

Integrating Public Participation Program into CAAD Curriculum

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Abstract. This paper discusses an early phase of ongoing research on the implementation of public participation program in urban setting by academia through digital visualization projects performed by students in CAAD course works context. The implication of this program on both sides, the academia and the city, is examined. The result has indicated prospects in enhancing digital course contents, which is not merely digital visualizing built environment anymore but also making digital project cases more local oriented. From public side, the resulted mechanism may facilitate dissemination of urban development program as well as opening wider opportunity to accommodate community aspiration.

Keywords. Digital design education; CAAD curriculum; public participation; city model; e-Government.

Introduction

Most of local governments in Indonesia have had strong commitment in implementing Information and Communication Technology (ICT) in line with their development program, either in internal administration works or in supporting their roles as public service. The e-Government terminology becomes more and more popular. But still classical problems emerge as consequences of public program in the context of developing countries. For typical technological implementation program, problems in maintenance and updating are very common making high investment in ICT sector seems not effective. Mostly this is caused by lack of supporting resources in making this technology runs well, especially in public interest setting.

This paper discusses an ongoing research to seek potential of university involvement in solving the problem by integrating academic works with public activities. The involvement is to be devel-

oped in the framework of community participation program, which has been a regular program of every higher institution in Indonesia. The objective of discussion in this paper is to define a mechanism of integrating public participation program by universities into academic works, in this context specifically CAAD (Computer Aided Architectural Design) course works within the framework of increasing quality of digital design education. This is very strategic policy considering prospect of making course materials up-to-date. Public participation in this paper means participation of academia as part of community and city stakeholder in facilitating dissemination of information that belongs to public rights as well as its maintenance and updating aspects. Including in this research program is prototype for implementation and development of a local oriented planning support system (Shiffer, 1999), which becomes the main framework of this research.

Precedent

Besides technological issues, content of CAAD courses is another strategic material that should be evaluated and renewed continuously. This is to anticipate progressive movement of ICT on one side, and more and more complicated architectural context as setting of modeling cases in CAAD works on the other side. Establishing CAAD courses in an architectural digital design education curriculum shouldn't be merely put it among course schedule without strategically noticing school resources (Mark et al, 2001; Satwiko, 2001). Considering this issue, we, at the Department of Architecture University of North Sumatra, has established a sequence of CAAD courses in the Curriculum 2000. There are two required courses in the undergraduate curriculum: Introduction to Computation in Architecture and CAAD. Both can be considered as basic level and intermediate level courses in a typical CAAD curriculum (Mark et al, 2001). There are also two elective courses: Digital Modeling and Special Cases in Architectural Digital Modeling, which are advanced level courses offered to those who have shown sophisticated performance in utilizing CAAD as design tool. With such complicated computer courses as well as existing limitation in our infrastructure, so far the department only has one computer lab with 20 PC's to be accessible for about 300 undergraduate students; we have committed to empower all of the resource to its maximum capacity. Every aspects of digital design education should consider its relevance to other aspects of architectural education. We have been attempting to integrate all possibilities of non-CAAD course works side by side with CAAD course works in building digital databases of course materials and course works (Hamid, 2003).

Including with this issue is course materials such as objects to be modeled digitally. Rather than building fictive forms as modeling cases, it is

more effective to employ real cases. Research on impact of local cases as course materials for CAAD by Hamid (2002) at Department of Architecture University of North Sumatra has indicated a prospective result. It stimulates students' cognitive skill of spatial design through exploring space digitally based on real situation that they have been familiar with. Based on these findings we have extended course works resources by involving any particular institution that can enrich source of modeling cases based on mutual benefit principle. One of the most potential opportunities is by making contribution to public through facilitating local government tasks in disseminating public information. Up until recently local government still faces problems in visualizing public information, while visualization is believed as a very communicative method to simplify information for people. The most important issue in implementing this idea is how to match content of CAAD courses with the needs to enhance public information without sacrifice the objective of each course. Previous research has indicated a success in the impact of integrating research works based on public project on the sequences of CAAD courses and is discussed widely in previous paper (Hamid, 2003).

Digital Map as Basis

A sequence of phases has been identified regarding the implementation of the university's public participation program concurrently with developing architectural computation courses. First phase is developing and maintaining the information, which is the content of the system. Second phase is defining strategy to maintain and sustain the system. Discussion in this paper focuses on research developed around strategic issues during those two phases. For next phase, the issue to be explored comprehensively in research setting is how to access information

publicly through a proposed network of local information center. Therefore the research setting has enabled this ongoing research to establish a more local oriented CAAD curriculum while in the same time still keeping in line with development of global technology.

The main material to be utilized in conducting the research is a digital map of Medan, a city of more than two million people settling in an area of 260 sq. km, which may represent a typical city that is projected to be a metropolitan in a third world country setting. The digital map has encompassed all area of the city with relatively detailed information. It was developed under governmental project, and had been completely finished in 1999 after four-years work. Some problems arose once it was completed. Sources of attributes for the map were from old archives, even some of them was taken from more than two decades sources, such as street names. Many developments and changes in the city during the project and after it had been completed couldn't be recorded. No updating mechanism had been established along with the map project. Some reasons could be mentioned, mostly concerning the limitation of municipal resources to establish such mechanism. The Department of Architecture University of North Sumatra has taken initiatives to handle the problems. We are doing a research for identifying a mechanism where public participation as part of university program is integrated into CAAD curriculum. Furthermore a more applicable course and practical materials can be utilized for CAAD courses.

Integrating Digital Public Projects into CAAD Coursework

First step in empowering the digital map is by designing a system for maintenance and updating process. This is executed by integrating it with CAAD courses, especially for basic level ones.

Most course works concerned with improving attributes and updating physical information, such as: adding information of new streets or buildings. A more high-level CAAD work, still in this research context, is the establishment of standard for extending digital map level of information and making it as prototype of a digital city model. The standard is intended to be reference for any parties who develop digital urban model based on the digital map (Dokonal et al, 2001). In this case, digital model as the result of each project can be integrated into the prototype of digital city model making it more and more complete. These steps are executed through intermediate and advanced level CAAD courses. As part of the research, the works include examination of the standard by integrating previous digital urban modeling project into the prototype of city model.

The most strategic aspect in integrating digital public projects into CAAD curriculum is to identify what kind of project to be digitally visualized and in what context of the curriculum this project should be placed. Referring to the curriculum the integration of those projects should be done through exploring all CAAD course contents and identify on which topic the project has its relevance. Figure 1 describes the mechanism of connecting type of digital public project, its projected users (participants), and the prospective of CAAD course topic, in which the digital visualization project is implemented. Through this mechanism we could identify that the more community-oriented the public participation program involved, the more advanced CAAD course is needed to carry out the program. The implementation of this mechanism can be seen in Figure 2, which shows results of a series of CAAD course works based on same urban case. In this case, the visualization is developed based on the existing digital map of the chosen location.



alization works will need experienced students (Dokonal et al, 2001). Yet the proposed mechanism is very promising to anticipate this problem. The sequence of digital works as indicated in the mechanism has required students to undergo the maturing process through the hierarchical contents of CAAD course as it was arranged in the

Figure 1. Mechanism of integrating public participation program into CAAD curriculum

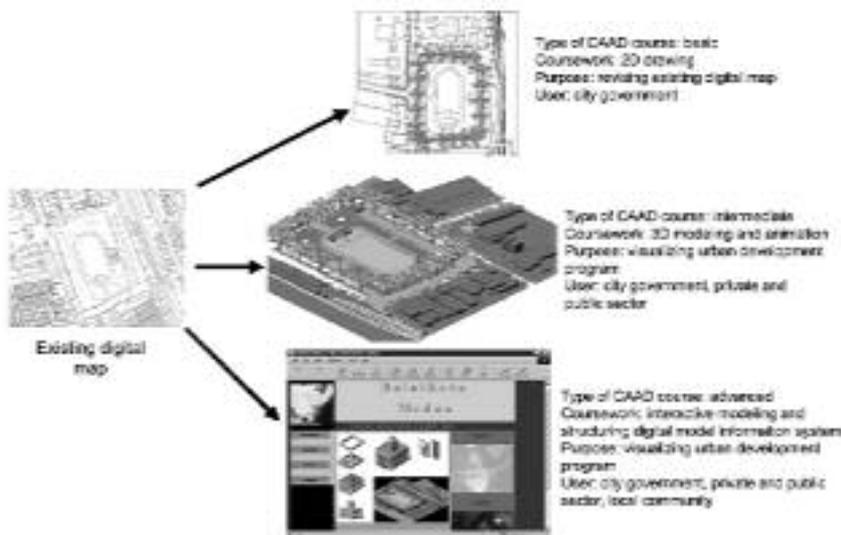


Figure 2. Example of CAAD coursework as part of public participation program

The role of students

The proposed mechanism has placed students as the central role in assuring the success of its implementation. All digital modeling are undertaken by students in the context of CAAD course works. With such a position, students have to be extensively encouraged to produce model that meets minimum standard either in the context of CAAD curriculum or in the context of public participation program. There is a risky situation here where not all students have capability or skill in utilizing complicated digital modeling works. As a city modeling project this digital visu-

curriculum.

It is clear that curriculum as framework of the proposed mechanism plays as scenario in supporting students playing their role. Although we could find many weaknesses regarding the resulted digital modeling product of the whole mechanism, at least student's work has successfully made valuable contribution to local government. Their works have filled spaces that should be undertaken by technical staff of city government in updating the city digital map. This menial digital work may cost nothing to the municipality if

this academic public participation program can sustain.

The implication and the next phase

As a consequence of public participation, this program should make a more community-oriented implication. Referring to the mechanism it will be reached on the upper level CAAD course, where the course content isn't merely about technical skill in authorizing computer aided design (CAD) application program. Analytical skill in exploring the information is required to each involved students in order to enable them developing a community-based information system. To achieve that point, we have attempted to make a prototype of a web-based information system by publishing digital visualization of a particular urban development project.

All completed works reside in special server and are projected to be available for public access. This dues to future development and empowerment of the digital map, the city model and the public website itself. By exposing it publicly we assume people's response as feedback of the project may be expected regarding content and level of communication (Shiffer, 1995). We have anticipated facilitation of this function by establishing local information center, which is built right on the local community neighborhood. Democratic dissemination of urban development information can be expected through this facility, where people can also participate in urban development physical planning and as well as making contribution in enriching information databases. This will be the early phase of developing planning support system for the local neighborhood (Donath and González, 2001; Geertman, 2002).

Conclusion

The integration of digital public project works into CAAD course works through revising basic digital map of the city has facilitated the Medan municipality government in keeping its digital property updated. From the academic side, this program has emphasized previous indication that modeling real cases stimulates students to enhance their digital skills as well as their visual perception of architectural space.

A more people-oriented public participation program becomes the target for the next phase of this research through the establishment of local information center as information node for accessing people's aspiration about digital model as well as disseminating public information. This type of digital public projects will also enrich cases to be explored in course works, which in turn will enhance course content. Students will not only visualize built environment anymore but also synthesize its non-physical aspects in the context of urban development. The completed program should be equipped with a system of sustainability mechanism that assures mutual benefit in accommodating public interests and in increasing quality of digital design education.

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