HOW TO CREATE A SYSTEM ECOLOGICAL THEORY OF THE ENVIRONMENT IN REVOLUTION 4.0 ERA?

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Abstract. The ecological theory of the environment plays an important role in the development and characterization of an individual's character. This theory will show the process of development that develops between the individual and the environment. The character of an individual will shape from the influence of the surrounding environment such as family, friends, school, teachers, workplace and so on. This paper will discuss the integration of environmental ecological theory into aspects of Islamic and western thought in the face of the revolutionary 4.0 era. The ecological theory of the environment will be based on Bronfenbrenner's ecological theory as well as Ibn Khaldun's ecological theory. Research on three aspects of the activity, role model, and practice will be detailed. This method of study uses documentary analysis based on Ibn Khaldun's book of scripture and Bronfenbrenner's writings. As a result of this study, it is found that these three aspects are in line with human needs. Therefore, this study is seen as contributing to the theory and can serve as a new reference and concept to society. Implications of this study apply the theory of the environment not only in education but in all fields.

Keywords: Educational Revolution, Integration, Ecological Theory of the Environment

1. Introduction

The education revolution 4.0 has colored the way of life and the actions of the world today. All parties need to act fast with the rapid development of smarter education technologies and automation systems. Almost all aspects of everyday life that use electricity do not deviate from the use of information technology (IT). Examples of the use of household items such as smart televisions, vacuum robots, smart whiteboards, smartphones, smart cars, and many other smart elements are used in everyday life to facilitate work through industry 4.0. There is no denying that Industry 4.0 has not appeared in education. His presence can be felt almost everywhere. The manufacturing sector is no exception and in fact, it will be the biggest beneficiary. However, the transition will require manufacturing sector organizations to embrace change and grow by creating innovative ways to increase production. In other words, manufacturers need to use innovative and agile technologies at the same time and increase the workforce. The main objective is to reduce reliance on human interaction as far as the operation is concerned and to improve the quality of human interaction at the same time.

In short, human interaction is particularly needed and is seen in critical aspects of decision making and maintenance. In the pursuit of the educational revolution 4.0, the rise of theory in the ecological
system also has a broad view. This theory is reflected in the theory of ecosystems, especially about units made up of communities of organisms of various species and community environments. System components are seen as interacting with each other. Ecology is a study of the relationships between living organisms including humans, and their physical environment. It aims to understand the important relationships between plants, animals and the world around them. Ecology also provides information on the benefits of ecosystems and how we can use the earth's resources by maintaining a healthy environment for future generations.

The elements of the environment are very important in life as these elements can have a huge impact on many aspects. Many research shows the most impactful aspects of this environment are behavioral problems [1], [2], student discipline problems [3], [4], Lesbian, gay, bisexual, and transgender (LGBT)[5], [6], bullying cases [7]–[9], stress and depression [10], [11] and so on. Its happen because of environment influences.

The ecological theory of the environment needs to be carefully studied as a guide or roadmap in the study of environmental factors and school climate. The school climate is the soul of the school. School climate will shaping individuals character. Western scholars have found that 87% of students are highly dependent on the actual environment, while 46.1% is the process by which individuals interact with their surroundings[12]–[14]. This indicates that the school climate and the surrounding environment greatly influence the process of student self-development. What is meant by integration here is a combination of two Islamic and Western theories that can be combined into one solid and applicable theory of all walks of life? The environment needs to be nurtured in a holistic way of life and line with Islamic teachings. With the integration of this ecological theory of the environment, it will indirectly be able to instill spiritual values in the students without excluding other things. For example in science tahfiz schools such as Intitayz, MRSM Ulul Albab memorized 30 juzuks of the Quran without excluding the study of other subjects such as English, Mathematics, chemistry, biology and so on. Students can also achieve excellent results using a dualistic education system. It is even better than the students of the regular school because it has a complete package of world science as well as the afterlife.

In the process of setting up a religious environment in school especially for religious high school students, the application of good values such as love, respect, happiness and responsibility should be nurtured in the school environment so that it does not arise from school dropouts, behavior issues, etc. [15]. These values are in line with the requirements of the Ministry of Education Malaysia which has introduced in the subject of civic education recently. This indirectly creates a positive school climate among its citizens. For example, students will be happy throughout their school life with the value of loving one another and respecting each other. They will feel very close to each other. This can indirectly reduce the problem of bullying, and skipping school when they feel those values. Also, students should be nurtured by the Muraqabah nature of feeling that God is always in their hearts and constantly observing what they are doing. If God were always in their hearts, the students would not do things contrary to Islamic teachings such as bullying their friends, disrespecting teachers, skipping school and so on.

The awareness of the existence of Allah Almighty observing in every action will affect the daily behavior and practice of the student. Whether or not our way of life and our actions are determined by this revolutionary technology. Therefore, those who do not want to change will be distracted and abandoned by new technologies. The pace of technology is moving fast and the whole world is struggling to create and trigger this technology. Education in Malaysia should take full advantage of the opportunity and space and be active using Revolution 4.0. If these new technological challenges are not adequately emphasized, they could leave Malaysia far behind in the global competition. In this regard, higher education systems across the country will also experience changes in the outcome of the Industrial Revolution 4.0. We need a more flexible institute of higher education and ready to face new challenges so that any community is not left out in the globalization and digital age. Malaysia is the first country to design the Industry 4.0 challenge element in the Education Development (Higher Education) Plan 2015-2025. Malaysia's initiative is a step forward, as the higher education
development plan encompassing the 10 spikes is an excellent narrative framework not only for the future but for today. The idea practiced by Malaysia is the most innovative step in determining how the country will become a significant player in the global economy in the future. As such, education is at the heart of the new challenges of the Industrial Revolution 4.0.

1.1. Application of Environmental Ecology Theory According to Ibn Khaldun

In the face of this 4.0 revolution, the use of ecological theory needs to be emphasized to produce holistic students both academic and personal. Islamic thinkers for decades have seen environmental challenges as issues that need to be studied for the formation of the next generation. Ibn-Khaldun states that "Whoever is not educated by his parents, will be educated by time." The development of an individual is closely related to the passage of time. In today's development, most new generation are exposed to gadgets compared to children in the past decade. No wonder children who are just one year old are already good at using smartphones to watch children's songs for educational purposes. Regardless of the reasons for using this gadget, parents should monitor and see the ecological system of the environment as an important factor in educating children. The development of an individual is closely related to the passage of time. In today's development, most new borns are exposed to gadgets compared to children in the past decade. No wonder children who are just one year old are already good at using smartphones to watch children's songs or for educational purposes. Regardless of the reasons for using this gadget, parents should monitor and see the ecological system of the environment as an important factor in educating children. According to Ibn Khaldun, the ecological theory of the environment also involves human civilization in shaping human morals. The mistake of educating children from childhood will damage the country's assets as well as the stock of the hereafter. Therefore, good environmental care is essential for proper education.

The growth and character of an individual will be shaped by the development of his or her environment whether by family, friends, teachers, neighbors, and communities. People around will be exemplary to them because children are good observers. They easily imitate what everyone around them does to build their attitude.

![Figure 1. Ibn Khaldun theory](image)

1.2. Application of Environmental Ecology Theory According to Bronfenbrenner Theory

Urie Bronfenbrenner (April 29, 1917 - September 25, 2005) was a Russian. He was brought into the world as an American psychologist best known for ecological theory [16]. Bronfenbrenner's research capabilities were key to changing the development of psychological perspectives by focusing on many influences on the environment, society, and children's development. Bronfenbrenner sees the process of human development as shaped by the interaction between individuals and their environment [17]. The specific path of an individual's development is the result of the influence of one's environment, such as parents, friends, school, work, culture, and so on [18]. During that time, he saw that psychological development only studied the individual's influence on development in extraordinary
circumstances. He also argues that psychological development is the science of behavior to children or adults in a very strange situation for the shortest amount of time.

Bronfenbrenner imagines the theory of human development as the ecological theory of the system. In his theory, he states that there are many levels of environmental influences that influence children's development. It starts with a human being and then an institution that directly influences the culture of a place [17, 18]. Then contributes to the influence of time, such as certain events and changes in culture over time, by adding a chronology to the theory. Also, he finally renamed his theory of bioecological models to recognize the importance of biological processes in broader development [19]. However, he only recognizes biology as a product of one's potential. Furthermore, this potential can be achieved or not through environmental and social power. Bronfenbrenner's theory of ecological systems focuses on the quality and context of the environment dating back to childhood. He states that as children grow and interact in this environment, it becomes more complex [17]. This complexity can arise as the physical and cognitive structure of the child matures and the environmental factors greatly influence its development at a later stage. As an example of a healthy adolescent environment such as having a caring family, hardworking and positive friends, the most helpful teachers will make the adolescent's growth more mature and smarter in identifying the bad situation.

Ecological systems are also known as developments in the context of human ecological theory. This theory offers a framework in which community psychologists study individual relationships in society more broadly. This theory is increasingly based on the context in which these individuals interact. Bronfenbrenner's ecological theory of environment is divided into five environmental systems. The ecological theory holds that we face different environments throughout our lives that may affect our behavior at various levels. The system is divided into five systems namely micro-system, mesosphere, ecosystem, macro-system, and chronosphere. These systems are the relationships or continuities associated with the environment and the interaction of the students themselves. Therefore, this theory is a belief based on an in-depth study that links students' relationships with their environment whether with society, environmental influences, climate, culture and language, beliefs and more.

The review of the ecological system framework facilitates the organization of information about people and their environment to understand their relationships. Individuals move through a series of transitions of life, all of which require environmental support and coping skills. Social issues include health care, family relationships, insufficient income, mental health difficulties, conflicts with law enforcement agencies, unemployment, educational difficulties, and more. All of these problems can be adjusted under the ecological model by evaluating factors relevant to the problem. Therefore, studying the context of the ecological theory of the environment from the very beginning of an individual's development is very important to identify the cause of the problem. Using Bronfenbrenner's (1977, 1979) ecological framework, this article explains the relevance or role of environmental ecology theory to provide specific guidelines for building a positive cultural climate among schoolchildren, communities, communities, and communities by using more detailed theory integration.
1.3. Harmful activity triggers harmony

The planning and management of clear and systematic activities need to be taken into account in delivering good results [20]. The main objectives of achievement should be emphasized so that students know exactly what to do. Engagement in social activities, communication, and cooperation between schoolchildren is crucial in shaping the identity of its citizens. A student's social development and skills will influence his or her attitude and behavior. The environmental events that are the most immediate and potent in affecting a person's development are activities that are engaged in by others with that person or in her presence. Active engagement in, or even mere exposure to, what others are doing often inspires the person to undertake similar activities on her own [16], [19]–[21].

Islamic scholars also emphasize activity as a strategy to create a good atmosphere or environment in life. For example, fasting, early church prayer, prayer, remembrance, and other activities can nurture students in a better way and be gratified by Allah (Ibn Khaldun 1967, 1993). Subsequently, these activities will be practiced daily by those who indirectly create a noble character in the student body. As a result of the activities, they can develop students who are more self-reliant, God-fearing, cooperative, and able to work towards solving problems well based on the Islamic way of life. The process of recruitment takes place not only during the process of teaching Islamic education in the classroom but also engages students in co-curricular activities, especially religious activities that provide a balanced field of human development and nourishment [22]. Religious activities involving students in the schools will provide the fill and fertility of the students. Understanding Islamic teachings will also be strengthened and students will be able to deepen their religious values. A research was conducted by the importance of implementing religious activities in schools found that the majority of students agreed that school surgeries were successful in building their friends' loyalty [23]. This means that activities carried out to create positive social interaction among students, especially those living in dormitories.

According to Ibn Khaldun (1967, 1993), the only way to counter the evil desires and temptations of the devil from committing evil deeds is to perform and practice activities such as meditating with the devotee and fasting for a while. This activity can directly extinguish all of the physical demands that each individual has. Therefore, the soul that is nourished by remembrance and the Quran will be closer to God who is the spirit in every breath of life. This will indirectly shape the future generation of rabbis. The development of today's technological world has led to a lack of student involvement in school activities. This is because students are less inclined to engage in social activities because they are more involved with gadgets, and the internet is alone at school or home. Students are beginning to
become less active in engaging in physical activity at school [22], [24]. This will indirectly cause students who are less skilled in learning activities to face difficulties in building their knowledge as it leads to less active learning. Also, the findings of Raihan and Kamarul Shukri [25], [26] study also found that the implementation of planned activities by the school administration can create a good early climate. The results of the study also found that the performance of the school band was also a result of planned and organized activity. This is evident from the national schools in the Pekan district who are performing well, mostly with well-planned activities such as early morning prayer recitations, ecclesiastical prayers before returning home, regular activities and so on. Based on previous studies, it is clear that activities play an important role in creating an early climate in schools. Each activity or program that is to be carried out must be carefully planned so that the planned goals are achieved and can produce a good outcome for the students in developing good morale and resulting in outstanding student achievement.

1.4. The practice of forming a superior personality
Ibn-Khaldun’s ecological theory of environment (1967, 1993) emphasized the practice of shaping one’s personality. This is because the behavior or actions of the surrounding environment will affect the students’ behavior [20], [27]. In addition to the actions, the events surrounding the students will also influence their practice. If they are in a good situation, the student will also imitate the good practice and vice versa until it becomes a habit. However, the process of empowering students to develop good morals requires continuous effort and practical training to familiarize themselves with praiseworthy traits and avoid all traits. Therefore, to recognize humiliation is to constantly reflect and reflect on what you do throughout the day and practice daily practices such as remembering, reciting the Quran and understanding its meaning, qiamullail and so on. These practices are one way to achieve good morals. All acts and behaviors in Islam are practiced daily according to the specific procedures that each of his people should follow.

Implementing a practice in daily life creates a routine or habit. In the Quranic manhaj has established that knowledge acquired through the taheim process should be practiced. Practice will be formed after such a thing has been done for forty days. Through the process of teaching and learning, one will reach a level of understanding and accuracy once the knowledge gained through it is implemented in practice. Conclusions based on social learning theory applied by Bandura (1973) conclude that the main thing that children and adolescents often learn is through observing the behavior (practices) of others, especially those who are significant to them. An act (deed) in society affects the lives of young people. Thus in the context of education especially in schools, every good deed practiced by its citizens will be the result of the appreciation of the virtues required by the Shar’ah.

The fact that families from different social classes exhibit consistent differences both in parental socialization practices and in measures of developmental outcomes for the children does not establish that the latter is a function of the former, for both could be direct products of other variables associated with or actually defining socioeconomic status, such as income, education, occupation, family size, single parenthood, and so on.

1.5. Role model influence the environment
The most effective and influential medium of education is through a good example. A Muslim will follow the wisdom gained from the influence of his environment to be modeled or exemplified in applying positive values to his personality. Indeed, the Messenger of Allah (may peace be upon him) is the best example for us to consider. The credibility of the Prophet Muhammad is to be followed by his companions and followers in all aspects of life. Ulwan [28] described the role model of the Prophet by saying that paradox in education is an effective and most convincing method of success in preparing and shaping learners in moral, spiritual and social education. Rasulullah S.A.W emphasized the principle of Qudwah Hasanah, which is an role model of the content of education which
emphasizes the subject of faith and morality through the methods spoken and performed by the Prophet and practiced more vigorously.

In the meantime, Ulwan [28], [29] also suggested that an effective method of education from an Islamic perspective is education by example. Role models can greatly influence the personal construction process of an individual, especially students. Discipline must be demonstrated by teachers whether religious or academic, they need to make themselves a prime example for students. This is further illustrated by a study conducted by Segupta [30] who found that teachers carry out their education through exemplary practices as implemented by the Prophet S.A.W.

The developmental importance of ecological transitions derives from the fact that they almost invariably involve a change in role, that is, in the expectations for behavior associated with particular positions in society. Roles have a magic like power to alter how a person is treated, how she acts, what she does, and thereby even what she thinks and feels. The principle applies not only to the developing person but to the others in her world [21], [27]. Finding a good example of self is easier for anyone around us to follow. That is the method of inviting people with 'al-Qudwah al-Hasanah.' It is a form of da'wah with deeds (da'wah bil-hal). The preaching work includes several key areas:

Morals Building morals is not an easy task. It's the Messenger's work. The Prophet SAW said: "Verily I am sent to fulfill the noble character." (History of al-Bukhari in al-Adabul Mufrad no. 273) The importance of moral construction is that the Messenger of Allah (may peace be upon him) associated it with faith: "The most perfect believers of their faith are the best of them, and the best of you are the best of their wives." (History of al-Tirmidzi (no. 1162) The morals of the parents greatly influence the morals of the children. They will imitate it spontaneously. Likewise, in our community live, we need to be present with dignity. Isn't it because Allah Almighty sends His messenger for us to develop a civilized moral code? The word of Allah Almighty, which means: "For you, it is to you that the Messenger of Allah is a good example. It is for those who are always looking for Allah (good) and the Hereafter, and he also mentions and remembers Allah abundantly (in times of trouble and ease)."(Surah al-Ahzab, verse 21)

1.6. Environmental Ecology Concepts in Education.

The educational concept of the revolutionary era has changed a lot. This change is not just in physical and material aspects, but also in the way of thinking, how knowledge is developed. Today's students are thinking far ahead. The approach that needs to be used must also be technology-based to attract their acceptance of any knowledge. The millennial generation is also more open-minded and does not like to be bound by many rules. They prefer the freedom to do what they want. What is worrying is that they make the mistake of choosing a friend and choosing the wrong path.

Therefore, the environment plays an important role in shaping the student's self to conform to their will without ignoring the teachings of Islam. Technology also helps the learning time of the school to become more active and engaging by using videos that represent the development of something, a phenomenon, from vivid visuals that lead to abstract thinking and are very difficult to forget. It only requires students to learn from their students, and teachers should strive to apply technology to their school days. From the beginning of the 21st century, big tech companies like Google, Apple have created a lot of smart tools and software to use for training, these devices help develop thinking and stimulate student creativity. Learning is no longer just a pen on paper, nowadays we can do everything on electronic devices. One of the breakthroughs in science technology is the introduction and development of smart devices such as smartphones, smart televisions that help people enjoy the Internet era, contribute to their entertainment needs, and enhance operating productivity in learning.

2. Methodology

The qualitative approach used in this study is based on the analysis of literature highlighting documents from previous studies. The analysis of this document is also based on research from the 14th-century Islamic scholar Ibn Khaldun (1332-1406). Combined with Islamic and western
researchers, it has come up with a conceptual framework that can be applied in shaping the school climate.

2.1. A Framework of the study concept
The results of this study form a new concept based on the views of Islamic and western scholars in discussing the integration of environmental ecology theory in schools in the wake of the industrial revolution 4.0. These three strategies are closely intertwined and are extremely important to be used in schools to create a positive school environment. The positive school environment will be shaped not only by physical aspects but also by emotional and spiritual aspects. The equilibrium in these three strategies will result in the formation of the pore as shown in Table 1.

Table 1. Thematic analysis

| Theme (repeat words) | Activities | Roles | Practices |
|----------------------|------------|-------|-----------|
| Ibnu Khaldun          | 90         | 105   | 99        |
| Urie Bronfenbrenner   | 16         | 104   | 23        |
| Total                | 106        | 209   | 122       |

Source: Mukadimah by Ibn Khaldun and the ecology of human development by Urie Bronfenbrenner

3. Conclusion
As a result of the integration of these ecological theories, the environment can discover three main dimensions that can be practiced by all parties. Dimensions of activities, practices, and exemplars are very important in shaping and adopting Islamic culture and lifestyle as the most important and balanced aspects of the world and the afterlife. All of these aspects can be adopted by all regardless of other religions. Islam is a religious religion that everyone can follow without assabiyah with their religion. All parties should work together to create an Islamic state or a pious society. Without the cooperation of all parties, the Islamic atmosphere would not have been possible by itself. The implications of this study can guide today's education system. It is also hoped that this study will open the way for the authorities to take the initiative to study the key criteria to create a more effective school climate in enhancing students' self-esteem while pursuing excellent academic achievement. Also, teachers need to be given an understanding of the importance of applying Islamic values and lifestyles in everyday life so that students can emulate and apply them. Advanced suggestions This study can be further researched by examining in detail the construction of programs that are compatible with the characteristics of palliative care. Such studies can also be extended by using different methods such as conducting empirical studies to secondary and lower schools throughout Malaysia. This study can also be carried out as a comparative study between regular and full boarding schools and studies on the construction of religious practice modules can also be conducted by future researchers.

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