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Sustainable Design Camp as a Platform to apply the Principles of Editing Urban Design to the City's Strategic Plan

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Abstract

“Sustainable Design Camp” is a collaborative workshop organized by three Universities. Inter-disciplinary and international students are divided into several teams with their specialties as architecture and urban design, building systems, building structures and the landscape architecture under the instruction by the various experts. After the site survey with SWOT analysis, each team will find issues (weakness) and potentials (strength) of the target site. The proposed solutions will be evaluated by the environment evaluation tool CASBEE for community development.

Throughout of the entire process, students will be well-educated and trained to facilitate how to utilize their specialties in the inter-disciplinary settings, and furthermore, international approach helps to find out the issues and potentials of the site objectively. This collaborative approach among Public, Academic and Private will be necessary to establish the city's strategic plan for the sustainable future.

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Keywords

Green Urbanism; Sustainable Development; Renewable Energy; Local Food; Sense of Place; Nature

1. Introduction

Kyushu University is constructing Ito campus, which extends over Fukuoka city and Itoshima city. Three campuses named Hakozaki, Ropponmatsu, and Haramachi will be integrated into one at Ito Campus (Figure 1). The relocation started in October, 2005. The relocation of the faculty of engineering, faculty of science and basic education programs are in progress. The multi-year relocation is expected to be completed in 2018.

The study area of this design workshop consists of planned area for future Kyushu University Academic City, and Maebaru northern area and Shima eastern area, of Itoshima City planning master plan. The objective of this design workshop is discovering the urban design possibilities of suburban campus life in the unique living environment of Itoshima. The workshop will also try to develop the urban design and architectural proposals to enhance the living environment of the students and employees of Kyushu University as well as the living environment of residents of the area. Itoshima city is known for its beautiful nature; mountains, beaches, and agriculture products. Yet, it is only 30 minutes from the center of Fukuoka city. Sunset beach concerts are held every summer, surfers come to surf, cyclists run around the peninsula, and fishing becomes popular. Now a days, people's life style has been shifting from “just working” to “enjoying hobbies”. Itoshima could be the place for people enrich themselves with

nature, without becoming totally disconnected from the “city”. Residential apartments, single homes with view oceans are easily achieved in Itoshima. If it is in Tokyo, people need to commute at least two hours to reach this setting.

Multidisciplinary student teams from urban design, architecture planning, environment, building structures and the landscape will study the problems and potentials of the site. The environment evaluation tool CASBEE for community development will be used to evaluate solutions and the existing condition of the site. Estimating the BEE (Building Environmental Efficiency) to evaluate the environmental performance of buildings before and after the planning of the scheme is a unique learning process of this workshop.

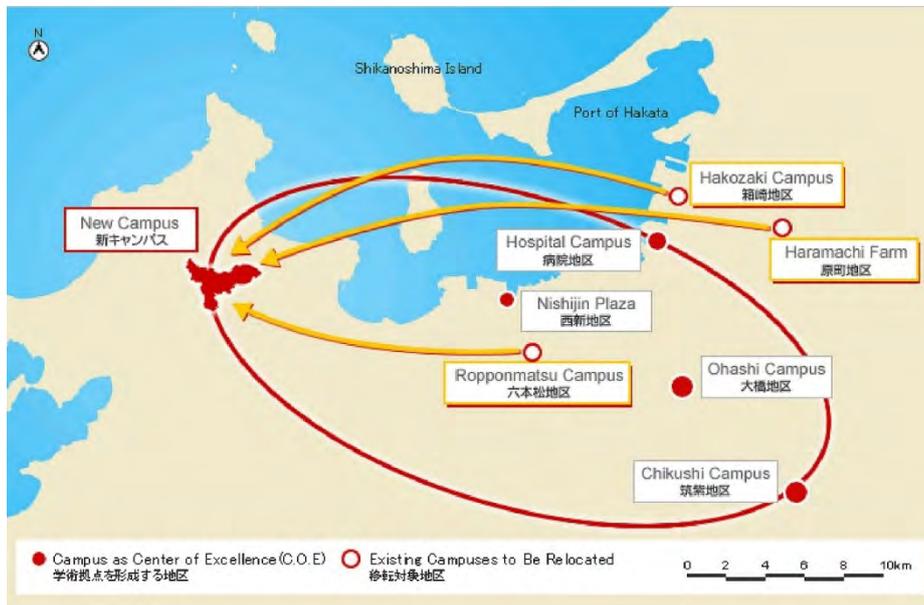


Figure 1. Campus Unification and Re-location

2. Principles of Editing Urban Design

In order to address the issues, the workshop began by carefully analyzing the city’s potential for improvement and considering the views of both the residents and visitors. Kobayashi (2012) states, “Most of the time, we learned that the cities had many natural resources and assets that result from a long history of trade, transportation and cultural exchange and knowledge”, in *Karatsu Re Editing a Fragmented City*.

However the cities lost much of its attractive characteristics because those resources and assets were fragmented. A truly attractive city is the one which encourages people to walk. In order to create a more walkable neighborhood, a new design approach can be applied to any city. Exchange may “re-edit” and reveal the city’s historic character as a walkable city.

2.1. Character of Target Site

For each workshop it is important to acquire an in-depth understanding of the site. The following are frequent issues stated by Kobayashi (2012) which each workshop addresses:

1. Once prosperous regions face urban decline with population growth and economic instability.
2. Due to a shift in industrial activities, cities have lost a major industry that had sustained its citizens’ jobs, income taxes, etc.
3. Historical resources for regeneration, such as building heritage, provide the possibility for valuable street-scapes
4. Natural resource for regeneration such as beautiful nature is available

5. Varying public connectivity and transportation exist.
6. Sense of the community is lacking or has been completely lost.

Additionally, there are many common urban issues which many cities suffer from such as the hollowing out of the city center, “downtown”, due to a decreasing population, an aging society, a loss of the young generation to the big cities for better opportunities, the rapid suburbanization by automobile oriented society, urban spread due to highway networks and development of suburban shopping centers, and a decline of old shopping streets in the city center. Figure 1 shows a campus unification and re-location to the new campus, “Ito Campus”.

To conclude, the following six themes are the common urban design theory for regeneration:

1. Succession of Urban Memory: utilize unique character of city’s asset such as historical inheritance and the cultural heritage
2. Unity and Connection: re-network a variety of fragmented, dispersed resources
3. Pedestrian Oriented Compact City: Construction and maintenance of pedestrian friendly streets
4. Return of Inhabitants to the Urban Center: Providing comfortable residential places to accommodate a diversity of residence
5. Landmark: Creation of a place that can become the symbol of the city, town, or even district
6. Strengthen a Sense of Community

3. Process of Workshop

Kobayasi (2012) also stated, “The specific process of the workshop is divided into the following eight stages.” As a member of the instructors with Prof. Kobayashi, we have followed the similar process. During the charrette period each group gathered data and formed conclusions about the situation. Each group then formulated a proposal scheme.

3.1. Sharing Basic Information (Understanding of Aim and Process)

Participants must clearly grasp the purpose and position of the workshop. There must be an understanding of the targeted country and city’s economic and social position as well as an overall understanding as to why the study area was chosen. The significance of a multi-field conversion study workshop must also be grasped knowing where one can contribute based on his/her expertise.

3.2. Site Survey (Understand the Area through a Site-Visit)

In order to grasp the outline of the study area, a personal visit of the study area and related facilities in the vicinity is required in which research data is gathered on foot. It is important to clearly differentiate between two types of field work. 1) Grasp and understand the features of the study area by intuition in a short time, and 2) take time and conduct analytical research in the study area based on research indices. It is preferable to conduct the former at this early stage, while the latter should be conducted as part of later, individual group work.

3.3. Collection of Local Information and Interview Residents

It is imperative to properly collate the issues of urban planning and environmental problems as well as information concerning policies for the measures to be taken. This should be done through the attending of lectures by the administration and universities as well as the referencing of existing information about the study area. In addition, it is important to ask citizens (called stakeholders) to present opinions concerning the current situation and their ideas regarding what it should be. These results will be the basis for establishing an urban and environmental plan.

3.4. Presenting a First Impression

Before obtaining and analyzing detailed information of the study area, students walk around the study area without preoccupation and present the features of the study area intuitively. This is for the purpose of obtaining basic information to be used for future work in the workshop. Each participant/group decides on the main theme to be pursued based on this information.

3.5. Analysis of the Site Areas (Extraction of “Problems” and “Potentials”)

Study and analysis of the topography, geography, history, nature, and environmental quality are used to extract “Strengths” and “Weaknesses” in the study area, and become aware of outside “Opportunities” and “Threats” (SWOT analysis). Additionally, “problems” and “potentials” in both the inside and outside environment are extracted.

3.6. Future Vision of the District (Investigation of the Strategic Design)

Groups think about how the problems in the study area can be solved, and what an attractive place it can become in the end. Then search for a means in which the future vision can be established based off of the strategic design methods available. Through the discussion, solutions for the existing “problems” are developed and a specific strategy to reach the site’s potential is reached.

3.7. Specific Design and Plan for an Effective Site

Teams focus on a specific location or facility through which improvement would have the greatest effect on the area as a whole. A specific plan or design is proposed taking into consideration its context in order to show an actual example of the future vision as well as to show the strategic design method discussed as a prototype. By focusing on one significant location and making a concise proposal, a significant improvement is expected to emerge in the whole study area.

3.8. Implementation of the Vision (Scenario Proposal in Order to Implement the Plan)

Study of the legal, financial and economic basis as well as the control/management system after the completion is conducted in order to put the final plan/design into practice so that the existence of a realistic and feasible scenario as opposed to a fictional one can be shown. It is hoped that the scenario in the timeline can be presented in stages: short term, middle term, and long term.

4. Workshop Methodology

To present the society with a realistic scenario, not a fictional plan, it is important to study the legal and financial logistics, and the management for the long term vision, in order to implement final designs. This shows the comprehensive process of the workshop, in which participating students are divided according to their research topics. Because the students can sometimes lose focus on their target and make their collaboration difficult, it is quite important for the participants to regularly report on their process and receive advice from the instructors and experts. Kobayashi (2012) suggested at least four levels of design review process for exchanging ideas as listed below.

4.1. Desk Critique

To review the design process of each group, the instructors and experts go around the group-tables and discuss the design orientation.

4.2. Pin-Up

The participating members show their ongoing work to the instructors and colleagues and conduct a design review in a relaxed way. It is important to avoid the overlapping of themes and to check the mutual relationship among the group projects. A process to confirm the structural strength of the proposal by all the members is implemented here.

4.3. Mid-term Review

In the middle of the workshop process, it is important for the participants to make an interim presentation to the government officials and the “stakeholders” (the local citizens) to help them understand the progress of the work. At this point the effectiveness of the selected methods (image, model, oral presentation etc.) are analyzed and decisions are made with regards to how to make them more easily understood by the citizens.

4.4. Final Review

For the final presentation the participants must highlight what they have learned and accomplished throughout the workshop incorporating the changes made with regards to the feedback they received during previous reviews. Using the workshop’s process as an introduction, the participants present their final products by groups. It is necessary to pursue a high standard of quality in order to impress the representatives of the community and the press media through attractive panels, models, handouts and visual slideshow presentations.

5. Environmental Assessment, CASBEE

As a matter of course, energy consumption of cities and architecture play a large role in the global warming and depletion of energy resources. There are numerous issues to which the fields of architecture and urban design must respond to, that exist in regard to energy conservation and the reduction of carbon emissions. Against such a background, countries throughout the world have developed tools for evaluating the environmental performance of buildings, and these tools are recently displaying a rise in popularity.

Comprehensive Assessment System for Built Environment Efficiency (CASBEE) is a tool for evaluating the environmental performance of buildings developed uniquely in Japan by a sub-committee of the Institute for Building Environment and Energy Conservation under the leadership of Japan’s Ministry of Land, Infrastructure, Transport and Tourism. The evaluation is carried out step-by-step in a question and answer format according to an instructions manual. Final evaluations are displayed according to a five rank system of “S Rank” (Excellent), “A rank” (Very Good), “B+ Rank” (Good), “B- Rank” (Fairly Poor), and “C Rank” (Poor) according to the value of the Built Environment Efficiency (BEE). BEE is determined by dividing the Environmental Quality (Q) by the Environmental Load (L). Therefore, even if the architecture has a high environmental quality, the total score will be lowered if the environmental load is too heavy.

The Environmental Quality is ranked according to Indoor Environment (thermal comfort, lighting, etc.), Quality of Service (durability, adaptability, etc.) and Outdoor Environment on-Site (conservation, local characteristics, etc.). The Environmental Load is ranked according to Energy (natural energy utilization, efficient operation, etc.), Resources and Materials (water resources, reducing usage of non-renewable resources, etc.) and Off-site Environment (consideration of local and surrounding environment, etc.).

Evaluation by CASBEE remains fundamentally voluntary, and no legal obligation regarding notification of results exists, but usage nonetheless is observable amongst local autonomous bodies. Since CASBEE offers a broad perspective on design, it is useful not only as an evaluation tool but also as a design tool. Versions exist not only for architectural specialists, but also for use by municipalities and renovation. Use in Japan is on the rise and further developments are expected in the future.

6. Case Study

The workshop held in Fukuoka, Japan (Summer 2017) was hosted by Kyushu University from August 4 to 12, in collaboration with Chinese Culture University (Taiwan), and Texas A&M University. The theme of this year's workshop was the planning of the core zone of Kyushu University Academic Research City, mainly at the Ito Campus of Kyushu University. During the workshop, the students were divided in eight teams each tasked with creating a future vision for one section of the district. In this eight day collaborative charrette workshop the participating undergraduate and graduate students of home (27 participants) and abroad (25 participants) worked under the guidance of 14 faculty members from the participating universities.

The Sustainable Design Workshop explored a multidisciplinary approach towards developing sustainable urban design and environmental strategies, considering Ito Campus neighborhood as a target area for creating a 21st century urban model. The students devised urban design and environmental strategies considering local context and international experiences for sustainable development of the area.

6.1. Master Plan of Itoshima Area, focus on “NATURE + HEALTH”

The “Itoshima style” is what guided the workshop’s overall concept. The slower, more nature-infused lifestyle leads to a happier and healthier life. The natural amenities are rich and lush that its design should bend to nature and fit in to the overall larger scheme of the topography. The master plan located the student housing close to the base of the campus for proximity, but kept the rest of the residential nestled in the beautiful lake at the bottom of the mountain. Combining all these areas together is the HUB (Figure 2).

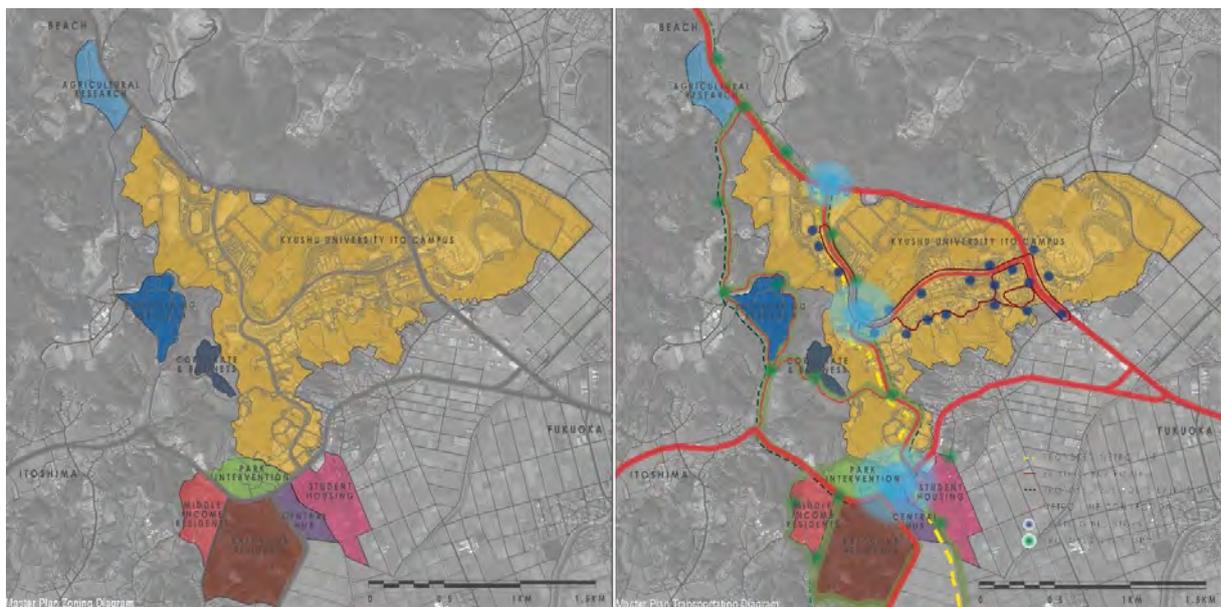


Figure 2. Master Plan

The hub creates a focal point for restaurants, community, shopping, and transportation. This point would allow the flow of a funicular train up the mountain to meet the local bus route as well. As time passes, this funicular could be expanded further into the mountain side for improved access while still keeping a low profile. By keeping things

on ground level, or below, the mountains are able to be expressed in their true glory.

On the west side of the main mountain, would be the firefly condition of the business and technology sites. The research and technology institute would be located close to the university for easy access for students and faculty. Where the agricultural research facility is more northern located in order to spread out appropriately for its focus type. The corporate focus zone splits these two in a firefly pattern for a perfect location in the mountainside.

Further firefly locations are chosen for when the Itoshima campus and community expands in order to balance work, living, and nature. Each of these small installation will, in time, create a beautiful network of enclaves that allow for good density with the country-style home that one would expect in Itoshima. In all, the master plan allows for a beautifully connected community with fast transportation and an affinity and respect for what makes Itoshima great (Figure 3, Figure 4).



Figure 3. Student's Proposal



Figure 4. Student's Proposal

7. Conclusions

In the Kyushu University Academic Research City Plan, the two aspects are “building a regional science and technology system to promote exchange and creative activities of knowledge” and “formation of a comfortable space that serves as a stage for knowledge, dwelling and eternity”.

In addition, as a design concept, “Hotaru=Firefly” was proposed, which its focus is to integrate with the rich natural environment of the Itoshima region and the local community. The concept of “Hotaru=Firefly” is to distribute various activities and facilities around Kyushu University as well as provide collaboration with the environment, such as research & development, design, and SOHO (small office, home office) businesses.

Students challenged their own “Hotaru=Firefly”, making use of the natural environment of each site and land use characteristics. As a result, we had wonderful and exciting proposals, even though it was done in such a short period of time.

These proposals will be introduced in the future, such as utilizing the traditional architecture, village design that responds to the ecology of fishing and fishing villages in Itoshima, and cooperating with the creative current Itoshima region lifestyle and community. I trust this material will be utilized effectively.

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