

Research article

Transformation of Learning Input Factors in the New Normal Era Post-COVID-19

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ORCIDIstikomah Istikomah: <https://orcid.org/0000-0001-5665-5813>**Abstract.**

Learning systems comprise three main components – input, process, and output. With the COVID-19 pandemic touching all areas of human life, there is a need to adapt to new, innovative alternatives, including in the field of education. This study examined the literature related to input factors in learning in the new normal era of the post-COVID-19 pandemic. A systematic literature review was carried out by documenting and reviewing articles using the keywords “learning” and “the COVID-19 pandemic” published during the 2020–2021 period. The articles used were 17 accredited national and international journal articles accessed from Scopus, lens.org, Springer, Science Direct, Scimago, and SINTA. According to the findings of this study, the transition to online learning in the post-COVID-19 era requires: (i) the transformation of the curriculum to suit the current emergency conditions; (ii) the transformation of teacher competencies by improving skills, especially in mastering digital technology; (iii) the transformation of learning media by using applications or platforms that are more varied; and (iv) building facilities (information and communication technology) and infrastructure (Internet access) to support effective online learning across the nation.

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1. Introduction

Learning is a collaborative process where teachers and students work together to achieve predetermined learning goals. The learning components consist of raw, instrumental, environmental, and other inputs. To improve the quality of learning, the components that affect the learning process must be considered, one of which is the instrumental input component. According to [1], instrumental input consists of curriculum, teaching materials, teachers, facilities, and infrastructure. Instrumental input is an important factor in achieving the desired learning outcomes (outputs). Now, instrumental input has undergone a significant change and has an essential effect on the achievement of learning outcomes during the COVID-19 pandemic [2]. This is due to the policy of limiting learning activities during the COVID-19 pandemic.

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The current COVID-19 outbreak has had a tremendous impact on all lines of human life, including education. Several attempts have been attempted to prevent the COVID-19 virus from spreading. Many countries have opted to close all educational institutions, from pre-school to college, for the time being. This regulation was implemented to prevent the COVID-19 virus from spreading. The general public is recommended to keep their distance, limit activities that might produce crowds, and avoid large-scale gatherings.

Since the establishment of the COVID-19 outbreak as a pandemic, the whole world has been preparing for a new normal life. The word new normal was initially used in the field of economics. However, after the COVID-19 pandemic, the health sector faces significant challenges in overcoming the need for new services and protecting health workers as the front line of the pandemic [3]. Along with strict social restrictions public health measures such as the lockdown rules, it is hoped that significant changes will occur to prevent the transmission of COVID-19. In the declining phase of the pandemic, many countries and health authorities are looking for alternative ways to adapt to new conditions, especially those related to the risk of COVID-19 transmission and requests for non-covid services. This new contextual situation is called the new normal era [4]. This new normal life can be interpreted as a life usually lived but with a new pattern, a new lifestyle related to the application of health protocols. Adaptation to the new normal is also carried out in educational institutions by organizing learning in this new normal era with online learning.

Online distance learning is nothing new for students, and neither is distance learning. However, COVID-19 reignited the need to explore online teaching and learning opportunities [5]. The existence of the COVID-19 pandemic has made online learning the safest choice. The learning components previously designed for traditional face-to-face learning must now be changed to suit the conditions. As essential elements in learning, teachers and educators are required to make an unprecedented large-scale migration from traditional face-to-face education to distance education (online) [6]. According to [7], during the school lockdown period, teachers made adjustments to the design of teaching and learning based on the policies implemented by the institution. Redesigning and adapting a lesson to a new condition is essential because learning is a continuous process, so designing learning needs to be done once. It is essential to see the need to adapt learning in the new normal era. Current conditions are urgent for innovation and adaptation related to available technology to support the learning process [8].

Based on the description above, we conducted a literature review on the transformation of learning input factors in the new normal era after the Covid-19 pandemic using the

SLR (Systematic Literature Review) method. This study explores learning input factors that focus on instrumental input in the new normal era after the COVID-19 pandemic.

This study aims to determine the instrumental transformation of learning inputs in the new normal era after the COVID-19 pandemic. Furthermore, it investigates adaptations and innovations in transforming of instrumental inputs to prepare to learn in the new normal era after the COVID-19 pandemic. Thus, the research question in this study is the first, namely, what is the instrumental component of learning input during the new normal after the COVID-19 pandemic?. Second, how are adaptations and innovations in transforming of instrumental inputs for learning preparation during the new normal after the COVID-19 pandemic?

2. Research Methodology

The SLR (Systematic Literature Review) method is used in the study. The stages of writing are identification, screening, eligibility, inclusion, and analysis of the available articles in the systematics of writing. By conducting content analysis and then systematizing the results, researchers collected all articles depending on data sources. The publications included in this study are from national and international journals that have been accredited. Scopus, Lens.org, Springer, Science Direct, Scimago, SINTA, and manual collection via Google Scholar were among the researchers' seven primary online data sources. These procedures allow for various database accesses and data availability, notably in the case of "Instrumental Learning Inputs." To obtain the latest literature and more accurate information, researchers collected material from articles spanning the last two years, from 2020 to 2021. The method adopted in the systematic review is depicted in the prism in Figure 1.

The research methodology includes the following stages:

1. Stage 1 (Identification): 1531 results were found in the Scopus database, 1357 results in the Lens.org database, 196 results in the Education and Information Technologies journal in the Springer database, and 79 in the Science Direct database. All article searches were conducted using the keywords: "COVID-19" and "learning or education."

2. Stage 2 (Extension): After the initial screening, the article was irrelevant because it was out of scope or context. Next, we conducted more stringent filtering using keyword snippets to identify articles relevant to our research; we combined the truncated words explicitly using the following set:

- Set 1: learning AND covid-19;
- Set 2: learning AND curriculum;

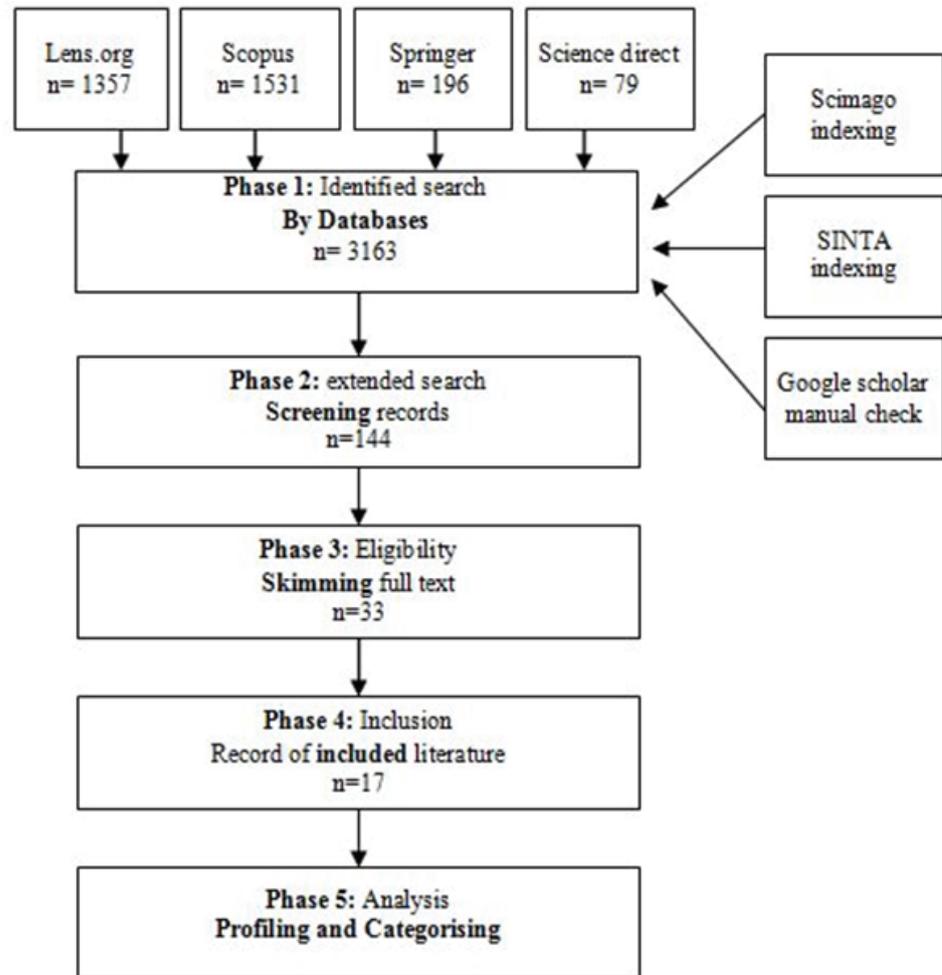


Figure 1: Systematic Review Prisma

- Set 3: learning AND teacher competence;
- Set 4: learning AND learning media;
- Set 5: learning AND facilities and infrastructure;

3. Stage 3 (Eligibility): Eligibility results obtained 114 articles by analyzing the abstract from the document. Only relevant studies are retained.

4. Phase 4 (Inclusion): All remaining articles (33) are now recorded in a structured and systematic format. The articles have been read, and a final weeding process removed all but 17 articles.

5. Phase 5 (Tables analysis): Profiling Tables were created for 17 sources deemed relevant to the research topic and stored for detailed analysis.

This stage is carried out to decide whether the data found are suitable for use in SLR research or not. The study deserves to be selected if there are criteria, as shown in Table 1.

TABLE 1: Inclusion and exclusion criteria.

Type of criterion	Criteria	Inclusion	Exclusion
Type of publication	Journal articles	v	
	Prosiding conference	v	
	Books		v
	Reports		v
Access	Online	v	
	Paper		v
Publication period	2018-2021	v	
Place of publication	Worldwide	v	
Research methods	Qualitative	v	
	Quantitative	v	
	R&D	v	
	SLR	v	

The search results will be selected based on inclusion and exclusion criteria. The following process leaves 17 journals and then scans the data. Table 2 shows the quality assessment results to show whether the data was used or not in this study.

3. Finding

In Table 1, the inclusion and exclusion criteria were determined. It aims to decide whether the data found are suitable for use in SLR research or not. Articles are eligible for selection if there are criteria as journal articles and proceedings with a range of 2020-2021. The selected articles are Scopus (Scimago), and SINTA indexed journals. There is also the clarity of methods in the selected articles, namely qualitative, quantitative, mixed qualitative and quantitative, R&D, and SLR. This process resulted in 17 articles.

Of the 17 articles used in this study, it was found that the research locations were spread across several countries. Table 3 shows that the research affiliation comes from Indonesia (9 articles), the cooperation of the United States and Japan (1 article). Furthermore, the research locations are also in America, England, Turkey, the Netherlands, Norway, Pakistan, and India, with 1 article each.

Curriculum, teacher competence, learning media, facilities, and infrastructure were identified to be four components of instrumental input in learning during the new normal, according to an in-depth analysis of the 17 articles. There is a curriculum transformation (n = 5, 20%) in articles [9], [10], [11], [12], and [13], as shown in Table 3. Furthermore, in

TABLE 2: Grouping by journal based on indexing.

No.	Journal	Reputable journal		Others (Filter Manual)	
		International Scimago Index (Q1,Q2,Q3,Q4)	National Sinta Index (S1,S2,S3,S4,S5,S6)	Lens.org	Google Scholar (GS)
1	International Journal of Educational Research	Q1	-	-	v
2	International Journal of Educational Research Open	-	-	-	v
3	Education and Information Technologies	Q1	-	-	v
4	Prospects	Q1	-	-	v
5	Jurnal Kajian Penelitian dan Pendidikan dan Pembelajaran	-	S3	v	v
6	Australasian Journal of Educational Technology	Q1	-	-	v
7	Jurnal Pendidikan Agama Islam	-	S2	v	v
8	Jurnal Riset Ekonomi dan Bisnis	-	S1	v	v
9	Educational Technology Research and Development	Q1	-	-	v
10	Teaching and Teacher Education	Q1	-	-	v
11	Jurnal Iqra' : Kajian Ilmu Pendidikan	-	S2	v	v
12	Jurnal Bioedukatika	-	S2	v	v
13	TADRIS: Jurnal Pendidikan Islam	-	S2	-	v
14	Jurnal Pendidikan IPA Indonesia	Q2	S1	v	v
15	Procedia Computer Science	-	-	-	v
16	TP-Jurnal Teknologi Pendidikan	-	S2	v	v
17	JPUD - Jurnal Pendidikan Usia Dini	-	S2	v	v

articles [9], [12], [14], [15], [16], [17], [18], [19], [20], [21], [22], and [23], the transformation of teacher competence (n = 12, 48%) was identified. While articles [17], [18], [21], [24], and [25] discussed the transformation of instructional media (n=5, 20 %). The remaining component, facilities and infrastructure (n=3, 12 %), is represented by articles [10], [17], and [23].

TABLE 3: Results of research on the instrumental transformation of learning inputs in the new normal era.

Code	Author (Year)	Journal	Title	Context	Method	Result	QA
[9]	Aslan, Seda Akti Turgut, Yigit Emrah Aslan, Alper (2021)	Education and Information Technologies	Teachers' views related the middle school curriculum for distance education during the COVID-19 pandemic	Turkey	Qualitative research	Teachers must transform face-to-face curriculum into the online curriculum.	A, B
[10]	Gul, Rani Khilji, Gulab (2021)	Prospects	Exploring the need for a responsive school curriculum to cope with the Covid-19 pandemic in Pakistan	Balochistan, Pakistan	Qualitative research	Responsive curriculum, a curriculum that will meet the intellectual needs of students in an emergency such as the current pandemic. The support system in distance learning must provide internet facilities. Redesign of curriculum for emergency situations.	A, D
[11]	Hadiana, Mohamad Eri Octiana, Erlita (2021)	Jurnal Kajian Penelitian dan Pendidikan dan Pembelajaran	Pengembangan Kurikulum Darurat Covid-19 (model dan media pembelajaran pada masa pandemi covid-19)	Bandung, Indonesia	SLR	The emergency curriculum has high flexibility and provides space for educational institutions at large in developing the curriculum structure up to the evaluation stage. The models used during this pandemic are e-learning, blended learning, and home visits. The learning media used depends on the needs of teachers and students, such as Zoom, WhatsApp, and other media that can support online (online) learning.	A, C
[12]	Jonker, Herma März, Virginie Voogt, Joke (2020)	Australasian Journal of Educational Technology	Curriculum flexibility in a blended curriculum	Amsterdam, Netherlands	Qualitative research	Implement flexible curriculum in blended learning. Attitudes, skills, innovations, teachers influence the implementation of flexible curriculum. Barriers to flexible curriculum: limited teacher innovation time, Regulations from schools, are considered to have a negative impact on curriculum accessibility.	A, B
[13]	Nursyahidin, Rahmad Rohman, Arif Febriyanti, Novi (2021)	Jurnal Pendidikan Agama Islam	Learning Innovation of Islamic Education in Covid-19 Pandemic	Yogyakarta, Indonesia	Qualitative research, literature study	Several innovations in education have emerged as new breakthroughs so that they are not monotonous and conventional by implementing project-based learning, online methods, offline methods, integrated curriculum, and blended learning.	A

TABLE 1: Table (continued).

Code	Author (Year)	Journal	Title	Context	Method	Result	QA
[14]	Sudrajat, Jajat (2020)	Jurnal Riset Ekonomi dan Bisnis	Kompetensi Guru Di Masa Pandemi Covid-19	Indonesia	Qualitative research	It is necessary to develop teacher competence in classroom management, communication, and social skills to reduce problems in online learning.	B
[15]	Abaci, Serdar Robertson, Judy Linklater, Holly McNeill, Fiona (2021)	Educational Technology Research and Development	Supporting school teachers' rapid engagement with online education	UK	Qualitative research	Teachers need skills in distance learning that are appropriate for emergencies. It takes the commitment of teachers in a professional learning system related to teaching that is relevant to online learning.	B
[16]	Møller-Skau, Marie Lindstøl, Fride (2021)	Teaching and Teacher Education	Arts-based teaching and learning in teacher education: "Crystallising" student teachers' learning outcomes through a systematic literature review	Norway	Systematic literature review	Teacher education requires more knowledge. Arts-based teaching and learning in Teacher education.	B
[17]	Fauzi, Irfan Sastra Khusuma, Iman Hermawan (2020)	Jurnal Iqra' : Kajian Ilmu Pendidikan	Teachers Elementary School in Online Learning of COVID-19 Pandemic Conditions	Banten and West Java, Indonesia	Quantitative research	The teacher modifies material from various sources and the content that is often created is audio-visual. The availability of supporting facilities in online learning greatly affects the success of online learning. The teacher modifies teaching materials from various sources to be given to students. Teaching materials using the e-learning platform. WhatsApp, Zoom, Google Form, Google Classroom Edmodo, Youtube, Learning House, Cisco, Teacher Room, Skype.	B, C, D
[18]	Suganda, Handi Riandi, Riandi Purwianingsih, Widi (2021)	Jurnal Bioedukatika	TPACK perception analysis of teachers in facing 21st-century learning	Bandung, Indonesia	Quantitative research	Teachers can use appropriate technology. Teacher experience influences the use of learning strategies.	B

TABLE 1: Table (continued).

Code	Author (Year)	Journal	Title	Context	Method	Result	QA
[19]	Istikomah Churahman, Taufik Akbar Romadlon, Dzulfikar (2020)	TADRIS: Jurnal Pendidikan Islam	Problematika Wali Murid Sekolah Muhammadiyah Dalam Mendampingi Belajar Daring di Masa Pandemi Covid-19 (Studi di Kabupaten Sidoarjo)	Sidoarjo, Indonesia	Quantitative research study cases	Teacher training to prepare teachers for online learning.	B
[20]	Yustina Syafii, W. Vebrianto, R. (2020)	Jurnal Pendidikan IPA Indonesia	The effects of blended learning and project-based learning on pre-service biology teachers' creative thinking skills through online learning in the COVID-19 pandemic	Riau, Indonesia	Qualitative, quasi-experimental research	The application of blended learning and project-based learning is quite influential in improving the creative thinking ability of biology teachers and is more effective than conventional learning.	B
[21]	Mishra, Lokanath Gupta, Tushar Shree, Abha (2020)	International Journal of Educational Research Open	Online teaching-learning in higher education during lockdown period of COVID-19 pandemic	Mizoram, India	Quantitative and qualitative research	Teachers prepare e-learning materials according to the syllabus. Teachers take online classes. Teacher recorded video then shared to WhatsApp group. WhatsApp, zoom, google streaming, Teachers are given MZU-LMS training.	B, C
[22]	Zimmer, Wendi K. McTigue, Erin M. Matsuda, Noboru (2021)	International Journal of Educational Research	Development and validation of the teachers' digital learning identity survey	Texas, USA	Quantitative Research	Teachers: Background, experience, grade level, subject area affect learning and teaching practices, including digital learning.	B
[24]	Barry, Dana M. Kanematsu, Hideyuki Ogawa, Nobuyuki McGrath, Paul (2021)	Procedia Computer Science	Technologies for teaching during a pandemic	USA and Japan	-	Popular platforms including Zoom, Microsoft Teams, Blackboard use Google My Maps to design virtual trips for students	C
[25]	Jusuf, H Ibrahim, N Suparman, A (2021)	TP-Jurnal Teknologi Pendidikan	Development of Virtual Learning Environment Using Canvas To Facilitate Online Learning	Jakarta, Indonesia	Research and Development	The virtual learning environment (VLE) utilizes the Canvas application as an effort to develop learning that contains pre-test questions, material explanations, post-test questions, and programs that can be used by students to practice independently.	C

TABLE 1: Table (continued).

Code	Author (Year)	Journal	Title	Context	Method	Result	QA
[23]	Muhdi Nurkolis Yuliejantiningasih, Yovitha (2020)	JPUD - Jurnal Pendidikan Usia Dini	The Implementation of Online Learning in Early Childhood Education During the Covid-19 Pandemic	Central Java, Indonesia	Qualitative research	Facilities and infrastructure such as internet access are very important in online learning The teacher's residence area affects the ability to handle online learning	D,B

Description of the results of the quality assessment (QA): A : Curriculum, B : Teacher, C : Learning media, D : Facilities

4. Discussion

4.1. New Normal

When dealing with the COVID-19 pandemic situation, WHO (World Health Organization) recommends limiting activities to reduce the spread of COVID-19. However, to start and revive the social and economic sector, people can continue their daily activities while maintaining social distance and personal hygiene [26]. These new system practices and adaptations in response to the pandemic status are called the new normal [4]. Meanwhile, through its spokesman for the handling of COVID-19 Achmad Yurianto, the Indonesian government defined the new normal as a new order to adapt to COVID-19. The community must maintain productivity during the COVID-19 coronavirus pandemic with a new order called the new normal.

With the rules in the new normal era, the daily habits that exist in society have also changed. The COVID-19 pandemic has also forced significant social changes in the world of education. For example, the change in the education system from offline learning to online learning [27]. Teaching and learning activities that are usually carried out face-to-face, where teachers and students are physically present in classrooms, are now changing, being replaced by learning activities through electronic media (e-learning) either directly (synchronously) or asynchronously (indirectly).). In distance learning (online), students are usually involved in asynchronous, synchronous, or a mixture of both, and these interaction methods of online learning are often classified as synchronous or asynchronous [28]. E-learning Learning in the new normal is a must, and it is necessary because learning must adapt to a condition that all people and institutions must face at a specific time. Distance learning has been used in affluent countries for decades, but with the COVID-19 epidemic, it is getting traction as a way to make educational opportunities more accessible to a broader population [29].

4.2. Transformation

According to the Big Indonesian Dictionary (KBBI), transformation means change. For example, the transformation of learning media means changes in the use of the learning media itself. All elements of education, including schools, teachers, and students, are forced to transform and adapt to new habits, namely learning through online media from home and learning using internet technology [30]. The transformation in the learning system in this new normal is touching on the curriculum, teacher competence, facilities and infrastructure, and learning media. The transformation that occurs in the instrumental input can be explained as follows:

4.2.1. Transformation of curriculum

The curriculum is everything that describes the school's appearance, from planning, the teaching and learning process, to the evaluation of activities. The COVID-19 pandemic has forced the learning system to adapt and look for forms of innovation to process teaching and learning activities effectively. Learning innovation is needed to bridge the barriers to face-to-face learning towards online learning. In the new normal after COVID-19, changing the face-to-face curriculum to an online one is necessary [9]. The curriculum applied includes a responsive curriculum, namely a curriculum that will meet the intellectual needs of students in an emergency such as the current pandemic [10]. The emergency curriculum has high flexibility and provides broad space for educational institutions in developing the curriculum structure up to the evaluation stage [11]. Implementing a flexible curriculum, namely a curriculum that adapts to conditions, especially in its implementation. A flexible curriculum is applied in blended learning [12]. Innovation in education is needed as a breakthrough by implementing project-based learning, online methods, offline methods, integrated curriculum, and blended learning. After the COVID-19 pandemic, schools need to adapt to transformations as a new breakthrough in implementing the post-COVID-19 curriculum so that it is not monotonous and conventional [13].

Blended learning strategies can be an alternative and applied by educators and students by utilizing technology. The blended learning strategy uses two approaches, namely online and face-to-face [31]. Blended learning is a blending or combination of learning between face-to-face and online in a harmonious and ideal manner. Blended learning provides an overview of an opportunity that integrates online learning's innovation and benefit with face-to-face learning's interaction and participation of teachers

and students [32]. Using a blended learning model using the Moodle application during the new normal during the COVID-19 pandemic is effective and can be used as an online-based learning solution for students [33].

Project-based learning may be an alternative in this new normal. Students are given the job of creating a project related to the subjects they are studying. Learners are taught to learn independently at specific times and are held accountable for the given activities [20]. According to the study's findings [34], project-based Hybrid learning is an alternative learning method relevant to 21st-century demands since it can enhance students' learning motivation.

In addition to project-based learning (Project-Based learning), another alternative is modifying the problem-based learning model (Problem Based Learning). The study results [35] showed that the modification of the problem-based learning model (Problem Based Learning) increased the quality of the learning process.

4.2.2. Transformation of teacher competence

Teachers as educators and instructors must provide the best performance because teachers are one of the primary keys to successful learning. It takes a professional teacher commitment to learning systems that are relevant to online learning [15]. Teachers have an essential role in transforming learning from face-to-face to online learning [9]. Teachers play a role and influence in applying flexible curricula used in online learning [12]. Therefore, it is necessary to develop teacher competence in virtual communication and social classroom management skills to reduce problems that arise in online learning [14]. This is because students who are constantly at home and minimally socialized will quickly feel bored, so teachers are required to maintain student motivation and independence in learning [36].

Teachers may take courses about preparing for online learning [19] and necessary learning skills for emergencies [15]. Teachers are given training in Learning Management systems [21]. Teachers need more knowledge, especially about mastering digital technology [16], one of which teachers must be able to use appropriate technology [18]. Teachers need this training to improve competence in online learning because not all teachers are proficient and master technology and are also unfamiliar with online learning [36].

The teacher modifies teaching materials and materials from various sources and content in the form of audio-visual [17]. The teacher's experience influences the use of learning strategies [18]. The application of blended and project-based learning is

quite influential in improving teachers' creative thinking skills and is more effective than conventional learning [20]. The background, experience, level of education, and area where the teacher lives affect learning and teaching, including digital learning [22]. The area where the teacher lives affect the ability to control online learning [23].

In the new normal after COVID-19, a teacher's creativity is an essential factor. The presence of technology becomes a tool in teaching and learning, whereas the instructor himself is the spirit in the process. With their efforts already, teachers can use a variety of exciting and sophisticated application platforms to manage to learn. Teachers must be able to innovate in their teaching and learning processes, and one way to do so is to use the SAMR model. Educational Technology SAMR model stands for Substitution, Augmentation, Modification, and Redefinition represented as a four-level taxonomy [37]. In the new normal, this model can describe the influence of technology on teaching and learning activities. Still, according to [37], learning activities in the category of substitution and augmentation function to improve learning, while learning activities that fall into the category of modification and redefinition result from transforming learning. The ability of teachers to use SAMR technology can change the level from a lower level of teaching to a higher level because such a shift can lead to a transformation of teaching and learning.

4.2.3. Transformation of Learning Media

In this time of the COVID-19 pandemic, digital media is a necessity. The use of digital media helps in the online learning process. The digital media used depends on the needs of teachers and students, such as zoom [17], [22], [24], WhatsApp [17], [21], google classroom, google form, youtube, edmodo, study house, cisco, teacher's room, skype [17], google streaming [21], google My Map [24], and canvas applications as an effort to develop learning that contains pre-test questions, material explanations, post-test questions, and programs that can be used by students to practice independently [25].

4.2.4. Transformation of facilities and infrastructure

Facilities and infrastructure are supporting learning in schools and supporting the learning process. These infrastructure facilities will make it easier for teachers to carry out the learning process in the classroom and can help students in understanding the learning material presented by the teacher. According to [2], the management of facilities and infrastructure can also affect learning outcomes because if the facilities and markets

are appropriately managed, it will create a conducive learning environment for students to support them to get better learning outcomes. In the new normal of COVID-19, the transformation of facilities and infrastructure is to complete the availability of information and communication technology facilities as facilities or devices that significantly affect the success of online learning [17]. Internet access is essential in online learning [10], [23]. Learning during the COVID-19 pandemic will not run effectively due to the limited supporting facilities owned by schools and students [38].

5. Conclusion

Based on the results of the SLR research on 17 articles related to learning input factors (instrumental input) during the new normal after the COVID-19 pandemic, it shows a transformation in learning. The learning process seems more dynamic than before the COVID-19 pandemic. This research can be concluded that there is a transformation with adaptation and innovation in the following components: first, the face-to-face curriculum adapts to an emergency online curriculum, namely a curriculum that is responsive, adaptive, flexible, and innovative. Second, teachers must also improve the ability to adapt and innovate to become committed and professional teachers in online learning, have virtual classroom management skills, improve social communication skills, emergency skills, LMS (learning management system) skills, digital technology skills, appropriate technology skills. Use, and modify teaching materials to make them more attractive. Third, the learning media used are increasingly diverse, namely online applications such as zoom, WhatsApp, google classroom, google form, youtube, edmodo, study house, cisco, teacher's room, skype, google streaming, google My Maps, and canvas applications. Fourth, in the new normal after the COVID-19 pandemic, the availability of facilities and infrastructure, such as digital technology and internet access, is an essential component for successful and effective online learning.

Several studies have shown that teacher competence and curriculum are most needed to transform readiness for learning in schools in the new normal era after the COVID-19 pandemic. Facilities (information and communication technology) and infrastructure (internet access) are essential components in preparing online learning to run effectively in the new normal era after the COVID-19 pandemic.

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References

- [1] Nurfauziyah A, Mahmud R. Pengaruh instrumental input terhadap hasil belajar siswa. *Economic Education Analysis Jurnal*. 2018;2(1):18–23.
- [2] Setyowati NAD, Hariyati N. Analisis faktor instrumental input pada keefektifan manajemen pembelajaran pada masa. *Jurnal Inspirasi Manajemen Pendidikan*. 2021;9:265–280.
- [3] Cook TM. Personal protective equipment during the coronavirus disease (COVID) 2019 pandemic – A narrative review. *Anaesthesia*. 2020;75(7):920–927. <https://doi.org/10.1111/anae.15071>
- [4] Pathirathna R, Adikari PS, Kumarawansa W, Balasooriya D, Senavirathna M. New normal context in health care settings after Covid-19 pandemic: A narrative literature review. *Recent Advances in Biology and Medicine*. 2021;7(1):1–8. <https://doi.org/10.18639/rabm.2021.1237255>
- [5] Almaiah MA, Al-Khasawneh A, Althunibat A. Exploring the critical challenges and factors influencing the e-learning system usage during COVID-19 pandemic. *Education and Information Technologies*. 2020;25(6):5261–5280. <https://doi.org/10.1007/s10639-020-10219-y>
- [6] Bao W. COVID 19 and online teaching in higher education: A case study of Peking University. *Human Behavior and Emerging Technologies*. 2020;2(2):113–115. <https://doi.org/10.1002/hbe2.191>
- [7] Dayagbil FT, Palompon DR, Garcia LL, Olvido MJ. Teaching and learning continuity amid and beyond the pandemic. *Frontiers Education*. 2021;6:1–12. <https://doi.org/10.3389/educ.2021.678692>
- [8] Ahmed S, Shehata M, Hassanien M. Emerging faculty needs for enhancing student engagement on a virtual platform. *MedEdPublish*. 2020;9(1):1-10 <https://doi.org/10.15694/mep.2020.000075.1>
- [9] Aslan SA, Turgut YE, Aslan A. Teachers' views related the middle school curriculum for distance education during the COVID-19 pandemic. *Education and Information Technologies*. 2021;26(6):7381–7405. <https://doi.org/10.1007/s10639-021-10587-z>

- [10] Gul R, Khilji G. Exploring the need for a responsive school curriculum to cope with the Covid-19 pandemic in Pakistan. *Prospects*. 2021;51(1–3):503–522. <https://doi.org/10.1007/s11125-020-09540-8>
- [11] Hadiana ME, Octiana E. Pengembangan kurikulum darurat Covid-19 (model dan media pembelajaran pada masa pandemi Covid-19). *National Jurnal Kajian Penelitian dan Pendidikan. dan Pembelajaran*. 2021;6(1):1-9
- [12] Jonker H, März V, Voogt J. Curriculum flexibility in a blended curriculum. *Australian Journal of Education Technology*. 2020;36(1):68–84. <https://doi.org/10.14742/ajet.4926>
- [13] Nursyahidin R, Rohman A, Febriyanti N. Learning innovation of Islamic education in Covid-19 pandemic. *Jurnal Pendidikan Agama Islam*. 2021;18(1):145–166. <https://doi.org/10.14421/jpai.2021.181-08>
- [14] Sudrajat J. Kompetensi guru di masa pandemi Covid-19. *Jurnal Risiko Ekonomi dan Bisnis*. 2020;13(2):100. <https://doi.org/10.26623/jreb.v13i2.2434>
- [15] Abaci S, Robertson J, Linklater H, McNeill F. Supporting school teachers' rapid engagement with online education. *Education Technologies Research Development*. 2021;69(1):29–34. <https://doi.org/10.1007/s11423-020-09839-5>
- [16] Møller-Skau M, Lindstøl F. Arts-based teaching and learning in teacher education: 'Crystallising' student teachers' learning outcomes through a systematic literature review. *Teaching and Teacher Education*. 2022;109:103545. <https://doi.org/10.1016/j.tate.2021.103545>
- [17] Fauzi I, Khusuma HIS. Teachers' elementary school in online learning of Covid-19 pandemic conditions. *Jurnal Iqra' Kajian Ilmu Pendidikan*. 2020;5(1):58–70. <https://doi.org/10.25217/ji.v5i1.914>
- [18] Suganda H, Riandi R, Purwianingsih W. TPACK perception analysis of teachers in facing 21st-century learning. *Jurnal Bioedukatika*. 2021;9(2):93-100. <https://doi.org/10.26555/bioedukatika.v9i2.17788>
- [19] Istikomah, Churahman T, Romadlon DA. Problematika wali murid sekolah muhammadiyah dalam mendampingi belajar daring di masa pandemi Covid-19 (studi di kabupaten sidoarjo). *TADRIS Jurnal Pendidikan Islam*. 2020;15(2):195–209. <https://doi.org/10.19105/tjpi.v15i2.3813>
- [20] Yustina, Syafii W, Vebrianto R. The effects of blended learning and project-based learning on pre-service biology teachers' creative thinking skills through online learning in the COVID-19 pandemic. *Jurnal Pendidikan IPA Indonesia*. 2020;9(3):408–420. <https://doi.org/10.15294/jpii.v9i3.24706>

- [21] Mishra L, Gupta T, Shree A. Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Jurnal Education Research. Open.* 2020;1(Jun):100012.1-13 <https://doi.org/10.1016/j.ijedro.2020.100012>
- [22] Zimmer WK, McTigue EM, Matsuda N. Development and validation of the teachers' digital learning identity survey. *International Jurnal Education Research.* 2021;105:101717. <https://doi.org/10.1016/j.ijer.2020.101717>
- [23] Muhdi N, Yuliejantiningasih Y. The implementation of online learning in early childhood education during the Covid-19 pandemic. *JPUUD - Jurnal Pendidikan Usia Dini.* 2020;14(2):247–261. <https://doi.org/10.21009/jpud.142.04>
- [24] Barry DM, Kanematsu H, Ogawa N, McGrath P. Technologies for teaching during a pandemic. *Procedia Computer Science.* 2021;192:1583–1590. <https://doi.org/10.1016/j.procs.2021.08.162>
- [25] Jusuf H, Ibrahim N, Suparman A. Development of virtual learning environment using canvas to facilitate online learning. *JTP-Jurnal Teknologi.* 2021;23(2):153–168.
- [26] Jamaludin S, Azmir NA, Ayob AFM, Zainal N. COVID-19 exit strategy: Transitioning towards a new normal. *Annals of Medicine and Surgery.* 2020;59:165–170. <https://doi.org/10.1016/j.amsu.2020.09.046>
- [27] Rohati E, Anshori I, Hazin M. Online learning during the Covid-19 pandemic from the perspective of Parsons' structural functional theory. *Alhikam Jurnal Multidiscipliner Islamic Education.* 2021;2. <https://doi.org/10.5897/err2021.4169>
- [28] Shoepe TC, McManus JF, August SE, Mattos NL, Vollucci RC, Sparks PR. Instructor prompts and student engagement in synchronous online nutrition classes. *American Journal of Distance Education.* 2020;34(3):194–210. <https://doi.org/10.1080/08923647.2020.1726166>
- [29] Lin X, Gao L. Students' sense of community and perspectives of taking synchronous and asynchronous online courses. *Asian Jurnal Distance Education.* 2020;15(1):169–179. <https://doi.org/10.5281/zenodo.3881614>
- [30] Salsabila UH, Melania A, Jannah AM, Arni IH, Fatwa B. Peralihan transformasi media pembelajaran dari luring ke daring dalam pendidikan agama Islam. *Al-Muaddib Jurnal Ilmu-Ilmu Sosial Keislaman.* 2020;5(2):198–216. <https://doi.org/10.31604/muaddib.v5i2.198-216>
- [31] Widyasari R, Humaira MA, Aliyyah RR, Gaffar AA, Rachmadtullah R. Preliminary study on the development of blended learning (BLM) model: Based on needs analysis and learning independence. *Journal of Physics: Conference Series.* 2019;1175(1). 1-12. <https://doi.org/10.1088/1742-6596/1175/1/012207>

- [32] Bokolo A et al. A managerial perspective on institutions' administration readiness to diffuse blended learning in higher education: Concept and evidence. *Jurnal Research Technology Education*. 2020;52(1):37–64. <https://doi.org/10.1080/15391523.2019.1675203>
- [33] Subandowo M, Humaira MA, Aliyyah RR, Rachmadtullah R, Samsudin A, Nurtanto M. Use of blended learning with moodle: Study effectiveness in elementary school teacher education students during the Covid-19 pandemic kedisiplinan dalam manajemen kelas view project use of blended learning with moodle: Study effectiveness in elementary SC. *International Journal of Advanced Science and Technology*. 2020;29(7):3272–3277.
- [34] Rahardjanto A, Husamah, Fauzi A. Hybrid-PjBL: Learning outcomes, creative thinking skills, and learning motivation of preservice teacher. *International Journal of Instruction*. 2019;12(2):179–192. <https://doi.org/10.29333/iji.2019.12212a>
- [35] Anshori I. Problem-based learning remodelling using Islamic values integration and sociological research in madrasas. *International Journal of Instruction*. 2021;14(2):421–442. <https://doi.org/10.29333/iji.2021.14224a>
- [36] Anshori I, Illiyyin Z. Dampak Covid-19 terhadap proses pembelajaran di mts al-asyhar bungah gresik. *Islamic Management: Jurnal Manajemen Pendidikan Islam*. 3(2)2020. 1-9 <https://doi.org/10.30868/im.v3i02.803>
- [37] Wang T, Towey D, Ng RY, Gill AS. Towards post-pandemic transformative teaching and learning. *SN Computer Science*. 2021;2(4). 1-7. <https://doi.org/10.1007/s42979-021-00663-z>
- [38] Widagdo W, Anshori I. Curriculum implementation during Covid-19. *Nidhomul HAQ Jurnal Manajemen Pendidikan Islam*. 5(3)2010;72-79 <https://doi.org/10.31538/ndh.v5i3.1085>