

Simon Colwill

Digital Communication of Knowledge for Academic Design-Build Initiatives

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Digital Communication of Knowledge for Academic Design-Build Initiatives

SIMON COLWILL Technical University Berlin, Germany

design-build | network | platform | knowledge transfer | communication

Academic Design-Build Studios engage in diverse projects throughout the world. They are often highly complex and involve numerous stakeholders of different disciplines and cultures. They therefore rely on effective communication between all parties throughout all phases of the project cycle. Digital technology offered by the worldwide web allows new means of communication and for immense amounts of information to be presented and shared. The research consortium European Design-Build Knowledge Network (EDBKN), consisting of a team of academic Design-Build practitioners, is currently developing a web-based platform designbuildXchange (dbXchange.eu) to support Design-Build stakeholders worldwide. A low-threshold, high-tech platform has been created, providing a "toolbox" for supporting projects throughout the project's life. Tools are offered for project presentation, networking, academic research, as well as dialogue and knowledge exchange between all stakeholders. This "knowledge exchange platform" allows projects to support each other by uploading information on research, design, construction details, funding, legal issues, costings, the realities of construction and much more. It will thus become a valuable source of information for all stakeholders throughout the world.

The complexity of today's architectural tasks requires highly qualified employees with both theoretical and practical knowledge and skills. These requirements are often not reflected in academic curricula. The Design-Build teaching methodology bridges this gap by establishing an educational infrastructure that reflects "real life" design processes thus contextualising student learning activities. Students receive a valuable opportunity to work in a team with a real client and realise their own ideas within an academic environment. They gain a deeper understanding of architectural concepts and benefit immensely from increased peer learning (Boud 2001).

Despite the enormous advantages of these teaching methods, there are many problems involved in initiating and running Design-Build projects. In 2011 Geoff Gjertson performed an online survey of 43 faculty members involved in Design-Build education in the US. The results highlighted the following major challenges: "Programme Challenges: The lack of integration of the programs within the curriculum coupled with the lack of acceptance and support from administration and other faculty may lead to the marginalization of Design-Build" and "Faculty Challenges: The stresses upon faculty caused by excessive workloads, multiple roles, and expanding student numbers and project scope threaten structural collapse". Furthermore, legal liability issues "...often require a faculty member to take on the role of architect for records. This factor often forces Design-Build programs to become separate legal entities to shield the university from potential lawsuits" (Gjertson 2012, pp 23-34). New forms of communication are necessary to address the increasing complexity of projects and numerous stakeholders "...all of whom have to communicate with one another in their various languages and with their various backgrounds" (Steiner 2013 pp 152-153).



FIGURE 1. Images from DesignBuild projects: "Malaab El Kobri", Cairo 2015 / Jam Manufactory, San Jerónimo Tecoaatl, Mexico 2012 / Assembly house, Guadalupe Miramar, Mexico 2009 / School, Zaachila, Mexico 2010. Photographs GUC Cairo and CoCoon Berlin

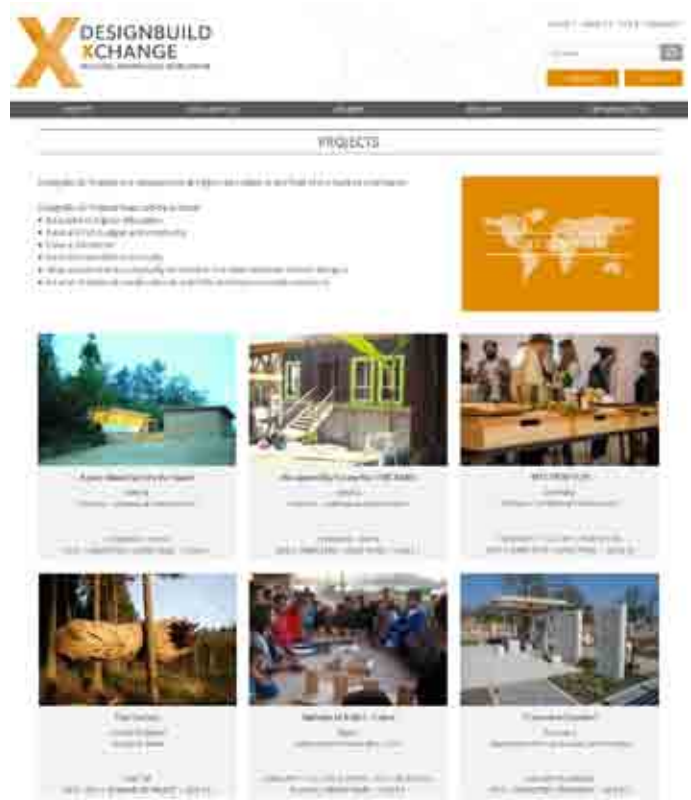


FIGURE 2. Project overview on the designbuildXchange web platform - dbxchange.eu. Retrieved 29. April 2016

In order to respond to these problems a consortium of Design-Build practitioners are developing the web platform designbuildXchange (dbXchange.eu). This EU funded research project is co-ordinated by CoCoon at the Habitat Unit, Technische Universität Berlin with its partners Ass. Archintorno, TU Wien, Dalhousie University and the German University Cairo. The web platform aims to become an everyday workplace providing a "toolbox" for supporting Design-Build Studios, mitigating problems and assisting project workflows, thus strengthening the efficiency and sustainability of Design-Build Studios. All drawings, related research documents, network partners, funding structures, legal facts as well as project results can be presented and made available to others. The responsive design of the platform allows for optimal viewing and interaction on all devices including the growing worldwide audience using mobile phones. By making the works more visible in their entirety and complexity, the platform allows the exchange of knowledge at various levels.

The target groups of the platform are all stakeholders involved in Design-Build activities, including individuals such as teachers, students, researchers, entrepreneurs and craftsmen. It serves local clients and supporting organisations such as NGOs, development agencies, foundations, the construction industry, and international academic exchange services. This diverse variety of platform stakeholders creates a common identity for the academic Design-Build community towards other interested parties (Pawlicki 2014). Registered members can contribute content to the platform by uploading a Personal Profile, posting Project Profiles, adding an Organisation Profile and uploading relevant documents. Members can also take part

in forum discussions, use the Networking Tool and download platform content. Non-registered users have reading rights only and can browse through the entire platform.

The "tools" provided on the platform aim at assisting project development. These were created by analysing the workflows of recent Design-Build Studios run by CoCoon at the TU-Berlin (see Figure 3).

These online "tools" facilitate research, dialogue, presentation and knowledge exchange, supporting projects at each project phase of the project cycle.

1) Preparation Phase

In this phase the integrated Text Search and Guided Search functions offer extensive filters for finding various types of information according to Content Type (member, organisation, project, library document, news and events) and a detailed categorisation with Tags (e.g. construction material or technique; project location; member expertise or profession). For example, Library Documents can be searched to find specific literature, research papers, construction drawings or funding strategies. Members and/or organisations can be searched to set up collaborations with clients, students or craftsmen and vice versa. The Networking Tool is an online noticeboard where members can add a post when searching for cooperation partners, funding, materials or specific knowledge.

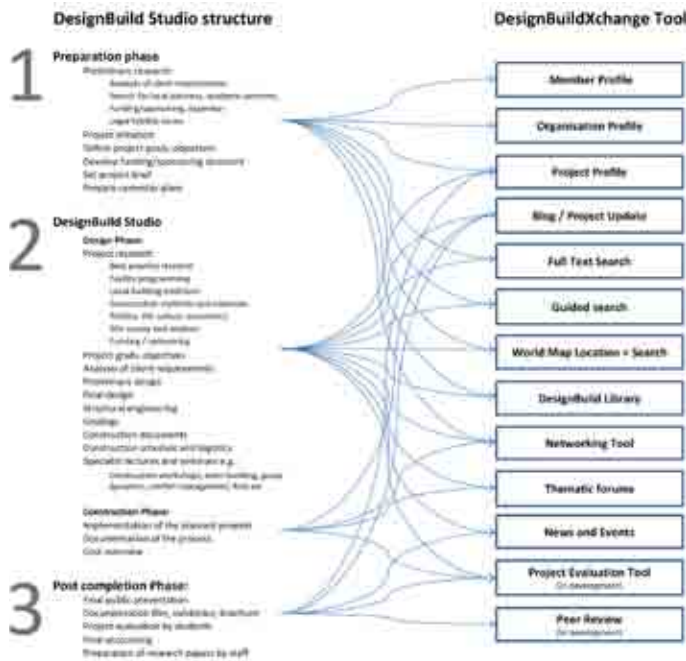


FIGURE 3. Workflow analysis of CoCoon DesignBuild projects in relation to the "Tools" available on the designbuildXchange web platform.



FIGURE 4. Project Profile on the designbuildXchange web platform - dbxchange.eu. Retrieved 29. April 2016

2) Design-Build Studio

Design Phase: Teachers and students can search the platforms database for best practice project examples, allowing an insight into what has already been achieved under similar circumstances (e.g. projects in certain regions or with a certain construction technique). Specific searches for literature, design plans, construction drawings and other documents provide the students with detailed information from the entire project cycle. The Thematic Forum enables project related discussion amongst participants or as a public debate.

In order to publicise the ongoing project a detailed Member, Project and Organisation Profile can be set up. These profile pages are automatically cross-referenced and allow for the full network of project partners to be presented within the platform. The location of projects, members and organisations is shown on the World Map Tool which can also be used as a search engine by scrolling for specific content. The Project Profile acts as a dynamic blog that can be added to or revised throughout the project cycle. It serves as an active means of communicating the status of works towards interested collaboration partners such as funding partners, students and academics (Pawlicki 2014). The project can be fully documented throughout the

project cycle by uploading documents to the platform. Logos of project partners, sponsors or supporters can also be uploaded to honour supporting institutions.

Construction Phase: The project update Blog is of most importance during this phase allowing for regular updates of project progress to be posted.

3) Post Completion Phase

Upon completion of the Design-Build Studio the Project Profile page serves as a detailed means of documentation. All related project documents, design and construction plans, costings, films, presentations and related research can be uploaded. This acts as an important reference for the associated funding organisations, academic administration and faculty members, students and clients. A Project Evaluation tool is currently being developed; this will involve setting specific project goals in the design phase and re-evaluating these goals through differing project stakeholders after project completion.

The platform is being coordinated with partner networks which have differing focuses related to their specific academic environments: the dbX Network (North America) focuses on research and the promotion of academic staff; the Live Projects Network (UK) focuses on project presentations and advocacy for Design-Build; the SEED Network focusing on social, economic, environmental design projects and post occupancy evaluations. These differences are reflected in the front end (the visible webpage) presentation of information on the different platforms, the back end (data access layer) however allows for shared components to be developed between the platforms. As joint ventures, we are currently seeking funding to sustain our platforms, connect our search engines and develop an online peer review system with an online journal. Long term financial support will be sought, for example from industrial partners or through fees for membership, peer review, congresses.

Academic Design-Build projects challenge standard practices for traditional design studios by exposing students to real world situations. We argue that Design-Build teaching methods not only intensify the learning experience but also provide students with holistic qualities that are essential to the profession today. Design-Build Studios however face many challenges at the programme and faculty level (GJERTSON 2011). The designbuildXchange Platform aims to ease faculty challenges by supporting the academic Design-Build community, providing tools for communication, presentation, knowledge transfer and public representation. This will enhance workflows and optimise the efficiency of design build initiatives. At a programme level, the platform provides evidence-based advocacy for the promotion of Design-Build educational practice.

Note

CoCoon – Contextual Construction, is a DesignBuild Studio and research unit at the Technische Universität Berlin. Staff members are Ursula Hartig, Nina Pawlicki and Simon Colwill

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