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Improving Architecture Planning for the Green Smart Future Schools Program

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SUMMARY

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Overview

The Green Smart Future Schools[1] program is one of the key projects of the Korean New Deal, and the Ministry of Education plans to convert a total of 2,835 school buildings that are more than 40 years old into Green Smart Future Schools over the next five years. The total budget for the program is estimated to be KRW 18.5 trillion. Following the announcement of the 'Green Smart Future Schools Comprehensive Promotion Plan' in March 2021, the selection and planning phase of the 1st-year Green Smart Future Schools target projects is currently underway.

The Green Smart Future Schools program differs from the previous innovating school environment project in two aspects: first, it emphasizes environmentally friendly green schools and digital learning environments; and, second, it introduces a new project implementation structure that recruits educational planners to strengthen the pre-planning process. The program devises a new way of planning school facilities and actively promotes participatory planning, however, there are limitations imposed by the current program schedule and structure which need reexamination. Recently, few local Offices of Education have attempted to change the current pre-planning procedures by changing the pre-planning period and considering the separation of educational

1) In previous documents written in English the program is known as the Green Smart Schools. However, in recent Korean documents released by the Ministry of Education the program is known as the Green Smart Future Schools. The latter direct translation is used in this study.

planning from spatial planning in the pre-planning stage.

Against this background, this study identifies the current status of architectural planning of Green Smart Future Schools using data compiled by the National Public Building Center. Based on this, the study aims to suggest improvement measures for the substantialization of the architectural planning of Green Smart Future Schools in the future.

Main Findings

☐ Main issues of the Green Smart Future Schools planning

The study identified the implementation structure of the Green Smart Future Schools program, in particular, the overall planning phase of the program, and compared the contents of the Green Smart Future Schools pre-planning to the public architecture planning work based on the Act on the Promotion of Building Service Industry. The study found that while the Green Smart Future Schools pre-planning emphasized the establishment of an education plan through the newly introduced educational planner, the public architecture planning required business plan-related items that are necessary for ensuring project delivery.

Through consulting various experts and stakeholders, the study identified further issues of the Green Smart Future Schools architectural planning. There was an issue regarding the planning process procedure: the proper procedure of executing the Green Smart Future Schools pre-planning first, then submitting it to the National Public Building Center for the preliminary review of public building project plans was not being implemented in a number of projects. The study also found that many involved in the pre-planning work voiced opinions that it was necessary to reconsider the appropriate implementation period and method of the Green Smart Future Schools pre-planning in view of its scope that requires participatory planning.

A defining aspect of the Green Smart Future Schools architectural planning is that spatial planning is based on the anticipated changes in the school curriculum and educational planning. Hence, setting educational goals for future schools and forming a consensus among stakeholders is of utmost importance.

In this sense, spatial planning serves as a means of achieving the educational planning objectives that have been agreed upon by the school community. Hence, the success of individual projects relies on establishing a close link between the educational goals and spatial planning which requires substantial input from those involved. Also, while the Green Smart Future School pre-planning emphasizes user participation design and education planning, matters that ensure project delivery, such as project budget, scale, and realistic timeframes may need to be reinforced. It is also necessary to establish a spatial plan that meets the purposes of the Green Smart Future Schools project by demonstrating how the key elements of its architectural design – innovative space, green schools, smart classrooms, and multi-functional schools – are implemented.

□ Green Smart Future Schools project and spatial planning analysis

Based on the preliminary review of public architecture projects being carried out by the National Public Building Center, this study analyzed the project and architectural planning of Green Smart Future Schools, limited to primary school reconstruction and remodeling projects submitted between July to September 2021.

Before discussing the results of the analysis, the nature of the data used for this study needs to be clarified. The study used preliminary review application form and review results, which are documents produced in adherence to the Act on the Promotion of the Building Service Industry. As mentioned earlier, since a number of Green Smart Future Schools projects have applied for the preliminary review process before properly completing the Green Smart Future Schools pre-planning work, the results of the analysis cannot be generalized to the overall status of the Green Smart Future Schools pre-planning. Rather, the analysis should be understood as information screened through the public architecture preliminary review process. With this in view, the implications based on the analysis of the project and spatial planning of Green Smart Future Schools can be summarized as follows.

With regards to project planning, it was concluded that the project scale, budget, energy efficiency improvement plan, and scheduling should be reinforced. With regards to the project scale and area, the insufficient common

areas, and with regards to budget, low design and construction costs were derived as items that required re-consideration. In particular, accurately determining the construction cost is necessary since the construction cost is linked to the calculation of the design cost. Many projects also omitted the implementation of design intents, which allows architectural designers to propose "matters necessary for realizing the intent of their design" as mentioned in Article 22 of the Act on the Promotion of Building Service Industry. The study also identified that while barrier-free living environment certification is not required for remodeling projects, this was recommended considering that school environments should accommodate students of all needs. Also, building energy efficiency, and zero-energy building certification levels were to be clearly set in order to determine the certification cost. Regarding the project schedule, realistic planning for the construction period was suggested. As for the design stage, the need for appropriate timeframes depending on the procurement method was suggested.

Considering spatial planning, the study identified that similar spatial planning contents were repeated across different school projects. In some cases, the descriptions of spatial planning were either too general or set on known principles without describing how the Green Smart Future Schools project objectives were being tailored to the individual schools. The study related these shortcomings to the difficulties in setting educational goals, which is thought to be the guiding aspect that drives the spatial planning of individual schools. However, since the method and extent of setting education goals need development, a clear direction for spatial planning may not be apparent in some cases.

Furthermore, the study identified that the spatial elements need to be aligned more closely to the purposes of the Green Smart Future Schools project. For example, in the case of green schools, there was a tendency of limiting the realization of green schools to outdoor green areas while key issues such as achieving carbon neutrality or using space as means for teaching climate change were not sufficiently considered. Also, since the purpose of smart classrooms is to cultivate digital literacy among students and to enhance their learning abilities using digital devices, classroom reconfiguration needs to be developed in closer relation to such curriculum plans and changes. In the case of creating multi-functioning school environments, comprehensive planning of appropriate spatial programs, and

discussions on how the space will be operated need to be laid out as well as reviewing the extent of areas that will be opened to the local community.

□ Improving Green Smart Future Schools project and spatial planning

Based on the project and spatial planning analysis of Green Smart Future Schools projects, the study identified a number of improvement tasks. The short-term improvement tasks are as follows. First, the Green Smart Future Schools projects should implement the public architecture planning phase procedures in accordance with the Act on the Promotion of Building Service Industry. If the public architecture preliminary review process is carried out on projects that have not completed the planning phase, the procedures that follow thereafter become merely formal and fail to ensure high design quality and rational project delivery. Hence, this study sets this as the basic premise of improving the Green Smart Future Schools project and spatial planning.

Second, to substantiate project planning, a draft of items that need to be strengthened in the existing contents of the Green Smart Future Schools pre-planning report was suggested. However, since there are dividing opinions on the specificity of area calculation in the planning stage, a method of suggesting a range rather than fixed figures could be considered. In the case of project budgets, the effective use of construction costs that allow the consideration of individual school needs and the main spatial planning direction was suggested as opposed to the current cost per area.

The mid- to long-term improvement tasks are first, the improvement of the education planning method and the related planning system. As mentioned in the earlier analysis, it is necessary to set clearer future education directions at a level that can be linked to spatial planning. In regards to this, a detailed guide that lays out the roles and methods of work between educational and spatial planners needs to be developed. Second, a comprehensive approach to the key architectural design elements of the Green Smart Future Schools is needed, and third, the content of user participation design needs to be clarified according to the different stages it is implemented.

Future Research

This study was conducted in the first year of the Green Smart Future Schools program where issues of pre-planning methods and contents are starting to emerge. Therefore, the study results and analysis should be understood in view of this fledgling state of the program. Acknowledging this, future research and project monitoring will be important in ensuring the success of the program.

In the future, a detailed understanding of the relationship between local Education Offices, schools, and educational and spatial planners carrying out the Green Smart Future Schools pre-planning work needs to be pursued. Especially, the pros and cons of separating educational planning from spatial planning, the appropriate pre-planning timeframe, etc. need to be analyzed to suggest efficient and effective ways of working among various stakeholders.

The building of temporary buildings during the construction phase is one of the key issues that require careful planning. Since erecting temporary buildings affects student safety and their use of the school grounds, the issue needs to be set out and agreed upon among the wider school community and properly taken into account in the project schedule and budget.

Lastly, concerning the spatial planning for Green Smart Future Schools, a deeper understanding of the role, scope of work of the educational planner is required, as well as the actual process of creating high-quality school environments through the involvement of educational planners. Also, the appropriate level and method of area planning need to be explored that is consistent with the public building planning procedure and pragmatic for the design stage of individual projects.

Keywords

Green Smart Future Schools, Architectural planning, Project planning, Spatial Planning