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Use of instagram to improve verbal-linguistic intelligence and kinesthetic-body intelligence of low-class students through scientific approach in primary schools

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Abstract: Verbal-Linguistic Intelligence and Kinesthetic-Body Intelligence are important for students to have at an early age. The purpose of this study is to see improvement in Verbal-Linguistic and Kinesthetic-Body Intelligence through Instagram-assisted Scientific Approaches. The study used a pre-experimental method with one group pretest-posttest design on the thematic learning of my hobby topic. Determination of the sample by purposive sampling technique. Participants consisted of 15 male students and 12 female students in first-grade elementary school in Purwakarta Regency. Measurement through observation and documentation to observe and record the activities of students' verbal-linguistic and kinesthetic intelligence. Research shows an increase in Verbal-Linguistic and Kinesthetic-Body Intelligence is in the medium category with n-gain values of 0.59 and 0.56, and an increase in Verbal-Linguistic and Kinesthetic-Body Intelligence after learning with a more scientific-assisted Instagram approach significantly better than before being treated with sig. 0,000<0.05. The use of Instagram shows students enthusiastic about expressing their hobbies. Learning development should be able to accommodate a variety of student intelligence and utilize social media that serves to facilitate learning and assessment more interesting.

Keywords: Verbal-Linguistic Intelligence, Kinesthetic-Body Intelligence, Scientific Approach, Instagram

Abstrak: Kecerdasan Verbal-Linguistik dan Kecerdasan Kinestetik-Tubuh penting dimiliki siswa sejak dini. Tujuan studi ini untuk melihat peningkatan Kecerdasan Verbal-Linguistik dan Kinestetik-Tubuh melalui Pendekatan Saintifik berbantuan Instagram. Studi menggunakan metode pre-experimental dengan one group pretest-posttest design pada pembelajaran tematik topik hobiku. Penentuan sampel dengan teknik purposive sampling. Peserta terdiri 15 siswa laki laki dan 12 siswa perempuan pada kelas satu SD di Purwakarta. Pengukuran melalui observasi dan dokumentasi untuk mengamati dan merekam aktivitas kecerdasan verbal-linguistik dan kinestetik-tubuh siswa. Studi menunjukkan peningkatan Kecerdasan Verbal-Linguistik dan Kinestetik-Tubuh berada pada kategori sedang dengan nilai n-gain berturut-turut 0,59 dan 0,56, serta peningkatan Kecerdasan Verbal-Linguistik dan Kinestetik-Tubuh setelah diberi pembelajaran dengan pendekatan saintifik berbantuan Instagram lebih baik secara signifikan dibanding sebelum diberi perlakuan dengan nilai sig. 0,000<0,05. Penggunaan Instagram menunjukkan siswa antusias mengekspresikan hobinya. Pengembangan pembelajaran seharusnya dapat mewadahi kecerdasan siswa yang bervariasi dan memanfaatkan media sosial yang berfungsi memudahkan pembelajaran dan penilaian lebih menarik.

Kata kunci: Kecerdasan Verbal-Linguistik, Kecerdasan Kinestetik-Tubuh, Pendekatan Saintifik, Instagram

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INTRODUCTION

All students are expected to develop their intelligence early on, according to what has mandated in the National Education System Law that education is a conscious and planned effort to create an atmosphere of learning and learning process so that students actively develop their intelligence (UU No 20 Tahun 2003, 2003). One of the functions of education is to develop the intelligence potential of students. Student intelligence has many types, including based on research has found nine intelligences called multiple intelligences. Multiple intelligences are proven to help realize diverse educational goals, one of which is the development of multidisciplinary learning and assessment (Gardner, 1993). In this study will reveal verbal-linguistic and kinesthetic-body intelligence. The selection of these two bits of intelligences is because verbal-linguistic intelligence plays a role in developing the language skills of low-grade students, and kinesthetic-body intelligence is very prominent in low-grade students, this is seen in the hyperactivity of these low-grade students. Linguistic intelligence is the ability to use words effectively. This intelligence includes the ability to manipulate the structure of language, phonology or language sounds, semantic, or meaning of language, and the practical use of language (Armstrong, 2009). One study said verbal-linguistic intelligence must certainly be prepared and chosen as effectively as possible to facilitate the category of early childhood to obtain this intelligence (Setyorini, Saddhono, Ermanto, Wildan, & Kirom, 2019). Besides, verbal-linguistic intelligence in children can show the extent to which the ability to think logically. So, a child who is intelligent in linguistics can speak well and effectively (Hanifah, 2014). People who have linguistic intelligence can easily influence others. The style of language, speech, verbal motion, the right expression when talking, all have extraordinary allure (Nining, 2018). Whereas if we have well-developed bodily-kinesthetic intelligence, we can manage body movements and physical experience of touch with the main activity of coordinating body movements to express ideas, feelings and shape things (Laduni, Novianti, & Febrialismanto, 2016). Besides kinesthetic intelligence as a method for reducing academic stress (Roberts, 2010). The description suggests that verbal-linguistic and kinesthetic-body intelligence is important for students.

Behind the importance of verbal-linguistic and kinesthetic-body intelligence, the fact is that the intelligence is still low and learning has not been done to facilitate this intelligence. A study found that the results of students' linguistic tests showed that the majority of students had linguistic intelligence insufficient categories, as many as 20 students. The other abilities are good categories as many as 14 students, and fewer categories are as many as 10 students (Riana, Monawati, & Hasan, 2017). Also found a study said the average kinesthetic intelligence of students is still in the category began to develop (Putri, Yuwono, & Utami, 2018).

Based on the description, the problem of verbal-linguistic and kinesthetic-body intelligence is still low. The need for more efforts to develop this intelligence. Learning following students' linguistic intelligence, including methods of demonstration, observation, discussion, question and answer, and role-playing (Bustamam, Trinova, & Febrianto, 2016). Besides learning that is used to develop each linguistic intelligence is reading, writing, discussing, listening to information about the matter in question and for kinesthetic-physical is wake up, demonstrate, touch, pull the thing concerned (Katni, 2015). The scientific approach is considered to be able to develop verbal-linguistic and kinesthetic-body intelligence. A scientific approach is an approach using scientific process skills that allows students to be active in the learning process by finding, identifying, building their learning with the teacher as a facilitator, without explaining the material by the teacher directly (Yuliyanto, Fadriyah, Yeli, & Wulandari, 2018). The scientific approach has also been used in the curriculum in Indonesia. The term learning by doing is learning that essentially teaches students through activity, so students play an active role in the learning process (Wakhidah, 2018). A scientific approach is a collection of techniques for

investigating phenomena, gaining new knowledge, or correcting and integrating prior knowledge. (Hasanah, 2016). The essence of a scientific approach is a scientific approach that gives allows students to take an active role and expressing their abilities. The steps of the scientific approach include students being asked to observe the media, the teacher encourages students to ask questions, encourages students to dig up information, guides students to try the media, does the discussion exercises, conveys the results of the discussion (Rusnah & Mulya, 2018). The scientific approach makes it easy for teachers to improve the learning process, namely by breaking down the process into detailed stages that contain instructions for students carrying out learning activities (Yustitia, Rusminati, & Sulistyawati, 2018). The scientific approach stage consists of 5 stages namely observing, teachers open up opportunities widely for students to ask questions, carried out to explore information, an activity to process information, and provide opportunities for students to communicate what they have learned (Machin, 2014). The Scientific approach steps include observing the attention to the teacher conveying, asking questions with the others, trying to find information about a concept, analyzing the concepts being studied, and conveying the findings. Intelligent verbal-linguistic students can develop their language through the process of observing the object being studied, reasoning what has been obtained from the process of developing their speaking ability in the communication process. Children who are kinesthetic smart body will enjoy the process of trying and doing activity-based learning, the process of observing and touching the object being studied will develop motoric kinesthetic. Learning activities in a scientific approach are done hands-on activity and can be done inside and outside the classroom, especially in the process of observation, and try to do what they have learned. In line with this, linguistic intelligence can be stimulated through activities carried out outside the classroom by carrying out a variety of activities including those that can develop all aspects of intelligence development in cooperative activities designed through play activities (Purwaningsih, 2014). The scientific approach involves students in learning activities that require HOT'S, and in multiple intelligences, many intelligence indicators that include conclusions based on experimental results, make hypotheses, predict, analyze, identify, and explain (Dewi & Rukmini, 2019). A scientific approach is also needed to develop student body functions (Kim, 2019). Learning using a scientific approach can refer to multiple intelligence theories so that at this stage, the teacher can determine the intelligence that will be facilitated in the lesson. The teacher's learning plan and worksheets are also followed by students' hypotheses of thought and teacher's alternative responses to every possibility so that the teacher can overcome the difficulties students face during the learning process (Kusrini & Rizkianto, 2017). Based on the previous description, the scientific approach is considered to be able to develop the verbal-linguistic and kinesthetic intelligence of the body.

Learning with a scientific approach in developing verbal-linguistic and kinesthetic-body intelligence can utilize Instagram social media in exploring learning. Social media allows its users to share and network more flexibly without having to be in the same place and time. The use of social media in learning provides more opportunities for students to exchange information with other students through various activities (Hanoum, 2014). Instagram can provide influence and benefits to the world of education, especially in the learning process, students can add knowledge and also information that can stimulate their creativity while also being useful to publish the results of their creativity, for example by uploading photos or videos of their creativity (Rubiyati, Asrori, & Wicaksono, 2018). Instagram as a tool that can record videos or photos of students. It's the most valuable learning tools in each class. Recorders offer students a medium that is used to learn about their linguistic power and help develop verbal skills to communicate and express inner feelings. Students can use recorders to speak aloud about projects they plan to do, making videos can record and explore activity-based learning that is considered suitable for kinesthetic smart students (Armstrong, 2009). A study indicates that students tend to have positive perceptions of the use of Instagram in speaking class. Furthermore, there

was an improvement in students' speaking skills after been taught by using Instagram (R & Seftika, 2019). Using Instagram can be an innovative media as it is used by students and teachers for educational aims appropriately (Basith & Syafi'i, 2019). Instagram in this study is used to explore student learning activities in expressing their language and kinesthetic skills related to their hobbies. Based on the description, this study will reveal an increase in verbal-linguistic and kinesthetic-body intelligence of low-grade elementary school students through an Instagram-assisted scientific approach.

METHOD

Research Method

The study applied a pre-experimental method with one group pretest-posttest design. Pre-experimental does an excellent job of controlling foreign variables that jeopardize the validity of one group. One group pretest-posttest design involves one group that is pretest (O), exposed to treatment (X), and then tested again (O). The success of the treatment is determined by comparing the pretest and posttest scores (Gay, Milss, & Airasian, 2012).

Participant

The study population was first-grade students in elementary schools in Purwakarta Regency. The sample in this study involved 27 students. The technique of determining the sample using purposive sampling method, the sampling technique considers several things (Patton, 2015).

Materials

The research instrument used observation sheets to measure the verbal-linguistic and kinesthetic-body intelligence of students and documentation. Based on the validity and reliability test of the observation instrument, all statements with high validity (r_{xy} = 0.81) and very high reliability (r_{11} = 0.90). Indicators used in the measurement of verbal-linguistic intelligence are listening and responding to sound, rhythmic, color and variation in the pronunciation of words, understanding sound, language, reading, and writing, others learn through listening, reading, writing and discussing, being able to speak, read, hear, and write effectively, experience in learning other people's languages using hearing, speaking, writing, and reading to communicate trying hard to improve the use of their language, paying attention to journalistic demonstrations, poetry and so on creating new and original forms of linguistics from spoken and spoken languages. writing. While the body's kinesthetic intelligence is used the following indicators can explore the environment and objects through touch and movement able to develop coordination and meaning of time, able to enjoy concrete learning through experience, showing dexterity in working with motor motion, responsive to systems and physical environment able to demonstrate capable motor movements, demonstrating balance movements, supremacy, graceful physical movements, understanding life with healthy physical standards undergoing a career as an athlete or dancer creating a new physical skill approach to dance, sports movements or other physical activities.

Procedures

This research was conducted by giving preliminary observations before giving treatment with an Instagram-assisted scientific approach. Furthermore, students were given a scientific approach to the treatment of my hobby material, students were assigned to tell and show their hobbies through Instagram media, students were free to tell their hobbies

in Sundanese, Indonesian and English. After that, the students observed their verbal-linguistic and bodily-kinesthetic intelligence.

Data Analysis

Data analysis was performed by identifying the increase in student intelligence by calculating the student's n-gain, then the data were analyzed descriptively and inferentially. Data analysis using the average difference test using the Mann Whitney U test with the help of SPSS 25 for macOS.

RESULTS

Increased verbal-linguistic and kinesthetic-body intelligence seen from Normalized Gain. The improvement criteria are grouped based on the criteria stated by (Meltzer, 2002) as follows.

TABLE 1. *Criteria for increasing student's multiple intelligences*

Increase Interval	Improvement Criteria
N-*Gain* > 0.7	High
0.3 < N-*Gain* ≤ 0.7	Medium
N-*Gain* ≤ 0.3	Low

Verbal-Linguistic Intelligence Descriptive Analysis

Recapitulation of the initial and final score results of verbal-linguistic intelligence and normalized Gain based on learning can be seen in **Table 2**.

TABLE 2. *Recapitulation of student's verbal-linguistic intelligence enhancement*

Score	Learning	Score		$\overline{x}$	Sd	N-Gain
		Min	Max			
Pre-VLI	Scientific & IG	6	15	10.74	2.93	0,59
Post-VLI		9	20	16.19	2.92	

Based on **Table 2**, it appears that the verbal-linguistic intelligence of students with Instagram-assisted scientific learning treatment has increased. Qualification improvement is in the medium criteria. The following are the complete enhancements to the following **Figure 1**.
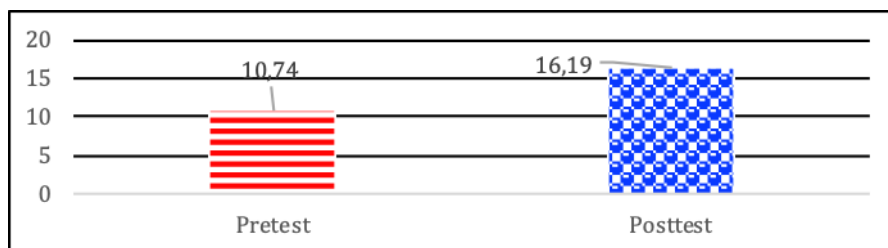

FIGURE 1. *Average increased verbal-linguistic intelligence*

Verbal-Linguistic Intelligence Inferential Analysis

Descriptive it has been revealed that an increase in students' verbal-linguistic intelligence is an increase in the medium criteria. To test whether the difference in increase is significant or not, an average difference test is performed with the Mann Whitney U Test.

Recapitulation of the test results of the average difference in the increase in students' verbal-linguistic intelligence based on learning can be seen in **Table 3**.

TABLE 3. *Test difference in average improvement of students verbal-linguistic intelligence*

Learning	Mann-Whitney U	Z	p-value (sig.1-tailed)	Information
Scientific & IG	70.000	-5.115	0.000	H_0 is rejected

Based on the calculation results in **Table 3**, it can be seen that for the average increase in verbal-linguistic intelligence *p-value* (sig.1-tailed) is 0.000 less than 0.05 then H_0 is rejected. This means that the increase in students' verbal-linguistic intelligence is significantly better after being given a scientific approach assisted by Instagram.

Descriptive Analysis of Kinesthetic-Body Intelligence

Recapitulation of the initial and final score results of bodily-kinesthetic intelligence and normalized Gain based on learning can be seen in **Table 4**.

TABLE 4. *Recapitulation of kinesthetic-body-intelligence enhancement*

Score	Learning	Score		$\overline{x}$	Sd	N-Gain
		Min	Max			
Pre-KBI	Scientific & IG	12	16	13,56	1,09	0,56
Akhir-KBI		13	21	17,19	2,30	

Based on **Table 4** it appears that the kinesthetic-body intelligence of students with given learning with Scientific with IG is increasing. Although the qualifications for upgrading are in the medium criteria. The following are the complete enhancements to the following **Figure 2**.
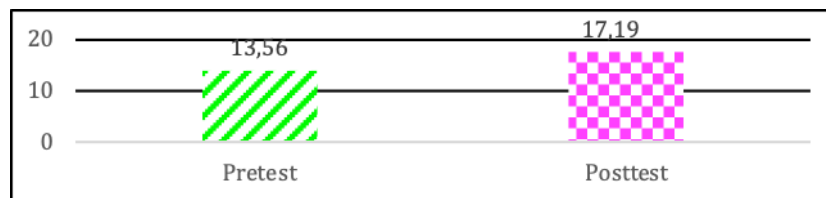

FIGURE 2. *Average kinesthetic-body intelligence enhancement*

Inferential Analysis of Kinesthetic-Body Intelligence

Descriptively revealed that the increase in kinesthetic-bodily intelligence students was an increase in the medium criteria. To test whether the difference in increase is significant or not, an average difference test was performed with the Mann Whitney U Test. Recapitulation of the test results of the average difference in the increase in kinesthetic-body intelligence of students based on learning can be seen in the following **Table 5**.

TABLE 5. *Test the difference in average of kinesthetic-body student improvement*

Learning	Mann-Whitney U	Z	p-value (sig.1-tailed)	Information
Scientific & IG	55.000	-5.425	0.000	H_0 is rejected

Based on the calculation results in **Table 5**, it can be seen that for the average increase in kinesthetic-body intelligence *p-value* (sig.1-tailed) is 0.000 less than 0.05 then

H_0 is rejected. This means that the increase in students' kinesthetic-bodily intelligence is significantly better after being given a scientific approach assisted by Instagram.

DISCUSSION

The research findings show that a scientific approach can improve student learning activities, creativity, and communication that can be seen in their Instagram posts. This can be seen in the process where students tell and practice their hobbies and post them on Instagram. In line with these results, several studies say a scientific approach can improve students' communication skills (Fadhilaturrahmi, 2017). It was also found that the application of a scientific approach could develop the creativity of early childhood as a whole (Pora, Sholeh, & Anggraini, 2019). Besides, social media can also raise awareness about independence, self-esteem, and creativity (Supratman, 2018). Social media in learning uses Instagram. The study says Instagram has several important tools that are useful for educational purposes related to linguistic intelligence (Wiktor, 2012).

Students 'verbal-linguistic intelligence is developed by applying a scientific approach to the theme of students' hobbies then students are allowed to publish activities related to their hobbies such as biking, swimming, running, racing cars, and so on. The teacher observes how students tell their hobbies in Indonesian, Sundanese, or English. Students' language skills will be seen in the process of telling their hobbies accompanied by their father and mother or friend. (Wijaya, 2018). In line with this, the development of verbal-linguistic intelligence can be done in the scope of the family, school, and community. Students are given the freedom to express creatively their hobbies and publish them on Instagram. Besides verbal-linguistic intelligence can be divided into four learning preferences including mastery (knowing), interpersonal (social skills), understanding (discovery and reasoning), and self-expression (creativity). If student learning styles are adapted to appropriate teaching strategies, students' experience, performance, and learning achievement are very likely to improve (Strong, Silver, & Perini, 2001). Linguistic intelligence can be enhanced in young children with activities that like to express themselves through language, like to read stories or to read and use language to help their understanding of the world about them (Lowenthal, 1997). The following are some activities on developing verbal-linguistic intelligence of learning using Instagram recorded in the image below.

FIGURE 3. *My hobby learning activities via instagram*

Videos uploaded on Instagram by the accounts @barmi58 and @meta_maya show the expressions of students explaining their hobbies of cycling, swimming, and playing football. The student looks excited. In line with that user experience to obtain self-satisfaction through Instagram can be explored even deeper through the process of receiving stimulus until the onset of human behavior (Zein & Rachim, 2018). Also, students' verbal-linguistic intelligence looks very good with a complete explanation by introducing themselves and using three languages at once, namely Indonesian, Sundanese, and English. The study says through Instagram students can practice 4 skills in English at once (Sesriyani & Sukmawati, 2019). A study also said Instagram can be an effective pedagogical tool in second language acquisition if used and monitored appropriately (Shazali, Shamsudin, & Yunus, 2019). Instagram can contribute to the students' confidence to speak in a foreign language and speaking skills (Rahmah, 2018).

A study said that there was a significant difference in the kinesthetic intelligence of children aged 5-6 years between the experimental class TK Sejahtera 4 and the control class TK Negeri Pembina Kota Tasikmalaya. Namely, the increase in kinesthetic intelligence of children aged 5-6 years in the experimental class TK Sejahtera 4 is higher than the increase in kinesthetic intelligence of children aged 5-6 years in the control class of TK Negeri Pembina Kota Tasikmalaya with a 95% confidence level (Respati, Nur, & Rahman, 2018). The kinesthetic intelligence of students is seen in the activities of students' body movements in expressing their hobbies such as running, swimming, cycling, playing soccer, etc. posted on their Instagram. With these activities, their movement skills will be honed and developed. In line with this, bodily-kinesthetic intelligence can be improved in children by enjoying sports, movement, dancing, and working on projects directly. Some ways to maintain this intelligence are to involve children in sports, dancing, playing outdoors, and manipulative creative use (Lowenthal, 1997). The scientific approach through the stages of trying to allowing interacting with their environment. This is related to kinesthetic intelligence can be stimulated by physical interactions with the environment. When used in teaching, students who manipulate material can develop a greater understanding of skills (McKenzie, 2002). Here are some kinesthetic-body intelligence development activities using Instagram recorded in the image below.

FIGURE 4. *My hobby learning activities through instagram*

The video uploaded by @dewisaljoe and @hanysaraswati shows students can develop and explore their kinesthetic through karate hobbies and the play piano well and happily. Instagram is considered to influence an effort to improve students' kinesthetic intelligence. The use of Instagram as a forum for students to develop their intelligence makes it easier for teachers in the assessment process too, because teachers can access videos of student learning outcomes. In line with that through Instagram, a person can get an assessment from others about himself because of posting photos and videos uploaded, so that many Instagram users tend to deliberately organize themselves to get an assessment from others (Pratiwi & Janu, 2018). Also, the results of the research are generally in line with a study that says there is an increase in students' multiple intelligences after learning with a scientific approach to thematic learning as seen from the results of the analysis of the N-gain test which increased by 0.41 in the moderate category. (Dewi & Rukmini, 2019). Based on the description Instagram assisted learning which is learning that applies technology has a positive impact and is considered effective. In line with that technology in learning is a strategy in conducting the learning process to be more effective by using technology (Yuliyanto, Fadriyah, Yeli, & Wulandari, 2018). The use of Instagram is part of the use of e-learning which aims to improve the quality of students. Besides, the use of e-learning will change the paradigm that was originally using conventional media towards information technology-based learning media. Thus, learning activities will be more effective, efficient, and increase student creativity through the use of e-learning based media (Majid, Ridwan, Fauzi, & Hikmawan, 2019).

CONCLUSION

Based on the planned research objectives it was found that the Instagram-assisted scientific approach showed an increase in verbal-linguistic and kinesthetic-body intelligence low-grade students are in the criteria and inferentially verbal-linguistic intelligence and kinesthetic-body intelligence low-grade students are better than before being given learning with an Instagram-assisted scientific approach. The scientific approach provides an opportunity for students to develop verbal-linguistic intelligence through the stages of observing and communicating. The kinesthetic-body intelligence of students develops through the stage of trying to express their hobbies. Instagram can facilitate and make students excited about exploring student intelligence and make it easier for teachers to make assessments. It is fitting that the development of learning can facilitate the diversity of student intelligence by utilizing social media that are developing at this time to facilitate the learning and assessment process.

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