The impact of parental education levels on digital skills of students in urban sprawl impacted areas

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Abstract. The current research will describe developing cities in developing countries especially in Indonesia representing polycentric or urban sprawl growth patterns. The purpose of this study is to identify the influence of the level of education parents have on the digital expertise of students in supporting learning in urban sprawl impacted areas, this is intended to recommend handling the problem of low levels of knowledge of students about the use of technology to support learning and so that students have good digital expertise to support his work in the future. Data analysis used is descriptive qualitative to explore social factors of the community and students who develop in Colomadu District. Data were obtained through interview methods accompanied by questionnaires in the study area. The results of this study illustrate that the low level of education of parents will lead to low income and socio-economic conditions, thus becoming a barrier to information and digital abilities of students in urban sprawl affected areas. Students tend to have digital expertise when the level of education of parents is in a good level and has a good economic level, besides that it is found that regional development does not necessarily have a positive impact on increasing students' knowledge about technology. Furthermore, the low level of digital ability of students will be predicted to become an obstacle in the future.

1. Introduction

The development of the villages that urbanize in Indonesia is so big and fast. The process of urbanization in Indonesia, like other developing countries, results in a very diverse face of urban morphology. The city always experiences development at all times, Java Island is one of the most populated islands which its residents live in the city rather than in the village, the number of people living in rural areas has turned urban so that social and physical structures change. Java Island is one of the big islands in Indonesia, but this island only covers 6.8% of Indonesia's land and holds 57.5% of the 237 million population of Indonesia [1]. Education in Indonesia is both structured and unstructured education held in this country. Structurally, education in Indonesia is the responsibility of the Ministry of Education and Culture of the Republic of Indonesia. All the Indonesian citizens are required to attend the nine-year compulsory basic education program, six years in primary school and three years in junior high school.
Education in Indonesia is divided into three main lines, namely formal, non-formal, and informal [2]. But before compulsory education, many Indonesians were only able to get basic education, so that the population currently in the village of Baturan, Colomadu District, Karangayar Regency has a different levels of education so that it affects digital capabilities of the next generation. Education level possessed by the residents in Colomadu District is one of the supporting factors in getting jobs so that the earned incomes are able to change the socio-economic conditions of the residents in urban sprawl affected areas. High levels of education are also very important for countries to be able to achieve high economic growth rates [3]. Efforts to reach high family economists, parents must provide the highest learning opportunities in school. So, information is needed about the level of education of parents to find out the digital skills of students related to the work of parents.

2. Methodology
This research was conducted in Colomadu District, Karangayar Regency, Central Java Province, which is an urban sprawl affected area located in the City of Surakarta, which includes Besa Baturan, data were collected through in-depth interviews with residents in the research setting which became one of the effects of urban sprawl. The research subjects were all people living in urban sprawl impacted areas in Colomadu District. Research participants were selected using purposive sampling technique, selecting people who really know about spatial transformation in Colomadu District allowed the researcher to use them as representatives of the community, community leaders or important people in the research area and village officials, as well as students who are still in high school. Qualitative descriptive data analysis technique was used in analyzing the data of the current research.

3. Results and discussion
Colomadu District is a sub-district located in Karanganyar Regency with an area of 15.64 km2 with an average height of 450 meters above sea level [4]. In the last few years in Colomadu Subdistrict, there have been significant changes in land use, the most land use for buildings and yards reached 93%, moored at 6.72%, and for ponds / ponds at 0.28% [5]. Besides the information given in the publication of BPS data in 2008-2015 the villages in this sub-district experienced changes in terms of population growth, resulting in changes in land use and changes in social interactions in Colomadu District [6]. Changes to agricultural land have led to an increase in land change, which is an indication of the symptoms of urban sprawl. In the population order the impact of urban sprawl on a village has a positive and negative impact [7]. The positive impact caused by urban sprawl is 1) increasing population which will increase population density in the region; 2) the more activities that occur will increase the regional economy; and 3) increasing infrastructure in the affected area, as a supply from the local government to the needs of the community. But it turns out, besides having a positive impact, the phenomenon of urban sprawl also has a negative impact, including 1) the decreasing fertile land for agriculture, even the land of its existence is also narrowing due to changes in land use; 2) the increasingly irregular city morphology as a result of the division of the city out of the area which is not preceded by the initial land use plan listed in the Regional Spatial Plan (RTRW); 3) the increasing cost of location tax for residential areas that are increasingly widespread and away; 4) increasing levels of pollution on land, water and air and increasing energy consumption by humans; and 5) the occurrence of social inequality due to slum areas.

Education is a crucial mobility ladder. The improvement of the level of education increases the likelihood of mobility for low and middle class children. The higher the level of education from the intellectual side, the higher the social level in society, usually the output of formal education is. The level of education is a long-term process that uses systematic and organized procedures, in which managerial workforce learns conceptual and theoretical knowledge for general purposes [8]. The measurement of the level of formal education in Indonesia is classified into three categories namely basic education, secondary education, and higher education. The community as education users who have the right to be given the opportunity to obtain the widest possible education by the government, but the absence and differences in opportunities become an obstacle to the order of practice in the field.
The following is the results of obtained interviews with parents regarding the level of education, income, and knowledge of students about technology in an effort to know the skills in using technology.

**Table 1.** The education level and incomes of Colomadu District residents.

| Education level | Income (Rp)          | Total of residents |
|-----------------|----------------------|--------------------|
| Elementary school | < 500,000            | 20                 |
| Junior high school | 500,000 - 1,500,000  | 42                 |
| Senior high school | 1,500,000 - 2,500,000| 25                 |
| University       | 2,500,000 - 3,500,000| 23                 |

Technology has become so integrated in everyday life that we can hardly remember what the world was like before the multi-device future, because technology and connectivity became a reality today. It is hoped that technology will become more intuitive and rooted in our daily lives, and this leads to an important conclusion: the better we handle this technological shift, the better our adjustments to it becomes [9]. Digital skills have core indicators that can be the basis of learning in school. The digital capabilities that students must possess include the ability to use digital tools, media and resources efficiently and responsibly to complete practical tasks, find and process information, design digital products and communicate content [10]. Digital skills also include developing digital assessments by acquiring good knowledge and strategies for using the Internet. Digital skills are an integral part of today’s education and an important part of life for students. Studying the key aspects of 21st century technology that surrounds us can provide benefits for students in pursuing their knowledge. The research conducted in Colomadu Subdistrict had a sample of 75 students who sat in junior high school. Many students who still use technology are just playing and have not maximized the role of ICT in schools. The findings in the field of junior high school students amounted to only 30 people who used well the advances in technology to help with the learning of the school, that was also because at home it did have computers to access learning resources in digital form. Students should be able to use a maximum number of websites that help in increasing knowledge such as Google Docs, Prezi, and Easybib [11]. Each service has helped students by teaching collaboration, allowing students to use the display of creative presentations made beforehand, and helping to produce quotes in any format.

In fulfilling their daily needs and other needs everyone needs work. By working they will get income, if the income can meet their daily needs and meet other household needs, the family is said to be prosperous. Income is all income earned by the family in the form of money or services. Everyone has the right to earn a living in an effort to meet their daily needs so that income can influence someone to pursue what they aspire to. For people who have a small income, they strive for the results of their work just to meet their daily needs. For middle-income families they are more focused on meeting basic needs such as food, clothing, housing, education and others. While high-income and well-off families will fulfill all the desires they want, including the desire to send their children to higher education. Based on its classification, the statistical central body distinguishes income into 4 income classes as follows:

**Table 2.** Incomes classification by the central statistics agency [12].

| Category of income | Nominal for each month (IDR) |
|--------------------|------------------------------|
| Low                | < 1,500,000                  |
| Medium             | 1,500,000 - 2,500,000        |
| High               | 2,500,000 - 3,500,000        |
| Very high          | > 3,500,000                  |

Historically, Asian countries experienced a high level of economic growth, but many of the rural communities still live below the poverty line. As a result, there is a bias in the allocation of resources which is reflected in the imbalance between rural and urban areas that are economically inefficient. This situation led to a lack of investment in rural areas as a result of excessive transfer of resources towards cities, which was reflected in the lack of public services provided to poor rural communities. The general
trend is also evident from the concentration of public facilities located at the center of local government administration, while in remote and poor rural areas that facilities such as schools, health centers, agricultural extension workers often cannot reach. Even if the facility is available, but its availability is very insufficient, which causes students to only be able to use what he knows in his village. Based on the description above, the income of the people between each other varies depending on the type of work done so that variations in the level of income can vary. The income generated from the work carried out is paid per day, weekly or monthly so that this income will be used to fulfill living needs, both for food and other purposes such as for the continuity of children's education which is an investment for the future. Parent education has a significant and stronger effect on students' digital skills [13].

At present, the study of the determinants of aggregate economic growth has emphasized the importance of fundamental economic institutions [14] and the role of cognitive skills of the population [15]. If the workforce must be good for the future, then the education system in Indonesia must be designed to equip all people with strong literacy and numeracy skills, information literacy and a flexible, creative and adaptive mindset. This will be important to prepare today's students for the future economy, where the skills needed are not only predicted now but can be given good and correct learning about technology. The importance of the digital capabilities of students is currently a supporting factor in the future. Even since reform, ICT has been mandatory for all students aged 5-16 years in school [16]. To reduce these problems, the schools must be strengthened again in the schools regarding technology, both in training and seminars. The results of the 2012 Royal Society report stated that many students revealed ICT "boring", this resulted in a decrease in the number of students who studied technology since 2007 [17].

4. Conclusion
From what is stated above, it can be summed up that the development of cities in developing countries, including Indonesia, shows symptoms of urban sprawl development towards the suburbs. The level of education of parents is one of the references to the socio-economic conditions of the people in the urban sprawl impact area. Where many residents with low education levels are only able to work as private employees whose average income is Rp. 1,500,000. This condition presents that the area affected by urban sprawl does not necessarily make the population to have a good socio-economic situation if it is not accompanied by the level of education and expertise of the population itself. This makes their children who are studying in school lack the ability to use technology well because of the lack of knowledge of parents and their socio-economic conditions. Though it is an important thing in everyday life even for the future of the children. Our task is to provide education and training to facilitate the population to create a creative economy that supports the community's economy and enables parents to provide facilities in the form of technology to their children in increasing their knowledge and ability to use it effectively. As for the government, it must instill digital technology in the school curriculum to overcome the digital skills crisis through starting from the education system. Education is important as a more digitally skilled machine so that future students have the ability and confidence to continue to learn and adapt to technological advancements.

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