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LAB KIT DEVELOPMENT TO IMPROVE STUDENT'S ATTITUDES AND ACHIEVEMENTS IN DISTANCE LEARNING

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ABSTRACT

A shortcoming of distance learning is the lack of substantive integration of hands-on activities into online classrooms. We conducted a research and development study, where the lab kits and tutorial videos were sent to students to perform experiments in their own homes. We planned, tested, developed, improved, and implemented kits into experimental distance learning. This research was conducted to improve previous studies in linear subjects. Findings have implications for distance learning in rural areas that have limitations. Furthermore, our findings illustrate the potential amplifying effect of this learning environment configuration for science teachers. Thirty-two students, four experts, and three science teachers participated in this research. The product' validity and feasibility were obtained by descriptive analysis of experts and students' assessment data. Students' learning motivation and activities were observed and analyzed descriptively. Students' cognitive learning outcomes were obtained by analyzing pretest and posttest data using *paired sample t-test*. This learning helped students achieve intellectual goals by significantly improving students' learning motivation, activities, and cognitive outcomes.

Keywords: distance learning, experimental learning, lab kits, learning achievements, learning video

INTRODUCTION

The 21st-century learning, including science learning, emphasizes learning that stimulates students to maximize their thinking skills, analyze problems, correlate science with daily life activities, master technological developments, and improve communication and collaboration skills (Bao & Koenig, 2019). Through this understanding, science can be taught contextually, involving students actively in the problems solving context related to socio-scientific problems. Science learning has to be meaningful for students (Kotkas et al., 2016).

Experimental learning lets students learn through concrete experiences and improves students' communication and collaboration skills in obtaining new ideas and concepts. This experience will be an essential provision for students to live in society. Experimental learning has value far beyond building social skills, work ethic, and practical expertise for students. Experimental education can also lead to more robust learning and help students achieve intellectual goals, including a deeper materials understanding, a higher capacity for critical thinking and the application of knowledge, and also a mature ability to engage in lifelong learning (Eyler, 2009). Experimental learning is also effective in improving students' cognitive abilities (Mutmainah et al., 2019).

Science education in Indonesia faces further challenges in overcoming existing problems. During the COVID-19 pandemic, schools have been closed since March 2020, and face-to-face learning has shifted to distance learning. Distance learning has many advantages that teachers and students in Indonesia are ready to accept, such as flexibility in learning, saving time, being friendly to students with special needs, and even increasing learning motivation and learning outcomes if appropriately managed. Distance learning also carries many disadvantages that teachers and students cannot accept. These disadvantages include many distractions, low social interaction, and less technical abilities of teachers and students in carrying out distance learning. This causes a decrease in students' quality of learning and low psychomotor abilities because they never carry out experimental learning or laboratory work (Doghonadze et al., 2020).

The kit is considered cost-effective, time-friendly, and environment-friendly tools to do specific lab works. The lab kit is a small-scale lab work tool with some advantages compared to traditional lab kits. The tools and other lab work materials are also arranged on small scales so that the lab work budget remains low. Lab work kit, which is combined with collaborative learning, supports students in approaching better process skills (Hanson & Acquah, 2014). In using lab work kits, students need guidance to carry out good lab work and stay on the right path to achieving the curriculum goals. For this reason, video tutorials are used as learning media. The tutorial video is an audio-visual learning media containing interactive learning material to learn independently, which is not limited by space. Students must follow the material, process, tutorials, rules, and learning assignments that the teacher has described in the video. Video tutorials are effective media for distance learning, helping students who are confused by written experiment guidelines (Brame, 2016).

Previous studies have revealed how effectively lab-work learning was used to help students achieve academic goals by improving learning outcomes, also attitudes and motivational achievement (Itzek-Greulich et al., 2017). In research suggestions, researchers also suggest using video tutorials as guides or other forms of guidance that are interesting and easy to understand for students. Many students have difficulty understanding written lab work guides. This has resulted in many failed experiments. Remote labs are also only superficial in the research articles published so far. Although cognitive, behavioral, and affective outcomes are promising, more rigorous empirical research should be conducted to obtain a more comprehensive picture of the learning benefits of remote labs in different disciplines (Post et al., 2019). However, research on this subject has never been taken further in the previous studies. This research was conducted to improve previous studies in linear subjects.

Based on the description above, further research is needed to determine how effective the at-home kit and videos were in implementing meaningful experimental distance learning for students to achieve learning objectives. This study aims to develop an at-home lab kit and tutorial videos and to obtain how effective the at-home kit and videos improved student learning attitudes and achievement in distance learning.

METHODS

This is a research and development study, developing an at-home lab kit and tutorial videos to improve students' attitudes and achievement in distance learning. At-home lab kits and tutorial videos were developed using modified Gall's model, consisting of data collection, planning, product development, product test, product improvement, and product implementation. In this study, tutorial videos contain a guide on how to carry out lab work properly using a kit, assignments that must be done, and safety guidelines to stay safe during the experiments. The kit and tutorial videos were tested their validity using experts' validation sheets and students' and teachers' questionnaires.

Besides students' cognitive outcomes, in this study, the researcher also focused on two critical students' attitudinal indicators related to the students' experiences to gains in learning: motivation and self-efficacy. The cognitive outcomes were analyzed from posttest data using *paired sample t-test*, while their motivation and self-efficacy were descriptively explained from posttest data, observation data, students' products, and students' questionnaires. All questionnaires were constructed in an online form due to pandemic widespread.

At the data collection stage, a total of 32 grade IX students and three science teachers took part in filling out a questionnaire as a reflection of science learning that had been done and to obtain data on needs that were truly relevant. Data obtained were then used to plan lab work kits and tutorial videos. The planning stage consists of 4 steps: determining competency standards, formulating basic competencies, formulating indicators of competency achievement, and determining evaluation tools. Based on the planning, product development was decided in an at-home lab kit for magnetism materials.

The development stage consists of four steps: designing the product, tools and materials collection, tools and materials arrangement, and product validation. Product validation is carried out by media experts and science material experts using validation sheets. Data from product validation were then used to make product improvements. At-home lab kit and video feasibility indicators and criteria are presented in Table 1 and Table 2. Feasibility assessment sheets were arranged based on a Likert scale with a value scale of 5 and a maximum score of 70.

The improved product was then tested on 10 grade IX students and asked for their feedback through a questionnaire. The test results and students' feedback were used to make re-improvements before being implemented.

At the implementation stage, the product was tested on 32 students of grade IX in online learning to determine the product quality through an assessment questionnaire by students. After the learning, students worked on a posttest to obtain students' cognitive learning outcomes. Motivation and self-efficacy attitudes were also analyzed through questionnaires, observations, and students' lab works video assessments. Product improvement is again carried out based on the implementation stage and experts' advice before the at-home kit and tutorial videos final product was declared feasible. The at-home lab kit and tutorial video media is declared feasible if it meets five criteria, namely (1) expert assessment score > 75, (2) student assessment score > 75, (3) A number > 75% of students in the sample score > 80 in the posttest, (4) students' motivation and self-efficacy increased and their scores > 75 from questionnaires and observations, (5) students' video lab work scores > 75 (Septian et al., 2017).

Table 1. Experts' Assessment Indicators

Indicator	Explanation
Indicators (I)	How relevant the product is to the indicators of competency achievement.
Materials (M)	How relevant the product is to the subject materials
Efficiency (E)	How easy is the product to use
Accuracy (A)	How accurate the lab kit is to deliver concept
Design (D)	Product' completeness and tidiness
Readability (R)	How easy the guide is to understand
Safety (S)	How safe the product is in use

(Susilo et al., 2018)

Table 2. Media' Feasibility Criteria

Total Score	Feasibility Criteria
< 21%	Miserable (Mi)
21 – 40%	Bad (Ba)
41 – 60%	Good (Go)
61 – 80%	Very good (VG)
81 – 100%	Excellent (Ex)

(Arikunto, 2006)

RESULTS AND DISCUSSIONS

Data Collection

A total of 32 IX grade students of junior high school and three science teachers in Juwangi, the outermost sub-district of Boyolali, took part in this study. Based on questionnaire analysis, teachers stated that they have difficulty teaching magnetism because it has many abstract formulas and concepts even though it is close to the daily life of students. The teachers only teach concepts and calculations to make students understand without using learning media or experimental activities. Students suffered more in understanding magnetism due to distance learning and were left unmotivated. The teacher gives assignments without the essence of the material. In outermost areas like they have, experimental activities in distance learning have never been carried out. Students will find it easier to understand the material if they learn the experiences through experimental activities. Meanwhile, the teacher was hesitant to carry out experimental activities in distance learning because it was difficult to explain the guidelines to students. One solution to this gap is using at-home lab kits and video tutorials in distance learning.

Experimental activities in distance learning offer an opportunity for students to search for the answers by participating in the activity through the concrete direct experience that emphasizes the processes of thinking, researching, experimenting, and summarizing until they gain new knowledge (Buenglee, 2017). With existing limitations, science experimental learning can be implemented using an at-home lab kit. The use of a science teaching lab kit helps teachers in science distance learning to deliver the concept more meaningful (Leite & Dourado, 2013). Learning science by using a science kit is more effective in achieving objectives that have been set (Widiyatmoko & Pamelasari, 2012), improving students' learning cognitive outcomes and motivation to help them reach academic goals (Eyler, 2009). Hence, the magnetism at-home lab kits and tutorial video are necessary to be developed to overcome students' learning difficulties.

Product Planning

In the planning stage, researcher compiled core and basic competencies, formulating indicators of competency achievement, and developing evaluation tools. The core and basic competencies were adopted from number 24 of the Minister of Education and Culture.

Researchers formulated indicators of competency achievement based on basic competencies, which include cognitive and skill aspects. The indicators then were developed into five themes, namely (1) magnetic, paramagnetic, and nonmagnetic materials, (2) magnetic poles and their properties, (3) how to make magnets, (4) the concept of electromagnets, and (5) designing and manufacturing the electric bell.

The learning evaluation tool used was an online evaluation test in the form of multiple choices questions. The evaluation was conducted twice. The pretest at the beginning and posttest are carried out at the end of learning. A total of 30 questions with four answer choices were prepared based on indicators of competency achievement.

The pretest score total of 32 students was 1,926 or 60.18 on average. Only four students, or 12.5%, had a score of more than 75. The results of the questionnaire analysis showed that 77.5% of students were not interested in science subjects because they were boring and difficult to understand, and 72.5% percent felt unmotivated to understand the science material. A total of 32 out of 35, or 91% of science teachers and students, stated that lab kit work and video tutorials need to be implemented. The pretest condition strengthened the research background, which stated that students were less motivated and had difficulty understanding the subject matter due to the lack of lab work kit media. Experimental activities have a big impact, especially in building scientific conceptual understanding, verifying the concepts, improving process skills, and developing a “love” for science (Koretsky et al., 2011). These findings encouraged researchers to step forward into the product development stage.

Product Development

In this stage, the necessary tools and materials, experiment guidance were also prepared. The tools and materials were then arranged into a complete lab work kit, complete with instructions and safety guidelines. The design of the at-home lab kit and a tutorial video is presented in Figure 1.

Video tutorials were conceptualized according to the themes and indicators of competency achievement, made as simple as possible with light and clear language, with a medium-sized file for accessibility reasons. For students’ internet data efficiency, the videos are kept brief but still informative.

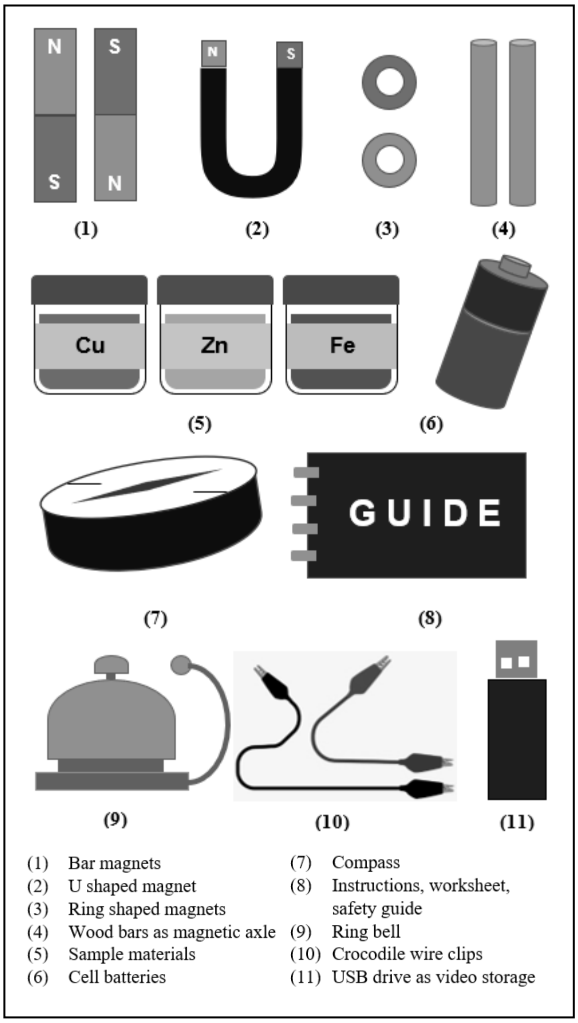

Figure 1. The Additional Tools to Improve Product

Videos were provided in the form of files on a USB drive so students could watch video tutorials repeatedly without internet data for maximum lab work results. Videos are also uploaded on the school's video channel so that students can access them anytime and anywhere, even with their cellphones. Students can also learn the material, assignments, rules, and how the teacher demonstrates the correct lab work before doing it themselves. After doing lab work, students can also watch videos of their lab work while reviewing videos from the teacher to evaluate their work.

The complete at-home lab kit package was then lent to students. Students were assigned to take the lab kit package at school in strict health protocols condition. Due to the zoning system, the students' houses were not far from the school, so it was still possible to take the lab kit package. For students who did not get permission to go to school, the at-home lab kit package will be shipped to their homes so that each student is ensured to get the package before implementation. This method also indirectly stimulated students' sense of responsibility to look after their at-home lab kit package.

The next stage was product validation which involved experts as validators, namely three science teachers (ST), a science materials expert (SE), and three media experts (ME). The results of the initial validation, as presented in Table 3, were used for the product improvement in the stages.

Table 3. Validation Score of At-Home Lab Kit

Code	I	M	E	A	D	R	S	Σ	Criteria
ST-1	9	9	7	7	8	7	8	55	VG
ST-2	8	9	7	8	8	8	8	56	VG
ST-3	9	8	8	7	7	7	7	53	VG
ME-1	9	8	7	8	8	7	8	55	VG
ME-2	8	9	7	8	8	7	8	55	VG
ME-3	9	9	7	7	7	8	8	55	VG
SE	9	8	7	8	8	7	7	54	VG

Table 3 shows that the at-home lab kit and video tutorials are categorized as very good (VG) criteria. The media scored 54.71 on average, or 78.16%. The score showed that the media are feasible and ready to be implemented. However, there were still some improvements being made to get maximum results based on the validation score by experts and science teachers. Experts and teachers provided suggestions for improving the position and grouping of magnets. The tools and materials arrangement in the box should be compact for accessibility and safety reasons. The lab kit package also needed to add observation sheets in worksheets, brief teaching materials, USB drive instructions, motivational sentences, and observation sheet rubrics. Experts also recommended making the lab kit package more compact.

The tutorial video provided on the USB drive was validated by experts and teachers and scored in Table 4. Experts and teachers rated the video as feasible and ready for implementation in the next stage. This can be seen from the average score, which reached 54.12 on average or 77.34%, categorized as feasible. They allow researchers to add animation and sound effects to the video to make it more interesting. The use of interesting learning videos can increase students' motivation in learning so that students can improve their learning outcomes (Hapsari et al., 2019).

Table 4. Validation Score of Tutorial Videos

Code	I	M	E	A	D	R	S	Σ	Criteria
ST-1	9	9	7	7	8	7	8	55	VG
ST-2	8	9	7	7	8	8	8	55	VG
ST-3	9	8	8	7	7	7	7	53	VG
ME-1	9	8	7	8	7	7	8	54	VG
ME-2	8	8	7	8	8	7	8	54	VG
ME-3	9	9	7	7	7	8	8	55	VG
SE	8	8	7	8	7	8	7	53	VG

The lab kit and tutorial videos were improved based on the suggestions of experts and teachers previously mentioned. Then the improved product was confirmed to the validators for approval before being used in the testing stage. The validators approved the media to be used in learning. The validators commented that using a lab kit would make it easier for teachers to deliver subject matter that would make it easier for students to understand.

This result was obtained because all steps in the development stage followed all the components in the planning stage. Every instructional media development should use well-structured planning for a better development result. In other words, media development without structured planning will make learning goals more difficult to achieve because researchers do not have clear concepts and directions to do.

Product Testing

A limited number of 10 grade IX students (St) participated in testing the lab kit and video tutorials in face-to-face learning, adhering to strict health protocols. According to their academic ability, good, moderate, and low, students were selected based on the teacher's recommendation. Every response and feedback from students were recorded as a reference for media improvement. The result of the students' assessment is presented in Table 5.

Table 5 shows that students can accept the lab kit and video tutorial. This statement is indicated by the average score obtained by the product of 54.1 or 77.28%, so that it is feasible to be used in learning. This condition is used as a general description of the quality of the product developed before it is implemented in class.

Table 5. Validation Score of Tutorial Videos

Code	I	M	E	A	D	R	S	Σ	Criteria
St-1	9	9	7	7	8	7	8	55	VG
St-2	8	8	7	8	8	7	8	54	VG
St-3	9	9	7	7	7	8	8	55	VG
St-4	9	8	7	8	7	7	8	54	VG
St-5	8	9	7	7	8	8	8	55	VG
St-6	9	8	8	7	7	7	7	53	VG
St-7	9	9	7	7	7	8	8	55	VG
St-8	8	8	7	8	8	7	8	54	VG
St-9	9	8	8	7	7	7	7	53	VG
St-10	8	8	7	8	7	8	7	53	VG

Students looked enthusiastic during learning, even though they still had to be guide because they were not used to getting explanations from videos. Students were active in solving problems in the worksheet, actively discussing with other students, and actively asking about concepts and how the product works to the teacher. The feedback from students was also used as a note of improvement. The product requires a guide for arranging tools and materials so that students who have finished experimenting can rearrange the tools and materials in the box properly and safely. This is a note for researchers to add a storage guide in the kit package so that the tools and materials are not broken when students keep the product. Students also suggested that a battery holder should be added to make it easier to carry out experiments.

Product Improvement

Suggestions and feedbacks from the previous stages were used to improve the product. They did not change the product as a whole, only the addition of tools in the package, such as shelves for a better arrangement of tools and materials, battery holder, storage guides, and additional animations and sound effects in the video. At this stage, the researcher also uploaded the tutorial videos on the school video channel to watch tutorials anywhere online. After all the improvements, the product was ready to be distributed and implemented.

Product Implementation

A total of 32 grade IX students who have received a lab kit took part in online distance learning. All students came from Juwangi, the outermost sub-district of Boyolali, a poor internet network. Online learning was carried out three times according to the indicators of competency achievement. Each learning was recorded and then uploaded to the school video channel. Students who could not take part in distance learning due to internet networks or internet data reasons could continue to learn whenever possible. Learning records were also used by researchers to evaluate learning and assess students.

During learning, students looked very enthusiastic because they rarely did experiments in learning. Students were active in asking teachers and other students to solve problems in worksheets. Some students could creatively arrange their experimental tools and materials not according to the guidelines. Students watch tutorial videos using cellphones, laptops or plug a USB drive on the TV. The teacher paid close attention to learning while constantly reminding them of the basic things so that learning objectives could still be achieved. Researchers noted that time management was less controlled, especially at the first meeting. Students were very interested in conducting experiments, so that they did not pay attention to the time. This condition became the researcher's attention to improve time management at the next meeting.

After learning, students' cognitive learning outcomes were measured using a posttest through an online application. The posttest data were analyzed using Kolmogorov-Smirnov’s normality test, Levene's homogeneity test, and paired sample t-test to compare the pretest and posttest results. The comparison of the students' pretest and posttest scores is presented in Table 6.

Table 6. Students' Pretest and Posttest Scores

Test	n	$\bar{X}$	S	Median	Min	Max
Pretest	32	60.18	11.18	61	43	79
Posttest	32	80.50	9.22	80	58	96

Table 6 shows that, on average, the students' cognitive learning outcomes improved from the conditions before implementing the lab kit and tutorial video. A total of 25 out of 32 students, or 78.12%, had a posttest score of more than 75. Based on these results, the lab kit and video tutorial products were claimed feasible. However, there were still seven students who scored less than 75. Most of them who did not meet this criterion worked part-time during the distance learning starting March last year, so they did not have enough time to study. They work in the fields, become shopkeepers, and even become laborers. These findings was quite surprising that students chose to work instead of studying at home. This is an important note, especially for schools to tighten distance learning. Some other students spend time playing games all night long and sleeping all day, so they miss their study time. Several other students reported being sick, so that they did not study optimally. These things affect the achievement of students' cognitive learning outcomes, which, unfortunately, this study has not reached. Parents as school partners have to participate in supervising student learning at home. Without good collaboration between schools and parents, learning goals will be difficult to achieve (Campbell, 2011).

Schools need to establish a parent or family center to offer good, frequent, and user-friendly communication. Schools as facilitators can provide organized good after-school programs or social activities that involve teachers and family. Schools can also provide parent education and family literacy programs adjusted to the conditions and needs of each school to increase parents' understanding of the importance of school-parent collaboration.

As a skill aspect of learning evaluation, students were required to work on assignments included in the lab work kit and collect them online within a certain deadline. Students were also permitted to collect assignments to school by implementing strict health protocols to prevent the widespread pandemic.

Only 18 students submitted the video assignment. The other 14 students did not collect videos for several reasons: unavailability of infrastructure, no partners who could take videos when students conducted experiments, and the out-of-material samples issue. This condition is still in the unfavorable category, but it is much more improved than before the study, where less than ten students collected each assignment given by the teacher. The limited number of materials can be overcome by assigning students to find substitution materials around them that can be used for experiments. These assignments can be added to an instruction.

After learning, suggestions and feedback from students were also collected, as shown in Table 7. The questionnaire results showed that the lab kit and video tutorial products were acceptable to students. The product got a score of 93.8%, categorized as excellent. Students rated that this product could help them understand magnetism material and be useful for use as a medium for distance learning from home. Students also rated the product as easy to use, increased their interest, and was easy to store and safe. Science will be more meaningful to students if it is taught experimentally so that students can learn it contextually (Hanson & Acquah, 2014).

Table 7. Students' Assessment of The Kits

Aspect	Score (%)	Criteria
Indicators	88.3	Excellent
Materials	95.7	Excellent
Efficiency	92.2	Excellent
Accuracy	95.1	Excellent
Design	96.3	Excellent
Readibility	94.2	Excellent
Safety	95.1	Excellent
Average score	**93.8**	**Excellent**

This study also assessed students' learning motivation. Students' learning motivation data is assessed at each learning process, obtained from three times lesson meetings in the product implementation stage. Data of students' learning motivation are presented in Figure 3.

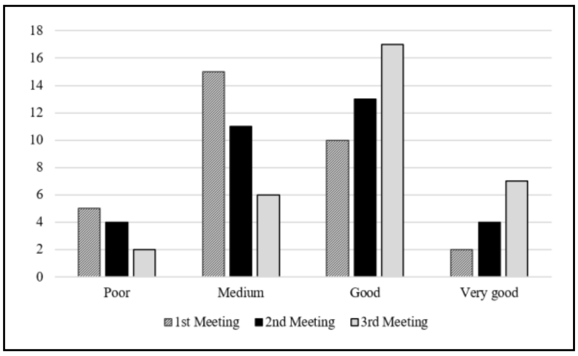

Figure 2. Students' Learning Motivation Data

Students' motivation is grouped based on 4 criteria, namely poor ($x < 63$), medium ($x < 79$), good ($x < 96$), and very good ($x > 95$) (Septian et al., 2017). Figure 3 shows that 93.75% of students had good enough motivation to learn up to the last meeting. The number of students with a minimum learning motivation score of a medium also increases at each learning meeting. This shows that the lab kit and video tutorials used in distance learning have increased students' motivation. Lab kits and video tutorials can stimulate students' passion, enthusiasm, curiosity, and independence. Students consider that the tasks in the lab kit are very challenging to solve patiently through the help of video tutorials. The implementation of video increases students' motivation and facilitates the transmission of knowledge to students. In planning video, teachers need to properly define the contents and the amount of information transmitted through video, as well as the duration, to increase the effectiveness (Syaparuddin & Elihami, 2020).

This research revealed how effective lab kits and video tutorials increase learning activities. Students who are usually passive in distance learning become more motivated to experiment and discover new knowledge. Student learning activity data were obtained from observations for three lessons. The aspects observed included visual, oral, listening, writing, motoric, and emotional with the same assessment criteria as learning motivation. Students' activity was observed to increase in each learning significantly. Experimental learning, which was carried out using lab kits and video tutorials, requires students to read, pay attention to video tutorials, listen, ask questions, argue, give suggestions, and discuss. With the worksheet, students were also required to record what they learned, compile experiments and experiment reports, draw, process data, and do every assignment in it. All science process skills are involved in learning using all five senses.

Experimental learning increases student activity that impacts student learning outcomes because students who learn through experiments gain direct experience, find their concepts, so that knowledge lasts a long time in their minds (Albadi & Solomon, 2019). High learning motivation encourages students to be active in learning. However, the teacher must plan experimental learning because not all experiments can significantly increase student motivation and learning activities (Holstermann et al., 2010).

This research shows that distance learning with all of the above-mentioned limitations can still achieve learning goals if managed properly, even in rural areas. The right of students to receive the best education, and schools through the teachers have responsibilities to help students learn to find knowledge and provisions to live independently. This research encourages teachers, especially in rural areas, to develop lab kits and video tutorials on other science materials, and implement them in learning. So that science learning can help students increase their learning motivation, which will positively impact learning activities and student learning outcomes.

CONCLUSION

The development of a media lab kit and the video tutorial was carried out in six stages, they are (1) data collection, (2) planning, (3) product development, (4) testing, (5) improvement, and (6) implementation. At the first stage, the students' and teachers' responses data showed that the product lab kit and video tutorials are really needed to increase motivation and learning activities, which will affect student learning outcomes. Researcher then developed competency achievement indicators and lessons plan at the second stage.

Researcher developed kits based on the objectives of competencies of magnetism material. The video is attached as a USB drive in the lab kit box. The complete lab kit product was then validated and obtained an average score of 54.71 or 78.16% of the validators consisted of 3 science teachers, one science materials expert, and three media experts. The video tutorials obtained an average score of 54.12 or 77.34% from the same validators. Some suggestions and inputs from the validators were used to improve the product. In the product testing, a total of 10 grade IX students participated. Their response and feedbacks were recorded for product improvements. The product obtained an average score of 54.1 or 77.28% so that it is feasible to be used in learning. Students' learning motivation and activities data were also observed in this stage. This condition is used as a general description of the quality of the product developed before it was used.

The researcher made some product improvements based on suggestions and feedback from product testing. Product implementation was conducted in three learning meetings. The lab kit and tutorial videos were distributed first before the learning. In every meeting, students' learning motivation and activities were observed. Every meeting was recorded to facilitate the researcher in re-observing students, and were also uploaded to the internet so that students could access learning anywhere and anytime possible.

After the last meeting, students took part in a posttest. A total of 25 out of 32 students, or 78.12%, had a posttest score of more than 75. Based on these results, the lab kit and video tutorial products were claimed feasible.

The product got a score of 93.8%, categorized as excellent. Students rated that this product could help them understand magnetism material and be useful for use as a medium for distance learning from home. Students also rated the product as easy to use, increased their interest, and was easy to store and safe.

Students' learning motivation and activity data were analyzed descriptively at each learning process, obtained from three times lesson meetings in the product implementation stage. This shows that the lab kit and video tutorials used in distance learning have increased students' motivation. Lab kits and video tutorials can stimulate students' passion, enthusiasm, curiosity, and independence. Lab kits and tutorial videos also significantly improve students' learning activities. The product stimulates students' science process skills, involving all five senses in learning.

Further research is needed to assess the validity of the lab work test kit for other science materials and develop a lab work test kit lending system to make it more effective. This research shows that with all of the limitations, distance learning can still achieve if managed properly, even in rural areas. This research also encourages teachers, especially in rural areas, to develop lab kits and video tutorials on other science materials, and implement them in learning. So that science learning can help students increase their learning motivation, which will positively impact learning activities and student learning outcomes.

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