

Current Study of Nonformal Education Program in the Era of the Industrial Revolution 4.0

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Abstract. The development of information technology encourages the formation of lifestyle, the ability to learn innovation, and the development of technology-oriented life skills education. This condition has an impact on improving the qualifications of non-formal educators both academically and in other competencies. This study aims to produce a theoretical analysis of the development of non-formal education in the era of the Industrial Revolution 4.0 and describe the latest non-formal education programs according to the needs of the Industrial Revolution era 4.0 post-pandemic. This study employed a qualitative approach with a systematic review method. Through this approach, the researcher summarised the primary research result to present a more comprehensive and balanced fact by applying eight stages of systematic review research. Data was collected through a document review process with a data collection tool in the form of a review guideline table. The research analysis used was a meta-aggregation technique. The results show that there has been a paradigm shift in the philosophy of non-formal education, leading to progressive education, which is marked by efforts to improve skills, accompanied by good and literate behaviour. Technological developments encourage changes in non-formal education practices, learning activities, and the substance and output of learning programs. This research presents novel learning models, alternative credentials, and adaptive tactics to effectively tackle the problems and seize the benefits of a future dominated by technology, making it pertinent and optimistic.

Keywords: current studies, community literacy, industrial revolution 4.0, post-pandemic

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INTRODUCTION

Non-formal education is education that existed earlier than the formal education system but over time non-formal education did not seem as popular as formal education. Non-formal education marginalised as an unfamiliar or lower-quality type of education. Even the language used by individuals who engage in it often portrays non-formal education critically, as informal education (Fauziah et al., 2021). In Indonesia, this is reflected in the alignments of policymakers towards non-formal education which increasingly makes the existence of non-formal education fade. In fact, in the most recent case at the beginning the Ministry of Education and Culture organisationally reformed the organisation, which resulted in the elimination of the Directorate for Non-formal Education. Based on this case, it can be seen that some parties implicitly do not know non-formal education and even know about non-formal education and its benefits this nation. After going through an intense dialogue process, in the end, the Directorate which oversees non-formal education held a

Non-,formal education is a type of education in Indonesia that has been recognised by the state and is regulated in the National Education System Law. The definition of non-formal education itself according to Commbis is: "an organised organisedoutside an established formal system - whether operating separately or as an important feature of some broader activity - that is intended to serve identifiable clientele and learning objectives" (Maruyama & Ohta, 2019). Meanwhile, according to the National Education System Law No. 20 of 2003, non-formal education is a path of education outside formal education that can be implemented in a structured and tiered manner.

Non-formal education in Indonesia has a vision: Creating a Lifelong Learning Society related to the mission of non-formal education, to improve the quality of skills, life skills, and professionalism for people who need a platform as an effort for physical and spiritual well-being, by applying the principle of lifelong learning and improving national competitiveness in the era of globalisation. If examined, the vision of non-formal education is very good perfectnation; however, implementing neglected, for example, in the case of pre-employment cards and their implications, which various kinds of training, training, and other related to preparing the workforce are all implemented in the education system. non-formal. Although developed by ministries other than the Ministry of Education and Culture, such as the Ministry of Manpower, the Ministry of Social Affairs, and the Ministry of Industry and Trade, all of them are non-formal education activities to improve the quality of human resources and community empowerment. However, in reality, there is not a single program organised by the Ministry of Education, especially in the directorate that covers non-formal education, which should implement programs related to preparing workers in the pre-employment card program.

The concept of non-formal education by definition is broad, non-, by definition, is broad; non-formal forms it can take in response to the different demands and needs of different individuals or groups. Non-formal education can only be defined in terms of its function in a particular context and it must be remembered also that non-formal education is designed to compensate for the shortcomings and contradictions in the traditional school system and to meet pressing needs that are often overlooked by formal education. This helps the interests taken by local communities in the form of education, which meets their needs effectively. For this reason, The objectives of non-formal education cannot be 'centralised' in the same manner as a formal system, much alone institutionalised (Souto, 2021). Imperative to establish a deliberate integration of formal and non-formal education systems (Salam, 2022). Failure to do so will result in non-formal education being transient, isolated, and usually disconnected from the intended audience's requirements, desires, and interests.

Non-formal education is implemented in education units equivalent to or equal to schools managed from, by, and for the community (community-based management). The non-formal education unit consists of the Course and Training Institute, the Study Group, the Community Learning Activity Center, the Taklim Council, and the Similar Nonformal Education Unit. Similar nonformal education units according to Permendikbud No. 81/2013 consist of smart homes, joint study centers, tutoring institutions, and other forms that develop in the community and are determined by the Director General of Early Childhood Education, Non-formal and Informal. The actual conditions in the field, where most nonformal education units live in uncertainty, especially institutions whose activities always rely on social assistance programs from the government, this condition create a paradigm that nonformal education units are between life and death, unable to independently support their institutions, less survival in dealing with the problems that occur.

The need for non-formal education in the 21st century is based on the concept of learning in the context of globalisation, marginalisation, increasing unemployment, and increasing poverty. These conditions encourage a new understanding of the skills and attitudes needed for sustainable economic growth and development. The development of the educational paradigm in the 21st century, as stated by Lauder, states that "The present emphasis on young people should be interpreted within the framework of the global transformations brought about by globalisation, as well as the prioritisation of individual autonomy that is a fundamental characteristic of modernity, democracy, and the knowledge-based economy" (Bennett & Kahn-Harris, 2020).

The 21st century better known as the information age has encouraged the exchange of data and information throughout the world without any space and time barriers. The information age marked by the development of information technology has triggered the birth of the era of the Industrial Revolution 4.0. Life in this era requires reliable life skills as a social asset so that it is not easily swayed by circumstances, one of which is by implementing the life skills of the Macmillan model. This model was developed by the Macmillan organisation to develop English language skills. Furthermore, Spencer Kagan, in the book *Macmillan Life Skills Language is Life Skills*, states that we are currently facing a Life Skills crisis. The crisis was due to two trends that caught Spencer Kagan's information explosion and change rate.

Information explosion or information explosion impacts one's ability to memorise a new fact, which is less valuable than the ability to understand, analyse, organise, apply, evaluate, and create new information. The change rate or rate of change is related to this condition. Most students who enter school at this time will later work in job categories that have not been created yet and all will work with undiscovered technology. This crisis can be conceptualised as an imbalance between supply and demand, where the need that drives academic achievement is more dominant than the drive for life skills. Life skills enable a person (students, educators, students, workers, and others) to have skills to support the Industrial Revolution 4.0.

Literacy in the era of Industrial Revolution 4.0. not only interpreted as the ability to read words, but also to read the world of "reading the word and the world" and the ability to read and write, but more on the ability or skills of a person in work and life. Cases of failure in the implementation of literacy education programs are often encountered in several countries, the reason is that there are ideas that depend on ideas about literacy that are born from social contexts and cultural practices. Literacy is only interpreted as an activity to learn to read and write. Several innovations have been developed, but still on the same path, namely functional. Functional means conformity to life's needs, social and economic relations. This idea assumes that people will be motivated and participate in literacy programs if social and institutional situations require literacy only. In the context of literacy, it allows people to participate in their development and self-development.

The Industrial Revolution 4.0 provides broad opportunities for every individual to develop their potential, with information technology that is increasingly easy to access and everyone can connect only with social media networks. The ease of access to information is useful for developing science and the economy (Kang, 2023). The Industrial Revolution 4.0 is not only a means and opportunity, for every individual to be more prosperous, but also as a challenge and as a trigger for other implications such as unemployment, human and machine competition, and higher demands for competence. The industrial revolution 4.0 in the next five years will wipe out 35 percent of jobs. And even in the next 10 years, the types of jobs that will be lost will increase to 75 percent. This is because work previously played by humans will be replaced by program digitisation technology. As a result, the production process is massively faster and easier to distribute with minimal human involvement. Furthermore, based on the results of a survey by McKinsey, a multinational management consulting corporation, in Indonesia, 52.6 million jobs have the potential to be replaced by digital systems. In other words, 52 percent of the labor force representing 52.6 million people will lose their jobs (Feridhanusetyawan, 2019).

The shift of the human workforce towards digitalisation is a form of challenge in the 4.0 Industrial Revolution that needs to be responded to by all parties and needs to be answered with an increase in competence, especially in the mastery of computer technology, communication skills, the ability to work collaboratively, and the ability to continue to learn and be adaptive to change. environment. The World Bank (Siahaan et al, 2023) reports that the job market requires multi-skills of graduates who are forged through education units and systems.

Non-formal education is education that has characteristics oriented toward individual skills in the world of work; specific justification for relevant needs in the field; success parameters are not limited to schools; and sensitivity to developments in the world of work. Non-formal education has training and skill acquisition programs that greatly affect the development of a person's identity in work. Non-formal education is a place to forge one's maturity and skills. Non-formal education also provides the development of knowledge, abilities,

skills, and the formation of one's competencies. Non-formal education also has entrepreneurship programs to increase individual independence and prepare graduates who have multiple skills. Non-formal education provides skills that are focused on providing skilled labor in various sectors such as industry, agriculture, and technology to enhance economic development.

METHODS

This study uses a qualitative approach with a systematic review design. A systematic review is a research approach used to locate, assess, and evaluate all pertinent study findings of specific research questions, themes, or phenomena of interest (Booth et al., 2021). In principle, a systematic review is a research method that summarises the results of primary research to present more comprehensive and balanced facts. This research was conducted from June to November 2020. This research is a systematic review study, so the scope of research is not limited by time and space. This research does not involve human subjects directly, but the results of research that have been carried out by experts in the field of non-formal education have been published in various media such as journals, proceedings, books, and other documents that are appropriate and meet academic criteria. Data collection is done through internet studies to find data sources in the form of research results that are scattered throughout the world. This research begins by identifying studies that are relevant to those conducted by domestic and foreign researchers through searching research journals with non-formal education program partners. The data collection instrument in this study was a guideline or review guide in the form of a review table using indicator items or questions that were taken based on the formulation of the problem or research question. Technically, every article that meets the criteria will be reviewed based on a table review. In analysing the data, the researchers employed meta-aggregation and meta-ethnography.

RESULTS AND DISCUSSION

A systematic review is essentially a research method for identifying, evaluating, and interpreting, all relevant research results related to certain research questions, certain topics or phenomena of concern (Booth et al., 2021). In meta-aggregation, the researcher elaborates on the themes that are in line with this research by producing a conceptual framework. Then, from these themes, a search for articles from relevant research results is carried out and compared which are then summarised from one another. In the meta-aggregation approach, the synthesis results of articles relevant to the theme are selected accordingly. This synthesis process includes extracting themes and concepts from relevant studies, the extraction results are organised into important findings, the findings obtained grouped into predetermined categories, these categories are then synthesised into themes by the conceptual framework that the researcher has compiled.

In this study, meta-synthesis (synthesis of qualitative data) has 2 (two) approaches, namely meta-aggregation and meta-ethnography (Majidah et al., 2019). In meta-aggregation, synthesis aims to answer research questions (review questions) by summarising various research results (summarising). Meanwhile, the system's ethnography meta-culture aims to develop a new theory (new theory) to complement existing theories (Booth et al., 2021). In meta-aggregation, research topics are elaborated into certain themes to produce a conceptual framework. Then, from these themes, a search for relevant research articles is carried out and compared and then summarised. In the meta-aggregation approach, the synthesis results are an "aggregate" of various research results according to the relevant theme.

Meta-ethnography uses an "interpretive" approach to research results in primary studies. The interpretive approach uses analysis techniques that are "iterative" (spiral). The results of primary study research are adopted through re-interpretation to produce new understandings or new theories. This synthesis process includes identifying themes from relevant studies, comparing themes between articles, developing new concepts that can capture similar themes from different articles, constructing a new framework as an effort to integrate various concept in one unit, in other words the synthesis of meta-aggregation is more of an effort to

summarise relevant research results by first making a research concept framework that describes interconnected themes, then the results of the primary study are plotted on different themes. has been identified and the presentation of the results is more descriptive. Whereas in the synthesis of meta-ethnography, the findings in the primary study are reinterpreted to obtain new understanding, by iteratively conducting cross-thematic analysis, so that the extraction and analysis are not sequential liners whereas, in the meta-ethnographic synthesis, the analysis is interpretive inductive.

Based on search results based on published research results, 62 research titles were identified, however, only 23 articles were identified that were relevant to the study of non-formal education in the era of the Industrial Revolution 4.0. Identifying 23 articles by considering a crucial step in the meta-analysis, namely by selecting a quality study, if the study included in the meta-analysis is not qualified, then of course the meta-analysis results are invalid.

Theoretical Study of the Development of the Revolutionary Era 4.0 Nonformal Education Program

At this stage, researchers extracted research results that discussed theoretical studies of the development of the latest nonformal education program in the era of the Industrial Revolution 4.0. There were 23 articles related to the discussion of this study. The Industrial Revolution 4.0 has made changes to the realm of education, education that previously only focused on knowledge with the 4.0 revolution turned into skills. These skills are innovative, fundamental, and interdisciplinary changes. The Fourth Industrial Revolution positions information technology as the primary catalyst for advancement in all spheres of existence. The essential talents universally required should encompass critical thinking, emotional intelligence, judgment, negotiation, cognitive flexibility, and knowledge generation and management. (Maryanti et al., 2020).

Learning in the era of the Industrial Revolution 4.0 focuses on the formation of an IT-based digital lifestyle, learning abilities, and innovations, as well as the development of life skills, more specifically learning carried out by educators must be oriented towards developing four core skills: critical, thinking and problem-solving skills, communication skills, collaboration skills, and the ability to create new things (creativity) (Setiyawami et al., 2019). Meanwhile, the revitalisation of the learning system includes curriculum and character education, learning materials based on information and communication technology, entrepreneurship, harmony, and evaluation. The education unit includes new school units and new classrooms, other learning rooms, classroom rehabilitation, student and teacher dormitories, equipment, and school management and culture. Student elements include scholarships and talent development interests. Elements of educators and education personnel include provisions, distribution, qualifications, certification, training, career and welfare, and rewards and protection (Firdaus, 2019).

Non-formal education based on revolution Industry 4.0 emphasises the learning strategy, namely by systematic learning management strategies: Learning planning with a life skills-based curriculum, learning implementation begins with motivating students, followed by the delivery of learning material and learning evaluation is carried out every two weeks in learning management meetings to determine learning planning, implementation, development of children's learning, learning methods and tutor evaluation. The Blended learning approach, which combines face-to-face instruction with online website-based learning, is a cutting-edge non-formal learning strategy in Indonesia. (Maryanti et al., 2020).

The Industrial Revolution 4.0 led to the birth of progressivism. Progressivism is an educational philosophy that focuses on forming students who are skilled, knowledgeable, can survive, compete, and face the problems of contemporary society which is the main way to prepare skills. The skills that are easiest to achieve are good behavior (behavioral attitude), increased self-competence, and a spirit of literacy. Provision for preparation can be achieved through the path of education (lifelong education) and self-concept through, experiences of working together across generations or disciplines (Allmendinger et al., 2019). Non-formal education plays an important role in mediating between new knowledge and its potential consumers, one of the prominent aspects of the new possibilities is the computerised learning environment, which encourages collaboration and work in study groups, enables knowledge building and reflective thinking, improves writing

skills, and creates opportunities. for online discourse. Working in a computerised community is based on a close interrelationship between instruction, learning, and evaluation. In some specific areas of NFE, such as working with separated youth, this provides learners with success that cannot be achieved in traditional formal settings (Rogers, 2019). Adolescents' experiences in education and non-formal social environments require them to develop ways of coping in various fields that formal education cannot accommodate (Fierli et al., 2024). Non-formal education encourages participants to build on their authentic experiences without fear of environmental reactions (Feridhanusetyawan, 2019; Maruyama & Ohta 2019). Strengthening character in facing RI 4.0 also needs to be done, namely through PNF carried out by parents, friends, and organisations, in addition to facing the Industrial 4.0 era, character development or training for parents through educational institutions and government is needed (Azahra & Ilyas, 2019).

Homeschooling which is one of the programs at PNF institutions can provide different education at home for children, flexibility in implementing homeschool education, learning patterns based on children's learning styles, making homeschooling experience development in several variants (Shofwan et.al. 2019). Homeschooling offers supplementary activities to pupils, allowing them to cultivate areas of interest tailored to their requirements and fostering more concentration due to the smaller student population compared to traditional education (Nursamsu & Mulyono, 2021). In modern times, as education becomes increasingly universal, nonformal education has been identified, in particular, with 'out of school' hours for the younger generation. Then, adult education is also included in the nonformal education framework and is understood as a lifelong process, starting with the family as the most powerful agent and followed by social and communal agents.

Nurhajati and Iriani (2020) did not develop a systematic theory of nonformal education. Instead, his approach is based on the theoretical conception that the importance of nonformal education lies in its relevance to real-life experience, which helps participants in the program to deal with current problems and prepares them to tackle future problems. Family education is an alternative to socialise understanding of parenting patterns and productive economic skills for families living in rural areas that are difficult to reach. Planting 8 family functions is necessary so that they are implemented in the family. Family functions, namely the function of religion, socio-culture, love and affection, protection, reproduction, socialisation and education, economy, and environmental functions contain positive moral values that are the basis of family life in facing technological developments in the current era of the Industrial Revolution 4.0. for families through family education and practiced by participants, it can be used to form a quality family which in turn contributes to the creation of family resilience (Chusniah et al., 2019). The era of RI 4.0 in family education should be more directed, motivating, and supporting children to face the challenges of the Industrial Revolution 4.0. families, especially parents, have an important role in family education in the era of the Industrial Revolution 4.0, namely guiding children to have intellectual skills and attitudes that are by the times, and wisely in using technology both now and in the future because in the present era, not only technological knowledge that must be provided but also knowledge about humans themselves.

Competencies that must be mastered by students in the era of revolution industry 4.0, of which is literacy, information literacy, digital literacy, and others (Agustini & Sari, 2020). Information literacy needs to be systematically integrated as part of the curriculum and trained by educators and librarians. Increasing the competency level of information literacy makes students reliable information seekers, processors, and information producers with Higher-Order Thinking Skills (HOTS) through activities outside formal education. Digital literacy is important in RI 4.0. In digital literacy, families, especially parents, are at the forefront of the digital literacy process in the family domain. Father and mother are first and foremost educators (Fitria, 2019). Digital literacy in communities can be developed through study groups, youth clubs, hobby communities, and community organisations. Digital literacy learning must also involve understanding universal values that must be adhered to by every user, such as freedom of expression, privacy, cultural diversity, intellectual rights, copyright, and so on. Digital literacy allows a person to interact well and positively with their environment.

Digital literacy needs to be developed in families, schools, and communities as part of lifelong learning.

The new literacy in the era of the Industrial Revolution 4.0 which is related to humanitarian literacy to succeed in the challenges of the globalisation era of the workforce in the future shows a higher order of thought. Critical thinking in the concept of 21st-century education is described as "the ability to design and manage projects, solve problems, and make effective decisions using various tools and resources (Putri et al., 2023). Creating new literacy, namely, literacy about one's activities and abilities in matters relating to the ability to read data, study technology, and study human life Development of human literacy which must cover everything in the environment holistically to obtain competitive human resources in the era of the industrial revolution 4.0, mastery of data literacy becomes The most important role for students and society, for example in entrepreneurship education, mastery of data literacy is very important in the world of entrepreneurship, this is because data management is currently a very crucial demand, especially in terms of understanding market conditions; better understanding of customers; Controlling re puts online; Cost savings associated with IT data management (Setiawan et al. 2020).

The Industrial Revolution 4.0 has an impact on the implementation of entrepreneurship learning as mandatory in educational institutions both formal and non-formal from an early age starting from elementary schools to tertiary institutions. Every individual possesses inherent creativity as a result of being brought into existence by a Creator equipped with creative abilities. Consequently, individuals are capable of becoming dependable innovators who are prepared to engage in competition while remaining within the context of the Industrial Revolution. 4.0 (Tyas & Naibaho, 2019).

The flexibility inherent in non-formal education derives much support from the enormous potential offered by computerised communication and technology (Ekwughe, 2020). Non-formal education in the era of RI 4.0 as education that repositioned itself towards the formation of quality human resources, the era of revolution industry 4.0 made nonformal education through innovations in the implementation of Life Skills Education programs. Programs in non-formal education that support human change that can follow the Industrial Revolution 4.0 with efforts to improve quality of life, support development at the region national level, offer manpower training opportunities tunities for the unskilled, offering upgrades, retraining or refresher opportunities for those who are already trained and non-formal education programs are closely linked to formal education, for example, these programs enable learners to meet formal school requirements (Man, 2020), including Youth Education, Women's Empowerment, Literacy Education, Skills and Job Training (Courses, Internships), Business Study Groups, Entrepreneurship Education, and Work Skills Education at the Course and Training Institute.

Nonformal education can bring someone into the world of work, which is oriented towards developing skills according to the needs of the world of work and business, the world of Industry, entrepreneurship, and as a vehicle for survival and development of community life. Existing programs in non-formal education focus on needs and the present and must be problem-centered, community-centered, and learner-centered. The emphasis should be on productive work, as opposed to the typical vocational applications, approach to formal education. The main goal of non-formal education is to get students involved in real-life production actions. In the case of the disadvantaged and poor, who find it difficult to meet the basic needs for survival and human dignity, all educational programs will be considered irrelevant if they do not relate to the urgent need for survival and human dignity (Tyas & Naibaho, 2019).

The Latest Non-formal Education Program in the Industrial Revolution Era 4.0

Non-formal education in the era of revolution industry 4.0 encourages learning that can produce a skilled workforce, creating fundamental changes through training and qualifications whose aim is to focus on human welfare. The era of revolution industry 4.0 focuses on the formation of an IT-based digital lifestyle, learning abilities, and innovations, as well as the development of life skills, and more specifically the learning carried out by educators must be oriented towards the development of four core life skills, namely: thinking and problem-solving skills, communication skills, collaboration skills, and the ability to create new things/creativity (Tyas & Naibaho, 2019).

The era of the Industrial Revolution 4.0 provides transformation in all aspects of life, namely by creating new things, in unimaginable ways. One of the strategies that can be taken to keep up with the flow of new technology is to develop student skills in the era of revolution industry 4.0, namely information literacy and digital literacy skills. Information literacy is a concept that develops through environmental conditions and information technology. Digital literacy forms a community structure with a creative-critical mindset and perspective, they will not be easily consumed by provocative issues, victims of hoax information or victims of digital-based fraud, it will create a sociocultural life that tends to be safe and conducive. Building a digital literacy culture needs to involve and take an active role in the community together. The success of building digital literacy is an indicator of achievement in the fields of education and culture. The development of new literacy to read data as well as material for evaluation and as a tool to find out what needs to be done and what targets should be achieved by students. Likewise, with technology that is always developing, everyone is obliged to continue to be upgraded and so it is with humans. This is the main role of new literacy in the era of RI 4.0 (Tyas & Naibaho, 2019).

Learning management strategies in non-formal educational institutions that support revolution industry 4.0, namely systematic learning, consisting of planning for life skills learning with technology-based curricula, learning implementation begins with motivating students, followed by the delivery of learning material and learning evaluation is carried out every twice once a week in a learning management meeting to find out about lesson planning, implementation, children's learning development, learning methods and tutor evaluation and the learning delivery strategy by providing information or learning materials using the Blended learning method (face-to-face and web-based or online) in non-formal learning strategies in Indonesia (Setiawan, 2020). Development of a learning system that is more adaptive to market needs, containing a field practice approach that involves industry and business actors in an internship program for students.

Implementation of student programs that are free to choose one year outside by doing internships, entrepreneurship, research, community service, and study abroad (for two semesters). Awareness of facing the Industrial Revolution 4.0 held symposia, seminars, and infrastructure development (Kurniawan, 2020). The era of the Republic of Indonesia 4.0 is very important for implementing entrepreneurship learning from the elementary level to higher education to be able to compete in the era of the industrial revolution 4.0, so entrepreneurship learning must be implemented creatively and innovatively from an early age (Fero, Martin., et.al. 2019) Homeschooling has great potential to get space to develop children's interests and potential in the era of the industrial revolution 4.0 and become an alternative education, on the other hand, homeschooling has challenges in empowering children's interests and potentials through technology that children will have for their future self-development in facing the industrial revolution 4.0. Character education as a support for revolution industry 4.0 can be done by instilling honesty, generosity, discipline, and religion through non-formal activities such as student organisations, lecturers, peers, parents, and the environment (Shofwan et al., 2019).

In the era of the Industry Revolution 4.0, soft skills development and increased job market opportunities from the perspective of non-formal learning participants, as well as the development of key competencies for learning, digital competence, and media literacy, and at least with the development of entrepreneurial core competencies, communication proficiency in foreign languages and cultural cognition and expression is also prerequisite (Byram, 2020). The implementation of the Higher Apprenticeship program in the Industrial Revolution 4.0 trains technicians to a high level of skill to meet future economic needs. This is by the philosophy of non-formal education, according to Dewey, which lies in three main areas of thought: the innate bond between democracy and education, interest theory, and learning through experience theory. The three fields are interrelated and unified in the theory of unity, which implies the unity between education and life experience (Fehring, 2020). For example, the Australian Government funds the apprenticeship program through the Skilling Australian Fund which is managed by the Australian Industry Group.

The Higher Apprenticeship Program model is similar to traditional paid apprenticeship programs. Apprentices can also enroll in an associate degree covering topics including advanced manufacturing

processes; automation and robotics; Internet of Things (IoT); Cloud; advanced algorithms; and smart sensors (Nurasiah et al., 2018). Implementation of training programs for tutors in facing revolution industry 4.0 with topill of innovative works, the results of this socialisation discussion recommend training and assistance for the development of novel works, namely in the areas of instruction design, presentation materials, question formulation, and assessment. (Lestari, 2019). This is supported by Weber's concept of 'ideal' types for non-formal education frameworks revealing that they contain ten structural components. These ten components work together to achieve the desired educational effect, namely creating an open framework that allows participants to build on their beliefs and interests, and express them freely in an authentic way (Fehring, 2020),

Non-formal education contributes to employees having skills that make them ready and competent in the world of work. Overall, the creation of new high-skilled workers will compensate, in large part, for the elimination of low-skilled jobs such as training in the application of agricultural technology for millennial farmers which introduces the adoption of modern technology and the importance of its use and its role in increasing the potential or employability of farmers in agriculture. best practices for the use of information technology in agriculture and elimination of the use of information technology in production, distribution, and promotion in agriculture (Fero et al., 2019) Training for farmers in revolution industry 4.0 should be more on data quality using e-sipp applications such as; introduction of agricultural information via the internet and satellite imagery; Digital marketing (Agricultural Product Marketing System through social media); Increasing the use of e-Dupak; Electronic data management; Publish information via the internet network.

The non-formal education needed in the 4.0 industrial revolution takes more advantage of the sophistication of technology and information which includes digitisation, optimisation, and customisation of production, automation and adaptation, the interaction between human machines, added value of services and business, automatic data exchange, and communication, and usage. internet technology. Learning content in the era of the Industrial Revolution 4.0, namely learning content that is expected to be able to meet 21st-century skills including innovative learning and skills including mastery of diverse knowledge and skills, learning and innovation, critical thinking and problem-solving, communication and collaboration, and creativity and innovation; digital literacy skills which include information literacy, media literacy, and ICT literacy and career and life skills including flexibility and adaptability, initiative, social and cultural interactions, productivity and accountability, and leadership and responsibility.

CONCLUSION

On a theoretical basis, there is a paradigm shift in the field of non-formal education that leads to progressive education. The main way to prepare skills that are easiest to achieve is good behavior, increasing self-competence, and having a spirit of literacy. Non-formal education in the era of revolution industry 4.0 encourages learning that can produce skilled graduates, creating fundamental changes through training and increasing qualifications to focus on human welfare. Information literacy is a concept that develops through environmental conditions and information technology. Digital literacy shapes the structure of society with a creative-critical mindset and outlook. Non-formal education programs that are relevant to the development of the Industrial Revolution 4.0 include skills training/ life skills, entrepreneurship training, homeschooling both independent and community, as well as soft skills development and increasing job market opportunities from the perspective of non-learning participants, formal competencies, as well as the development of key competencies for learning, digital competencies, and media literacy, and at least with the development of core entrepreneurial competencies, communication in foreign languages, cultural awareness, and expression. Improving the competence of educators and non-formal education personnel is a basic need, considering the increasingly rapid changes in the educational environment and the challenges that students will face in the future are increasingly difficult. Therefore, it must be supported by good educator competence to produce good graduates. The development of non-formal education programs based on entrepreneurship, technology-based life skills education, and the development of literacy and soft skills for the 21st century must be a priority in the future. Universities, especially those focusing on non-formal education, must be encouraged to develop future-oriented studies to prepare quality human resources for the next era. This information offers significant

perspectives that influence policy development, create efficient educational frameworks, meet the needs of the workforce, and contribute to socioeconomic progress.

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