Advances in Social Science, Education and Humanities Research, volume 566
Proceedings of the 5th Asian Education Symposium 2020 (AES 2020)

The Implementation of COVID-19 Curriculum:

Learning Strategy and its Impact on the Health Literacy of High School Students

Sylva Sagita*
Doctorate Program of Science Education
Universitas Pendidikan Indonesia
Bandung, Indonesia
*sylvasag@gmail.com

Anna Permanasari
Science Education Program, School of Post-Graduate Studies, Universitas Pendidikan Indonesia
Bandung, Indonesia
anna.permanasari@upi.edu

***Abstract*—The purpose of this study was to profile the teaching strategies in the implementation of the COVID-19 curriculum as a chance to improve the health literacy of high school students. The descriptive study was conducted, with two questionnaires were designed as instruments and separately made for teachers and students, and completed by interview. The surveys were prepared in Google Form and distributed to teachers and students via WhatsApp. A total of 305 students and 34 teachers participated in this study. The research shows that although the Covid-19 Curriculum has been implemented in science learning, it has not had a good impact on students' health literacy. This impact is because of the weak strategy of teachers in online learning implementation. As many as 18.2% of teachers used virtual face-to-face learning to discuss the subject matter; meanwhile, 81.8% of teachers learned students only through online assignments without virtuals meetings. This condition leads to the lower literary thinking skills of students who have to develop as a base for enhancing student health literacy.**

Keywords—health literacy, learning strategies, curriculum, COVID-19, online learning

I. INTRODUCTION

COVID-19 is an acute respiratory syndrome caused by a new coronavirus derivative, SARS-CoV-2 [1,2]. 'CO' is taken from corona, 'V I' virus, and 'D' disease. Statistical data from the worldometer on April 24, 2020, recorded a total of 2,718,139 positive cases of COVID-19 spread in 210 countries [3]. The rapid transmission capacity of the virus led the WHO to issue guidelines for COVID-19 prevention and control and to declare it a troubling public health emergency [2].

Efforts to maintain health during the COVID pandemic are critical, considering that health is an essential capital for sustainable development as an effort to produce human resources that are ready to compete [4]. This emergency was also understood by the Indonesian minister of education, who sought to break the chain of the spread of COVID by organized education at home through online learning. An appeal from the minister was responded by the West Java provincial government by publishing a curriculum on Coronavirus education or the COVID-19 curriculum.

The COVID-19 curriculum is implemented by all high schools in West Java province in the first two weeks of learning from home. There are five major topics discussed in learning, namely: introduction to viruses, the introduction of Coronaviruses, disaster mitigation, healthy ways of living, and socializing in society during a pandemic. The determination of the curriculum aims to provide knowledge and insight to students about viruses, especially coronaviruses. Also, the products produced during the Covid-19 learning activities are expected to educate parents, neighbors, friends, and the community, with students acting as literate educational agents, especially health literacy.

The World Health Organization (WHO) defines health literacy as cognitive and social skills that determine the motivation and ability of individuals to gain adequate health access, understand and use information well to maintain health. According to Sorensen [5], health literacy includes the ability of individuals to obtain, understand, assess and apply health information so that they can make judgments and make decisions in daily life regarding health care, disease prevention, and health promotion. Nutbeam [6] divides health literacy into three levels, namely: functional, communicative, and critical.

There are several international studies related to health literacy during the pandemic. The results of Zarcadoolas, Pleasant, and Greer [7] research, showed that the moment in 2001 when the United States had a bioterrorist attack in the form of anthrax was a time when the public was actively seeking information. In the study, Zarcadoolas discussed the threat of anthrax as a series of opportunities to improve health literacy. Research by Castro-Sánchez, Chang, Vila-Candel, Escobedo, and Holmes [8], explains the link between the level of health literacy and the rate of spread of infectious diseases. From the results of his research, it is known that there is a positive correlation between inadequate health literacy and low protective behavior, and insufficient understanding of care.

The current COVID-19 pandemic situation is a contextual learning opportunity to improve student health literacy. The rapid spread of the virus is accompanied by swift information circulating through print and online media, including social media (WhatsApp, Twitter, Instagram), requiring excellent health literacy skills to select and filter data, to avoid harmful

panic actions. Health literacy that is owned can be used as a basis for making appropriate decisions in protecting themselves against the dangers of COVID-19.

The implementation of the COVID-19 curriculum at the Senior High School level in West Java province can be used as a moment to improve student health literacy. However, there has been no official report on teacher learning strategies in the implementation of the COVID-19 curriculum as a potential to improve the health literacy of high school students. This condition is quite unfortunate because one crucial factor for achieving learning objectives is the learning strategy [9,10].

Therefore, this study will examine teacher learning strategies in the implementation of the Covid-19 curriculum as a potential to improve the health literacy of high school students. The teacher strategy profile that was tried to be explored was the strategy in organizing teaching, teaching delivery strategies, and learning management strategies [11]. This research is expected to be able to provide an overview of teacher learning strategies in the implementation of the Covid-19 curriculum and provide an overview of the position of the health literacy level of high school students.

II. METHODS

This study was included as a descriptive observational study aimed at exploring teaching strategies in the implementation of the Covid-19 curriculum and describing the health literacy profile of high school students. The study population was chosen randomly. The questionnaire prepared using Google Form, and a link was sent to students and teachers via WhatsApp. A total of 34 teachers and 307 students from 8 high schools participated in this study. Some teachers and students were interviewed as supporting research data obtained. The data collected is then processed in the form of a percentage. Qualitatively interpreted and analyzed data supported by other research findings.

III. DISCUSSION

This section is divided into two parts, namely the teaching strategy on the implementation of the Covid-19 curriculum in its potential to improve student health literacy and the profile of high school students' health literacy. The demographics of participants in this study are presented in Figure 1.

TABLE I. TEACHER AND STUDENT DEMOGRAPHICS

	Teacher (n = 34)	**Students (n = 307)**
Teaching experience	2-17	
Gender [n (%)]		
Men	9	90 (29.3)
Woman	25	217 (70.7)
Class [n (%)]		
10	15	183 (59.6)
11	20	112 (36.5)
12	4	12 (3,9)
Previous online experience [n (%)]		
Ever	74.3	91.7
Never	25.7	8.3
Implement the Covid-19 Curriculum		
Yes	31 (88.6)	96.1
Not	4 (11.4)	3,9

Table 1 displays the teacher and student data for several components, namely the average teacher's teaching time, gender, class, online learning experience, and the percentage that implemented the Covid-19 curriculum. Based on gender, respondents were dominated by women in both the teacher and student groups. Education statistical data for the high school level in West Java shows the same trend, displaying the number of teachers and female students more than men [12].

Data on online teaching experience shows that 25.7% of teachers have never implemented it. The group is dominated by senior teachers with long teaching experience. The results of an interview with one of the teachers found that the teacher felt the use of technology was troublesome and felt face-to-face learning was sufficient in the period before the pandemic occurred. That feeling influenced by lack of experience, self-confidence, and teachers' motivation in the manipulation of technology for using ICT in the classroom [13]. Its condition differ for young teachers and students belonging to the millennial generation have more confidence in using technology for learning [14].

Students who have never carried out online learning (3.9%) found they have technical obstacles in accessing the internet. To anticipate this experience, diversification of delivery media other than the internet, such as radio programs or using postal services for areas with low connectivity, could be considered [15].

From 34 teacher respondents, 88.6% stated implementing the Covid-19 curriculum in the first two weeks of the home study program following the recommendations of the West Java provincial education office. Teachers who do not implement the Covid-19 curriculum are 12th-grade teachers because they are preparing students for the school examination and portfolio. Refer to that condition, four teachers and 12 students from grade twelve are not included in further discussions on strategies for implementing the Covid-19 curriculum.

A. Teaching Strategies on Implementing the Covid-19 Curriculum in its Potential to Improve Student Health Literacy

This study examines teacher learning strategies on the implementation of the Covid-19 curriculum in its potential to improve student health literacy. The lesson was carried out in the first two weeks of online distance learning activities at the high school level. Teaching strategies relate to instructional organizing delivery, which includes methods, approaches, tactics, and techniques chosen by teachers during online learning activities.

The organizing of the Covid-19 curriculum is organized into five discussion topics, namely the introduction of virus characteristics, introduction of coronaviruses, disaster mitigation, healthy ways of living, and socializing in the community. The percentage of material delivery can be seen in Figure 1.

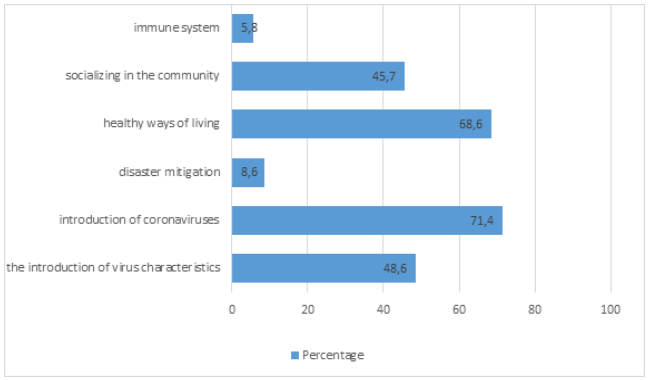

Fig. 1. Demographics of organizing teaching(%).

When distributing questionnaires, teachers are allowed to choose more than one according to the topic presented. Based on Figure 1 it can be seen that the percentage of material delivered from the highest to the lowest is coronavirus introduction material (71.4%), healthy way of life (68.6%), introduction to virus characteristics (48.6%), socializing in the community (45.7%) and disaster mitigation (8.6%). Confirmation of teacher questionnaire data with student answers showed more or less the same results. Both questionnaires showed disaster mitigation material as the material most rarely delivered. Some teachers consider disaster mitigation to be material for natural disaster management and not uncommonly correlated with the current co-pandemic. This circumstance shows the level of teacher understanding of disaster categories is still low, because due to the President presidential decree no 12 the year 2020, COVID-19 pandemic stated as a national disaster [16].

In Figure 2, the method chosen by the teacher in implementing the Covid-19 curriculum is presented.

Fig. 2. Online learning methods (%).

In the questionnaire distributed about the method used, there were three choices, namely, online assignments, virtual face-to-face classes, and a combination of virtual face-to-face and online tasks. From the results obtained, it is known that 81.8% of teachers do teaching through online assignments remaining 18.2% do a combination of tasks and face to face. From the interview results, it is known at the beginning of the implementation of the learning from home policy, teachers and students must adapt independently to the situation. Lack of socialization and training on e-learning in the pre-epidemic period affected the readiness of teachers when making the transition from offline learning to online learning [17].

Another reason underlying learning only through assignment is due to cost efficiency factors. It cannot be denied that face-to-face online conferencing activities require more quota than through online messaging applications. Data consumption for video conferencing using the Zoom application with 720p video quality for one hour consumes 540MB of data [18] combination learning method, conducting online face-to-face meetings at least once. The duration of face-to-face contact ranged from 30-45 minutes. The virtual conference is used by teachers to exchange news, deliver material, give assignments, and provide motivation. One teacher argued, face-to-face activities needed to build strong relations between student-teacher. At that moment, the teacher motivates and encourages students to make learning enthusiasm—students who have high motivation in learning show more significant learning outcomes [19].

In the current digital era, many technologies support online learning. The media used by the teacher are presented in Figure 3.

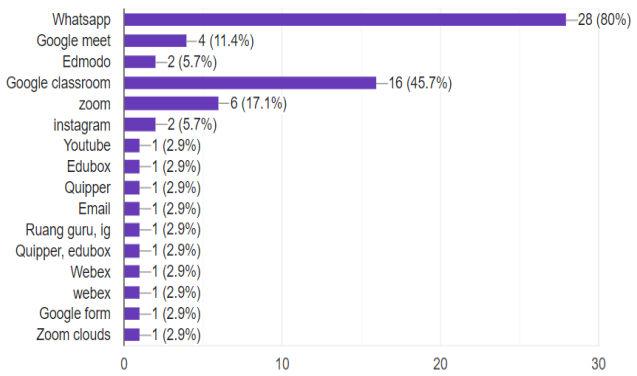

Fig. 3. Teaching submission techniques.

Based on Figure 3, the WhatsApp application is the most widely used online mode by 80% of respondents. This choice is supported by several factors, mention that almost everyone uses WhatsApp as an online communication medium in daily life, so that when it used as an online learning medium, teachers and students are already adept at operating without additional training needed. Other supporting factors are non-text features such as sending photos, documents, voice notes, even videos that are considered complete enough to support online learning.

The second most used mode is Google Classroom (45.7%). The Google service has class features, where teachers can create and manage classes online. Google Classroom (Gclass) is integrated with Google Drive, which significantly helps teachers in organizing assignments, Google forms that can be used to make online quizzes, Google docs that allow students to collaborate to make journals or summaries. Another feature that Gclass has is Google Meet to conduct virtual meetings. In

terms of data needed to do video conferencing, Google meet requires a bandwidth of 1100Kbps, higher than the zoom application, which is only 600Kbps [18]. But many teachers prefer Google Meet as a mode for virtual meetings since the zoom security feature is still being debated.

Variations in instructional teaching strategies are needed to avoid boredom in online learning. Figure 4 shows the types of activities given by the teacher during online learning.

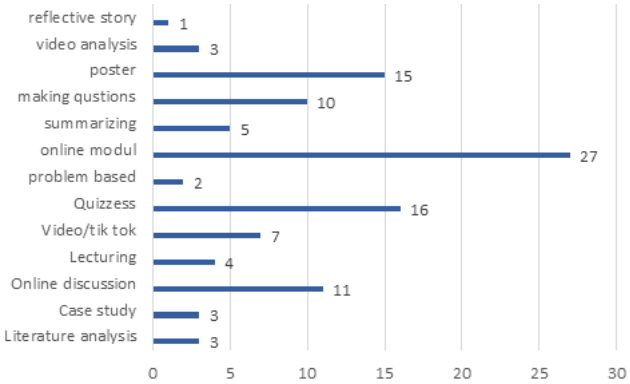

Fig. 4. Online teaching task variations.

Based on Figure 4, online learning is dominated by the online delivery of learning material. The teacher uploads the learning material and tasks in an online mode such as WhatsApp or Google classroom, which is then downloaded and studied by students. Forms of the assignment given by the teacher include making posters, summarizing, making questions related to COVID-19, reviewing the literature, making video clips, conducting an analysis of case studies from videos or literature. From the results of interviews with students regarding the assignments given by the teacher, they stated that the tasks assigned were quite a lot and tiring. Confirmation with the teacher is known that each teacher only gives one assignment per meeting, but students attend the online class for 2-3 subjects. Lack coordination between teachers in providing homework may increase the number of tasks received by students. Another challenge in online learning is time management, and students are required to have independence in study or self-regulated learning [20].

One important thing in teaching strategies is giving feedback for students about their works. In online learning, modes like Gclass have a deadline reminder for gathering tasks. It was useful to motivate students to collect assignments on time. In Figure 5, the proportions shown between the teacher who provided input and not. As many as 77, 1% of teachers gave feedback when students collected assignments while the rest, 22.9% said they did not provide feedback. Some teachers offer input as a form of appreciation and motivation for students to remain enthusiastic in collecting assignments and improving the quality of future works.

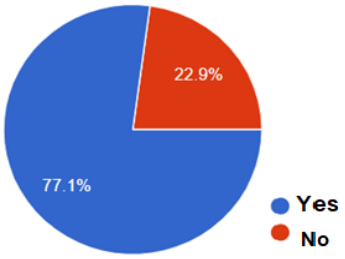

Fig. 5. Demographics of teacher feedback.

In Figure 6, a form of assessment is carried out by the teacher when implementing the Covid-19 curriculum through online media.

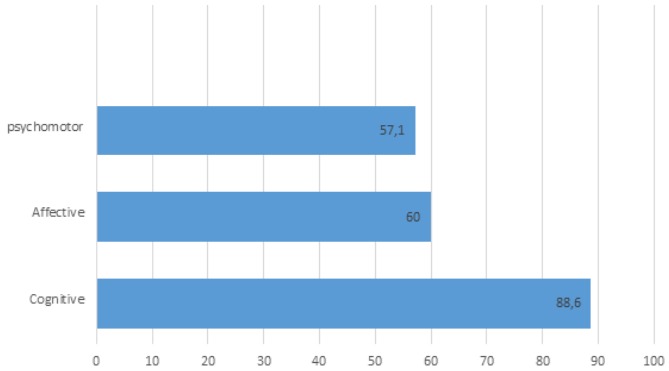

Fig. 6. Measured aspects of assessment activities (%)

The highest measurement is for the cognitive aspect of 88.6%. Cognitive dimensions measured include the level of student understanding of COVID material that has been learned. Analysis of the questions made by the teacher shows that the form of questions is still a matter of confirmation about the basic knowledge of Covid-19. Types of cognitive application questions such as interpreting data graphs already exist in the problem but are still limited in number. The kind of item that is rarely found is a cognitive problem of reasoning group such as analyzing, concluding, interpreting, predicting, and synthesizing, which belongs to the HOTS question category.

Assessment of affective aspects is done by the teacher without any clear rubric. The criteria used such as the punctuality of task collection, activeness during online learning, courtesy when communicating, and student creativity based on product creation. Compared to the two domains, the psychomotor aspect is the domain most rarely measured in online learning. The teacher assesses psychomotor elements through the product or work produced, such as communication skills in the video, composing content, neatness, as well as the teacher's observations of the assignment documentation.

B. *Health Literacy Profile of High School Students*

The implementation of the Covid-19 curriculum is designed as a provision of knowledge about prevention and guidance in dealing with outbreaks, which has the potential to improve the literacy skills of high school students. In Figure 7, the results of the teacher's opinion trail are presented about the ability of health literacy that students must improve the most.

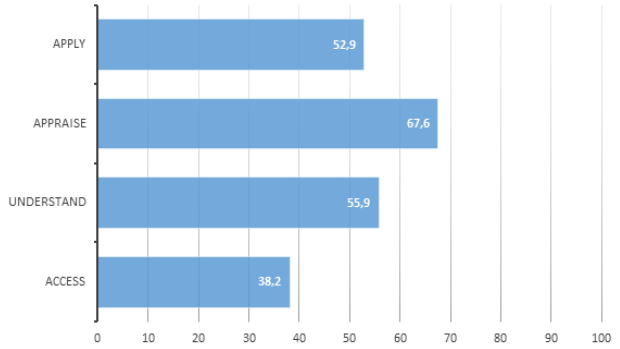

Fig. 7. Teacher trace opinions regarding student literacy ability of the lowest students.

There are four components of health literacy, namely obtaining information, understanding information, filtering data and applying knowledge. The teacher's opinion states, students are still weak in filtering and confirming (67.6%). To be able to filter and verify information, students need primary skills of analyzing, concluding, interpreting, predicting, and synthesizing that included in the high order thinking skills category [21]. This result confirmed the urgency of learning strategies that can improve students' higher-order thinking skills.

Health literacy, according to Nutbeam, is divided into three levels, namely functional, communicative, and critical. The health literacy profile of high school students is measured through a questionnaire adapted from Osborne's Health Literacy Questionnaire (HLQ) [22]. The research survey contained 30 statements (strongly disagree, disagree, agree, and strongly agree) grouped according to the level of health literacy measured. The results of the health literacy of high school students, in general, can be seen in Figure 8.

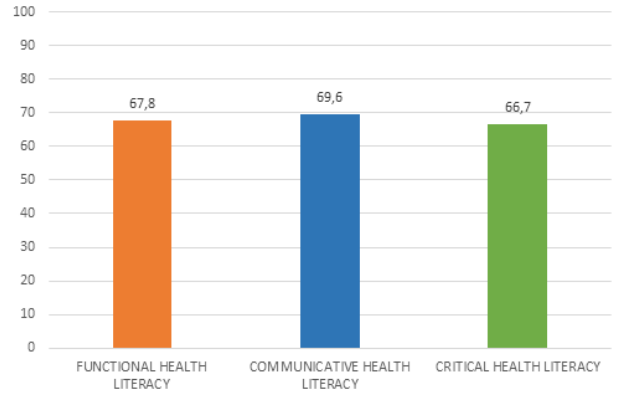

Fig. 8. High school student health literacy profile.

Figure 8 shows the percentage of student achievement for each level of health literacy, which is below 70%. The highest rate was obtained for communicative health literacy (69.6%), 1.8% higher than functional health literacy ability. The lowest number is at a critical level, with an achievement of 66.7%. The functional level describes the extent to which students can understand the health information obtained, while communicative shows the level of initiative and confidence to find sources of information. The level of achievement for each level of health literacy can be seen in Figures 9, 10, and 11.

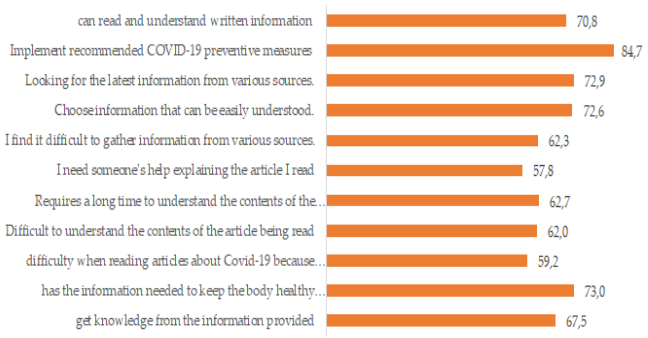

Fig. 9. Indicators of functional health literacy.

In figure 9, the functional level shows that students have difficulties and still need help to understand health-related information in the form of articles (57.8%). A low level of understanding of data can be seen in the summary products made by students. Students have not been able to summarize the subject matter of the article being read, so the summary form is made in the way of short pieces of paragraphs. It shows the ability of students to analyze reading is still low. These findings are consistent with the results of Indonesia's PISA achievements in 2015 that have not shown significant changes, and even below the OECD country average [23].

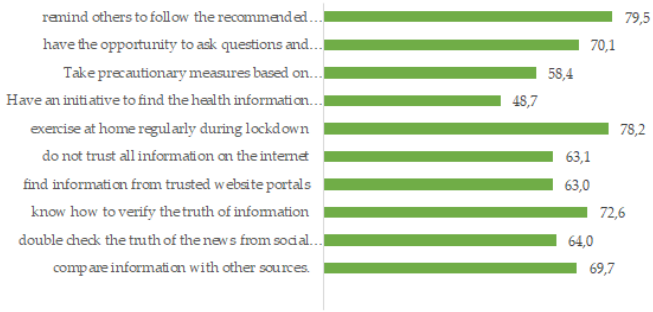

Fig. 10. Indicators of communicative health literacy.

Based on the points of the statement at the communicative level in Figure 10. Indicates students can find the source of information needed, but there is still a tendency for students to wait for instructions or orders first. It indicates that the level of initiative and responsibility for student learning is not optimal. The reasons students did not take action in seeking information included feeling useless because they were not assessed by the

teacher, "later also told by the teacher" to be one of the embedded mindset. Student learning initiatives and responsibilities can be developed through modification of the learning environment that stimulates students to be actively involved in the process of forming knowledge and making the process of inquiry (inquiry) as part of their scientific needs [24, 25]

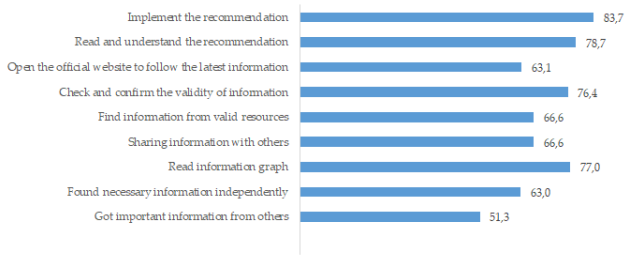

Fig. 11. Indicators of critical health literacy.

The level of critical health literacy can be achieved if students fulfill the two previous literacy levels first. The ability of students to verify information (63.1%) and apply to new conditions (48.7%) is still low. This ability has an impact on the little awareness of the urgency of prevention and self-protection measures during the outbreak by following the recommended protocol (58.4%). Verification skills are included in higher-order thinking skills [26]. This finding reinforces that teachers need to develop learning strategies that practice high-level skills.

In general, the purpose of implementing the COVID curriculum in Bandung is to provide knowledge and insight into the Coronavirus and self-protection protocols during the outbreak. The material in the COVID curriculum provides space for teachers to develop contextual learning under the conditions experienced by students today. In designing learning strategies, teachers must pay attention to aspects of student interest and motivation to be actively involved in finding and building their knowledge. Forms of learning and evaluation are preferred to develop types of questions in the cognitive aspects of analysis and reasoning so that the high-level thinking skills of trained students will have an impact on increasing literacy skills.

IV. Conclusion

Based on the analysis of the Covid-19 curriculum implementation strategy as a potential to improve student health literacy, several significant findings were found. The research shows that although the Covid-19 Curriculum has been implemented in science learning, it has not had a good impact on students' health literacy. This impact is because of the weak strategy of teachers in online learning implementation. As many as 18.2% of teachers used virtual face-to-face learning to discuss the subject matter; meanwhile, 81.8% of teachers learned students only through online assignments without virtuals meetings. This condition leads to the lower literacy thinking skills of students who have to develop as a base for enhancing student health literacy. First, the learning strategy that is mostly done is assigning tasks.

To improve online instructional several strategies are needed—first, variations in the types of assignments given aim to avoid boredom and keep students motivated. Second, providing feedback on online learning is very important to do to foster a sense of student attachment to the teacher as well as the assignments given. Third, the form of evaluation designed by the teacher is still dominated by low-level cognitive questions and not yet intensively training high-level thinking skills. Fourth, the level of health literacy in high school students is still low. Students always experience difficulties in developing necessary literacy skills to understand health information.

Acknowledgment

Acknowledgments are given to Lembaga Pengelola Dana Pendidikan (LPDP) Kementerian Keuangan Republik Indonesia for scholarship, research and publication costs with the registration number: 201907212015050.

References

[1] Q. Lu and Y. Shi, “Coronavirus disease (COVID-19) and neonate: What neonatologist need to know,” Journal of medical virology, vol. 92, no. 6, pp. 564-567, 2020.

[2] World Health Organization, Coronavirus disease 2019 (COVID-19): situation report, 73, 2020.

[3] Worldometers.info, COVID-19 Coronavirus Pandemic. Acessed on 2020, April 24th. https://www.worldometers.info/coronavirus/

[4] A. Atmawikarta, Investasi Kesehatan Untuk Pembangunan Ekonomi. Artikel Bappenas. Jakarta: Bappenas, 2008.

[5] K. Sorensen, S. Van den Broucke, J. Fullam, G. Doyle, J. Pelikan, Z. Slonska and H. Brand, “Health Literacy and Public Health: A Systematic Review and Integration of Definitions and Models,” BMC Public Health, vol. 12, no. 80, pp. 1-13, 2012.

[6] D. Nutbeam, “Health literacy as a public health goal: a challenge for contemporary health education and communication strategies into the 21st century,” Health promotion international, vol. 15, no. 3, pp. 259-267, 2000.

[7] C. Zarcadoolas, A. Pleasant D.S. Greer, “Understanding health literacy: an expanded model,” Health promotion international, vol. 20, no. 2, 195-203, 2005.

[8] E. Castro-Sánchez, P.W. Chang, R. Vila-Candel, A.A. Escobedo and A.H. Holmes, “Health literacy and infectious diseases: why does it matter?,” International Journal of Infectious Diseases, vol. 43, pp. 103-110, 2016.

[9] E.P. Widoyoko, Evaluasi program pembelajaran. Yogyakarta: pustaka pelajar, 238, 2009.

[10] W. Anitah, Strategi Pembelajaran Biologi, 2014.

[11] P. Yuliatmojo, “Mempersiapkan Guru Pada Strategi Pembelajaran Berbasis Teknologi Informasi Dan Komunikasi,” Prosiding APTEKINDO, vol. 6, no. 1, 2012.

[12] Statistik.data.kemdikbud.go.id. (2019/2020). Jumlah Siswa Menurut Jenis Kelamin Dan status Sekolah Tiap Provinsi Sekolah Menengah Pertama (SMP). Accessed on 2020, June 15th. statistik.data.kemdikbud.go.id/index.php/page/smp.

[13] S. Wiranto, “Penerapan Teknologi Informasi dan Komunikasi Sebagai Media Interaksi Guru-Siswa,” Jurnal VARIDIKA, vol. 26, no. 2, 2014.

[14] I. Wati and I. Kamila, "Pentingnya Guru Professional Dalam Mendidik Siswa Milenial Untuk Menghadapi Revolusi 4.0," In Prosiding Seminar Nasional Program Pascasarjana Universitas PGRI Palembang, Vol. 12, No. 01, 2019.

[15] N.F. Azzahra, Mengkaji Hambatan Pembelajaran Jarak Jauh di Indonesia di Masa Pandemi Covid-19, 2020.

[16] Setkab.go.id., Presiden Tetapkan Bencana Nonalam Penyebaran Covid-19 sebagai Bencana Nasional. Diakses pada 15 Juni 2020 dari https://setkab.go.id/presiden-tetapkan-bencana-nonalam-penyebaran-covid-19-sebagai-bencaa-nasional/, 2020, 20 April.

[17] S. Jamal, "Analisis kesiapan pembelajaran e-learning saat pandemi covid-19 di SMK Negeri 1 Tambelangan," Jurnal Nalar Pendidikan, vol. 8, no. 1, pp. 16-22, 2020.

[18] CNNIndonesia. (n.d.-a). 4 Aplikasi Video Conference yang Irit dan Boros Data. Retrieved from https://www.cnnindonesia.com/teknologi/20200330191529-185-488422/4-aplikasi-video-conference-yang-irit-dan-boros-data

[19] Z. Taurina, "Student motivation and learning outcomes: Significant factors in internal study quality assurance system," International Journal for Cross Disciplinary Subject in Education, vol. 5, no. 4, 2625-2630, 2015.

[20] N. Dabbagh and A. Kitsantas, "Personal Learning Environments, social media, and self-regulated learning: A natural formula for connecting formal and informal learning," The internet and higher education, vol. 15, no. 1, pp. 3-8, 2012.

[21] M.Z. Fanani, "Strategi pengembangan soal hots pada kurikulum 2013," Edudeena: Journal of Islamic Religious Education, vol. 2, no. 1, 2018.

[22] R.H. Osborne, R.W. Batterham, G.R. Elsworth, M. Hawkins and R. Buchbinder, "The grounded psychometric development and initial validation of the Health Literacy Questionnaire (HLQ)," BMC public health, vol. 13, no. 1, pp. 658, 2013.

[23] M. Tohir, "Hasil PISA Indonesia tahun 2015 mengalami peningkatan," Jurnal researchgate, 1-2, 2016.

[24] S. Siswanto, Y. Yusiran and M.F. Fajarudin, "Keterampilan Proses Sains dan Kemandirian Belajar Siswa: Profil dan Setting Pembelajaran untuk Melatihkannya," Gravity: Scientific Journal of Research and Learning Physics, vol. 2, no. 2, 2017.

[25] S. Suherman and A. Budiamin, "Pengembangan Inisiatif, Kemandirian, dan Tanggung Jawab untuk Meningkatkan Kualitas Pembelajaran Peserta Didik," Indonesian Journal of Educational Counseling, vol. 4(1), pp. 47-56, 2020.

[26] H.M. Sumampouw, "Keterampilan Metakognitif dan Berpikir Tingkat Tinggi dalam Pembelajaran Genetika (Artikulasi Konsep dan Verifikasi Empiris)," Bioedukasi, vol. 4, no. 2, 2011.