

## A Study on the Linkage plan between Local universities and Communities in the era of the Fourth Industrial Revolution

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### Abstract

*This study investigates cases of support policies and institutional support implemented by governments, municipalities and universities in developed countries for their communities based on previous research on local community resources in Korea. In addition, we intend to derive a plan to revitalize urban regeneration through existing research and case studies on the linkage type between university and community*

**Keywords:** 4th Industrial Revolution, Smart City, Urban Regeneration, Local Universities, Community

### 1. Introduction

The fourth industrial revolution, which was first mentioned at the World Economic Forum<sup>1</sup> in 2016, is a next-generation industry in which advanced information and communication technologies such as artificial intelligence (AI), Internet (IoT) It means revolution. As a result, efforts are being made to establish and implement new strategies in many industries. Under this background, Korea is actively promoting ICT-based smart city projects by combining urban regeneration projects with the fourth industrial revolution. In particular, in the case of provinces, it is considering ways to link regional universities with urban regeneration. This is because Korean universities have grown and expanded along with the growth of the metropolitan area and the university campus(Bae et al.2007). The first universities in the metropolitan area were outskirts of the city and gradually became the center of the city with the growth and expansion of the city. The community around universities that have developed around universities has undergone changes over the course of 70 years, and the bigger universities are gradually expanding into community boundaries. Therefore, this study examines the possibility of using local universities as a linkage method of urban regeneration projects, and examines the development and expansion of cities and the process of resolving aging and re - taking with local universities. Through this research, we will examine the relationship between local universities and local communities, and the programs that can link university campuses and local communities.

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## 2. Theoretical background

### 2.1. Urban policy in the era of the 4th industrial revolution

In the era of the Fourth Industrial Revolution, there is a heated debate about how to prepare for change in various industries. In fact, the debate on the Fourth Industrial Revolution has been steadily progressing since the spread of IT technology and the Internet has been steadily progressing. However, as the globalization issue, the 46th World Economic Forum in Davos, Switzerland, WEF). The key theme adopted at this forum was 'Understanding the Fourth Industrial Revolution'. If the core of the first industrial revolution was to revolutionize the use of mechanical force by the power of steam and water through mechanization, the Second Industrial Revolution was to build a global mass production system using electric energy, Is a digital revolution through automated production system using information technology and internet diffusion. It is very natural, but it has a great influence on the function and form of the city. Therefore, this study examines the key concepts for linking local revitalization projects with local universities on the basis of the changes in cities brought about by the industrial revolution in history.

Table 1. Process of Industrial Revolution

The first industrial revolution	Second Industrial Revolution	Third Industrial Revolution	The Fourth Industrial Revolution
Innovative power generation of steam and water through mechanization	Established mass production system using electric energy	Automated Production System and Internet Dissemination Using Information Technology (Digital Revolution)	Fusion of various technologies and cognitive revolution centered on artificial intelligence

### 2.2. Smart city and urban regeneration

The era of the Fourth Industrial Revolution is transformed into city concept centered on people rather than traffic. At the base of this flow, the values of life changed around the young generation are working. They live in downtown, but rather pursue a life that allows them to spend their time freely, rather than traveling around with cars. As the interest in the ecological environment of the area deepens, the urban area which is hoped to move to public transportation in daily life and can utilize the shared car service when it is needed is again attracted to the spot. For this reason, in some cities of developed countries, it is not a hollow city but a suburban hollow. Then, among the key technologies of the Fourth Industrial Revolution, what kind of technology will lead the future city, and what kind of city will be transformed.

### 2.3. Urban regeneration and community

The era of the Fourth Industrial Revolution is expected to create new jobs and opportunities for entrepreneurship[3]. Modern urban planning, which has been optimized for industrialization in the strictest sense, is now in a state of convergence. Now the city is undergoing another evolutionary process. But now the city itself will become a new factory, enterprise and industrial complex without walls. Tokyo R Realty is a real estate boutique and real estate media.

It is a service that responds to the desire to use a house with a good atmosphere and a warehouse as an office because it is fine[6]. It is a business that started in an area where transportation was convenient but the image was poor. It is a way to find an interesting empty house, provide it by remodeling it, and monetize it. The UK and the Meanwhile space are examples of community revitalization projects and community collaboration[9]. It is a social enterprise that creates spatial contents for communities and residents' communities until empty buildings are reopened. As the economy worsened after the global financial crisis in 2008, vacant houses and vacant stores increased, and slum problems became a serious social problem[8]. These vacant buildings were rented almost free of charge to artists who needed small businesses or workshops, and tenants paid only administrative expenses such as electricity and heating costs[1]. One of the successes of this case is the 'vacancy tax'. If you leave the building empty, you will be taxed. Builders can get tax relief instead of lending an empty building, so the benefit is on the landlord as well as on the tenant[2].

### **3. Connecting urban regeneration with local universities**

#### **3.1. Relationship between community and university**

English-American universities have designed campus plans in conjunction with the community. In the case of New York University, Sorbonne University, and Royal Melbourne Institute of Technology in Australia, each facility of the campus is dispersed around the area, so that there is no boundary between the university campus and the city, and the city space and the campus can interact spatially[4]. It is planned to be easily accessible from all over. According to the 2020 LRDP (Long Range Development Plan) of UC Berkeley in the United States, new projects are being established each year to enhance the characteristics and cultural vitality around the area[5]. Through the City Environs Framework, The land use around the campus is not contradictory, and I am planning a campus with the surrounding community. This university campus is a place where private corporations participate, community facilities, R & D cooperation and community activities are carried out beyond university ownership sites that accommodate the basic functions of education and research, Defining it as space can be thought of as the beginning of campus space planning income to prepare for the growth and development of university campus(Tone Tetsuo et. al.2006). In the case of Japan in Asia, as a part of the regional reduction of the educational research activities of universities, the cases where the universities participated in the different township makisakuri organizations in terms of the starting process, the purpose of the activities, can be analyzed[12].

#### **3.2. University relations for community regeneration**

It also proposes to extend the concept of planning for the growth of campus to the space of the adjacent community closely linked with the university, beyond the possession of the university, by introducing the process of transition from monoculture to polynuclear structure at the University of Berkeley[10]. This means that the expansion of the campus through the review of the master plan of domestic universities will provide the interrelated function through the formation of the university-community society as a principle in order to preserve the natural environment[7]. Existing research suggests the necessity of this planning concept by showing that the university campus can be the subject for community revitalization and that the campus area can expand the community to the spatial extent[11]. However, the scope is limited to the case study of the established campus towns and the linkage between the university and the non-physical program among the community, and related planning and design studies are also

limited to the improvement of the street environment facing the university and the expansion of facilities in the university site.

Table 2. Relationship between campus and local film

Classification		Contents
Clustered	Concentration type	Areas where many large college passes are concentrated in one space
	Distributed type	A number of small and medium-sized universities are scattered and distributed
	Base type	Areas where functions can be linked around one base
Standalone		A region where the university is independently formed with self-fulfilling functions

Therefore, this study has differentiated from the existing researches in that the meaning of community revitalization within the scope of urban regeneration is suggested by selecting local base for joint growth and establishing strategy by linking with local universities

#### 4. Linkage plan of local and urban regeneration using local universities

##### 4.1. A Case Study of Urban Regeneration in Local Universities

The case of urban and regional regeneration is sought to draw up a linkage plan through Kongju National University in Korea. First, Kongju National University is a national university with four campuses located in each province of Chungcheongnam-do. The reason for the selection of this case is because it is judged that it is a good case to judge the linkage of local universities to local communities by distribution in each region. The first site of Kongju National University is located in Gongju City, the College of Engineering is located in Cheonan, and the College of Industrial Science is located in four areas, including the Ogryon Campus, which fosters the education of Korean nationals.

##### 4.2. Linkage plan of urban regeneration to local universities

The kongju national university yesan campus was built in 2002, and its accessibility to the urban area has been reduced, and there are many old buildings that are about 20 years old. In the campus comprehensive plan, there is room for development capacity, so it is possible to plan the experiment and practice in the field of agriculture and life by securing the experiment and practice for specialization of the agriculture and the life field by linking with students and local agricultural and livestock industry. In addition, the department with similar functions is organized as a cluster zone, and the campus core is formed in the central part. In particular, the campus core is designed in such a way that the students and the residents are located in the center of each cluster zone considering the walking movement and designed to improve

accessibility and efficiency. In order to create an ecological space, natural green areas and artificial green areas are connected naturally, and in order to make the convenience of the residents connected, a promenade can be used as a nearby promenade in the downtown area.

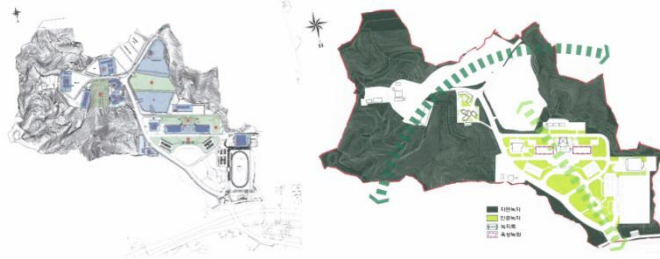


Figure 1. Yesan campus complex and green space plan

For this purpose, we will promote the vitality around the central city area through the creation of the streets of Chuseok, the guest house for artists in the budget market, the creation space, and the residency (joint work room and residence space) It is possible to carry out various projects to promote cultural programs such as lifelong cultural communities, development of day-to-day cultural programs, cultural space revitalization (life culture centers, small libraries, etc.)



Figure 2. Local streets and youth incubation

Finally, it is necessary to create a young entrepreneurial engagement with the campus and create an exciting space. To this end, it is necessary to operate the Incubation Support Center, to provide support services related to entrepreneurship in the region, and to assist in the role of management consulting for small business owners and stable settlement support after establishment.

## 5. Conclusion

This study examined the possibility of using local universities as a linkage between local universities and local communities in connection with urban renewal projects in the era of the Fourth Industrial Revolution. To this end, I have examined the process of city development, expansion, aging, and re-taking with local universities. Therefore, the relationship between local universities and localities, and the possible alternatives between university campuses and local communities are derived as follows. Based on the master plan of the yesan campus of Kongju National University located in four provinces of Chungcheongnam-do in Korea, the derivation suggests urban and regional regeneration plans in the surrounding area. First, in

terms of the comprehensive plan, the campus core is composed of the cluster zones with the functions of education and field practice in cooperation with the major industries of the region. The community space was used as a plaza of the Urban College. Students and local residents are designed to have accessibility and efficiency at the center of each cluster zone in consideration of gait circulation. By connecting the circumferential road, which is the environmental axis of the environment, and the walkway in the forest, The accessibility of the center was secured. Lastly, in connection with the plan to revitalize the urban regeneration, we have provided various commercial contents such as local festivals and cultural events, and provided publicly - owned commercial facilities for Chusa, a key figure in the area, and proposed a linkage business of specialized campus arts areas. In particular, based on youth resources linked to campus, we proposed an alternative that could stimulate vitality of youth centers by creating youth support and creative support spaces. Finally, this study does not provide an empirical analysis of the project's performance as an empirical study suggesting alternatives through the case of local universities. Therefore, the type of business and implementation plan will be more concrete through empirical analysis.

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