

Learning Innovation in Realizing Freedom of Learning

Hendrikus Midun¹, Imelda Sanjung²
{hendrik.m2002@gmail.com}, imeldasanjung@gmail.com}

^{1,2}Universitas Katolik Indonesia Santu Paulus Ruteng, Indonesia

Abstract. Education constantly changes from time to time. Educational change begins with curriculum design and learning. Changes in curriculum design usually depart from learning problems and the demands of the world of work. However, in reality, it did not live up to expectations. Through meta-analysis (literature review), this paper aims to find a rational-analytic relationship between learning innovation and independent learning. An analytical-rational study found that the challenges and problems of implementing innovative learning were operationally manifested in the form of implementing a transdisciplinary curriculum, life-based learning, and independent learning. Adequate resources support the success of its implementation, both students (in the form of changing mindsets, willingness to learn, and being proactive towards change), teachers/lecturers (ability to manage learning, digital literacy, technical skills, flexible and patient attitude), and educational institutions (culture of quality and provision of adequate resources). The abilities and skills of these components at all levels of education need to be further investigated and the results will be the basis for future learning innovations.

Keywords: Innovative learning, curriculum, freedom of learning, transdisciplinary, life-based learning

1 Introduction

Learning innovation has long been introduced in the world of education. Learning innovation is a response to the low quality of education, technological developments, and job demands. The learning innovation movement is getting more robust when the coronavirus outbreak hits the world. In education, the coronavirus storm forced all educational institutions to make learning innovation efforts in the design, implementation, and evaluation of learning. The Minister of Education and Culture of the Republic of Indonesia implements educational innovations through the curriculum of freedom of learning.

This curriculum emphasizes a diverse learning experience. Operationally, the curriculum of freedom of learning is implemented in eight forms (activities): internships or industrial practices, village projects, student exchanges, conducting research under the supervision of lecturers or researchers, entrepreneurship, independent studies/projects, humanitarian projects, and teaching. In schools [1]. The seriousness of the Indonesian government in realizing an independent campus program is shown in several important policies. First, changes to the accreditation system for study programs and higher education through the Regulation of the Minister of Education and Culture of the Republic of Indonesia Number 5 of 2020. Second, an independent campus competition program was launched by providing the most significant budget among many grants ever implemented at the Ministry of Education and Culture of the

Republic of Indonesia. Third, the teaching campus involves many educational personnel education institutions as a pilot program. Fourth, the Indonesian Student Micro-Credential competition program involves lecturers and students on and off campus with online learning. Fifth the recognition of past learning, where higher education institutions formally acknowledge everyone's professional experience through an accurate assessment process.

The application of freedom of learning to study independently coincided with the emergence of Covid-19. Therefore, learning innovation is one way out that every educational institution must do it. Implementing learning innovations is mainly related to using I.C.T. (Information and Communication Technology) in learning, especially computers and the internet [2-3]. After going through a difficult period of education (during the Covid-19 period), educational institutions (have started) to transform the learning system from face-to-face learning to online learning, although its effectiveness depends on the level of readiness of students, teachers, and the availability of resources in schools [4-5].

However, the online learning system that was started (massively) during the Covid-19 pandemic will become a new habit in the future. Therefore, learning innovation

(post-pandemic) using various online learning applications is a necessity in the new normal civilization. This is possible for several reasons. First, the Covid-19 pandemic and similar viruses are still haunting humanity. The use of online media is an essential reference for educational institutions to remain "moved" when a similar outbreak comes. Second, Indonesia is one of the world's most significant cellular phone users. The 2019 Forbes magazine survey revealed that Indonesia ranks first as a mobile phone user country worldwide, followed by China, Thailand, South Korea, and Vietnam. This fact shows that Indonesia has the capacity and opportunity to implement various learning innovations using internet network applications. Third, the global trend of using the internet for various purposes. The coronavirus appears ten years ahead of a consortium of The Communication Promoters Group from the Industry-Science Research Alliance in Germany.

This consortium introduces thousand and three as the era of the industrial revolution 4.0 [6]. The era of the industrial revolution 4.0 places the internet as the centre of economic activity. Forbes Magazine April 7, 2020, edition mentions nine trends that will occur after the Covid-19 pandemic, namely, many interactions are carried out without contact, digital infrastructure will be more robust, better monitoring using the Internet of Things (IoT) and big data, drug development with artificial intelligence, telemedicine (virtual consultation), online shopping will be more widespread, increasing dependence on robots, many events are carried out digitally, and increasing interest in e-sports. In the field of education, the internet not only plays a role in the transfer of knowledge but also becomes an educational system [7]. In this way, educators and educational institutions have developed many internet-assisted learning innovations, both in the form of fully online learning, with various platforms such as Moodle, Google Classroom, Edmodo, etc., as well as hybrid learning, such as Flipped Classroom or Inverted Classroom. With the Flipped Classroom arrangement, online learning has positively contributed to the effectiveness and efficiency of learning [7-8]. The purpose of this study is to reveal the problems of learning innovation in the context of education, both related to curriculum and learning concepts as well as efforts to empower students, teachers and educational institutions to improve the quality of education. Disclosure of this problem will be a recommendation for further analysis and research.

2 Method

This research uses a qualitative descriptive research type with a literature review method. The literature review method is a process of collecting data where the object of research is collected and analyzed through various references in the literature in the form of books, scientific journals, and documents [9]. Following this topic, the literary sources used by the authors are digital libraries in the form of journals, books and guidelines related to independent learning.

Data that are relevant to this topic are read, collected and analyzed. These data were analyzed using deductive and inductive methods. Deductive thinking starts from theories or general ways of thinking, then reduces (by setting aside things that are less important or irrelevant) and formulates conclusions. Furthermore, inductive thinking is a process that links concrete facts and events that are specific, then concludes specific events or things to become general conclusions [10]. Researchers can formulate conclusions and answer these research questions by combining deductive-inductive methods.

3 Results and Discussion

3.1 Curriculum and Learning Concepts

One of the popular expressions in the era of online learning is that learning occurs anytime and anywhere. This fact is made possible by open and continuous internet access through various devices, such as computers, laptops/notebooks, iPods, smartphones, etc., with various learning channels [11]. Because learning can be done anytime and anywhere, the recommended learning approach is a personalized and collaborative learning approach. A personalized learning approach allows each learner to learn from various learning resources uniquely and at his own pace. Meanwhile, a collaborative learning approach is always needed to facilitate the mastery of competencies and skills.

The question is, how is the curriculum designed? The curriculum, as an effort to influence student learning, must align with learning choices, learning interests and the development of science and technology. The curriculum is designed so that students continue to learn anytime, anywhere, from any source, in any way, and at their own pace. Thus, the concept of curriculum and learning is also changing. The curriculum is no longer understood as a collection of subject matter to achieve educational goals. Nor is it just a set of plans (objectives, content, strategies, evaluations) systematically arranged to achieve educational goals. The curriculum must be interpreted as a student learning experience.

To support this concept, the curriculum must be designed to provide the widest opportunity for each student to continue learning until behavior changes, both cognitive, affective, psychomotor, sensorimotor, social and metacognitive behaviour [12]. Furthermore, learning activities are not emphasized on delivering message content from teachers/lecturers to students, but on the process of multi-way educational interaction between students, students and teachers/lecturers, and students with learning resources.

The relationship between curriculum and learning can be analogous to water and a river. Learning is flowing water, and curriculum is a river that lets water flow constantly. Because the curriculum is a river, it has no fixed form. That way, student learning becomes unique, challenging and risky, like water flowing through rocks, sand, garbage, and mud along a river. The task of educators as curriculum designers and implementers is to "clean the river" so that water continues to flow. Operationally, the recommended curriculum for freedom of

learning is a transdisciplinary curriculum and a life-based curriculum. Both of these curricula emphasize open and flexible learning, and the competencies to be achieved are very diverse.

3.2 Transdisciplinary Curriculum

The transdisciplinary curriculum was first introduced by the international organization Baccalaureate in 2010. This curriculum focuses on new issues and perspectives in education, as well as efforts to overcome various problems experienced by the nation. The transdisciplinary curriculum seeks to transfer methods, models, processes or forms of logic from one learning area and apply them to other fields [13-14]. The transdisciplinary curriculum aims to teach students to think multidimensionally and holistically [15]. This is not only done in the classroom, outside the classroom, and in the space of human life. Students who think holistically will have life skills in solving everyday problems, including correct self-concept and understanding traditions and culture [16-17].

Greenstein [18] sees the transdisciplinary curriculum as a balanced mix of knowledge, character, and skill competencies. In skill competency, Greenstein elaborated on four skills: creative thinking, critical thinking, communication, and collaboration. Stehle and Peter-Burton [19] mention three types of skills that every student must possess and develop, namely (1) learning and innovation skills, (b) information, media, and technology skills, and (3) life and career skills. Six indicators demonstrate three main skills: (1) knowledge construction, (2) real-world problem solving, (3) communication skills, (4) collaboration, (5) use of I.C.T. for learning, and (6) self-regulation skills. These skills support each other.

3.3 Life-Based Learning Curriculum

A life-based learning curriculum (L.B.L.) is almost the same as thinking about capability, transdisciplinary, and interprofessional or trans professionalism. The L.B.L. aims to form the competence of students as whole individuals. WHO defines life skills as "a set of psychosocial competencies and interpersonal skills that help people make decisions, solve problems, think critically and creatively, communicate effectively, build healthy relationships, empathize with others, and cope and manage their lives in healthy ways." and productive" [20].

Through the L.B.L. curriculum, students are empowered to become individuals with abilities and talents that develop in an optimal, balanced, and sustainable. Students are taught to have study skills, use technology and information media, and have skills in working and living life [21].

The L.B.L. curriculum is a process of acquiring knowledge and skills in understanding the nature of life, solving life's problems, and living a balanced and harmonious life. This is a contextual-integrative-holistic form of ecological learning between personal, work, family, and leisure time. The L.B.L. curriculum integrates everyday life, work, and learning in any space, situation, and time [21-22]. This means that the L.B.L. curriculum is implemented in a wide space and time, with students learning independently from various sources and experiences.

Thus, the main objectives of L.B.L. are (1) to develop students' abilities and willingness to learn and change; (2) to conduct dynamic and balanced interactions with anyone; (3) to recognize and respect the differences of each individual; (4) making educational institutions as creators of the best environment for the implementation of learning [20]; so that life-based education not only teaches students to remember and understand knowledge but encourage students to use knowledge in everyday life, both for skill development and interaction with

themselves, others, and the natural environment [23].

3.4 Freedom of Learning

The idea of the L.B.L. curriculum aligns with the "*Freedom of Learning*" instruction, where students can learn not only the competencies learned in their study program but also other competencies outside the study program or outside the university. Students carry out learning activities and experiences, apart from educational institutions and other institutions, both public and private, as well as business/community economic units. Freedom of learning aims to encourage the learning process in higher education to be more independent and flexible and to create a learning culture that is innovative, unfettered, and in accordance with student needs [1].

In general, the Ministry of Education and Culture of the Republic of Indonesia [1] emphasizes eight learning activities in independent learning. The eight forms of learning are internship or practice in the industry, the project in the village, student exchange, conducting research under the supervision of lecturers or researchers, entrepreneur, independent study/project, humanitarian projects, dan teaching in schools.

As described above, the concept of curriculum and learning will be successful if human resources support it. First, Students. Students are the first educational component to be the target of innovative learning. Changes in student behaviour are the basis for discovering and implementing innovative learning. Therefore, the success of its implementation depends on students' essential attitude in responding to the innovative learning strategies offered. There are two basic attitudes that every student needs to have in supporting independent learning and innovative learning. The first essential attitude is a change in mindset and willingness to learn. The mindset that individuals have can influence and encourage them to do something. In addition, students willing to learn can try and do something new and achieve high learning achievement. Students with high achievement motivation are shown in several characteristics, such as utilizing study time as effectively as possible, liking to do versatile work, liking challenges, having realistic life principles, being success-oriented, learning from experience, and liking working in teams [24]. Therefore, the success of independent learning and innovative learning, among others, depends on the willingness and commitment of students to learn. This aligns with the approach used in online-based learning, namely the individual learning approach. Through this approach, each student can carry out independent learning activities from various sources. The effectiveness of its implementation depends on the willingness of students to learn. According to Joel [25], the requirements for students who participate in internet-based learning are high motivation to succeed, diligence in learning, happiness to learn, study or reading independently, and love to learn flexibly.

The second essential attitude is to be proactive about change. As well as changing the mindset and willingness to learn, being proactive about change is the basis every student must have in successfully implementing innovative and independent learning. Innovative learning offers many approaches and learning models. Its effectiveness is determined not only by learning managers (educators and educational institutions) but also by the proactive attitude of students in following the steps, procedures, models and innovative learning strategies offered. Being proactive towards change means that individuals like to do new things, are disciplined in following the learning procedures from the learning model, enjoy exploring, diagnosing problems and analyzing them, and have the courage to take risks for learning failure [25-26].

Second, teacher/lecturer. Their attitudes and skills determine the success of innovative learning. Educators' primary skills and basic attitudes are the ability to manage learning,

technical abilities, patient attitude, and flexibility. This essential attitude supports learning tendencies in the 4.0 industrial revolution era, such as different times and places, personalization of learning, free choice, project-based learning, field experience, data interpretation, examinations change completely, learning belongs to the learner and mentoring becomes more important [2, 27]. The first essential attitude that educators must own is the ability to manage to learn. Learning management is a crucial ability educators must have in the digital-internet era. This ability is considered very important because the learning approach used tends to be individual and students' learning preferences are very diverse. This diversity requires proper learning management so that it has a positive impact on every learner; both desired effects and natural effects. Thus, innovative learning management is related to the actual class (face-to-face), the virtual class, and the "living space" class. In this context, an educator must have the ability to empower students optimally. "Empowering" actions include (a) making learning always interactive, both natural and virtual classes and living space classes; (b) optimally utilizing resources (physical, hardware, software) to improve learning interactions; and (c) facilitating student learning in the form of learning aids to guide students to study independently and in groups [8, 28].

The second essential attitude that educators must own is digital literacy. The analysis of education productivity during the Covid-19 pandemic on indicators such as the implementation of spending, credit hours, customer satisfaction, and graduates [34] concluded that education during the pandemic had low productivity values, both quantitatively and qualitatively. Therefore, in the future, digital literacy skills must become a basic skill for every educator. Globally, digital literacy is one of the main skills needed in the 21st century. The decline in the quality of education (even the loss of learning) during the Covid 19 pandemic is partly because many educators have low digital technology literacy. Many online learning practices (during the Covid-19 pandemic) are not following the nature of online learning expressed. Innovative online-based learning will only be effective and efficient if educators have adequate digital literacy. Therefore, empowering educators to improve digital literacy is an urgent need today. Educators can be empowered through training and workshops on understanding and mastering online learning techniques. Thus the practice of online learning (during the pandemic), which causes excessive stress and anxiety experienced by students [29], does not occur. Technical skills must also support literacy skills. Innovative online-based learning, where the media and learning resources used are mostly digital-online, so educators are not only required to master scientific concepts, but also technical skills, how students find and use learning resources efficiently. This ability is also needed when they guide students to find and observe problems, use methodologies to obtain, process and analyze data and make conclusions. This condition supports independent studies/projects and research as part of the learning experience in implementing freedom of learning.

The third ability that educators must have is to be flexible and patient. Implementing a transdisciplinary curriculum, life-based learning, and freedom of learning must be supported by the educator's flexible and patient attitude as the curriculum's primary executor at the instructional level. A flexible attitude helps them learn flexibly, especially in diverse learning conditions (student characteristics [abilities, learning styles and learning experiences, learning talents and interests, and learning challenges], learning resources, and learning media). Flexibility is also understood in terms of time and place for implementing learning. The diverse learning characteristics allow for flexibility in the place and time of learning, strategies, and evaluation of learning. If the curriculum is analogous to a winding river and learning is water flowing in a river (cf. the previous description). The task of the teachers/lecturers is to dredge mud and lift garbage, stones, and sand in the river so that the

water (learning) continues to flow.

These tasks require patience, loyalty, sacrifice, love, and responsibility. The personal ego must be discarded. Because the task of teaching students (educating, teaching and training) is not primarily to fulfil the personal pleasure of a teacher/lecturer but to serve students so that they acquire competence and skills. Even teachers/lecturers are responsible for educating students who are not passionate about life so that they can reinvent themselves [33]. By having a patient and tenacious attitude, educators allow their students to continue to be creative and innovative, as well as being critical of learning resources and learning conditions, including their own teachers.

4. Conclusion

Innovative learning begins with learning conditions, learning problems, science and technology development, and the demands of the world of work. The digital-internet era, which began in the 1990s, was echoed continuously in the 4.0 industrial revolution (in 2010) and was increasingly promoted during and after the Covid-19 pandemic, encouraging educational components to carry out innovative learning. Innovative learning is interpreted as the use of the internet and online media for delivering learning messages and as a learning system itself. As a learning system, the internet, with various platforms, can be used as a source of learning, learning media, and learning interactions. The implementation of innovative learning must begin with changes to the curriculum concept. The concept of the curriculum has yet to be understood as a collection of subjects that students learn. It is also understood as a set of plans systematically arranged to achieve educational goals and as a student learning experience. That way, the implementation of learning emphasizes the process of multidirectional and flexible educational interaction in terms of time, place, method, and assessment.

In Indonesia, curriculum flexibility has begun to be applied to the transdisciplinary curriculum, life-based learning, and freedom of learning. Adequate resources must support the successful implementation of freedom of learning for both students (in the form of changing mindsets, willingness to learn, and being proactive towards change), teachers/lecturers (ability to manage learning, digital literacy, technical skills, flexible and patient attitude), and educational institutions (culture of quality and provision of adequate resources). These concepts need to be analyzed and researched further at all levels of education. The results of this analysis and research become the basis for the development of educational innovation projects and become new habits in the future.

References

- [1] Dirjen Dikti, *Panduan Kompetisi Kampus Merdeka*, Kementerian Pendidikan dan Kebudayaan, 2020.
- [2] P.Setyosari, "Belajar Abad Ke-21 dan Era Revolusi Industri 4.0", In Praherdhiono, H., P.Setyosari, and I.N.S. Degeng (Eds.), *Teori dan Implementasi Teknologi Pendidikan Era Belajar Abad 21 dan Revolusi Industri 4.0*, Malang: CV. Seribu Bintang, pp.17-42, 2019.
- [3] I. Febrianto, H. Kusdiyanti, and C.K.Tsong, "Game-Based Entrepreneurs Learning for Vocational High School Students in Facing 4.0 Industry," *J. Disruptive Learn. Innov. (JODLI)*, vol 2, no. 2, pp. 35-71, 2021.
- [4] S.Jamal, "Analisis Kesiapan Pembelajaran *E-Learning* Saat Pandemi Covid-19 Di SMK

- Negeri 1 Tambelangan,” *J. Nalar Pendidik.*, vol. 8, no. 1, pp.16-22, 2020.
- [5] F.Widyawati, “Pelaksanaan PAK pada SD Di Ruteng, Manggarai Pada Caturwulan Pertama Masa Pandemi Covid-19,” In Midun, H. & Tapung M.M. (Eds.). *Pemberdayaan Sumber Daya Era dan Pasca Pandemi Covid-19*. Malang: Seribu Bintang, pp. 59-82, 2021.
 - [6] E.G.Popkova, Y.V.Ragulina and A.V.Bogoviz, *Industry 4.0: Industrial Revolution of the 21st Century*. Springer International Publishing, 2019.
 - [7] K.Wang and C. Zhu, “MOOC-Based Flipped Learning in Higher Education: Students’ Participation, Experience and Learning Performance,” *Int. J. Educ. Technol. High. Educ.*, vol. 16, pp.1-16, 2019.
 - [8] H. Midun, O. Bule, and W. H. F. Rorimpandey, “The effect of scaffolding on assignment quality and procedural learning achievement,” *J. Educ. Cult. Psychol. Stud.*, vol. 22, pp. 143–157, 2020
 - [9] N.Luh, S. Nuraini, S. Qihua, A.S.Venatius, T.I. Slamet, and P.S., “Distance Learning Strategy in COVID-19,” *Proceeding Int. Webinar Ser. –Educational Revolut. Post Covid Era*, 2020.
 - [10] R.Rahayu, M.Mustaji and B.S. Bachri, “Media Pembelajaran Berbasis Aplikasi Android dalam Meningkatkan Keaksaraan,” *Jurnal Obs. J. Pendidik. Anak Usia Dini*, vol. 6, no. 4, pp.3399–3409, 2022.
 - [11] S.E.Smaldino, L.L. Deborah and D.R.James, *Instructional Technology and Media For Learning*, Jakarta: Kencana Prenada Media Group, 2011.
 - [12] N.Amaliyah, S.Sapriya and E. Maryani, “A trans-disciplinary approach and inquiry-based learning model of social studies,” *World Trans. Eng. Technol. Educ.*, vol.15, no. 2, pp.174-177, 2017.
 - [13] D.Herro and C. Quigley, “Exploring teachers’ perceptions of STEAM teaching through professional development: Implications for teacher educators,” *Prof. Dev. Educ.*, vol.43, no. 3, pp.416-438, 2017.
 - [14] B.Gürkan, “Transdisciplinary Integrated Curriculum: An Analysis of Teacher Experiences through a Design Model within the Framework of IB-PYP,” *Particip. Educ. Res.*, vol. 8, no. 1, pp. 176-199, 2021.
 - [15] C.Broersma, “Is it time to change? Infusing the transdisciplinary approach into social work studies,” *J. Sociol. Soc. Work*, vol. 2, no. 2, pp.145-154, 2014.
 - [16] A.R.D.Kurnia, T.Nusantara, M. Ibrahim and W.Widodo, “Multidisciplinary and Transdisciplinary Design to Teach Problem Solving Skills,” *First Int. Conf. Math. Sci. Educ.*, Vol.218, Published by Atlantis Press), pp. 161-166, 2018.
 - [17] I.Ismail, H. Ali and K.A.U.s, “Factors Affecting Critical And Holistic Thinking In Islamic Education In Indonesia: Self-Concept, System, Tradition, Culture (Literature Review of Islamic Education Management),” *Dinasti Int. J. Manag. Sci.*, vol. 3, no. 3, pp: 407-437, 2022.
 - [18] L. Greenstein, *Assessing 21st Century Skills, Guide to Evaluating and Authentic Learning*, California: Corwin a Sage Company, 2012.
 - [19] S.M. Stehle and E.E.Peter-Burton, ”Developing student 21st Century skills in selected exemplary inclusive STEM high schools,” *Int. J. STEM Educ.*, vol. 6, pp 1-15, 2019.
 - [20] N.N., "WHO: Knowledge Brief: Basic Life Skills Curriculum", Retrieved from (<https://www.unicef.org/azerbaijan/media/1541/file/basic%20life%20skills.pdf>), accessed on August 30 2022.
 - [21] R.Fachrunnisa, U.Fitriyati, H.Susilo, H. Suwono, D.Setiawan, and I.Ibrahim, “Life-Based Learning: Two Trajectories of Students in Biology Education Program,”

- A.I.P. Conf. Proc.*, pp. 1-6, 2020.
- [22] A.Kastur, Mustaji and Y.Riyanto, "Feasibility of Developing Direct Learning Models with a Life Based Learning Approach", *Int. J. Recent Educ. Educ.*, vol. 1, no. 3, pp. 261-270, 2020.
 - [23] S.J.Parnonansia and D.Mustikaningtyas, "Development of Life Skill-Based Learning Instruments:Biotechnology Material in Junior High School", *J. Biol. Biol. Educ.*,, vol. 7, no. 1, pp. 14-21, 2015.
 - [24] A.Riswanto and A.Aryani, "Learning motivation and student achievement: description analysis and relationships both", *Int. J. Couns. Educ.*, vol.2, no.1, pp.42-47, 2017.
 - [25] O.P.Joel, "Learning Environment, Achievement Motivation and Career Decision Making among Gifted Secondary School Students," *American J. Educ. Learn.*, vol. 4, no. 1, pp. 50-61, 2019.
 - [26] S.K.Parker and C.G. Collins, "Taking Stock: Integrating and Differentiating Multiple Proactive Behaviors," *J. Manage.*, vol. 36, pp. 633-662, 2010.
 - [27] R. Kongson, " Ability of Learning Management of Graduate Students According To The S.T.S. Approach," *J. Posit. Sch. Psychol.*, vol. 6, no. 8, pp. 4838-4852, 2022.
 - [28] H. Husin and S. Sawitri, "Covid-19: Tingkat Stres Belajar Anak-Anak Di Daerah Terpencil," *Al-Madrasah J. Ilm. Pendidik. Madrasah Ibtidaiyah*, vol. 5, no. 2, pp. 101-124, 2021.
 - [19] W-yi.C. Rebecca, L.Shui-fong and C.-Y.C. Joanne, "When High Achievers and Low Achievers Work In The Same Group: The Roles of Group Heterogeneity and Processes In Project-Based Learning," *Br. J. Educ. Psychol.*,, vol. 78, pp. 205–221, 2018.
 - [30] R.Kongson, "Ability Of Learning Management Of Graduate Students According The S.T.S. Approach", *J. Posit. Sch. Psychol.*,vol. 6, no. 8, pp. 4838- 4852, 2022.