



LEARNING INDEPENDENCE OF JUNIOR HIGH SCHOOL STUDENTS THROUGH THE USE OF RADEC LEARNING MODEL IN SCIENCE LEARNING

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ABSTRACT

The purpose of this study was to determine the description of students' learning independence after using the RADEC (Read, Answer, Discuss, Explain, Create) learning model in learning science in energy material. This research was analyzed using a quantitative approach with descriptive methods. The instrument used to measure students' learning independence is a learning independence questionnaire using positive statements. The learning independence of students has been achieved by 26 students with a percentage of 87%. Learners who do not depend on others as much as 83%, are responsible for their duties as much as 83%, have 93% self-confidence, have 87% discipline, act on their own initiative as much as 90%, and are able to control themselves as much as 83%.

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INTRODUCTION

The implementation of education in a country is carried out in accordance with the signs used in that country. The signpost used in Indonesia is the 1945 Constitution of the Republic of Indonesia. The Act describes the objectives of national education in the State

of Indonesia. The purpose of national education is to develop students who are educated to become students who believe and fear God Almighty, have noble character, are healthy, capable, knowledgeable, creative, independent, and responsible. Independent behavior is one of the goals of education held in Indonesia[1]. Furthermore, national

education also realizes that each learner has their own potential and education is obliged to develop it [2].

The attitude of independence can be developed in the process of learning science. In science learning, students are asked to independently explore the knowledge of science concepts through experiences or learning resources that have been provided by educators [3]. Learners find their own science concepts facilitated by the learning model prepared by the teacher [4]. Learning independence in science learning needs to be developed in order to help students find their knowledge.

Learning independence is a learning process that comes from the willingness of the learners themselves without dependence on others [5]. Learners learn on their own initiative and want to be involved in the process of learning activities [6]. If the learning initiative comes from the learners themselves, learning will take place optimally.

Independent learning is able to involve learners in the stages of learning to produce what the teacher wants to produce with the learners [7]. Learning must be able to lead learners into the competencies to be built independently and response [8]. Clear learning stages are needed in shaping students' learning independence.

One of the learning models that can be applied by teachers in learning science is learning with the RADEC model. This RADEC learning model stands for the stages of Read, Answer, Discuss, Explain and Create [9]. Science learning with the RADEC Learning Model is in accordance with the characteristics of science learning in the 21st century. Science learning in the 21st century is learning that is able to involve students actively, build cooperation among friends, be

able to establish communication with fellow friends and teachers, encourage creative thinking of students, and centered on students [10]. Science learning organized in the 21st century is in accordance with the expectations of the national education goals that want to empower students through the educational process carried out at school.

A learning model consists of a clear learning syntax. The RADEC Learning Model consists of the following stages [11] :

a) Read

At this stage, learners are given readings related to the energy material provided by the teacher. Learners read the reading material in their own way. This activity is done per each individual. The reading material provided is related to the pre-learning questions that will be answered by learners in the next phase.

b) Answer

Learners at this stage are given pre-learning questions related to energy material and learners answer these questions on the paper provided. This stage is carried out by each learner with responsibility in each learner.

c) Discuss

In this section, students no longer carry out learning activities individually but in groups. Before carrying out this stage, the teacher divides the learners according to the answers in the previous stage. There are groups that are beginning to develop, developing and advanced. Learners share knowledge and share references with each other.

d) Explain

In this stage, learners explain their answers in the answer stage that have been combined with their group mates in the

discuss stage. Learners present carefully and are open to receiving input from other groups. This is where learners complement each other without wanting to bring down other groups guided by the teacher.

e) Create

In this create part, learners are free to be creative according to their own abilities and needs. Learners conclude what they have learned in the form of work. The type of work displayed by students varies.

This RADEC learning model guides learners to seek their own knowledge through learning experiences that already exist in the RADEC stages [12].

The RADEC learning model is able to empower learners in learning. This RADEC model makes learners not dependent on their peers in carrying out tasks. After the answers are discussed together, there will be confidence in the answers delivered during the presentation. Learners will be responsible for all their independent work at the read and answer stages.

Based on the description above, the researcher is interested in conducting research related to learning independence that can be achieved by students through the RADEC learning model in science learning. This study aims to determine the learning independence of students in learning science on energy material by using the RADEC learning model. The formulation of the problem in this study is how the learning independence of students after using the RADEC model in science learning.

METHOD

This research was analyzed using a quantitative approach with descriptive methods. The descriptive method is appropriate because this method aims to

describe a condition or event systematically through accurate data that has been collected [13]. Learning independence is obtained using a learning independence questionnaire consisting of 6 indicators. The six indicators are not dependent on others, responsible, confident, disciplined, working with their own initiative, and able to control themselves. The results of this questionnaire will later be analyzed using the percentage of students who can achieve these learning independence indicators.

RESULT AND DISCUSSION

Independent learners are needed in the 21st century [14]. Students' learning independence is seen from six indicators. The research sample was 30 students in grade 8 of junior high school. The results of students' learning independence are in Figure 1.

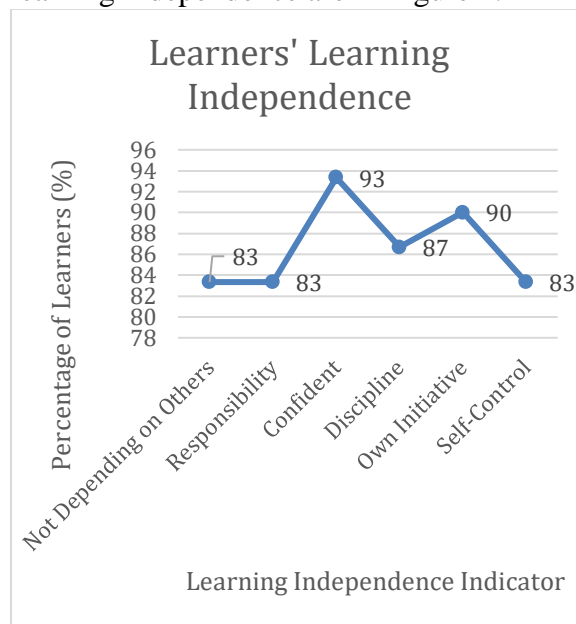


Figure 1. Learning Independence of Learners

Figure 1 shows the percentage of students' learning independence after using the RADEC learning model in science learning. A total of 25 learners have been able to not

depend on other learners or the teacher as a facilitator. Learners can use reading materials and learning videos shown in front of the class. Furthermore, as many as 25 learners are able to take responsibility for the work assigned to them in each phase.

There are 28 learners who have confidence in every phase of learning. This is because learners are free to be creative in each phase according to their abilities and potential. There are 26 learners who are disciplined in doing tasks during the learning process. There are 27 learners who are able to act on their own initiative and there are 25 learners who are able to control themselves during the learning process.

At the reading stage, learners do not depend on anyone. Learners read with full concentration on the material given to learners. The reading is related to the types of energy found in the learners' environment. Potential energy, kinetic energy, and mechanical energy. Learners are also presented with a learning video. The learning video snippets are shown in Figure 2 and Figure 3.



Figure 2. Potential Energy Snapshot

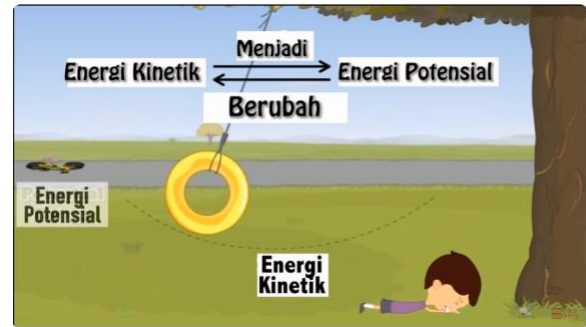


Figure 3. Snapshot of Energy Change

Learners listen to the video and reading material provided. At this stage, learners do not depend on others. From the video and reading materials, we learned that energy cannot be destroyed or created. It can change form from one form to another.

In the answer stage, students are asked to answer some pre-learning questions. Questions in the form of "What is energy?", "What are the types of energy?", "What are the forms of energy in everyday life?", and given some physics questions related to energy. Learners work on their own pre-learning questions with reference to the reading materials provided. Learners are responsible for their work until the time set by the teacher. Responsibility is an attitude of carrying out the tasks assigned to him in a particular activity [15]. Learners are not required to answer perfectly. If there are shortcomings in answering the questions, they will be refined at a later stage.

At the discuss stage, learners begin to be able to control themselves by not imposing their will in a discussion. Learners exchange ideas and search together for the truth of the answer in the previous activity. In discussion activities, learners have equal rights in conveying their ideas in solving problems by cooperating with group members [16]. Learners establish good cooperation in the team.

The next stage, learners explain the results of the discussion on the answers to the pre-learning that have been discussed together. In this explanation, the teacher will not blame learners for answers that are not in accordance with the teacher's wishes. Learners explain the results of their discussion based on their reading ability and the reference sources they use. The teacher manages the class well by allowing each group to explain what they have obtained in their discussion. The delivery of material explanation varies according to the learners' ability. This is in accordance with Amaliyah & Rahmat (2021) who argues that learners are born with their own potential that needs to be developed by teachers in the learning process. A snapshot of learners performing during explaining activities is shown in Figure 4 below.



Figure 4. Learners in the Explain Stage
After learners explain what they understand, there is then confirmation from a teacher. The teacher can strengthen the learners' answers if they are correct and the teacher can correct the learners' wrong concepts with additional explanations.

In the create phase, students create the work that they display as a form of understanding of the previous stages. Learners make concept maps and some also make a collection of questions for energy

material. The form of work is also released to students according to the wishes and abilities of students.

The RADEC model with the reading stage can foster an attitude of not depending on others, self-control, and discipline. The answer stage in the RADEC learning model can train the attitude of responsibility, acting by using their own initiative, and also the attitude of not relying on others. The discuss stage can train students' self-control and responsibility. The explain stage can train the attitude of confidence, responsibility and self-control. The create stage can train the ability to act with their own initiative, responsibility, confidence, and discipline.

CONCLUSION

The conclusion of this research is that by using the RADEC Learning Model, as many as 26 students out of 30 students have learning independence based on the learning independence questionnaire that has been filled in by students.

REFERENCES

- [1] P. S. Mustafa, "Peran Pendidikan Jasmani untuk Mewujudkan Tujuan Pendidikan Nasional," *J. Ilm. Wahana Pendidik.*, vol. 8, no. 9, pp. 68–80, 2022, doi: 10.5281/zenodo.6629984.
- [2] E. Lisdiawati, "UPAYA PENCAPAIAN TUJUAN PENDIDIKAN ISLAM DALAM PENDIDIKAN NASIONAL DIMASA PANDEMI COVID-19," vol. 2, pp. 22–33, 2021.
- [3] V. Mairina and R. Amini, "Peningkatan Hasil Belajar IPA Melalui Model Pembelajaran Kuantum di Sekolah Dasar," *J. Basicedu*, vol. 5, no. 2, pp. 784–788, 2021, doi: 10.31004/basicedu.v5i2.766.

- [4] T. E. N. Andriana, E. Ramadayanti, S. “Pembelajaran IPA di SD pada Masa Covid 19,” *Sustain.*, vol. 3, no. 1, pp. 409–413, 2020, [Online]. Available: <http://www.unpcdc.org/media/15782/sustainable-procurement-practice.pdf%0Ahttps://europa.eu/capacity4dev/unep/document/briefing-note-sustainable-public-procurement%0Ahttp://www.hpw.qld.gov.au/SiteCollectionDocuments/ProcurementGuideIntegratingSustainability>
- [5] R. N. Fadila, T. A. Nadiroh, R. Juliana, P. Z. H. Zulfa, and Ibrahim, “Independent learning online as a predictor of learning outcomes for students of mathematics education at UIN Sunan Kalijaga,” *J. Cendekia J. Pendidik. Mat.*, vol. 5, no. 2, pp. 880–891, 2021.
- [6] N. Handayani and F. Hidayat, “Hubungan Kemandirian Terhadap Hasil Belajar Siswa Mata Pelajaran Matematika Di Kelas X Smk Kota Cimahi,” *J. Educ.*, vol. 1, no. 2, pp. 1–8, 2019.
- [7] I. Muhammad, “Pengaruh Perkuliahan Daring Terhadap Kemandirian Belajar Mahasiswa,” *Al-Qalasadi*, vol. 4, no. 1, pp. 24–30, 2020.
- [8] A. Banat and Martiani, “Kemandirian Belajar Mahasiswa Penjas Menggunakan Media Google Classroom Melalui Hybrid Learning Pada Pembelajaran Profesi Pendidikan Di Masa Pandemi Covid-19,” *J. Teknol. Pendidik.*, vol. 13, no. 2, p. 119, 2020, doi: 10.24114/jtp.v13i2.20147.
- [9] T. Rindiana, M. H. Arifin, and Y. Wahyuningsih, “Model Pembelajaran Radek Untuk Meningkatkan Higher Order Thinking Skill Dalam Pembelajaran Ips Di Sekolah Dasar,” *Autentik J. Pengemb. Pendidik. Dasar*, vol. 6, no. 1, pp. 89–100, 2022, doi: 10.36379/autentik.v6i1.186.
- [10] M. Makhrus, “Analisis Rencana Pelaksanaan Pembelajaran (Rpp) Terhadap Kesiapan Guru Sebagai ‘Role Model’ Keterampilan Abad 21 Pada Pembelajaran Ipa Smp,” *J. Penelit. Pendidik. IPA*, vol. 5, no. 1, 2018, doi: 10.29303/jppipa.v5i1.171.
- [11] A. A. Pohan, Y. Abidin, A. Sastromiharjo, and U. P. Indonesia, “Model Pembelajaran Radek,” *Semin. Nas. Riksa Bhs. XIV*, vol. 496, pp. 250–258, 2019.
- [12] A. R. Kusumaningpuri and E. Fauziati, “Model Pembelajaran RADEC dalam Perspektif Filsafat Konstruktivisme Vygotsky,” *J. Papeda J. Publ. Pendidik. Dasar*, vol. 3, no. 2, pp. 103–111, 2021, doi: 10.36232/jurnalpendidikandasar.v3i2.1169.
- [13] H. S. Tanjung and S. A. Nababan, “Pengaruh penggunaan metode pembelajaran bermain terhadap hasil belajar matematika siswa materi pokok pecahan di kelas III SD Negeri 200407 Hutapadang,” *J. Bina Gogik*, vol. 3, no. 1, pp. 35–42, 2016, [Online]. Available: <https://www.ejournal.stkipbbm.ac.id/index.php/pgsd/article/view/26>.
- [14] N. S. Amin, A. Rahmawati, N. Azmin, and M. Nasir, “Pengembangan Pembelajaran Blended Learning untuk Meningkatkan Keterampilan Abad 21 Siswa SMAN 2 Kota Bima,” *JIIP - J. Ilm. Ilmu Pendidik.*, vol. 5, no. 12, pp. 5563–5567, 2022, doi: 10.54371/jiip.v5i12.1254.
- [15] S. S. Rifai, D. A. Uswatun, and I. Nurasih, “Model project based learning (PjBL) untuk meningkatkan sikap tanggung jawab ilmiah peserta didik di kelas tinggi,” *JIPVA (Jurnal Pendidik. IPA Veteran)*, vol. 3, no. 2,

- p. 127, 2019, doi:
10.31331/jipva.v3i2.874.
- [16] Putri Hidayatin Nisa, Pebrian Tarmizi, and Dwi Anggraini, "Pembuatan Karya Montase Dalam Menumbuhkan Sikap Kerja Sama Peserta Didik Kelas Iv Sekolah Dasar," *J. Cakrawala Pendas*, vol. 8, no. 4, pp. 1160–1170, 2022, doi: 10.31949/jcp.v8i4.2626.
- [17] A. Amaliyah and A. Rahmat, "Pengembangan Potensi Diri Peserta Didik Melalui Proses Pendidikan," *Attadib J. Elem. Educ.*, vol. 5, no. 1, p. 28, 2021, doi: 10.32507/attadib.v5i1.926.