Motivation and Skills of Science Teachers' Online Teaching through Online Learning Training in The Covid-19 Period in Pekanbaru Indonesia

Hendra Taufik, Yustina
Civil Engineering – FT, Universitas Riau
Biology Education – FKIP, Universitas Riau
Jl. HR. Soebrantas, Km. 12.5, Pekanbaru, 28293, Indonesia
hendra.taufik@lecturer.unri.ac.id
hjyustina@gmail.com

Abstract. The purpose of this study was to analyze the motivation and skills of science teachers' online teaching through online teaching mentoring training in Pekanbaru in the month of May-July 2020. The subject of this descriptive study was the teachers participating in the training. Online training materials include Google classroom, Google form, slides, and videos. The training used the methods of simulation, training, modeling, and production of science teachers' online teaching videos. The research parameters were that five indicators of science teachers' online teaching motivation and ten indicators of skills from 4 aspects, namely the concept of online learning, implementation of Google classroom in learning, modeling of online learning, and online learning video products. Data collection instruments used the Google questionnaire form pretest-posttest and portfolio. Data is presented and analyzed descriptively. The results obtained the average value of teachers' online teaching motivation increased from a mean score of 67.2 (pretest) to 81.8 (posttest) with N-Gain 0.44, which is classified as effective. Teachers' online learning skills increased from a mean score of 55 (pretest) to 78 (posttest) with an N-Gain of 0.56, which is classified as effective. In conclusion, online teaching mentoring training is effective in increasing the motivation and online teaching skills of science teachers during the COVID-19 period in Pekanbaru.

1. Introduction
Instructions for social distancing and working from home (WFH) online have been announced, as well as the learning process. The usual learning process that is a class meeting is diverted by an online meeting (in the internet network). Severe short-term disruption is felt by many families around the world for which there is no model to predict it [1] and the transition process to online teaching platforms [2]. Schooling at home is not only a big surprise for parents' productivity but also children's social life and learning. Further, the profound understanding of the COVID-19 pandemic [3] needs to be considered teaching become online, on a scale that has not been tested and has never happened before. Student assessment also moves online, with lots of trial and error and uncertainty for everyone, and replaces traditional exams with online assessment tools [4].

Progress made in the 21st century is a challenge for students and teachers. The challenge for the generation is currently developing so that it needs to be considered the need for learning to have life skills to be able to adapt and deal with life to come. Therefore, the need for a comprehensive design of teaching materials, approaches, and learning instruments to overcome these challenges. One of them is by utilizing the function of technology in the process of teaching and learning activities. It becomes a
challenge for teachers as educators, especially in implementing learning by integrating technology [5]. Learning must be able to answer the challenges of the 21st century, one of which is information literacy and ICT literacy, so that students' ICT skills develop, it is necessary to integrate ICT in the learning process [6];[7] and be able to utilize technology optimally [8];[9].

The implementation of online learning has not been programmed according to the curriculum, guidelines, and technology facilities along with network devices, the readiness of educators, and students in implementing online learning during the COVID-19 epidemic. The learning is boring because it is in the form of assignments through WhatsApp, this is an obstacle to student motivation, especially lack of motivation, lack of interaction, and less interesting learning process [22]. It is considered to be caused by a lack of motivation and teacher skills in teaching online.

The solution efforts, in line with Tridarma of tertiary institutions, include community service that is demanded of lecturers and students. Collaboration between lecturers and students at the Research and Community Service Institute (LPPM) Riau University through a real work lecture program (KUKERTA), including through an integrated community service program. One of the aims of the curricular activities is to raise student's awareness and participate in providing solutions to problems in the community (LPPM Universitas Riau., 2019). The condition of the COVID-19 pandemic period with problems in organizing the learning process, especially the constraints of the implementation of learning by teachers related to online learning, therefore this community service activity, with the theme “Ayo Berbagi Atasi Covid-19, KITA BISA”. One of the program activities is providing online learning training to teachers in the area of community service activities.

In order training to be following the target achievement, namely to be able to increase motivation and skills of the trainees (teachers) online teaching, it is, therefore, necessary to study the targets of this training achievement, namely to increase the motivation and skills of teachers as trainees in online teaching. The purpose of this study is to Analyze the Motivation and Skills of Teachers’ Online Teaching through Online Learning Mentoring Training in the COVID-19 Period in Pekanbaru-Indonesia.

2. Method
This descriptive study was carried out at Purnama Junior High School Pekanbaru, Riau Province, from March to June 2020. The subject of the study was elementary, junior, and senior high school teachers who teach at Merpoyan Damai subdistrict in Pekanbaru, as many as 60 participants. The parameters of this research through online training are the motivation and skills of science teachers' online teaching. Data analysis and methods as follows:

2.1 The motivation questionnaire sheet
The motivation questionnaire sheet compiled in this study is a closed questionnaire sheet with 4 Likert scales, student learning motivation consists of 5 indicators, namely desire and curiosity, encouragement and learning needs, hopes and ideals, appreciation in learning and interesting activities in learning. Google form questionnaire file, motivation for evaluation is according to Curriculum 2013. The five indicators were developed into descriptors and then elaborated in 15 statement items, each indicator consisting of 3 statement items. A learning motivation questionnaire was given before and after learning—the questionnaire descriptors in Table 1.
Table 1. Indicators and Descriptors for Student Learning Motivation Questionnaires

| Indicator                        | Descriptor                                                                 |
|---------------------------------|-----------------------------------------------------------------------------|
| Desire and curiosity            | Curiosity to learn new information and learning tools.                      |
| Encouragement and learning needs| Facilitating educators, the need for support, feeling proud of the results achieved. |
| Future hopes and ideals         | Striving, persevering (learning intensity), and optimistic (confident) completing tasks, relevant to learning achievement targets. |
| Appreciation in learning        | Giving and informing values, achievements, opportunities for competition.    |
| Interesting activities in learning | Attitudes of educators and peers towards students, material relevant to students’ daily lives, facilitated in a fun, clear, straightforward, and easy to understand manner. |

2.2 Indicators of learning skills

Adjusted to online teaching skills using Google Classroom and Google Form [21], developed into online learning skill questionnaire descriptors through Google form and assessment of product portfolio in the form of learning videos for each trainee (Table 2) as follows

Table 2. The descriptor of Online Learning Skills using Classroom

| No | Aspect of skill                          | Indicator                                                                 | Items | Classroom-based teaching skills descriptors                                                                 |
|----|-----------------------------------------|---------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------------------------------|
| (1)| Online Knowledge                        | The concept of online learning.                                           | 1,2   | Benefits of Google classroom, disadvantages, and advantages of learning.                                      |
|    |                                         | Advantages & disadvantages of e-learning                                  |       |                                                                                                                                 |
| (2)| Implementation of Google Classroom, Google Form in online learning | Creating & implementing classroom, attendance, Google form questionnaires, Google slide, video | 3,4,5, 6 | Application classroom, attendance, Google form questionnaires, Google slide, and video.                       |
| (3)| Modeling online learning                | Readiness and independence implementing online learning compatibility of ICT literacy (content, virtual audio media, and pedagogy). | 7,8   | How the learning process, facilitation, and interaction look                                                                 |
| (4)| Online learning video product           |                                                                           | 9,10  | The relevance of the material to the strategy, interaction, and assessment of the online learning process.     |

Google form questionnaire about online learning skills consists of 5 aspects, namely: 1) The concept of online learning; 2) Training of learning tools through Google classroom, Google form, slides, and videos; 3) Conducting online learning activity modeling, and 4) Output in the form of participant's online learning video which refers to the practical learning guide online [21].

The average score obtained for each aspect of motivation and skills of online teaching among teachers is converted into interval data with a scale of four. The data obtained was changed in the
form of a score, then the data in the form of the score will be changed to a value, namely the score obtained divided by the maximum score multiplied by a maximum value of 100 [10].

To find out the target of training achievement, namely increasing motivation to learn and online teaching skills to teachers, the data used are normalized Gain Index and classification/effectiveness [11]. The average value of normalized gain (Gain index) is the difference between the final average value (posttest) divided by the results of the difference in the maximum score minus the average value of the initial test (pretest). Interpret the gain index (g) Normalized and classification [11], Table 3 as follows.

Table 3. Normalized Gain Index Values and Their Classifications

| Normalized Gain Index | Classification       |
|-----------------------|----------------------|
| (g) ≥ 0.70            | High/very effective  |
| 0.30 ≤ (g) ≥ 0.70     | Medium/effective     |
| (g) < 0.30            | Low/less effective   |

2.3 Procedure for Training Activities

The research procedure is presented in Figure 1 below.

![Figure 1. Online Learning Training Procedures in Teachers' Motivation and Skills of Online Learning in Pekanbaru in the COVID-19 Period](image)

Coordination of the organizer by Dosen Pembimbing Lapangan (DPL) kukerta was integrated into Sidomulyo Timur village. The venue for the training was at Purnama Junior High School Pekanbaru, and the school principal served as the head of the training organizer and was held from June to July 2020, with a speaker for online technology learning, Mr. Hendra Taufik, ST, MSc. Participants as the target of the activity were elementary, junior high, and high school teachers in Sidomulyo Timur sub-district as many as 40 teachers from 10 schools. Recruitment of participants through the school principal's recommendations and coordination with the training team through the WA group on June 20 to 24, 2020, online training on June 25 to July 9, 2020, with a total of 40 JP equivalent activities (Online Training Hours), the publication of implementation on July 13, 2020. Reports and submission of article publications for August – September 2020.

3. Results and Discussion

3.1 Description of Online Learning Training

Recruitment of participants was through requests to schools with the criteria for each school to send messengers (prospective mentors and administrators) of 2 participants offline. The venue was at
Purnama Junior High School Pekanbaru as an online training post, and other participating teachers participated online. Registered participants as many as 60 people, the implementation of training from June 24 to 25 began with a pretest. The profile of online learning training participants consisted of 60 people. Based on the status of the institution school level, it was obtained 16.1% elementary school teachers, 79.7% junior high school teachers, and 4% high school teachers. Meanwhile, based on gender, 84% of women and 16% of men are obtained. In terms of the participant's tenure as much as 70% for five years, and 30% for ten years. Based on the attendance of participants consisting of 30 people offline (located in Purnama Junior High School Pekanbaru) and 30 people online. Training activities are scheduled with a total of 40 JP (Meeting Hours). The training activities consisted of 10 stages, the activity started at 08.30 followed by the details of the training material, namely: 1) the concept of online learning (1 JP); 2) getting to know and practicing Google classroom (2 JP); 3) Google form (questionnaire, attendance, and assessment) and guided practice through online (3 JP); 4) the practice of preparing learning tools and classroom practices independently until June 27, 2020; (5) Modelling exercises teaching classroom online and making learning videos, in the form of micro-teaching namely participants as host (teacher) invites other participants as students (June 28 to July 5 2020); 6) Collection of instructional videos for each teacher on Monday, July 6, 2020; 7) Tuesday, July 7, 2020, post-training online using Google form; 8) Selection of the best participants' online learning videos (July 8 2020); 9) Thursday July 9 2020 Announcement of the best participant videos and submission of E-certificates; 10) Monday publish activities in the newspaper, the best video products in the FB group of the Indonesian Teachers and Lecturers Association and launching youtube online learning training for teachers from the Merpoyan Damai sub-district in Purnama Junior High School Pekanbaru.

The training begins with giving a pretest to participants by informing Link: https://bit.ly/2zWHJ2y Link Pre-Test (10 minutes), followed by prayer & opening. Then the socialization of the concept of online learning with its advantages and disadvantages is conveyed. Then the core activities are displayed as documentation. At the end of the training, a posttest was given by informing the Link: https://forms.gle/ZbFTN3G9usZWitMb8 Link Post-Test and rewarding to the best training participants and E-certificates online.

![Figure 2. Practicing Google Classroom & Google Form](image1)

![Figure 3. Practicing independently to implement Classroom (instructor's guidance)](image2)
3.2 Teachers’ Online Learning Motivation (Figure 6 and Table 4) as follows.

**Table 4.** N-Gain Index for each indicator of motivation and their classifications

| Indicator          | N-Gain Index | Classification |
|--------------------|--------------|----------------|
| Motivation         | 0.49         | Effective      |
| Desire             | 0.42         | Effective      |
| Hope               | 0.52         | Effective      |
| Encouragement      | 0.37         | Effective      |
| Appreciation       | 0.44         | Effective      |
| Interesting        | 0.44         | Effective      |
| Mean               | 0.44         | Effective      |

Figure 6 and Table 4 breakdown of teacher motivation in online learning training. Based on Figure 3 and Table 4, the average score of students’ desire and curiosity motivation pretest is 60.5, and the average posttest score is 80, with an N-Gain of 0.49 (effective classification) increasing the desire and curiosity of online learning training teachers. Teacher encouragement and needs from the average pretest of 65 and posttest scores increased to 80, with an N-gain of 0.42 (effective classification). The
average pretest score was 75 and posttest 88, with N-Gain of 0.52 (effective classification) increasing the hopes and ideals of teachers through the implementation of this online learning training. The average score of pretest awards in training was 60.5, and the posttest was 75, with N-Gain of 0.37, meaning this learning training gave an effective impression of increasing the motivation of teachers to receive appreciation in training. Based on the interesting score in training, the achievement was 75, and the posttest increased to 86, with N-Gain of 0.44 (effective classification) increasing the motivation of attractive teachers in online learning training. The overall online teaching motivation of teachers increased from a mean score of 67.2 (pretest) to 81.8 (posttest) with an N-Gain of 0.44 classified as effective. It means that online mentoring training is effective at increasing teacher motivation in online teaching.

3.3 Teachers’ Online Teaching Skills
Based on the implementation of the teachers' skills implementing online learning training in terms of aspects of skills are presented in Table 5.

| No | Skill aspect and indicator | Mean score | N-Gain Index | Classification |
|----|---------------------------|------------|--------------|----------------|
|    |                           | Pretest    | Post-test    |                |
| (A) | Online knowledge           | 70         | 88           | 0.6            | Effective      |
| 1   | The concept of online learning | 80         | 90           | 0.5            |               |
| 2   | Advantages/Disadvantages   | 60         | 86           | 0.5            |               |
| (B) | Implementation of Google classroom, form, slide, video | 50         | 72           | 0.44           | Effective      |
| 3   | Application of Google classroom | 65         | 80           | 0.42           |               |
| 4   | Application of Google form, attendance | 45         | 80           | 0.64           |               |
| 5   | Application of Google slide | 50         | 60           | 0.33           |               |
| 6   | Application of Google video | 40         | 60           | 0.33           |               |
| (C) | Online modeling process    | 50         | 80           | 0.6            | Effective      |
| 7   | Learning content           | 80         | 90           | 0.5            |               |
| 8   | Facilitation and interaction | 20         | 70           | 0.43           |               |
| (D) | Online learning video      | 50         | 72           | 0.44           | Effective      |
| 9   | Material and pedagogy      | 80         | 90           | 0.63           |               |
| 10  | Virtual learning appearance | 20         | 54           | 0.44           |               |
|     | Mean                       | 55         | 78           | 0.56           | Effective      |

Teachers' online learning skills through online training obtained the highest average score of skills, namely online concept knowledge (88) higher than (70) mean pretest score with N-Gain of 0.6, which is classified effective. Online teaching modeling skill with mean post-score (80) is higher than mean achievement scores (50). N Gain of 0.4 is classified as effective. Online learning video production skill with mean posttest score 72 is increased from the mean score of pretest 50 with N-Gain of 0.44 which is classified as effective in increasing teachers' online skills, and the lowest score in the implementation of Google classroom, form, slide, and video is 70 increased from pretest by 50 with an N-gain of 0.4, which is effective. Overall, online teacher learning skills increased from a mean score of 55 (pretest) to 78 (posttest) with an N-Gain of 0.56, classified as effective. It means that online learning mentoring training effectively improves the skills of teachers' online teaching.

Discussion
The science teachers' desire to take part in online learning training is due to online learning that is facilitated by the instructor communicatively and applicatively, the teachers' encouragement through challenges with questions, equal opportunities to express ideas, and the teachers' curiosity in applying
information, skills. The availability of practical guidebooks and slides PPT is structured, systematic, and training videos so that training materials are easily understood and practiced are also needed. The instructor endeavors through positive verbal, attitude, atmosphere, and pleasant encouragement. It is the most crucial factor to increase learning motivation [12], [13] states that the strongest predictors of academic success include: 1) The facilitator must provide positive verbal inspiration to support the independence of the participants; 2) The instructor must show a positive attitude that helps motivate participants to practice, 3) Activities that are relevant to cognitive involvement in online learning settings. It academically will be able to motivate participants (teachers) to practice.

These effectively motivate in the form of teachers' encouragement and needs through online learning training. There is an encouragement to practice from the participants because it requires online learning skills, classroom making skills, how it works efficiently to apply. Following the needs and feeling proud of the skills achieved can make virtual classroom learning, useful in increasing motivation, teacher skills in online learning. Motivation to learn increases because there are needs and challenges, encouragement to be met in the online learning process [14];[15].

The teacher hopes that the acquired skills can be utilized in the online learning process as alternative learning in the current COVID-19 period. The teacher is diligent in following the skill activities that are trained and are optimistic in completing assignments because these activities are relevant to the needs and targets of the teacher's online learning skill achievement targets. Improving teacher motivation to take part in training is an alternative form of positive impact from the strategy, a more comprehensive training model [3]; [16].

This training allows teachers to participate and apply skills according to the target of training achievements, and the results (teacher modeling learning videos) are assessed and commented on input and praise by the instructor team both individually and in the classroom. Hence, participants compete to produce fast, and quality online learning videos, so received praise from other participants and the instructor. Training motivation also plays an important role directly affecting the performance of online learning in the quality of the appearance of the teacher's online learning settings. Teachers' online teaching skills and displays that are low in impact on less effectively motivate student learning [22].

Interestingly this training is facilitated in a fun and easy to understand way. This training, starting from pretest to reflection and at the end of the activity, was given a posttest to the training participants. Presentation of interesting exercises online with guidance delivered systematically, directed, and interspersed with instructor stimulus comments with examples and light jokes. The trainee (teacher) participates in full awareness and sincerity from her/himself because of various Google Classrooms, Google forms, slides, and video skills. Skills in processing information using manuals and YouTube videos encourage self-learning practices [17].

The training framework, including ICT literacy with pedagogies, proves to be very useful, attracts interest, increases the desires of participants, combined with interesting pedagogical methods, effective but rich in training experience, and involves participants, and the attractiveness of practice. Sun and [18] suggest that effective online learning depends on 1) curriculum design about content, instructor and student interaction, 2) creation of a sense of online learning community, 3) rapid technological advancements such as device fascism computers, internet network servers, support effective strategies for successful online teaching. The atmosphere of e-learning will force participants to play a more active role in their learning. Students make the design and search for material with effort, and their initiatives strengthen the learning model through enriching content and developing educational technology [19]. According to the results of research by [20] that facilities, instructors, communities, access, fast and quality network speed facilities so that there are not many distractions. Besides, the readiness of e-learning/hybrid or web-based learning design for prospective teachers and lecturers. [3] add that it is necessary to consider the literacy competencies of students in online teaching.

From the description above, overall, online learning mentoring learning is effective in increasing the motivation of students' online teaching. This online learning training provides the strength of practical PPT slide instruction guides with clear and compelling learning videos and precise, straightforward, and relevant statements. Integration in its application is stated as interrelated: 1)
online concept theory with application, 2) guiding questions from mentors lead to curiosity and interest 3) has relevant application concepts with online learning COVID-19 with 4) objectives, training benefits according to expectations and needs of the teachers, namely improving teachers’ online learning skills, specifically through Google classroom, Google forms and integrating with slides, PPT, and videos in the learning process. The condition of the training is effective in increasing the skills of the trainees (teachers). It means the implementation of training following the targets/achievements of this training that is increasing motivation and online teaching skills to teachers (trainees).

4. Conclusion
Online learning mentoring training for teachers effectively increases the science teachers' online learning motivation and skills during the COVID-19 period in Pekanbaru.

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