

Student-led post-occupancy evaluation of a BREEAM excellent building in close collaboration with a 'real world' partner

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Context

Discipline/Course/Subject area: BA Architecture

Impact: The practice was introduced:

within a course unit/module

Length of time project has been running: a four week project run over the past year

No. of students: 14

Level/Year of students: Year 1 and 2

No. of staff involved: 2

Summary of Case Study:

Architecture is often conceived of as the process that comes before the design of a building. Little emphasis is given to the experience of buildings by users. Post-occupancy evaluation (POE) is therefore becoming more and more accepted as a crucial part of architecture's methodical arsenal. This project was designed to equip future architects for this task. The evaluation was conducted of a BREEAM excellent building and thus gave this project extra relevance in the context of the current sustainability discourse

Key Words:

Post-occupancy Evaluation, Problem Based Learning, Enquiry-based Learning, Student Centred Learning, Live/Client Based Projects, Sustainability, Employability Skills

Key Points of Good Practice

- Students appreciated an initial brainstorming session on a flip chart about issues that are or might emerge as relevant for a building's evaluation of 'sustainability in action'.
- Some form of agreement should be reached about the protection of intellectual property. This does not necessarily have to be a written non-disclosure agreement; further discussion below.
- Students were allocated to four different groups: online survey; interviews with elites (designers, management, etc.); interviews with support staff (janitors, catering, etc.); interviews with 'sustainability champions' of every floor.
- Within these four groups, students were free to allocate tasks among themselves according to means, capacities and interests. This collaborative approach was appreciated by the students who thought it 'worked well' as a means of generating a broad spectrum of ideas, of sharing the workload fairly, and of helping to produce a more thorough analysis

Description of Implementation

This project was part of the 'event month' which is held every year at the Manchester School of Architecture. Over a period of four weeks lectures and studio teaching are suspended and students are allowed to select one of a variety of 'unusual' projects to work on. Fourteen students voluntarily signed up to this project, most of them were motivated by an interest in sustainability issues. Meetings were held every week for about three hours.

Before the first meeting, the project leader developed an agreement with the 'sustainability manager' of the local branch of an internationally operating architecture firm (henceforth 'the client'). Together, they defined the key parameters of the project and clarified issues around access to information, timing, intellectual property, etc. It was of particular importance to elicit the client's own motivation and his view on the areas that should be looked at in detail in order to build the POE's practical relevance into the whole research process.

This initial meeting with the client also included a discussion about the most suitable type of POE. The literature distinguishes between different types of POE depending on the time after occupation (Barlex *et al.*, 2006). Due to the fact that the client's company moved into the building under scrutiny only nine months before the POE – and thus had not yet completed the full cycle of seasons – only an 'Operational Review' was possible which is designed to find out "how well [a building] is working and whether there are any immediate problems that need resolving" (Barlex *et al.*,

2006, p. 9).

For each type of POE, three other categories can be distinguished, depending on the substantive focus. The first type analyses the process of the project delivery from inception to handover and/or the operational management practices by the estates team. A second class of POE analyses a building's technical performance, mostly through quantitative measurements of various physical systems such as lighting, heating, cooling, ventilation and acoustics. Thirdly, a POE can focus on a building's functional performance by investigating the degree to which a building supports an institution's – and its users' – needs, ambitions, mission and goals.

Our project was of the latter type because the client was keen on gathering empirical evidence about the users' experience of the new building as such and in particular about their experience of some innovative technical features such as the natural lighting provision and the acoustically attenuated semi-automatic ventilation louvers. These features were introduced to achieve a BREEAM excellent rating. It is important to bear in mind that the client was an architectural firm and thus had a strong interest in knowing whether these features were worthy of replication in its own future designs.

During the first meeting with the students, an issue map was developed on a flip chart to identify key areas that were or might emerge to be relevant to a building's sustainability 'reality check'. At the end of the first session the students went on a tour of the building.

The second meeting focused on the development of data gathering techniques. For example, what questions should be put to the different user groups? What questions should be included in an online survey; in what order; how many; on which server? It was decided that a range of survey techniques should be used: one-to-one interviews with the main actors, focus group discussions with group representatives, an online survey developed through SurveyMonkey (a free online survey tool). It was hoped that this would enable a level of triangulation of data.

The third meeting was held immediately after the main round of interviews and focused on the appropriate analysis procedures. It was also used to cross-fertilise ideas between the four groups and included the conceptual preparation of the final report. The report sought to be a mix of quantitative data, utilising the more structured online survey data to produce graphic analysis, and qualitative 'ethnographic' data that emerged out of the more discursive interviews and out of the students' observations of how the office was actually used.

The meeting in week four focused on building a consensus as to outcomes of the POE process, and substantial time was dedicated to the production of the final report in terms of content and layout. The value of the course and of POE in general was

discussed as well. Eventually, the final report was sent to the 'sustainability manager' in our partner company. Also, at this time, the group negotiated their conclusions between themselves and us, their tutors, in light of the data they had established. This was particularly important with the more qualitative data and served as a means of levelling-out the more extreme interpretations. The report also underwent approval by the client themselves, being sent through to our main contact who made comments and suggested improvements upon which the students acted. In this way the report was not only clarified but made impartial as well.

Students were assessed based on their presence, intellectual contribution and plain diligence. We admit that we were unable to judge precisely every student's contribution within one of the four groups but we are confident that adjudication was fair. This perception was reiterated by the students during the focus group evaluation, who insisted that workload was fairly distributed and everybody was seen as having been essential to the whole.

Perceived Benefits

For Students...

Students confirmed that the project could have the potential of highlighting the often problematic discrepancy between the user as imagined by the designer and the user in flesh and blood with their complex emotional, social and bodily needs. However, the rosy picture painted by the client made this discrepancy less visible than it often is.

Students unequivocally appreciated the opportunity to see "another side of architecture" (research, critical reflection) – other than the sometimes tedious and monotonous design work which consumes 80% of their studies.

Wide agreement was also expressed as to the value of experiencing "how the system works" and of seeing how a large international architecture firm operates from the inside. However, most students would have preferred to see more and to engage in deeper dialogue with the building's users.

The project's most tangible outcome is a 60-page report which all 14 students can put in their portfolios. It also contributed to a sense of satisfaction among the students because it is likely to stimulate some improvements in the evaluated building.

For Teaching/Support Staff...

For pedagogical and managerial purposes, every member of staff in any school of architecture with an interest in the theory, practice and student-led application of post-occupancy evaluation (POE) can potentially benefit from a study such as this. Since the very nature of POE is to better understand, and ideally to improve, the

relationship between the material and human components of a lived-in building, a well conducted POE should also always lead to performance improvements in the real world, be it as sustainability benefits, cost effectiveness, user satisfaction, reduction of sick leave, etc. Staff will also benefit from such a POE through the development of new contacts with 'real world' partners.

Issues/Challenges for Students

Access to the client was complex but in general not as rewarding as had been suggested or hoped for. This problem might have partly been caused by the initial project outline which was intended to attract students to sign up to this project. Some students even interpreted the project brief as an opportunity to develop contacts with the client which might have been useful in their future job searches. Expectations should have been better managed.

Issues Challenges for Teaching/Support Staff

As it turned out, it was difficult to elicit sufficiently detailed information from the client specifying their intentions and hopes for the project before it began. This would have helped us to manage the expectations both of the client and of the students. It would also have made it easier to avoid problems of access, non-disclosure, and willingness to engage with students and to cooperate in the production of the final report document.

Enablers that helped the project to work

Students agreed that working in self-directed groups "worked well". They liked the freedom to define their own boundaries and to allocate tasks according to individuals' means, capacities and interests (a subsidiarity principle).

A precondition for the materialisation of this benefit is the setting of clear goals which we recommend to be developed in a Socratic method with the students in order to ensure their 'sense of ownership'.

Students appreciated the initial brainstorming session which focused on issues that were or might have emerged to be relevant for a post-occupancy evaluation of a building's sustainability performance. However, some input about the socio-technical understanding of architecture is required.

It is important to stimulate reasonable and realistic expectations among both students and the client. Thorough preparatory work by the leading staff is therefore indispensable.

Details of project evaluation

The student-tutor group met four times; once per week. During and after every session the teaching staff proactively sought feedback and comments from students about the project in general and the task at hand in particular. The results were also exhibited in an 'Event Month' show, which allowed all MSA members – staff and students – to provide feedback on the process and results of the project. The tutor team also convened an explicit focus group session (with free coffee) several weeks after the completion of the project which provided valuable in-depth feedback. Also our client provided helpful comments on the process, conduct and outcome of the project. Taking into account all forms of evaluation we consider the project to have been a success – although there was some room for improvement, especially with regards to the management of expectations.

Possible improvements/enhancements

Students agreed that it would have been useful to have managed their expectations more carefully at an early stage of the project. Also the anticipation of possible and foreseeable hurdles (bureaucratic or otherwise) would have been appreciated. This concerns mainly the non-disclosure agreement which made students wonder whether they could use the final report in their semester portfolios. What also deserved more thorough preparation was the handling of the power differential between the students and the client because it affected the ability of the students to produce data that they felt was relevant and important. If the client is overbearing in their demands the students can feel disempowered and potentially used, which can inhibit the students' desire to be thorough in their investigative work. Managing this differential therefore seems to be vital in helping the students appreciate the value of their work. For example, the non-disclosure agreement, upon which the client insisted, should have been explained better to the students so that it did not become a barrier between them and the client. The careful selection of a client whose outlook matches the project's and who desired outcomes are similar to those of the teachers/students is thus important.

On a more practical level, the students felt that it would have been reasonable to expect their – albeit small – expenses to be reimbursed. They thought a small budget would also have allowed them to produce a more professional report (without proposing specific expenditures), which would have better served the needs of the client.

Points of advice for others who may wish to replicate the techniques used

We can only encourage others who may wish to replicate a post-occupancy evaluation like this. Taking into account the room for improvement in this particular POE, it was a very valuable and worthwhile project with exceptionally high benefits for the students – and, almost as a side effect, for the 'real world' partners – as outlined above. Although we operated with no dedicated budget we do not think that access to specific financial resources would have significantly improved the conduct or results of a post-occupancy evaluation; students even agreed on this point. They also stated that the time frame of four weeks was sufficient. However, the students did feel that, had they been given more time to analyse the data collected as a group, they would have produced a more cohesive and clear report.

The students intimated that the POE had been to some extent curtailed by the client themselves, who was not entirely forthcoming with information – at least not on all aspects of the building. As a consequence, possibilities for analysis which the students identified could not develop on the ground that they were not granted access to all information. This is understandable, especially in a business where intellectual property is paramount. Students might have perceived a discrepancy between the tutors' task description to analyse the client's sustainability claims about the building as a 'critical friend' and the client's implicit hope to confirm these claims.

From this, the students felt that the client selection should be the result of very careful considerations and pre-negotiations, taking into account the diverse requirements of the project for both the client and the students (for example as promotional literature versus academic work). The high status of the client may have played a role here. The students identified their relative lack of ability compared to that of the client in dictating the shape of the study as being a result of the apparent differentials of perceived power. More precisely defined project boundaries, developed by both the client and the students, may help to circumvent such problems.

A specific issue relating to this exemplar POE was the production by the client of a 'non-disclosure agreement'. The students stated that they "never saw it coming", and could not imagine the function of it. The existence of the agreement, and the necessity of its being signed in advance of any work being undertaken, reiterated earlier student concerns about their relative inability to form the structure and agenda of the POE. It caused great confusion and no little worry on the students' part when they wished to include the finished report in their portfolios. The existence of such an agreement needed to be identified by us well in advance and the implications of it understood. This could then be explained to the students who could design their study in full knowledge.

The POE demonstrated that the majority of features introduced with the intention to increase the building's sustainability performance lived up to the design team's expectations. Of particular interest to the 'client' was the users' satisfaction with a semi-automatically controlled passive ventilation system which could be overridden by the employees. Although this and certain other materials and design solutions triggered lively discussions among the users, their overall satisfaction with the building did not seem to be negatively affected. This has to be seen in context with the fact that the company had just recently moved from an old and clearly unsuitable building to this new, purpose-built one under investigation. The POE also demonstrated to the students that the production of sustainable architecture emerges out of many 'voices' and reinforced current views of architecture as socially constructed. This is of particular relevance to students studying in architecture schools who are often removed from the negotiated nature of architecture in practice.

FURTHER READING

Relevant publications by those conducting the case-study:

Brand, R. & Rincón, H. (2007) Tackling six common dilemmas in 'live' planning projects. *Journal for Education in the Built Environment*, 2 (2), 36-60. URL: [http://www.cebe.heacademy.ac.uk/jebe/pdf/RalfBrand2\(2\).pdf](http://www.cebe.heacademy.ac.uk/jebe/pdf/RalfBrand2(2).pdf). Accessed: 9 October 2009. (Archived by WebCite® at <http://www.webcitation.org/5jggUMG4s>).

Publications in the research literature:

Hadjri, I. K. & Crozier, C. (2009) Post-occupancy evaluation: purpose, benefits and barriers. *Facilities*, 27 (1/2), 21 – 33.

Preiser, W. & Vischer, J. (Eds.) (2005) *Assessing building performance*. Oxford: Elsevier.

Turpin-Brooks, S. & Viccars, G. (2006) The development of robust methods of post occupancy evaluation. *Facilities*, 24 (5/6), 177 – 196.

Cross references to other materials/resources in the topic area:

Barlex, M. J.; Blyth, A. Gilby, A. (2006) *Guide to post occupancy evaluation*. London: HEFCE/AUDE. Available at <http://www.architecture.com/Files/RIBAHoldings/PolicyAndInternationalRelations/ClientForums/Higher/PostOccupancyReviewOfBuildings/brochure.pdf>

Design Quality Indicator: www.dqi.org.uk

Federal Facilities Council, Board on Infrastructure and the Constructed Environment, National Research Council (2002) *Learning from our buildings: A state-of-the-practice summary of post-occupancy evaluation*. Washington: National Academy Press.

R. Brand & A. Gillick: Student-led Post-Occupancy Evaluation of a BREEAM Excellent Building in Close Collaboration with a 'Real World' Partner

Oseland, N. A. (2007) British Council for Offices Guide to Post-Occupancy Evaluation. London: BCO. Available at

<http://www.bco.org.uk/research/researchreports/detail.cfm?rid=99>

Post Occupancy Evaluation (architectural practice specialising on POE)

www.postoccupancyevaluation.com

Usable Buildings: www.usablebuildings.co.uk

A range of pertinent information is also available by typing 'Post-Occupancy Evaluation' in the search box on www.emeraldinsight.com