System Leadership in Continuing Education in Digital Era Industry 4.0

Lord Steward Ebe[1]*, Joulanda AM Rawis[1], Henny N. Tambingon[1], Joseph Kambey[1]

[1] Doctoral Management Education Program, Manado State University, Indonesia, 95618

Corresponding author: ebestewardsttap@gmail.com

ABSTRACT

This research aimed to describe education leadership in continuing education by building the system leadership as a reform system in the professional and modern era. This research is descriptive qualitative research using a social history approach. The design research method was carried out in four phases: data collection, data display, conclusions, and data condensation. The result of this research shows that all education leaders in all levels should be building a system leadership as a reform system for the generation in the modern era to education for sustainable development in Papua.

Keywords: continuing education, digital era, industry 4.0, papua, system leadership

INTRODUCTION

Rapid technological progress demands School leadership to play an important role in delivering quality education as well as achieving educational goals. The quality of education is the result of synergy, collaboration of sustainable development systems. It will gain relevance if it is integrated with the perspective of Continuing Education (Education for Sustainable Development / ESD) through the provision of capacity needed by students in dealing with current world issues and global challenges. (Arief Rachman, 2021). System leadership is important to developing the capabilities of leaders in a strategic way to impact leader, teacher and student learning. System leadership refers to a shared commitment to improving teaching and learning within and across the system. This collective commitment to lift system wide achievement through improvement in teaching and learning requires careful attention to the creation of conditions for purposeful and meaningful collaboration between school leaders. It requires an authentic approach to encourage and enable the most successful leaders

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to identify and transfer best practice and "mobilize leadership capacity in pursuit of whole school improvement".

The ability to generate change across a system with particular attention to the Importance of system leadership, working in conjunction with school leadership, will ultimately drive school improvement. System leadership is considered a "wider resource for school improvement". Successful leaders identify and transfer best practice and support leadership of improvement across the system. The result is an improvement in teaching quality and educational outcomes for all students in all schools. System leadership requires a collective understanding of the actions needed and an explicit moral purpose that every school can improve.

In the digital era of Industry 4.0, technology has become an important part of everyday life. This technology affects various aspects of life, including in the field of education. Education must be able to keep up with increasingly rapid technological developments in order to provide a quality education that is relevant to the times. On the other hand, environmental challenges are also increasing. Climate change, environmental damage, and species extinction are global problems that must be addressed. Therefore, education for sustainable development (Education for Sustainable Development/ESD) is becoming increasingly important. Education that includes aspects of ESD in its curriculum can help develop students' skills to become a generation that is environmentally aware and able to solve environmental problems. The use of technology in ESD can also help speed up the learning process and enable students to understand more complex concepts. Therefore, an article on "Education for Sustainable Development in the Digital Era Industry 4.0" is important to discuss in order to provide a deeper understanding of how education can integrate aspects of ESD in the digital and industrial era 4.0. Thus, education can have a greater impact on the development of future generations who are environmentally responsible and contribute to solving global problems.

Indonesia's Central Bureau of Statistics released the 2021 Human Development Index for Papua Province of 60.62, still the worst in Indonesia. Various studies show that the strategies carried out by the government in the form of Special Autonomy (Otsus), infrastructure development to regional expansion have not been able to overcome the complexity of education problems, so it is not surprising that the sense of nationalism has also been eroded due to disappointment with the widening gap in various fields.

The main focus of this study firstly, presents how the system leadership can be a reformation system for Continuing Education (Education for Sustainable Development). Secondly, it also described how it can be a solution in reducing education gap in Papua.

METHODS

This research used qualitative research. Qualitative research methods can provide an in-depth understanding of ESD teaching in the digital context of the industrial era 4.0. However, because this method involves fewer data collection than quantitative research methods, it requires careful consideration in the interpretation and generalization of research findings.

Collecting data has used secondary data. Firstly, collecting data from online Journals and books, local news, national news, and international news, and some books. Second, data display: the data has

displayed to see the relationship between system leadership for Education sustainable development. Third, conclusions: the conclusion has used in drawing and verifying. Fourth, data condensation: to get condensation of online school is a disaster solution for education within sustainable development.

RESULTS AND DISCUSSION

System Leadership

The concept of 'system leadership' is one that has caught the educational imagination. John Dunford (2005), argued to the National Conference of the Specialist Schools and Academies Trust (SSAT), that: "The greatest challenge on our leadership journey is how we can bring about system improvement. How can we contribute to the raising of standards, not only in our own school, but in others and colleges too? What types of leaders are needed for this task? What style of leadership is required if we are to achieve the sea-change in performance that is demanded of us?

In Systems Thinkers in Action Michael Fullan (2004) argued that: … a new kind of leadership is necessary to break through the status quo. Systematic forces, sometimes called inertia, have the upper hand in preventing system shifts. Therefore, it will take powerful, proactive forces to change the existing system (to change context). This can be done directly and indirectly through systems thinking in action. These new theoreticians are leaders who work intensely in their own schools, or national agencies, and at the same time connect with and participate in the bigger picture. To change organizations and systems will require leaders to get experience in linking other parts of the system. These leaders in turn must help develop other leaders within similar characteristics.

Caldwell (2006) insists that policy-makers must 'empower the frontline'. Hopkins says that 'There is a growing recognition that schools need to lead the next phase of reform' (2007: 44). Whole system reform is needed: . . . it requires a commitment to sustained, systemic change because a focus on individual school improvement always distorts social equity. (Hopkins, 2007: 9) That requires new agents – system leaders: 'System leaders' are those headteachers [. . .] who care about and work for the success of other schools as well as their own. (Hopkins, 2007: 153) And it requires new 199rganizational forms – networks: . . . in networking lies the basis for system transformation. (Hopkins, 2007)

What is system leadership?
According to Hopkins, it comprises a range of emerging roles including:
- eading an educational improvement partnership;
- executive headship, running two or more schools;
- leading in extremely challenging circumstances or becoming an academy principal;
- 'Civic or Community leadership to broker and shape partnerships across local communities.
- change agent as NLE, SIP, consultant leaders. (Hopkins, 2006).

System leadership is a shared commitment to foster collaborative networks within and across the system to generate improvement. It is characterized by being outward looking, connected and forward thinking, driving sustained improvement and shared responsibility at a local and system level. The significance of effective leadership and management for the successful operation of schools and colleges is widely acknowledged in the twenty-first century.

As such, system leadership is a new and emerging practice that embraces a variety of responsibilities that are developing either locally or within discrete national networks or programmes that, when taken together, have the potential to contribute to system transformation.

Education for Sustainable development

Education for sustainable development (ESD) is UNESCO's education sector response to the urgent and dramatic challenges the planet faces. The collective activities of human beings have altered the earth's ecosystems so that our very survival seems in danger because of changes more difficult to reverse every day. To contain global warming before it reaches catastrophic levels means addressing environmental, social and economic issues in a holistic way. UNESCO's ESD for 2030 education programme aims to bring about the personal and societal transformation that is necessary to change course.

Continuing education is defined by The Accreding Commission of the Continuing Education as follows: "Continuing education as the further development of human abilities after entrance into employment or voluntary activities. It includes in- service, upgrading and updating education. It may be occupational education or training which furthers career or personal development. Continuing education includes that study made necessary by advances in knowledge. It excludes most general education and training for job entry. Continuing education is concerned primarily with broad personal and professional development. It includes leadership training and improvement of the ability to manage personal, financial, material, and human resources. Most of the subject matter is at the professional, technical and leadership training levels of the equivalent. (Apss,1979: 68-69)."

Education as a factor in achieving sustainable development highlighted in the Europe 2020 strategy (European Commission, 2010, UNESCO, 2019). The Europe 2020 strategy set two targets regarding the Education area: i) reducing the number of early school leavers and ii) increasing the share of young adults who have completed tertiary education (European Commission, 2010). Particularly, the EU has set a target of reducing early leavers of education and training to less than 10 percent of population aged 18 to 24 and increasing the tertiary educational attainment to 40 percent of the same age frame.

As described earlier, Europe 2020 aims to achieve Smart, Sustainable and Inclusive growth to overcome the structural weaknesses in Europe"s economy, improve its competitiveness and productivity. To reach these goals the EU has adopted various targets to achieve by 2020 in five areas: employment, R&D, climate change and energy, education, and poverty reduction.With the adoption of the Europe 2020 strategy, the first results have begun to appear. Early leaving from education and training has been falling continuously in the EU since 2002, for both men and women.

"Education and training play an important role in improving employability," according to The Roadmap of SDGs Indonesia 2017, "Nationally, 46.83% and 77.13% of Indonesian fourth grader perform poorly in reading and mathematics test, respectively. Meanwhile, only 6.06% and 2.29% of them achieve "performing well" level.

In both tests, students in Eastern Indonesia tend to perform poorer than their peers in the western part, which reflects the persisting inequality between the two regions.

a. Although education resources have increased vastly in the past decade, it has not been accompanied by a similar increase in learning outcomes, which indicates the need to improve the spending quality of education budget.

b. Improvement in teaching and learning environments, teaching curriculum, and school management are needed to reach Indonesia's education potential. These include delivering technical support for teachers and schools to improve students' learning; and assisting school, district, and province level to plan and budget efficiently to meet national education standard.

Since Indonesia's first participation on PISA test in 2000, students' test scores in reading and mathematics have increased substantially by 27 and 26 points –equivalent to around one year of schooling, respectively. However, it is important to note that Indonesia's latest performance in reading test has been decreasing and stagnant since 2009, where on average, Indonesia's students scored 402, 396, and 397 in 2009, 2012, and 2015.

a. Despite the significant gains in reading and mathematics, Indonesia is still lag behind regional and OECD average. In PISA 2015, Indonesia ranked 62nd out of 72 participating countries, a slight improvement from the 2013 ranking where Indonesia ranked 71st.

b. These learning outcomes do not correspond with the number of resources that the government has invested in education, thus, implying the need to use the resources more efficiently.

Furthermore, policy actions that aim to strengthen teachers' subject-matter knowledge and equitably distribute well-qualified teachers across regions are imperative in improving students' learning outcomes in Indonesia.

Great emphasis on the role of Education was also given in the Agenda 2030 as it is one of the 17 goals set for achieving sustainable development and sustainability (Agenda 2030, 2015). Ambitions for education are essentially captured in Sustainable Development Goal 4 (SDG 4) of the 2030 Agenda which aims to "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" by 2030.

The SDG has seven associated „targets" at the global level that are universally applicable (and three targets which are so called „means of implementation") (Agenda 2030, 2015):

1. Ensure universal, free, equitable, and quality primary and secondary education.
2. Ensure universal access to quality pre-primary education.
3. Ensure equal access to quality technical, vocational, and tertiary education.
4. Increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.
5. Ensure equal access to all levels of education particularly of marginalized groups.
6. Achieve full literacy of youths and substantially increase literacy of adults.
7. Ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and nonviolence, global citizenship and appreciation of cultural diversity and of culture"s contribution to sustainable development.

Means of implementation:

1. Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, nonviolent, inclusive, and effective learning environments for all.

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2. Substantially expand globally the number of scholarships available to developing countries, least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries.
3. Substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.

In summary we can say that quality education is the foundation of sustainable development because it:
a) facilitates the lifting of people out of poverty and prevents the perpetuation of poverty from generation to generation
b) empowers marginalized groups
c) enables the realization of other human rights
d) reduce social economic, and power inequality
e) drives sustainable and inclusive economic growth
f) facilitates peace, tolerance, and respect for human rights

Equally, the right to education cannot be fully realized without sustainable development because poverty – as well as being unjust, unnecessary, and a human right violation is one of the biggest barriers to access to education (Agenda 2030, 2015)

Education for Sustainable Development (ESD) is an educational concept that includes the knowledge, skills, attitudes, and values needed to promote sustainable development in all aspects of human life. ESD is considered as an integral part of global efforts to achieve the Sustainable Development Goals (SDGs) set by the United Nations. In the digital industry 4.0 era, technology has changed the way we learn and work. Therefore, ESD must adapt to these changes and use technology as a tool to achieve sustainable development goals. In this context, ESD has an important role in preparing students to become responsible individuals and able to contribute to sustainable development in the future.

In ESD, students are taught to understand the complexity of the relationship between the environment, social, and economy, and how these three factors are interrelated and affect the sustainability of our planet. They are also taught the skills necessary to evaluate their decisions and actions against their impact on environmental, social, and economic sustainability. Additionally, technology can be used to facilitate ESD. In the digital industry 4.0 era, technology has enabled the use of new media, such as videos, animations, simulations, and interactive games, to strengthen and expand learning. Technology also allows students to access resources and information online, thereby enabling lifelong learning.

However, the use of technology in ESD must be managed carefully, and pay attention to data security and student privacy. Educators must understand the risks associated with technology use and ensure that technology is used in a safe and effective way to support ESD goals. In conclusion, ESD must adapt to changes in the digital industry 4.0 era and utilize technology as a tool to achieve

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sustainable development goals. ESD prepares students to become responsible individuals and able to contribute to sustainable development in the future, thereby ensuring that our planet is sustainable and remains a decent place to live.

System Leadership as a reform system

System leadership is a concept related to the ability of a person or group to lead a complex system or network. This concept emerged as an attempt to deal with complex and multidimensional problems that cannot be solved by conventional approaches.

System Leadership is considered a reformed system because it is able to improve existing systems and create positive changes in an organization or society. This leadership system combines the principles of leadership, management, and decision-making, as well as the ability to understand and manage the dynamics of the system as a whole.

As a system of reform, System Leadership helps create sustainable change and enhances the ability of organizations or communities to face complex and varied challenges. This leadership system not only focuses on improving one part of the system but also considers the interactions between different system elements.

The leadership system is especially useful in situations where the problems encountered cannot be solved in the traditional way. This happens because the problem is related to many variables that are interrelated and influence each other. Therefore, a holistic and coordinated approach is needed. The leadership system also strengthens participation and collaboration, thus enabling good relations between leaders and the community. This is important in creating sustainable social change because it requires the involvement of all parties involved. In conclusion, System Leadership is a reformed system that is very useful in creating sustainable changes in organizations or society. This concept integrates the principles of leadership, management, and decision-making, and considers the dynamics of the system as a whole. Therefore, System Leadership becomes an important approach in dealing with complex and multidimensional challenges.

System Leadership can be applied in the field of education as a reformed system that allows for sustainable change and has a positive impact on the entire education system. This leadership system can strengthen participation and collaboration, and improve the quality of decision-making in the education system.

One of the main challenges in education is to improve the quality and equity of learning. In this case, System Leadership can help create positive changes in this regard by strengthening cooperation between education stakeholders, such as teachers, students, parents, and the government. This leadership system also pays attention to the interactions between different system elements in education, such as curriculum, assessment, and learning strategies. This allows the creation of a holistic and coordinated system so that it can provide a better and more beneficial learning experience for students.

In the context of education, System Leadership can also help overcome other complex problems, such as increasing accessibility and inclusivity, improving the state of the learning environment, and increasing community involvement in education. The application of System Leadership in education also requires the important role of educational leaders, such as school principals or university leaders. This leader must have the ability to lead, manage, and understand the dynamics of the education system

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as a whole. They must also be able to build strong partnerships with education stakeholders and motivate their team members to create sustainable change.

In conclusion, System Leadership can be applied as a reformed system in education. This leadership system can help create positive changes in education, such as improving the quality of learning, accessibility, inclusivity, and community involvement. Therefore, it is important for educational leaders to understand and apply the principles of System Leadership in leading the education system.

System Leadership can be considered as a reformed system in education in the industrial era 4.0. This system is based on the concept that school leaders must have the ability to lead and manage the entire education system in a holistic, integrated, and innovative manner. In the digital industry 4.0 era, technology has changed the way we learn and work. Therefore, the leadership system in schools must adapt to these changes and use technology as a tool to achieve higher educational goals. In System Leadership, school leaders must be able to evaluate the entire education system as a whole and ensure that each element of the system functions synergistically. This system also pays attention to the involvement of all stakeholders, including students, teachers, parents, and the community.

School leaders must be able to use existing technology to enhance student learning experiences, increase operational efficiency, and improve the education system as a whole. In addition, System Leadership also pays attention to the development of student's skills and competencies to be able to compete in the increasingly complex industrial era 4.0. In System Leadership, school leaders must also be able to identify challenges and opportunities that arise due to changes in the industrial era 4.0, and adjust education and staff development strategies to overcome these challenges. This enables school leaders to create learning environments that are more innovative, creative, and relevant to the increasingly complex needs of the world of work. By implementing System Leadership as a reformed system in education in the digital industry 4.0 era, it is hoped that school leaders will be able to create a learning environment that is effective, relevant, and has a positive impact on the development of students and society as a whole.

The style of school leaders in system leadership

School leadership style (school leadership) has an important role in facilitating the implementation of System Leadership in an education system. An effective leadership style can influence the ability of an education system to achieve goals and improve the quality of education.

In System Leadership, there are several leadership styles that can be applied by school leaders, including the following:

4. Transformational leadership

This leadership style focuses on sustainable change and aims to improve the quality of education. Leaders who use the transformational leadership style motivate and guide teachers, students, and school staff to achieve higher educational goals.

2. Participatory leadership

This leadership style encourages the active participation of all stakeholders, including teachers, students, and parents, in making decisions and planning learning programs. Leaders who use a participatory leadership style build close collaboration with all parties involved in the education system.

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5. Authoritarian leadership

This leadership style focuses more on control and giving orders. Leaders who use an authoritarian leadership style tend to be in full control in making decisions and planning learning programs. However, this leadership style tends to be less effective in motivating and building engagement from teachers and students.

6. Transactional leadership

This leadership style focuses on achieving goals and provides rewards or punishments based on those achievements. Leaders who use a transactional leadership style tend to focus on achieving targets and do not consider other factors that might affect the learning process.

In System Leadership, school leaders can use different leadership styles according to the needs and conditions in their schools. However, it is important for school leaders to consider the principles of System Leadership in their leadership style, such as strengthening participation and collaboration, paying attention to interactions between different system elements, and considering the dynamics of the system as a whole. Effective school leaders in System Leadership must be able to lead in a flexible way and adapt their leadership style according to the situation and needs of the school. In addition, they must also be able to motivate and guide teachers, students, and school staff to achieve higher educational goals and improve the overall quality of learning.

In the Leadership System in the industrial era 4.0, school leaders must have an adaptive and innovative leadership style to meet the increasingly complex needs of the world of education. In System Leadership in the industrial era 4.0, school leaders must be able to combine several effective leadership styles to achieve higher education goals. This will enable school leaders to create learning environments that are innovative, creative, and relevant to the increasingly complex needs of the world of work.

CONCLUSION

This research concludes that continuing education in the industrial era 4.0 requires an innovative approach that can meet the needs of an increasingly complex and changing world of work. System Leadership is the right approach to improve the quality of continuing education in this digital era. In System Leadership, a collaboration between stakeholders such as students, teachers, staff, parents, and the community is very important to achieve higher education goals. In implementing System Leadership in continuing education in the industrial era 4.0, school leaders must be able to develop educational strategies and programs that are in line with the increasingly complex and changing needs of the world of work. School leaders must also have effective leadership skills, such as transformational and participatory leadership styles, and be able to motivate and guide teachers, students, and school staff to achieve higher educational goals. In the industrial era 4.0, technology is an important key in continuing education. The application of technology in education can make it easier for students and teachers to obtain and share information, as well as expand access to educational resources. Therefore, school leaders must consider technology as part of their continuing education strategies and programs. In conclusion, System Leadership is the right approach to improve the quality of continuing education in the digital industry 4.0 era. Quality school leaders who are able to apply System Leadership properly

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will be able to develop educational strategies and programs that are effective and relevant to the increasingly complex and changing needs of the world of work.

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