causes students unable to freely actively ask questions, answer questions, or be active in discussions. Based on the problems faced, it takes a learning media that can help students in learning as well as provide space for students to be active in asking and answering. The media needed can not limitedly be used at school but can also be used at home to increase the limited hours of studying biology in schools.

Student Worksheet (LKPD) is one of the means of assisting learning activities. An alternative media that can be used is to use a Student Worksheet (LKPD) based on Reading, Questioning Answering (RQA). Reading, asking, and answering activities in RQA-based learning strategies, are expected to be able to cover the lack of biology learning hours at school while still paying attention to student activity in asking and answering. Through the RQA-based LKPD, students will deepen the material through reading activities. As said, through reading habits, a person can be trained to sort out authentic information, practice critical thinking skills, and develop skills, especially analytical skills (Bahri, 2016). In LKPD based on Reading Questioning & Answering (RQA), students can obtain and understand information from reading materials and can analyze and evaluate content through questioning and answering activities. The existence of LKPD can facilitate teachers learning activities because students can learn independently and learn to understand the concepts they have learned through the tasks contained in the LKPD. In addition, LKPD has a vital role in the learning process. According to (Prastowo, 2014) KPD acts as teaching material that is more active for students, makes it easier for students to understand the material provided, as a concise teaching material that is also rich in assignments to practice.

Based on the results of interviews conducted at SMA N 2 Kendal, the students also experienced problems with the material on the Circulatory System. This is proved by the low level of completeness of students' scores which are less than 50%. Circulatory System material is quite complex so it takes more time to learn and deepen understanding through reading the material, asking questions, and answering.

The results of previous research conducted by (Akmaliya & Hapsari, 2016) regarding RQA have been proven to improve student learning outcomes. Meanwhile, another study conducted by (Hidayatika et al., 2020) was proven to be able to improve students' scientific literacy skills through the RQA learning model. Research by (Ramdiah & Adawiyah, 2018) with the title The Effect of the Reading Questioning And Answering (RQA) Learning Model on the cognitive biology learning outcomes of students with the low academic ability also showed significant results

RESEARCH METHOD

The research was carried out using the Research & Development (R&D) research method and using a modified research design according to Sugiyono (2015). The research stages include 1) Analysis of potential and problems, conducting analysis studies of potentials and problems based on field facts, 2) Data collection, in the form of literature review, interviews, identification of problems in the form of supporting factors, and learning barriers, 3) Product design, designing components in preparing LKPD in the form of titles, semesters, basic competencies to be achieved, learning indicators, instructions for use, supporting

information, assignments, evaluations, and assessments. 4) Design validation, carried out by each material and media expert to determine the validity of the developed product, 5) Design revisions, improving products based on suggestions and input from validators, 6) Product trials, field trials to students to know the effectiveness of the product, 7) Revision of the product, product improvement based on the results of the trial 8) The final result, the product can be used as additional learning media for students.

The research was carried out at SMA Negeri 2 Kendal for 25 days from October 25 to November 19, 2021. The subjects of the research were class XI MIPA 3 and XI MIPA 4 SMA Negeri 2 Kendal with a total of 72 students. The indicators measured in the research are the validity and effectiveness of the RQA-based LKPD. The instruments used in this study were interview sheets, material and media expert validation sheets, and test instruments. The instrument validity of the material is seen in terms of competence, the material presented, and the suitability of the material to the basic competencies under the 2013 curriculum. The media validity instrument contains an assessment in terms of graphics, grammar, and media presentation for students. The test instrument uses 25 multiple-choice items on the circulatory system. Validity is obtained from the results of validity tests by material experts and media experts. LKPD is said to be valid if the assessment results reach valid to very valid criteria. The effectiveness of LKPD is obtained from student learning outcomes. LKPD can be said to be effective if the percentage of classical completeness obtained from the pretest and posttest tests reaches 70% of the number of students with a score of 75 (KKM=75).

RESULT AND DISCUSSION

Research Result

The validity of the Reading, Questioning, and Answering (RQA) based worksheet was obtained through validity tests by media experts and circulatory system material experts. The instrument validity is based on aspects and criteria adapted from the 2016 National Education Standards Agency (BSNP). Material validation is carried out by Dr. Lisdiana, M.Si, lecturer in Human Physiology Anatomy at the Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang. The assessment given by the material expert includes aspects of the dimensions of knowledge, language, presentation techniques, completeness of presentation, and the benefits of media. Media validation was carried out by Dr. Sigit Saptono, M.Pd, lecturer in Biology Learning Strategy at the Faculty of Mathematics and Natural Sciences, Universitas Negeri Semarang. The assessments given by media experts include aspects of cover design, LKPD content design, and media benefits.

Table 1 LKPD Validity by Material Experts

No.	Aspect	Score	Maximum Score	Percentage	Criterion
1.	Content Eligibility	26	28	92,8	Very Valid
2.	Language	22	24	91,6	Very Valid
3.	Presentation Media	7	8	87,5	Very Valid
4.	Benefit of Media	11	12	91,6	Very Valid
Total		66	72	91,6	Very Valid

Table 2 LKPD Validity oleh Media Experts

No.	Aspect	Score	Maximum Score	Percentage	Criterion
1.	Readability	16	16	100	Very Valid
2.	Presentation Media	15	16	93,7	Very Valid
3.	Graphics	19	20	95	Very Valid
4.	Benefit of Media	11	12	91,6	Very Valid
Total		61	64	95,3	Very Valid

Field trials have been conducted on two classes with a total of 72 students. Each of them is 36 students of class XI MIPA 3 and 36 students of class XI MIPA 4. The results of classical mastery which is the overall mastery of students in a class show achievement. The achievement of classical mastery can occur if classical mastery in a class exceeds 85%.

Table 3 Classical Completeness Recapitulation

Information	Amount
Complete	67
Not finished	5
Classical completeness (%)	88%

Table 4 Pre-test and post-test score

Information	Score	
	Pretest	Posttest
Highest score	76	96
Lowest score	20	64
Average	48	80

Table 5 Recapitulation of N-Gain Test

N-Gain	Number of Students	Percentage	Information
>0,70	21	29,1%	High
0,31 – 0,70	46	63,8%	Medium
<= 0,30	5	6,9%	Low

Table 5 presents the results of the N-Gain test students. The N-gain test is used to measure and increase student learning outcomes cognitively before using the RQA-based LKPD learning media and after using it. The results of the N-Gain test showed 92% of students in the medium to high category.

Discussion

The results of the LKPD validity test were declared very valid, both in terms of material and media validity. The developed RQA-based LKPD shows the relevance of the learning material to the Basic Competencies (KD) of the Circulatory System and the learning objectives and indicators are appropriate. In addition, the accuracy of the material, the accuracy of the pictures, and the illustrations in the worksheets have been well presented. The existence of good pictures, photos, or illustrations can clarify the concept of the material to be conveyed (Arsyad, 2010). RQA-based worksheets, especially in reading activities, are prepared using easy-to-understand reading materials so that the material to be conveyed to students can be more easily digested. A good Student Worksheet (LKS) contains sentence clarity, namely using sentences that are easy to understand and do not cause double meanings, using the standard Indonesian language, and can invite students to be actively involved (Widjajanti, 2008). The worksheet developed is easy to use because they have clear and concise instructions for use, and can be used in flexible forms, both soft files, and hard files. In addition, RQA-based LKPD can facilitate the learning process for both teachers and students. The occurrence of a pandemic like this has caused obstacles in the form of learning time in class to be reduced (İlhan, 2020). LKPD can be a new learning media that can be used independently to minimize the impact of reduced learning hours when studying remotely or when hybrid learning.

Based on classical completeness and the results of the N-gain test, it is known that the use of LKPD based on RQA has proven to be effective in improving students' cognitive learning outcomes on the circulatory system material for class XI SMA. Improving student learning outcomes with the help of learning media in the form of RQA-based LKPD on the material of the circulatory system is influenced by

several factors including that RQA-based LKPD can make it easier for students to hone their asking and answering skills through LKPD. The material presented in the LKPD is easy to understand and uses language that is under the development of students so that the material to be conveyed can be accepted by students. Learning media is one of the learning resources that can facilitate teachers in conveying information and providing material, thus making the learning process more effective (Yudasmara & Purnami, 2015). The learning process occurs due to the interaction of its components (educators and students). This interaction in learning functions so that changes in student behavior can be seen as a result of planned learning. The process and learning objectives in the classroom are achieved, it depends on the elements involved, without exception for the educators. Educators have a great influence on student activities in the learning process and play a role in learning outcomes (Priyayi et al., 2018).

Dalam kegiatan belajar mengajar, guru tidak hanya bertugas dalam menyampaikan materi, tetapi juga bertanggung jawab dalam mengamati proses perkembangan peserta didik. Aktivitas pembelajaran dilakukan sejalan dengan Rencana Pelaksanaan Pembelajaran (RPP). Pembelajaran diawali dengan pemberian motivasi belajar kepada siswa, sekaligus bertujuan untuk memengaruhi hasil belajar siswa. Motivasi belajar yakni suatu dorongan belajar baik yang bersumber dari dalam diri (internal) maupun luar (eksternal) sehingga dapat memunculkan semangat belajar (Monika & Adman, 2017). Motivasi belajar yang diberikan dari pendidik diharapkan mampu membuat dampak baik pada peningkatan hasil belajar siswa, karena motivasi belajar memegang peranan penting dalam keberhasilan siswa. Hasil belajar siswa akan mencapai yang terbaik berkat motivasi belajar (Andriani & Rasto, 2019). Pembelajaran dalam penelitian ini adalah pembelajaran yang terfokus pada siswa, sehingga siswa akan lebih berpartisipasi dalam proses pembelajaran, dan guru akan bertindak sebagai fasilitator dan memberikan bantuan untuk menjelaskan materi yang belum dimengerti siswa. Pembelajaran yang berpusat pada siswa dibantu dengan penerapan model pembelajaran yang tepat sesuai dengan kondisi yang dibutuhkan kelas. Dalam proses pembelajaran, sebagai fasilitator, guru hendaknya menggunakan model atau metode pembelajaran yang tepat agar tujuan pembelajaran dapat dicapai dan siswa dapat memahami inti materi yang ingin disampaikan (Hamidah & Haryani, 2018).

In teaching and learning activities, the teacher is not only tasked with delivering material but is also responsible for observing the development process of students. Learning activities are carried out in line with the Learning Implementation Plan (RPP). Learning begins with providing learning motivation to students, as well as aiming to influence student learning outcomes. Learning motivation is an encouragement to learn both from within (internally) and outside (externally) so that it can bring up the spirit of learning (Monika & Adman, 2017). Learning motivation given by educators is expected to be able to make a good impact on improving student learning outcomes because learning motivation plays an important role in student success. Student learning outcomes will achieve the best due to learning motivation (Andriani & Rasto, 2019). Learning in this study is student-focused learning so that students will participate more in the learning process, and the teacher will act as a facilitator and provide assistance to explain the material that students have not understood. Student-centered learning is assisted by the application of appropriate learning models according to the conditions required by the class. In the learning process, as a facilitator, the teacher should use the right learning model or method so that learning objectives can be achieved and students can understand the core material to be conveyed (Hamidah & Haryani, 2018).

CONCLUSION

Based on the results of the research that has been done, it can be concluded that the Student Worksheet (LKPD) based on Reading, Questioning & Answering (RQA) material for Circulatory System class XI SMA MIPA is declared feasible as a learning medium and effective in improving student learning outcomes.

BIBLIOGRAPHY

- Akmaliya, N. I., & Hapsari, A. I. (2016). Model Pembelajaran Reading Questioning and Answering (Rqa) Untuk Meningkatkan Hasil Belajar Siswa. *Jurnal Biologi Dan Pembelajaran Biologi*, 1(1), 69–80.
- Andriani, R., & Rasto, R. (2019). Motivasi belajar sebagai determinan hasil belajar siswa. *Jurnal Pendidikan Manajemen Perkantoran*, 4(1), 80.
- Bahri, A. (2016). Strategi pembelajaran Reading Questioning and Answering (RQA) pada perkuliahan fisiologi hewan untuk meningkatkan hasil belajar kognitif mahasiswa. *Jurnal Bionature*, 17(2), 107–114.
- Choo, S. S. Y., Rotgans, J. I., Yew, E. H. J., & Schmidt, H. G. (2011). Effect of worksheet scaffolds on student learning in problem-based learning. *Advances in Health Sciences Education*, 16(4), 517–528.
- Darussyamsu, R., & Fadilah, M. (2017). The Effect of Reading, Questioning and Answering Strategy toward Student Creative Thinking on Evolution Course at Biology Department FMIPA Universitas Negeri Padang. *Bioeducation Journal*, 1(1), 10–21.
- Effendy, I. (2016). Pengaruh Pemberian Pre-Test dan Post-Test Terhadap Hasil Belajar Mata Diklat HDW.DEV.100.2.a pada Siswa SMK Negeri 2 Lubuk Basung. *Jurnal Ilmiah Pendidikan*, 1(2), 81–88.
- Hamidah, N., & Haryani, S. (2018). Efektivitas Lembar Kerja Peserta Didik Berbasis Inkuiri Terbimbing Untuk Meningkatkan Hasil Belajar Siswa. *Jurnal Inovasi Pendidikan Kimia*, 12(2), 2212–2223.
- Hidayatika, F., Suprpto, P. K., & Hernawati, D. (2020). Keterampilan Literasi Sains Peserta Didik dengan Model Pembelajaran Reading, Questioning, and Answering (RQA) dalam Pembelajaran Biologi. *Quagga: Jurnal Pendidikan Dan Biologi*, 12(1), 69.
- Istikharah, R. dan Z. S. (2017). Pengembangan Lembar Kegiatan Peserta Didik (LKPD) Kelas X SMA / MA Pada Materi Pokok Protista Berbasis Pendekatan Ilmiah. *Jurnal Pendidikan Matematika Dan Sains*, 12(1), 1–6.
- Kritis, B., Materi, P., & Kelas, B. (2020). *BioEdu*. 9(3), 466–475.
- Lashari, D. A., Lisa, Y., & Julung, H. (2017). JP BIO (Jurnal Pendidikan Biologi) Pengaruh Model Reading Questioning Answering (Rqa) Terhadap Pengetahuan Metakognitif Siswa Pada Materi Sistem Pernapasan Manusia Mahasiswa Program Studi Pendidikan Biologi , STKIP Persada Khatulistiwa Sintang Dosen Pro. *JP BIO (Jurnal Pendidikan Biologi)*, 2(2), 27–33.
- Monika, M., & Adman, A. (2017). Peran Efikasi Diri dan Motivasi Belajar Dalam Meningkatkan Hasil Belajar Siswa Sekolah Menengah Kejuruan. *Jurnal Pendidikan Manajemen Perkantoran*, 2(2), 109.
- Muh Amin, A., & Corebima Aloysius, D. (2016). Analisis Persepsi Dosen terhadap Strategi Pembelajaran Reading Questioning and Answering (RQA) dan Argument-Driven Inquiry (ADI) pada Program Studi The effect of PDEODE (Predict-Discuss-Explain-Observe-Discuss-Explain) Learning Strategy In The Different Aca. *Researchgate.Net*, March.
- Nurhidayati, S., Zubaidah, S., & Indriwati, E. (2015). Pengaruh Metode STAD dipadu Inkuiri Terbimbing terhadap Aktivitas dan Hasil Belajar Biologi Siswa Pengaruh Metode STAD dipadu Inkuiri Terbimbing terhadap Aktivitas Jurusan Pendidikan Biologi FPMIPA Universitas Negeri Malang Pendahuluan Berdasarkan kurikulum. *Jurnal Kependidikan*, 14(1), 73–81.
- Nuzuloh, D. F., & Budijastuti, W. (2018). Worksheet Based on Reading, Questioning and Answering (Rqa) Model in Invertebrate Material for Training Critical Thinking Skill. *Berkala Ilmiah Pendidikan Biologi*, 7(1), 38–44.
- Pingge, H. D. (2018). Faktor yang Mempengaruhi Hasil Belajar Siswa Sekolah Menengah Atas di Kecamatan Kota Tambolaka. *Jurnal Faktor Hasil Belajar*, 6(2), 166–176.
- Priyayi, D. F., Keliat, N. R., & Hastuti, S. P. (2018). Masalah Dalam Pembelajaran Menurut Perspektif Guru Biologi Sekolah Menengah Atas (Sma) Di Salatiga Dan Kabupaten Semarang. *Didaktika Biologi: Jurnal Penelitian Pendidikan Biologi*, 2(2), 85–92.
- Ramdiah, S., & Adawiyah, R. (2018). Pengaruh Model Pembelajaran Reading Questioning and Answering(Rqa) Terhadap Hasil Belajar Kognitif Biologi Siswa Kemampuan Akademik Rendah. *Simbiosis*, 7(1), 1.
- Srimaya. (2017). Efektivitas Media Pembelajaran Power Point Untuk Meningkatkan Motivasi Dan Hasil Belajar Biologi Siswa. *Jurnal Biotek Volume 5 Nomor 1 Juni 2017*, 5(1), 53–68.
- Taşlıdere, E. (2013). Effect of Conceptual Change Oriented Instruction on Students' Conceptual Understanding and Decreasing Their Misconceptions in DC Electric Circuits. *Creative Education*, 04(04), 273–282.
- Tindangen, M., & Palenewen, E. (2018). Analisis Permasalahan Guru Terkait Pengembangan Perangkat Pembelajaran Biologi Berbasis Model Pembelajaran Reading Questioning and Answering (RQA) di SMA Teacher Problem Analysis in the Development of Biology Learning Tools Integrated by Reading Questioning and Answering (RQA) Learning Model in Senior Highschool. 4(1), 18–25.
- Ummah, K. (2021). Pengembangan Modul Pembelajaran Biologi Berbasis Reading, Questioning, And Answering (RQA) Materi Virus Kelas X. *Jurnal Biologi Dan Pembelajarannya (JB&P)*, 8(1), 19–25.
- Yudasmara, G. A., & Purnami, D. (2015). Pengembangan Media Pembelajaran Interaktif Biologi Untuk Meningkatkan Hasil Belajar Siswa Smp. *Jurnal Pendidikan Dan Pengajaran*, 48(1–3), 1–8.
- Zahrawani, N. A., Suharti, P., & Gayatri, M. P. Y. (2017). Manusia Berbasis Reading, Questioning, And Answering (Rqa) Guna Menunjang Pembelajaran Mandiri Dan Keterampilan Berpikir Kritis