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Kyrö, Riikka; Artto, Karlos

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8th Nordic Conference on Construction Economics and Organization

The development path of an academic co-working space on campus - Case Energy Garage

Riikka Kyrö* and Karlos Artto

Aalto University, Aalto FIN-00076, Finland

Abstract

Over the past few years, shared spaces for students, entrepreneurs and faculty have become popular on university campuses. This study aims at increasing understanding on how a new co-working space is developed on campus, and what the different stakeholders' roles are in the development process. The single case study is a recently emerged 'learning, networking, and innovation platform' for energy, named the Energy Garage. The Energy Garage is available to all university students, faculty, and businesses with an interest in energy related topics. Using archived material and interviews with key stakeholders, the study analyses the development path of the Energy Garage, placing special focus on the role of students during the different phases. The study finds that, while the initiative for Energy Garage came from faculty, students have successfully been given a major role in the planning and operational management of the space. The findings provide an insight into other similar initiatives, which continue to gain popularity on university campuses.

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1. Introduction

Working is becoming less and less dependent on space, location, and time (Joroff, 2002; Joroff et al., 2003; Chen & Nath, 2005). Work may be conducted outside regular working hours, often outside the office, and new technologies such as teleconferencing are used widely. These new ways of working inevitably set new requirements for modern workspaces. Traditional single occupancy offices are making room for open, flexible and multi-use workspaces. Multi-use offices generally require less space per person, yet better facilitate teamwork and

* Corresponding author. Tel. +358 50 4802279
E-mail address: riikka.kyro@aalto.fi

spontaneous, informal encounters (Rothe & Rasila, 2012; Eurat, 2004). Multi-use workspaces with multiple end-users, so-called co-working spaces, enable said encounters even between user groups. University faculty and students are two user groups whose work closely relates to each other. It is no surprise, then, that co-working spaces are quickly gaining popularity on university campuses as well.

For academic facilities, it is particularly important that spaces support learning (Matthews et al., 2011). Learning that derives from social interaction is referred to as cooperative or social learning (Loyens & Gijbels, 2008; Matthews et al., 2011). Therefore, an academic equivalent to a co-working space should first and foremost be a social learning space - a place where students, researchers and faculty can interact and learn. Matthews et al. (2011) studied learning and were surprised to find what great significance students put on spatial design, something Matthews' team had left out of the initial scope of their research. In very simple and concrete terms, the students were hoping for a place to 'talk, eat and socialize' (Matthews et al., 2011). For the sake of clarity, social learning spaces are also referred to as co-working spaces in the remainder of the paper.

User experiences have been studied quite extensively in both traditional offices, and co-working spaces in Finland (e.g. Luoma et al., 2010; Kojo & Nenonen, 2012; Kojo & Nenonen, 2014; Airo 2014). Kojo et al. (2013) conducted a mixed-method study of a co-working space located on Aalto University Otaniemi Campus. The study comprised an extensive survey and interviews, and found that the end-users (both students and faculty) preferred light-colored, clean spaces with natural light. Accessibility outside office hours was also appreciated (Kojo et al., 2013). User experiences from the Aalto Design Factory, perhaps the best-known academic co-working space in Finland, have also interested researchers (Björklund et al., 2011; Kojo & Nenonen, 2014). Björklund et al. (2011) found that the space has succeeded in supporting various activities, interaction, experiments, and student work. Interestingly, the 'rough around the edges' design of the facilities was seen to play an important role in manifesting the informal nature of the space (Björklund et al., 2011). Meanwhile, Rytkönen & Nenonen (2012) and Rytkönen (2014) have focused research efforts on real estate management on university campuses. Rytkönen & Nenonen (2012) argue that traditional corporate real estate management might not be the best fit for university campus management. More recently, Rytkönen (2014) suggests a community-based approach for campus management. He claims that social facilitation of the campus community is key to a successful workspace, while the physical environment is actually secondary. In other words, a space is only a space, until the community adopts it.

Based on previous research, co-working spaces are believed to facilitate networking, enable social learning, and foster innovation. Consequently, they are becoming more and more popular on university campuses. Therefore, this study aims at understanding how a new co-working space is developed on campus, and what the different stakeholders' roles are in the process. The study is conducted using qualitative means, and a single case study approach. The case study addresses a learning, networking, and innovation platform in the field of energy. The Energy Garage (hereinafter EG) comprises both a virtual community on social media, and a physical co-working space on the Aalto University Otaniemi Campus in Finland.

The remainder of the paper is structured, as follows. Chapter 2 introduces the methods, data, and the studied case. This is followed by a detailed description of the development process of Energy Garage in Chapter 3. Chapter 4 then discusses the main findings. Finally, Chapter 5 concludes the paper with ideas for future research avenues.

2. Study design

The study was conducted by qualitative means, using the case study method with a single case approach. A case study is a powerful method for studying real-life phenomena (Yin 1994). Furthermore, selecting a single case enables in-depth analysis, and makes it possible for researchers to gain a holistic view of the case (Robson 2002). The EG case was selected through purposive sampling, as the phenomenon is very contemporary. Case selection also involved convenience sampling, considering that a significant amount of data, along with the possibility to observe, was available to the researchers. The selected case study is described in the following subchapter.

2.1. Case

The topic of the case study is Energy Garage, which boasts itself as a 'innovation, learning and networking platform' open to anyone (students, faculty, businesses) interested in energy related topics. The EG comprises a

virtual platform including a website and social media sites (Facebook, Twitter), as well as a physical co-working space. The 373.4 square-meter space is located centrally on Otaniemi Campus, in a former machine hall. Aalto University Properties Ltd owns the building, and other tenants in the building include a laboratory and a café run by students. The space comprises two floors and the following facilities:

- Forum - a stage equipped with basic presentation hardware that may be reserved for teaching, seminars etc.
- Meeting Island – a meeting point that may be reserved for meetings, study groups, etc.
- Bistro and Kitchen – kitchen appliances and places to sit down and enjoy your meal
- Project Planning – an open space with comfortable seating for ad hoc studying or meetings
- Workshop and Soldering Station – workshops with tools available to use
- Energy Wall – a drop-in, free indoor climbing / bouldering wall, with shoes available for loan.

The space is open to visit for everyone interested in energy topics on a drop-in basis, according to a schedule every weekday. Some of the facilities may also be reserved for use beforehand. The floor plan with the different facilities may be seen in the layout in Figure 1.

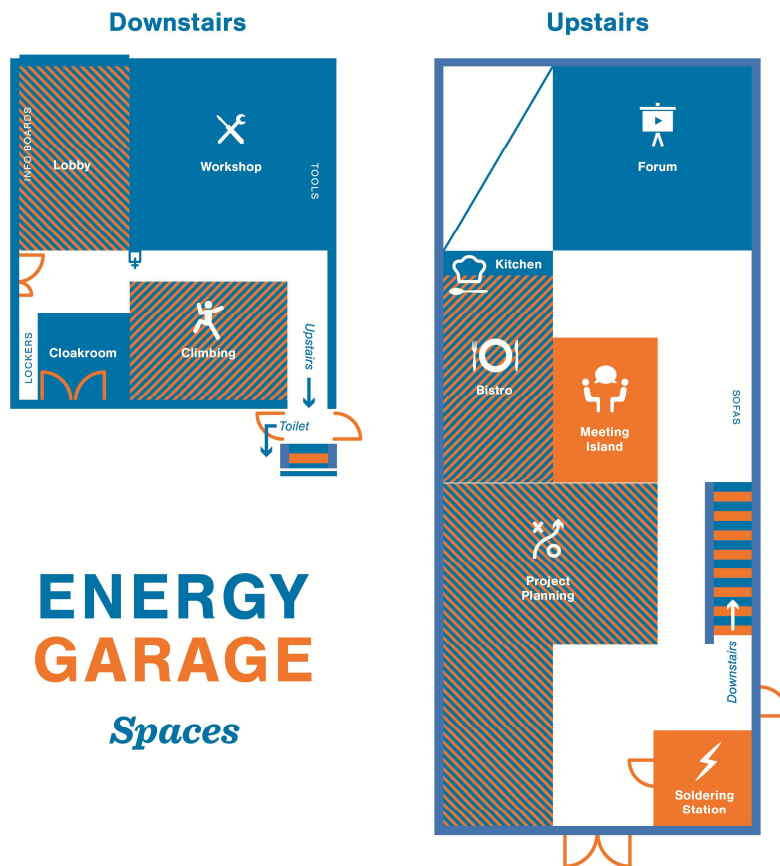


Fig. 1. Energy Garage layout.

2.2. Data

The study utilizes two sets of primary data, namely, archived material from a period of three years, and themed interviews. Additionally, observation is used as a secondary data source. The primary data comprises four interviews with key persons, as well as archived material such as meeting requests, presentations, layouts, photographs, and emails exchanged between key persons. Observations were made of both the virtual and physical platforms, and utilized as secondary data. The different data sources are outlined in more detail in Table 1.

Table 1. Data sources.

Contribution	Type	Sample
Primary data	Themed interview	4 interviews, 405 minutes
Primary data	Archived material	242 documents incl. emails, presentations, plans, layouts
Supportive data	Observation	Opening Ceremony, site visits, social media activity

Data collection, in a way, started already three years ago, when the second author joined the initiative behind the Energy Garage as a member of the board. Therefore the authors had access to written material related to the initiative from a period of three years, including email exchange, presentations, budget proposals, and reports. An additional set of 80 documents, related more directly to the EG facility, were provided by the EG project manager in November 2014. All archived material was prepared for analysis by categorizing it based on significant events, such as board meetings. The written material was then analysed from the perspective of one theme, namely, the physical facility and its significance to stakeholders.

The findings of the data analysis were complemented and confirmed with four themed interviews of key persons in November 2014. All four informants have been crucial in the coming together of the initiative. Two are professors representing faculty, one is with the university administration, and the fourth is a student who also became the EG project manager. Several researchers (2-5) were present at the interviews, which ranged from 90 to 120 minutes in length. Each interview was recorded and transcribed for ease of analysis. Observations provide an additional data source, as both authors attended the Opening Ceremony of the EG, and have frequented both the physical and virtual platforms.

3. Empirical case analysis

The case analysis is based on identifying critical events in the history of the EG. These events, including board meetings, budget rulings, deadlines etc. were found in the archived material, and were also repeated by the informants during the interviews. Four very distinctive phases, with different focus and different key stakeholders, arose from the analysis. The analysis clearly shows the transitions from a faculty-driven research initiative to a student-led social learning and co-working space. The phases are presented in detail in the following sub-chapters.

3.1. *Twinkle in the eye (2011-2013)*

The Energy Garage (EG) has its origin in a multi-disciplinary research initiative of Aalto University School of Science. Dating back to 2011, the Aalto Energy Science Initiative (ESCI) included 20 professors from the six departments of the School of Science, each with different core competences. The topics range from materials to energy systems, innovation, information technology, complex networks, and energy markets. An email from 2011 by the School's strategist outlines the aim of the Energy Science Initiative:

"...to refine our Schools contribution to Energy related research on a wide scale, and to communicate our targets and actions, through an action plan, to the University administration."

The initiative came together quickly in Fall 2011, with the first meeting held in September 2011. From the very first meeting, activities on campus are also mentioned. The first draft plans of an ‘Energy Center’ were distributed among the members of the initiative in October 2011. The meeting minutes show that a co-working space, at this point denoted as “Energy Science Factory”, is included in the plans, as follows:

“Energy Science Factory (t.b.d). Platform for industries and top science to meet, test, try, and innovate in energy.”

Based on the above statement and all documentation from the early stages, the focus was originally very much on research excellence and business innovation. The target was to create start-ups in the field of energy, and pioneer innovative ideas. During the first stage of the initiative, the co-working space was actually first only described as a resource for ESCI, then later as value adding result of the whole initiative. Drafting a blueprint of the space was set as a target for 2012, and the rental costs were already included in the 2013 budget.

Later in 2013, changes in the planned budget for the initiative meant that education became a priority. The reasoning was that, the same amount of money would bring about more impact, when used for students rather than on high impact research. This shift in priorities marked the starting point for focusing efforts on the co-working space with a focus on learning. It also gave reason to engage students in the design process.

3.2. Conception (2013 - early 2014)

The first blueprint of the platform was developed as a student course work during spring semester 2013. The project work was completed at Otaniemi Design Factory in a 5-person team, instructed by three of the informants of this study. The students were assigned to plan a learning, networking, and innovation platform. The group held workshops with students, businesses and faculty. The initiative also received a new name: Energy Garage. The workshops provided a lot of essential information about the necessities and preferences of the potential users. Four user groups were identified: a student with energy topic, a student without an energy related topic, a faculty member, and an alumni (also thought to represent the businesses). The leading idea was that, the platform would have a physical co-working space that would be open to all and enable spontaneous meetings. The co-working space was suggested to be student-driven, and hoped to foster start-ups, and work as a link between the academic and business worlds. The group already identified the current EG facility as a potential location, partly due to the presence of a café in the neighbouring space. In fact, participants of the workshops identified the availability of coffee as the most important feature of a co-working space. The 2013 ESCI scorecard mentions the student course work and its results as one of the key accomplishments for the initiative in 2013.

The informants recalled a brief period after the student course work, when the progress of the EG project was slower. During the time, some discussions about the location were had, but no decisions were made. At the turn of 2013-2014, the EG finally started to quickly materialise. The most significant events took place in January 2014, when two active promoters of the EG had discussions with the Dean of the School. The Dean ended up supporting the idea in full. The Dean’s support appeared to be the key to kicking off the project, and things started moving at a fast pace. An ambitious target was set to have the space ready at the start of the new semester in Fall 2014. The schedule put a lot of pressure on the project. Negotiations about the space started about two possible locations on campus, and the first information about the location was shared among the board members before the end of January 2014. The facility picked out by the student group was finally chosen as the location. At this point the ESCI professors were also asked whether and how they could utilize the co-working space. All professors actively responded with suggestions for courses, seminars and other activities that could take place in the new space.

3.3. Birth (April - October 2014)

The timeline for the ramp-up of the EG was very short. Access to the space was given in April 2014. As a former machine hall, the space was very dirty and in need of refurbishment. At this point, a facility manager joined the team, and started actively organizing contractors and regulatory inspections for the refurbishment. A project manager, an energy science student with previous work experience from facility management, was hired in May 2014. During the summer, a space design team was formed. The team comprised the project manager, facility

manager, student representatives from energy related guilds, a librarian specialized in social learning spaces and co-design, a strategist, and a professor. The team held three design meetings. The first meeting on 19 May 2014 was for brainstorming ideas. The second meeting a week later on 26 May, decided on the wanted activities, and planned where they would fit within the space. The facility manager organized a fire inspection on 4 June. The inspection brought along a few changes, including the need to for a fire exit resulting in a new door to the neighbouring café. All in all, the layout changed many times during the process before the final plan. The final design meeting was held on 10 June, and already included plans for detailed interior design, such as furniture. Most of the furnishings were donated, which was thought to support both the unpolished look and sustainability aspirations of the space.

The refurbishment work begun after the third meeting in June 2014 and lasted throughout the summer. The main work comprised painting of walls, patching of floors, renovating the toilet, building a kitchen, and making the new fire exit. During summer, the webpage, Facebook page and Twitter account were designed and launched by a student. Several pictures were posted on social media from the renovation phase. The Grand Opening was celebrated on 2 October 2014. Many guests, including both authors, were present, and heard the Dean of the School praise the project for being unusually “timely and on budget.” Altogether 44 guests had registered for the ceremony, mostly faculty and student guild members. Students were themselves responsible for the program, and organizing the event.

3.4. First steps (October 2014 onwards)

During the first six weeks of operation in October–November 2014, the EG has been open according to a weekly schedule, usually from 10 am to 4 pm every weekday. The project manager is still a part-time employee assigned to the EG, and has a janitorial role. Other students help in the management, for instance, by opening and locking up when needed. The Facebook page is the main channel of communication, for instance all events and the weekly opening hours are posted there. Events during the first six weeks of operation include board meetings of the student guilds, and a few energy themed seminars. The online booking calendar shows a few bookings a week, mostly exercises for different energy related courses. Students are responsible for managing the booking calendar, and it is maintained that all events have to in some way relate to energy topics. However, ‘energy topic’ is understood widely, including anything from energy production to consumption and transportation. Professors from the ESCI have asked to hold lectures on energy related themes, and individual lectures have been allowed. However, full semester courses are considered too formal and organized for the informal and unpolished nature of the space. Some of the professors have argued that the courses would bring along students and fill the place with activities. However, to the students, it is seen crucial that the EG remains a student led co-working space, focused on social learning. As one of the interviewees explained:

“It’s darn good the students are involved. And if the students bring along other students, friends who come here to do their exercises, and the student guilds hold meetings here, and, slowly start building the crowd we want to have.”

Plans for the coming months include engaging companies from the field of energy to join the platform. A few companies were already involved in the very initial planning and took part in the early planning workshops, but afterwards the focus was sifted toward students and learning. Potential future co-operation with companies has been planned internally, but companies have not been approached, and no marketing has been done as of yet. One idea for attracting companies is a monthly energy themed luncheon where a different company could present every month and students would have the opportunity to network and ask questions.

Despite these plans, all informants viewed students and student guilds as the most important stakeholders. Staff and students from the neighboring laboratories are also considered potential users. The neighboring café, similarly run by a group of students, is seen as a good collaborator who provides catering services for the events, and attracts visitors. The novelty and industrial-like interior are seen as an attractive quality compared to other similar spaces located on campus. The current focus is on building the community and getting people to come, even after their first visit. This will essentially define the success of the facility: the School is monitoring the number of events and visits.

4. Findings and discussion

The study aimed at understanding how a new co-working space is developed on campus, and what the different stakeholders' roles are in the process. Special emphasis was placed on the role of students. As one informant described, everyone who was in touch with the project got enthusiastically involved. However, all stakeholders had varying levels of involvement in initiating, planning, renovating, and operating the facility. The role of the different stakeholders in each phase is outlined in Table 2.

Table 2. The roles of the stakeholders in the EG development phases.

Phase	Key stakeholder(s)	Description
1. Twinkle in the eye	Faculty	The focus was on research excellence. EG was present as an idea, a networking platform for researchers and businesses.
2. Conception	Students, faculty, businesses	Joint workshops with student, faculty and businesses were held to brainstorm ideas for the platform. The students prepared a plan, which was later used as a basis in the planning process.
3. Birth	Administration, faculty, students	The administrative support was key in initiating the ramp-up phase. The renovation phase required the active involvement of the property owner, facility manager, and a designer. However, students were part of the co-design process.
4. First steps	Students	The operational management of the facility is on the responsibility of the students, who manage the bookings and are present onsite during the opening hours.

What is exceptional about the case is how it started out as a top-down faculty led research initiative, but slowly shifted toward a student-led learning platform. The shift seems to have been successful, even though from an administrative perspective the EG is still part of the university. The experiences from this project provide insight into the design and development of the popular co-working spaces on university campuses. In this particular case, it is remarkable how only one person in the design team had professional knowledge of designing a co-working and learning space. Still, almost intuitively, the space follows the suggestions and principles found to be of importance to social learning. The space is not too polished, yet renovated with light colors, and plenty of windows allow natural light to penetrate. There is a niche facility, the climbing wall, which is only related to energy symbolically, but distinguishes EG from other co-working spaces on campus. More importantly there are facilities enabling eating, drinking coffee, and networking. The only restraint are the current limited opening hours: the students are expecting a facility that is open 24 hours a day, 7 days a week. These items could be used directly as a 'check-list' for future similar endeavors. However, the single most important take-home message from this project should be the importance of engaging students early on in the planning and design process.

Limitations arise from the scope of the study. While the background data was extensive and all informants were key stakeholders in the project, it is likely that interviewing more stakeholders will bring about new issues, events, and perspectives.

5. Conclusion

The EG case provides an interesting case, due to the space being currently operated quite independently by students, even though initiated by members of the faculty. In other words, the study describes a shift from a top-down (faculty-driven) to bottom-up (student-led) management. It seems that the ramp-up phase in particular has

been successful in this sense. Nevertheless, the students' input was also crucial in the design phase. This finding will hopefully be considered when developing other similar spaces on campuses: the spaces should not only be designed for the students but also in collaboration with, and by the students. Furthermore, the benefits of having a physical facility beyond the virtual platform seem evident from the viewpoint of all stakeholders. Besides the obvious advantages of having a place to meet and greet, the space was described as a business card, a concrete physical artefact representing energy research and education on campus.

The EG is still in early stages of operation, and it is difficult to predict how the different user groups will find and adopt it. Even though the EG is first and foremost a space for students, it is clear that more interaction from both faculty and businesses are needed to maintain the students' interest, and reach the target of fostering innovation. The authors will continue to gather empirical data from the operational phase, and conduct stakeholder interviews. Additionally, a multiple-case study is planned, which would include other co-working spaces on the same campus.

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