

THE 21ST-CENTURY OF LEARNING CALLS FOR THE 21ST-CENTURY PEDAGOGY

Maximus Gorky Sembiring

Universitas Terbuka (INDONESIA)

Abstract

This inquiry deliberates and investigates the implementation of online learning after the outbreak of the Covid-19 pandemic in Indonesia settings. Arguments on this issue are important given the rise of various complaints about online learning operations, from March – December 2020. Complaints originate from teachers, students, parents, and education stakeholders. Therefore, this study aims to scrutinize and discover the factors that potentially cause those complaints. Additionally, this study elaborates and introduces solutions exclusively by looking for transformative pedagogy so that online is as effective as offline learning. The outcomes are expected to procreate basic ideas as a bridge to anticipate and mitigate the potential for prolonged complaints at the operational level. The emphasis is also expected to minimize complaints in the operational and social domains. Methodically, this study utilizes a qualitative approach. It is a modification of the integrative literature review (ILR) and comprehensive literature review (CLR) procedures. Having amalgamated the two approaches, this study establishes six steps in the form of routine activities. The routine starts with designing, implementing, summarizing, analyzing, validating, and writing a report. Under this approach, the synthesis process is semi-structured and implemented analytically, critically, in-depth, and broadly. These steps are executed by systematically reviewing related previous studies to assemble new theories. After going through a process procedurally, this study constructs the main outcome with three supporting arguments. The *main outcome* is to generate ideas on applicable transformative pedagogic in online learning. This transformative pedagogy is then referred to as the so-called Maxiagogy. The arguments that support the outset of Maxiagogy refer to five basic conceptions: the revolution of online learning models, the evolution of pedagogy in online learning, the differences between online learning versus emergency remote teaching, and the system operations of online learning. The theory on expounding educational experiences is also included. This experience is used as a basis to ensure that the effectiveness of online and offline learning is relatively comparable as long as the educational experience exists. Maxiagogy, the proposed pedagogy in online learning, becomes relevant as a transformative pedagogy. For, Maxiagogy positions students at the center of the learning process by giving them full autonomy in the learning process. Students can also openly obtain learning resources since the reason for them to study is to be of benefit to the universe. Maxiagogy then considers students' drive to learn so that they become more self-motivated and self-determined. This is a response to the demands and styles of millennial learners. Additionally, it was acknowledged that the role of educators will be reduced to the details that can be automated by applications. The idea of Maxiagogy is still in its infancy. Further studies with a wider theoretical and methodological spectrum need to be conducted. The results of a further comprehensive study will mitigate the complications of online learning implementation at the operational and social levels.

Keywords: Revolution of online learning model, pedagogy evolution, online learning system, educational experience, ILR-CLR

1 INTRODUCTION

Shift after shift endures continuously occurring. From the Industrial Revolution 1.0 up to now and we then call it Industry 4.0 (Schwab, 2016). Soon after that, now the times shifted again to Industry 5.0 (Rossi, 2018). At this point, two keywords emerge, digitalization and disruption. These two issues leave one thing certain: **Uncertainty!** This is the essence of a shift that occurs randomly and unpredictably from industrial and technological perspectives.

Before arriving in this era, we were also surprised by globalization. Even today, this globalization is referred to as Globalization 2.0 as expressed by Vielmetter and Sell (2014). Globalization brings up openness and at the same time competition. Those who survive in this era are those who present in such a way that every time they appear they will always get better, newer, faster, simpler, and easier (Sembiring, Rahayu & Sembiring, 2021).

Only with these two driving factors, the world order in almost all aspects of life must be rearranged. Re-adjusted, so as not to run over time. Some ways of thinking and patterns of action and even old behavior are no longer appropriate to be applied in this disruption era. This phenomenon certainly disturbs the education sector as well.

At the end of 2019 and entering 2020, a global pandemic called the Covid-19 pandemic suddenly appeared. The new order that has been attempted to materialize due to the impetus of globalization and the industrial revolution has not sat down. The Covid-19 pandemic was then unexpectedly shaken. Activities previously carried out "normally" must suddenly be carried out in the "new normal" mode.

This phenomenon penetrates the world of education, especially at the implementation level, i.e., the learning process (Sembiring, 2022b). Education, apart from having to keep up with the demands of the times, must at the same time adapt to the direct effects of the pandemic. At first learning face-to-face, for example, shifts suddenly to virtual mode. In the current term, previously offline learning suddenly had to learn online (Sembiring, 2022a). Not only studying from home but even working and praying from home as well.

At the beginning of this shift, in the learning process, many complaints arose. Learning that is initially offline, must be carried out online. Complaints don't just come from teachers and students. Parents and education stakeholders also dispatched complaints (Sembiring, 2021b).

Having observed previous related analyses, it identified potential factors why complaints appeared. Among other things, the unpreparedness of teachers and students to learn online since

there has been no previous adequate experience. What is more, parents must have never imagined playing a role of a "teacher" as the learning process is carried out from home. There are also complaints about the unavailability of infrastructure; this is actually quite important to support the learning process. Online learning should be supported by the latest information and communication technology-based media.

Various complaints due to the shift from offline to online learning can be grouped into three main categories. They are in the area of conceptual, operational, and social (Sembiring, 2021b). Conceptual complaints related to the philosophy and theory of learning. Operational complaints related to the system and service delivery. Social complaints related to cultural stuttering. Most communities did not realize that whatever the mode of learning is, the basis is always student independence (teachers and the school system should also do so).

Considering that many features can be used to investigate why these complaints appear, we will take them from the upstream first. Note first that the complaint is conceptual. This step is expected to reduce operational and social complications afterward. At the conceptual level, it is even still quite broad to be investigated. For simplicity, we focus on the pedagogical aspect (Sembiring, 2021a). This means that 21st-century education (learning) essentially calls for 21st-century pedagogy. Now, what is meant by 21st-century pedagogy in this context?

As a result of having to learn from home, the only choice for learning is online (Belawati, 2019). Pedagogy has existed and has even evolved (Anderson & Dron, 2011). Basic question: Is the pedagogy "definitely" following the current and future modes of online learning?

Based on the previous depiction, this study, therefore, aims to explore, investigate, elaborate and introduce the transformative pedagogy of online learning. The results are expected to bring up basic ideas as a link to anticipate and mitigate the potential for prolonged complaints in the operationalization of online learning. In the end, this idea is expected to reduce complaints in the operational and social scopes.

To make all this possible, we look at three basic conceptions plus one discourse on efforts to realize an educational experience. First, it refers to the revolution in online learning models (Taylor, 2001; McTee, 2011). Second, the evolution of pedagogy and its relation to online learning (Anderson & Dron, 2011). Third, the system and operations of online learning services (Sembiring, 2020). Fourth, conceptual and operational differences in emergency remote teaching versus online learning (Whittle, Tiwari, Yan & Williams, 2020; Hodges, Moore, Lockee, Trust &

Bond, 2020). The last refers to the concept of realizing an education (learning) experience through the presence of cognitive, teaching, and social presence of students (Garrison, 2009).

2 RESEARCH DESIGN

The study utilizes a qualitative approach, i.e., a modification of the five steps of the Integrative Literature Review (ILR) and seven steps of the Comprehensive Literature Review (CLR). They are a valid all-inclusive review, consisting of a systematic and scientifically designed review of a defined literature base. It employs the rigor of original research to limit outcome bias. Methodically, the processes and procedures finally utilized in this study are better understood by perceiving a modified ILR and CLR approach illustrated in Figure 1.

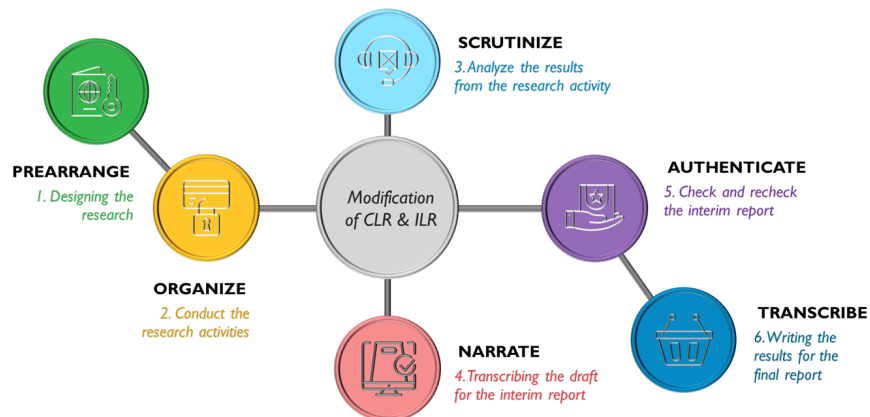


Figure 1. A Modified ILR and CLR Techniques

The first type of research considered and elaborated on ILR, library research introduced by Onwuegbuzie and Frels (2015) and Williams (2018). The process follows five steps, i.e., design, conduct, analysis, structuring, and writing a report. It was related to a semi-structured review aiming at assessing, criticizing, and synthesizing the literature on the related.

The second type of research referred to and particularized was CLR. It is literature research introduced by Whitemore and Knafl (2005) and Snyder (2019). The process follows seven steps approach. It includes defining the scope, planning the approach, searching the strategy for efficiency, managing the literature, reading-analyzing, benchmarking from other comparable works of literature, and assembling-writing the results. Those steps are followed to assess, criticize, and synthesize related literature, enabling new-fangled and applicable theoretical frameworks and perspectives to emerge methodically.

Although this study uses modified ILR and CLR, it does not mean that there are no other approaches as a supplement. Focus group discussions (FGD) are inserted and conducted in certain

stages. In this FGD, reconfirmations were made regarding the focus and sub-focus of the study that should be considered for follow-up. The follow-up to the FGD was intended to ensure that the focus cited remained relevant to the literature review executed.

3 FINDINGS AND DISCUSSIONS

Based on the symptoms and objectives described previously, the theoretical inquiries carried out refer to five main spheres. First, related to the revolution in online learning models. Second, it relates to the evolution of online learning pedagogy. Third, related to the general practice of implementing online learning, Fourth, referring to online learning systems and operations. Finally, we pay attention to the concept of realizing an educational experience.

Related to the five theoretical studies mentioned above, it is symptomatic that the learning process referred to as online learning is actually an empirically emergency remote teaching (Whittle, Tiwari, Yan & Williams, 2020). The four studies mentioned earlier are the basis for showing how the implementation of online learning is well-organized so as not to fall into the trap of emergency remote teaching (Hodges, Moore, Lockee, Trust & Bond, 2020).

3.1 The Revolution of the Online Learning Model

There have been discussions and elaborations made to explain the revolution of the online learning model (Taylor, 2001; McTee, 2011, Belawati, 2019; Sembiring, 2021a; Sembiring, 2021b). The essence of the discussions accentuated that the online learning model has now reached the Fifth Generation (Figure 2). It is referred to as the so-called Intelligent Flexible Learning Model. Along the way, the Fifth Generation has been reliable as a substitute for offline learning to be online with a relatively equal level of effectiveness.

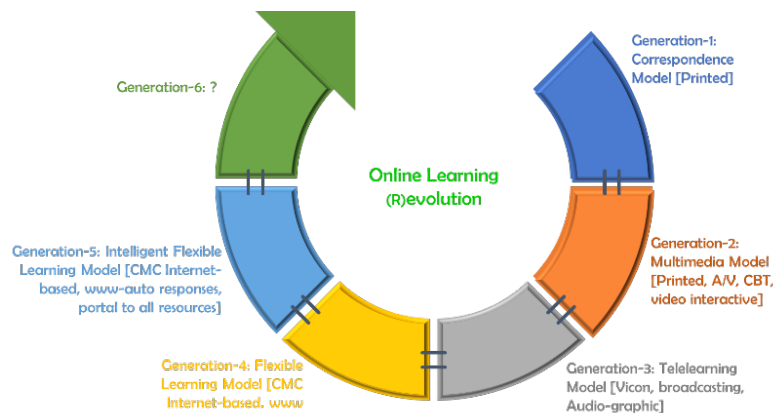


Figure 2. The Revolution of the Online Learning Model

The Fifth Generation has already taken advantage of the existence of computer-mediated communication (CMC). What is important and prominent in this generation, the model is already Internet-based, www-auto-responses, and a portal system for all the necessary learning resources. From the facilities that follow, it seems this model is close to perfection because there is real interaction, as it can be done synchronously.

Communication by computer media makes the learning system (even without face-to-face meetings) become integrated as two-way communication is available. Multidirectional and synchronous communication and interaction also take place. Nowadays, everyone is familiar with the CMC. Every day people send messages via various applications such as chat. Some connect through online forums to other social media where we connect with individuals from various backgrounds. Also able to connect even if you are from and in various regions around the world without limits. Not to mention the various types and variations of chat applications that allow everyone to exchange information quickly, actively, and intensely.

This situation makes this Generation superior to the previous generations. Why? Because the interaction can be multi-directional and occur synchronously. It is also possible to keep active continuous communication because the available devices are supportive. In addition, the entire learning process is well documented.

The online learning revolution has moved in such a way in five generations. However, it still needs improvement. That's not to say that the Fifth Generation model doesn't support it optimally. However, due to the fast-changing times, it must be improved to be balanced. Many concepts have changed. We must of new developments following changes, otherwise educational goals not be achieved. Or it could even come back, which causes problems that eventually pile up so that it becomes a burden for educators and students.

The application of an appropriate online learning model, on the one hand, will make online learning as effective as offline. On the other hand, in order not to fall into the trap of emergency remote teaching, online learning must also be subject to appropriate pedagogical choices and implementation. It is also necessary to make anticipatory efforts, "maybe" soon there will also be a "Sixth Generation" online learning model. The following describes the evolution of online learning pedagogy.

3.2 Evolution of Online Learning Pedagogy

Each learning process has its design associated with the existing theory. The same is true for distance learning, which was later called online learning. Pedagogics in online learning have also evolved (Anderson & Dron, 2011).

In the early stages, the approach applied refers to the cognitive concept of behaviorism. In practice, the approach implemented is more teacher-oriented. It was highly influenced by educators' ways, styles, and teaching strategies. At first, the learning reaction was in the self and not in the attitude or ability. Limited only to the behavioral aspect. Only then developed a view that began to include aspects of one's motivation, attitude, and mentality. Thus learning in terms of the concept of cognitive-behaviorism exists in educators who design learning. At the beginning of this concept, the existence of supporting technology is still very limited.

The changing times will always be followed by technological developments. Likewise, the evolution of the online learning generation has also evolved to constructivism. Where there are two-way communication support devices. In that way, the learning process becomes more dynamic as it facilitates teacher and student interactions despite it doesn't take place in the same space and time. Interaction can take place synchronously and/or asynchronously.

Entering 2000, the connectivity approach emerged. This concept, as a third-generation pedagogy of online learning, is relatively new. What is more, it is associated with today's technological era. the dissemination of information is so rapid with more sophisticated communication devices connected in a global network. In this situation, the learning process takes place outside the learner but focuses on social networks. Learning in the sense of the generation of connectivism focuses on creating and maintaining networked connections so that they always follow the development of the situation flexibly. It can be applied at any time according to the needs of each in terms of solving the problems encountered.

Just like the revolution that occurred in the online learning model, which is certain to bring up to the next generation, in terms of pedagogy the same process also happened. This means that it is necessary to open up the possibility of the need to conduct a study of pedagogy that is thought to be suitable for online learning according to the demands of 21st-century learning.

3.3 Online Learning Systems and Operations

The basic system of education can be broadly illustrated in two ways. Namely the face-to-face education (offline) and the distance education system (online). What will be elaborated at this level is related to the distance education system (online learning). And, a more elaborative one is described later related to online learning. The discussion will be directed specifically into the context of online learning. So far, the online learning system is considered a breakthrough because it can penetrate the constraints of space and time (Suparman, 2020). To simplify, it can be understood by perceiving Figure 3.

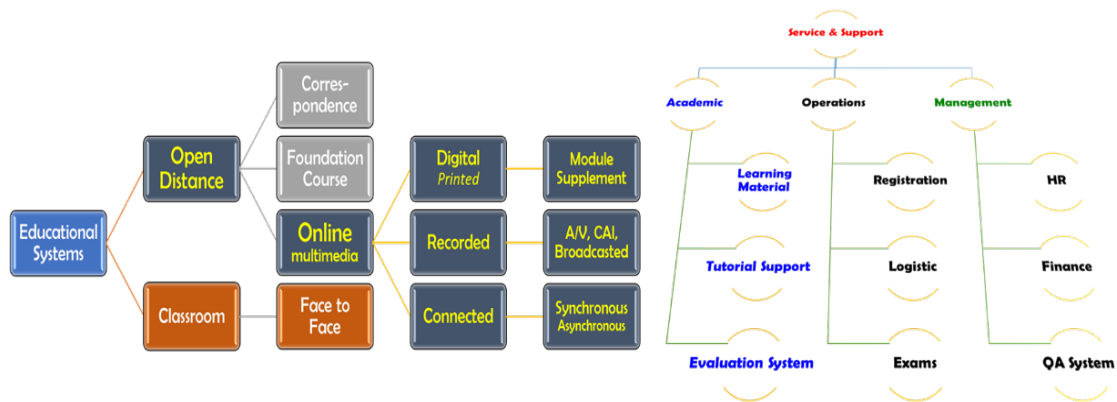


Figure 3. Online Learning Systems and Operations

An online learning system that can penetrate the constraints of space and time takes maximum benefit from ICT-based multimedia existence. Online learning with a multimedia-based system provides services and access in written, recorded, and connected forms. Modules and supplements are examples of materials provided in written form. Products in the packaging of audio/video programs and computer-assisted instruction are examples that were developed and provided in recorded form. Interactive interactions delivered via the internet, e.g., teleconferencing, are examples of connected categories (Sembiring, 2020).

This concept is suitable to be applied in current and future conditions. Of course, by meeting the prerequisites set so that it can be implemented effectively. It is also equipped with a digitally available multimedia package accompanied by modular printed materials. There are also teaching materials in the form of recordings in audio/video format. Including broadcasts via radio/TV. Learning material in this digital format is one-way because there are no interaction features available for its users. However, it can also be bidirectional, even multidirectional. This means that features are provided so that interaction activities can occur and are multi-directional.

The conceptual previous review illustrates that as long as the conceptual and operational rules are applied correctly, the effectiveness of online learning will not be different from offline learning. That is, by complying with standard conceptual and operational prerequisites, the implementation of online learning will not fall into the trap of emergency distance learning (Hodges, Moore, Lockee, Trust & Bond, 2020). Next, it will be explained what is meant and the differentiating factors associated with emergency remote teaching.

3.4 Online Learning versus Emergency Remote Teaching

So far, especially in the March – December 2020 period, many parties have stated that the learning carried out during the pandemic is online learning. Is that so? It is not entirely so. What happened was the practice of emergency remote teaching following the classification of Whittle, Tiwari, Yan, and Williams (2020). One of the analytical differences between online learning and emergency remote teaching is the issue of pedagogy. In emergency remote teaching, the application of pedagogy is merely following institutional force majeure. While online learning refers to pedagogic-based learning (Hodges, Moore, Lockee, Trust & Bond, 2020). The differentiating factors of online versus emergency remote teaching will be well understood by perceiving Figure 4.

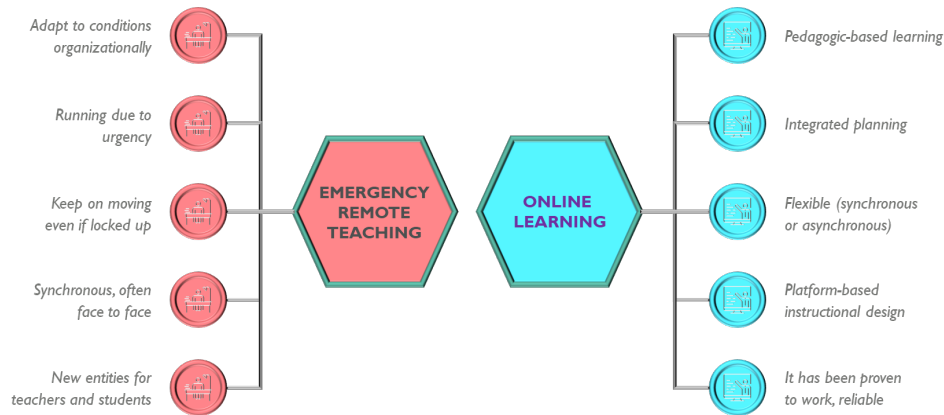


Figure 4. Differences between Online Learning and Emergency Remote Teaching

Correspondingly, online learning is principally designed and planned in an integrated manner. While emergency remote teaching, it takes place on an urgent basis. Online learning is generally flexible and can take place synchronously/asynchronously. While emergency remote teaching must take place even though the lockdown is in place. Online learning follows the principles that apply according to the rules of instructional design. It is based on a reliable platform. While emergency remote teaching is mostly synchronous with the dominant face-to-face proportion.

Lastly, but most importantly, online learning has a well-established theoretical basis and has proven to be effective. Meanwhile, emergency remote teaching is still considered unfamiliar not only to students but also to teachers.

From the description related to emergency remote teaching, we have a conceptual and operational basis for "sniffing" what learning practices happened during the early days of the pandemic. A description of the educational experience (Garrison, 2009), will then provide more ability to pursue online which is relatively as effective as offline learning.

3.5 Educational Experience

Conceptually, the educational experience is accomplished if the presence of cognitive, teaching, and social have appeared simultaneously. Social presence, according to Sembiring (2021a; 2021b), can be separated into social-emotional and physical/personal student presence. Creating a learning experience through efforts to expound students' cognitive, teaching, social, and physical presence is the theoretical answer to avoid the trap of emergency remote teaching. In simple terms, it is easier to understand by scrutinizing the illustrations presented in Figure 5.

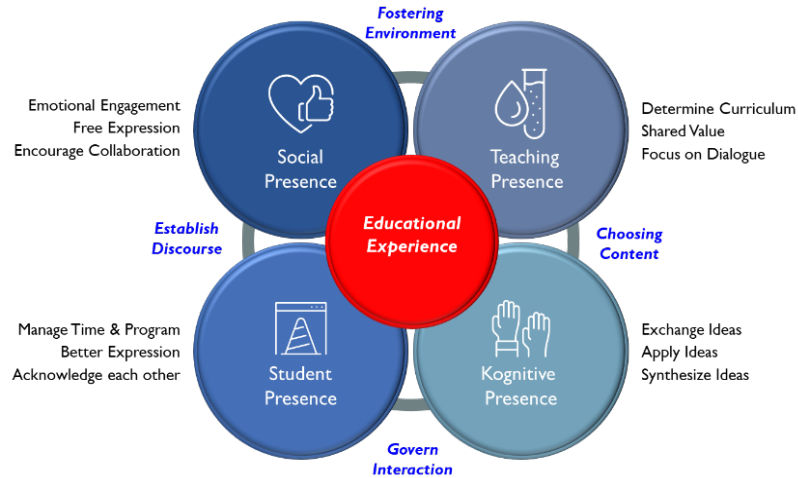


Figure 5. Realizing Educational Experience

The four presences can be pursued through various activities. For example, realizing teaching and cognitive presence can be done by selecting content according to learning objectives. Realizing the presence of cognitive and students is pursued by managing interactions. Realizing student and social-emotional presence is pursued by building a supportive learning environment. Realizing a socio-emotional and teaching presence is pursued by building a conducive learning environment for effective learning.

The five previous elaborations are used as a basis for finding breakthroughs, building pedagogies that are following the demands of online learning as well as supporting the 21st-century of learning. The results of this study are expected as a breakthrough in finding transformative pedagogy in terms of models and online learning systems accordingly.

3.6 Transformative Pedagogy of Online Learning

After progressing scientifically and methodically, this study obtained one main result with three supporting arguments. The main findings related to the transformative pedagogy of online learning. In the process, online learning pedagogy moves evolutionarily to respond to developments according to the needs and demands of online learning for the 21st-century era.

The series of evolutionary movements of pedagogy, andragogy to heutagogy have been well received. What's more in the context of offline learning. In line with that, in its interaction which is seen from the "ism" that follows it, the evolution of pedagogy also moves from cognitive-behavioralism, and constructivism to connectivism (Anderson & Dron, 2011).

The leap in technological development occurs rapidly and tremendously and is coupled with the acceleration of the implementation of online learning due to the Covid-19 pandemic. As a result, the three evolutions of pedagogy and existing patterns of interaction are deemed inadequate to suit the demands of the 21st-century of learning. So, what steps should be taken?

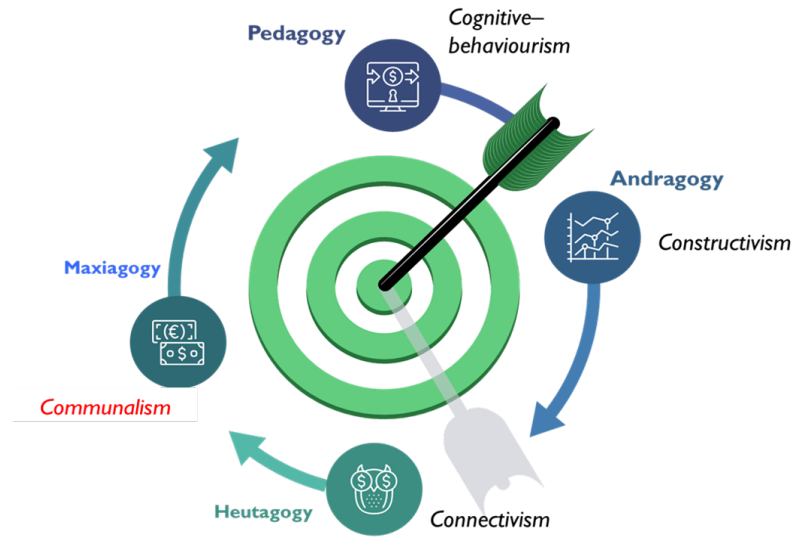
It is necessary to study and initiate a transformative pedagogy that can fill the gap that potentially occurs. The gap is simple. Namely, responding to the shifting demands of the 21st-century of learning as introduced by Sembiring (2021b). They are systematically and simply summarized in Table 1.

Table 1. Pedagogical Evolution for the 21st Century Learning

	Pedagogy <i>Children Learning</i>	Andragogy <i>Adults Learning</i>	Heutagogy <i>Self-Directed Learning</i>	Maxiagogy <i>Fully-Autonomous Learning</i>
Dependence	Learner is dependent. Teacher determines on what, how and when to learn.	Adults are independent. They strive for autonomy and self-direction in learning	Learners are interdependent. They identify the potential to learn from novel experiences and manage their own learning	Fully autonomous
Resource of Learning	Learner has few resources. Teacher devises transmission to store knowledge to learner's head	Adults use their own experiences and other's experiences	Teacher provides some resources but the learner decides the path by negotiating the learning	The Universe
Reasons for Learning	Learn to advance to the next level	Adult learns when they experience a need to know or to perform more effectively	Learning is not necessarily linear and , planned, but on the potential to learn in the novel situation	Humans who are infinitely useful for the universe
Focus of Learning	Learning is subject centred, focused in prescribed curriculum and planned sequences according to the logic of subject matter	Adult learning is a task or problem oriented	Learner can go beyond problem solving by enabling pro-activity using their experiences (reflection, interaction with others)	Joyful, in accordance with the development of civilization
Motivation	Motivation come from external sources	Motivation stems from internal sources. The increased self-esteem and recognition come from performance	Self-efficacy and knowing how to learn, creativity, ability to use this qualities in novel and familiar situation and working with others	Self-esteem Self-determined
Role of the Teachers	Designs the learning process, imposes materials, is assumed to know best	Enabler or facilitator, climate of collaboration, respect and openness	Develop learner's capability (How to learn, high self-efficacy, work with others)	Very specific

Table 1 exhibits that now and in the future, the existence of the existing pedagogy must also develop. The development shifted from the aspect of student independence, resource of learning, responses and focus for learning, motivation, and role of the teachers. Therefore, the "ism" that follows and is contained in it, also shifts. Therefore, transformative pedagogy and appropriate “isms” are needed, especially in online learning contexts.

In the beginning, we know pedagogy which goes hand in hand with cognitive-behaviorism. Over time, it also shifted to andragogy in line with constructivism. In turn, heutagogy was born along with connectivism. This shift can be understood by perceiving Figure 6.



Gambar 6. The Evolution of Pedagogy Leads to Maxiagogy

The fundamental question is, why and what are the driving factors that transformative pedagogy is needed according to the demands of 21st-century learning?

Let us consider three supplementary notions as an argument for “why 21st-century education calls for 21st-century pedagogy?”

First, the online learning model revolution has now reached the Fifth Generation. This latest generation is called the Flexible Intelligent Learning Model. This generation is already based on computer-mediated communication. In addition, it also includes integrated auto-response and access to all web-based portals. When compared with the previous generation, which refers to connectivism, it then pedagogically is adequate. In addition, this Fifth Generation has more sophistication that demands adjustment of conception in terms of learning, especially in the pedagogical aspect.

Second, operational systems and online learning services are also moving in a more complex direction. The progress that occurs relies on the development of information and communication technology supports. The use of appropriate technology is intended to bridge the gap due to the shift in learning modes, from offline to online. Mediation is carried out by utilizing the latest ICT-based learning media. The progress of this movement must take into account the existence of educational technology, especially the existence of instructional design. Thus, the shift from offline to online learning, with the help of appropriate learning media, will not create a gap in terms of learning outcomes and effectiveness.

Third, the existence and use of the Fifth Generation and the online learning operational system are believed can create a learning experience. If a learning experience materializes, whether learning is conducted offline or online, it does not make any difference. Offline and online modes are equally effective when learning is present and occurs. The learning experience is realized if the cognitive, teaching, emotional and physical presence of students are in the same moment as well as in the same space.

Based on the three main arguments above, it is believed that 21st-century learning does call for 21st-century pedagogy. The 21st-century pedagogy, in accordance and in line with the demands of modern online learning requires Maxiagogy. Communalism-based Maxiagogy is expected to be a transformative pedagogy. Through Maxiagogy, it is expected that the gap in the effectiveness of offline and online learning can be scientifically and technically anticipated and mitigated.

4 CONCLUDING REMARKS

The shift from offline to online learning requires a pedagogical insert so that the effectiveness of learning does not indicate a difference. This breakthrough is expected to be a panacea to reduce the gap in learning effectiveness due to the use of different modes. Through a transformative pedagogical idea, known as Maxiagogy, complaints that arise can be anticipated and conceptually countered. If followed by more tactical steps at the operational level, it is hoped that all parties (teachers, students, and schools) are already in the same dimension, namely in a fully online learning mode.

Given the fact that the idea of Maxiagogy is still at an early stage. Further studies are encouragingly needed. Follow-up studies with theoretical studies and methodologies that are more complete and integrated will provide a way for education stakeholders to generate comprehensive ideas. Through conducting studies on synergistic and continuous activities, the potential complaints of online learning operations can be progressively anticipated.

Education and the learning process still need an integrated and continuous effort so that the implications of the shift from offline to online learning can be seized. In the future, the trend toward learning will undeniably lead to online. Therefore, synergistic efforts are needed so that the conceptual, operational, and social implications of shifting learning modes can be apprehended. It will not decrease the belief that online learning is as effective as offline providing educational precautions, specifically learning experiences, are present.

It is wished that further comparable inquiry will be able to strengthen the idea of Maxiagogy to become a transformative pedagogy of online learning. The existence of transformative pedagogy will be a pillar of detecting and mitigating doubts about the effectiveness of the implementation and results of online learning.

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