Vegetable gardens for educational purposes: a specific toolkit for didactic contexts

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Abstract

The paper reports on how urban and community vegetable gardens are a increasing phenomenon with the ability to address a strong community capacity.s (Shanghai, Ljubljana, Milan) have allowed the authors to understand a need for multifunctional spaces, where the citizens of these spatial realities are oriented towards the virtuality of relational behaviors.

One of the main research objectives is to let the people, even non-designers, to define the spaces, functions and ways of use of these gardens. Through co-design sessions with different communities related to specific schools, the design output aims at the creation of a multifunctional space, where people, time and the interaction between them become regulators and generators of the space itself.

The expected result is a set of guidelines tools able to deal with the creation of vegetable gardens by defining the layouts, the functions and the experiences.

Keywords: *Social innovation; Urban Agriculture; Service Design; Spatial Design; Co-design; Education.*

1. Introduction

Current literature reveals how urban and community vegetable gardens are an increasing phenomenon with the ability to address a strong community capacity. Community gardening fosters neighborhood ownership and civil pride which in turn build a constituent base for a policy agenda (Twiss et al., 2011).

Urban vegetable gardens can be even more than just community garden, they can be Shared Gardens, Guerrilla gardens, or can provide a more specific service for a given community, like gardens for a enterprise or for school, with a didactical purpose. They are not only "food, community and culture makers", but they are able to produce hope, like an opportunity for the collective imaginary (Hou et al., 2009). This paper will focus on the increase of socialization and co-creation, with a specific didactical role. It aims to investigate how school, university and campus internal spaces and surrounding areas can become incubators of social practices. Urban community schools gardens can be considered the physical connection and filter between the local context and the environment through different lines of aggregations. One this can be identified by the "learning by doing" method in order to stimulate, with specific tools, the creativity as a strategy for social innovation (Schank et al., 1999).

Nowadays community gardens are no longer considered as marginal or only related to peripheral areas (Union, 2010) and finding new ways of meeting social needs that are not properly met by the public sector is one of the final goals. They play a role of social integration, a new path to simultaneously meet social needs and create social collaboration. (Murray et al., 2010). Urban agriculture could become a sharing system to increase aggregation, and developing relationships in the surrounding context, even those without a direct link i.e. schools environments. The expected results are a collection of guidelines tools to create community gardens such as learning environments with spatial and service approaches.

2. Citizens as designers of their needs

Design methods as a tool applied in new fields, such as an impactful social innovation tool aimed at developing new solutions to response to the social needs. Different initiatives can be impactful demonstration of social innovation such as visualizing or prototyping using co-creation methods too. In the contemporary city, we tried a convergence of tensions and expectations practices and attitudes, a new horizon of values. An evolving movement is bringing people to live "individually together" (Bauman, 2002).

We live in a hyper-connected world, were creativity happen in practices fields of designing teams and human interaction (Christensen, 2013). The idea of creative class, were service

designers belongs, means to be in the heart of new products, new processes and social structure (Kuosa & Westerlund, 2012).

Starting with the creation of new opportunities and participatory spaces, creating everyday things, developing cohabited spaces where there was almost nothing, generating new spaces defined by conviviality (Illich & Lang, 1973) in the system of relations generated.

The community garden in this sense is turning into an impactful resource, a powerful touchpoint, a sharing circle and the actors that live these realities are multiple-identities, fragile in real relationships and in some personal relationship behaviors, tending more and more towards the virtual realm while also being co-operative and participatory (Lega & Piccinno, 2012).

A new landscape, "theatres of strong dynamics" (Gilles, 2004), is emerging from the margins and interstitial parts of towns and cities, from "in between" spaces where conditions of diversity take place. Collaboration and collaborative communities are at the base, and have the foundations in actors and users that share same needs and interests. Inventors of a "local discontinuity" who, acting in this critical technological condition, find the way to be able to create a more sustainable and self-sufficient process.

Environmental design, and in particular the design of communal spaces, needs a strong user and use definition with a powerful multifunctional aspect, where building relationships need to be defined, transforming and producing energy of intangible aspects that change over time. (Branzi, 2006)

People are observers of details, starting from the smallest things, generating a mechanism of understanding of everyday life; the ability to transform everyday objects into something that generate and provide pleasure and satisfaction. In this sense, everyone could become a designer, with the combination of good observation skills and good design principles, in order to design our lives, our rooms and the way we do things (Norman, 2016). The designer and researcher can ultimately be considered as the same figure. But the designer, at the same time, still plays his critical role in giving form to the ideas (Visser et al., 2005). In addition, the tension between the consumer and designer when working together on a project, is the influence of a professional designer on a design, versus to the consumer's influence (Fisher et. al, 2002).

Trying to identify design behavior in subjects that can be considered both as consumers and designers, is mentioned the emergence of adaptive design, in which the user could scale his involvement with a product from passive consumption to expert adapting (Hermans & Valtonen, 2014).

Finally, we can talk about "communities of practice", when a group of people starts to sharing the interest in what they usually like to do and want to learn (Lave & Wenger,

1998).   The stakeholders of a community garden want to share experiences, stories, resources, skills, etc. This sharing process can generate a self-sustainable system, self-coordinated, and self-aware, with the improvement of daily life, starting from its own actors.

3. The process of sensitization and coordination of user's needs, a meta-design approach

Cultivating the garden at school is an interdisciplinary activity adaptable to every age, an opportunity for growth in which the division between teacher and student is overcome and new knowledge is learned by sharing gestures, choices and notions, as well as method.

The goal is to make the gardens, educational tools able to take root permanently in the school program, powerful experiences that aim at the redevelopment of the courtyards and gardens of the schools making them fully accessible to young people, promoting food education as knowledge of the process that leads from the land to the table; involving in a participated way the communities around the school, in the planning and management of the gardens trying to develop in the students scientific knowledge and civic sense, through the care of a common good. A multicultural integration among students also promoted in the convivial spaces around the vegetable garden, adding public space to organize more curricular activities or a better free time.

Here, the need of a space without a rigid and defined function, but a multifunctional space, where people, time and relationships between them become regulators and generators of the space itself.

Giving a fundamental role to the communities' needs, a user centred approach with some rapid prototyping experiences is the starting point of the design process as a tool of social innovation (Murray et al., 2010).

A number of failed projects related to communities of people working together, have also stressed designers motivating them need to develop new approaches to be able to contribute in this perspective (Mulgan et al., 2007). New ways to establish and set awareness and coordination.

In this context designers could become supporters and mediators in order to give input that will become new visions and expectations for the users involved, they become generators of dialogues and facilitator of interactions (Sanders at al., 2010).

In the sense proposed by Gobo (2008), a participant observation through interviews, focus groups, ethnographic observations and various other tools designed on purpose like, for instance, a toolkit for these kind of spaces, are able to:

- *generate a direct relationship between the "social actors" and the researchers*
- *have a contact with their natural environment, with the purpose of observing and describing their behaviors*
- *learning their habits, fluxes and interactions in order to understand the meaning of their actions and to adapt their needs in a spatial context.*

A meta-design approach has been used to approach the design of a didactic garden, creating a chart of the main elements. The chart helps to simplify the choice and visualize new or existing solutions and components in defining a spatial layout and in creating an efficient vegetable garden. As a set of tools, it wants to make it easier the adaptation of the format into several contexts.

It's a matrix of elements with some variables on the budget, time, space and the specific maintenance required, in this way students, teachers and staff of the context can choose the different elements of a community garden and module them in a layout, trying to set up a system of an integrated and flexible green area.

The flexibility is a common value during the protying of the community garden, allow for a wide range of use, limited only by our students' or users imagination.

A flexibility that is defined as the ability to be easily reconfigured to suit the needs of all the students using the space for a variety of activities.

To support pedagogical innovation, with a shift toward an active learning model, the flexibility is also the capability to include the green area as an informal learning space, in order to introduce new transversal and disciplinary skills that can make the time spent in a school environment useful and profitable.

To better understand this variability related to a specific context and the specific communities' needs, a spatial survey has been conducted visiting and listing some best practices in different parts of the world (Milan, Shanghai and Ljubljana). A research to highlight that every space has a specific identity, and inside the space there are features tied to the community for which it is designed for. This survey is a process that lasted months, to get closer to places, to local cultures and specific issues. The survey conducted on sixteen practices in the three different contexts were divided into five areas of expertise depending on their functional purpose: Corporate gardens, Educational gardens (tied to a school space, the object of this paper), Connection gardens (with a social function), Commercial gardens (depending on a commercial activity) and Picking gardens (with the food as primary objective).

By comparing elements and functions in these categories, the surveyors found that the cultivated area and the convivial area do not have a constant percentage, but vary in each typology in relationship with the activities to carry on in the space.

The comparison between the percentage of each part has been useful to build the design model to follow.

According to the survey, didactic gardens have the percentage of the agricultural activities similar to the one of convivial gardens. The garden could be a new space for relationships, with a multi-functionality quality characterizing all the functions it's designed for.

The area of cohabitation and the cultivation space often co-exist, as can be seen in the diagram of the percentages here below. In terms of spatial function the area of yellow color, which indicates the space dedicated to the convivial function overlaps the green area, which indicates the area dedicated to the cultivation. The blue area indicates paths, usability spaces, with a connective function between the other two areas, generating precise flows. Paths also play an important role during the didactic activity: the learning groups, composed of at least 2/3 students, need a fluid mobility during the lectures and workshops. The learning space often changes, rotates, generates multi-functionality, in this way workshop area often coincides with the cultivation one and sometimes with the convivial one, as the area initially destined to other recreational activities. Therefore, classrooms can be considered the spaces where the scientific-investigative phase and the interactive phase co-exist and where through extracurricular activities we reach a play-practice phase, with recreational performances such as exhibitions, concerts, film and documentary projections.
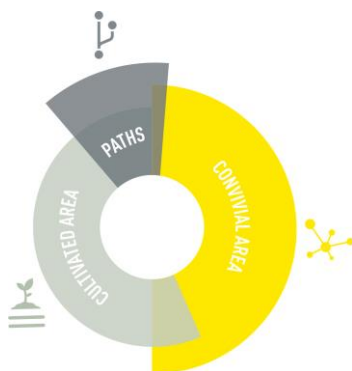

Figure 1. Diagram about percentages of convivial, cultivated and paths in a didactic garden.

This is a definition between the parties not based on an a priori delimitation of some hypothetical values for the user. Do not represent rigid parameters, but malleable in respect to the community addressed for the project. Here are some examples of parameters for defining the values for the company: adults, workers and local communities, the initial financial contribution, multiculturalism, coexistence of different needs, curiosity to experiment new activities, the creation of a connection between people involved.

3.1 A vegetable as an educational tool: how to design it for a didactic context

When applying design to the context of social innovation, there are some strengths to take into account, there is a need to simplify the process and could be a fundamental reason to help people who are not designers to guideline their needs (Mulgan, 2010).

This research conducted has shown, how on the basis of this new systemic space is a strong integration between cultivated space and convivial space. The participatory activities, in this way, are linked to the green space itself in an active way, both connected and established in the space, without a direct contact with the agriculture activities.
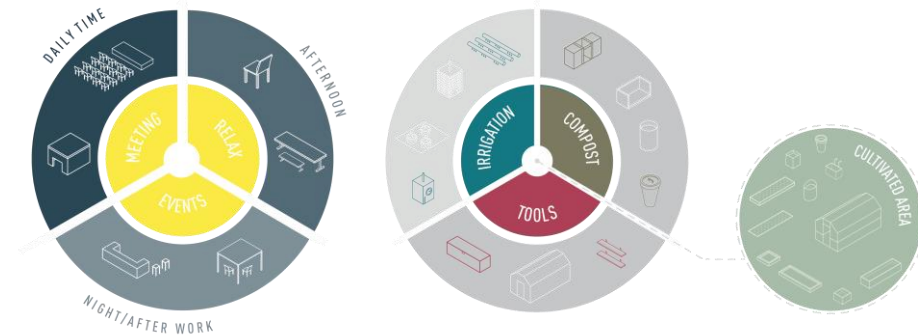

Figure 2. Convivial function and cultivated area diagram.

As illustrated in the diagram here above, a concept of hybridization is applied to the definition of convivial areas, which become more and more open and adapted to the users' need. Here, an example of a timeline and related activities:

- *Meeting* refers to the time during the workday that is tied to specific aggregational activities. They include lectures, workshops, green classes and team-based learning in a pleasant environment.
- *Relax time*, provides a short break and a lunch break, it's when space becomes part of a moment of connection between colleagues.
- *Events*, during the evening hours, are more focused on events or parties, such as concerts, "eve parties" or fitness activities in general, but also team building activities.

The cultivated area has been defined as part of a sustainable health strategy, a natural space that is anti-stress and can improve the welfare of students in a fun and healthy way.

The elements are not diversified depending on the target, but the toolkit provides a recommendation on some items related to a variable of the space (as opening and closing time, number of people..), that can condition the management of space and favor some elements over others.

In this way, are emerging two main categories, time and set tools, that have to be adapted to the given context, enabling the generation of a final masterplan.

The steps to follow in the toolkit, are:

- Define a location (could be a terrace, rooftop, isolated context, etc.)
- Understand the shape (squared, rectangular, spread out, multilayers, irregular, etc.)
- Consider the given community, understanding their specific needs (age, culture, project's objectives, etc.) following the defined percentages between cultivated and convivial area.
- Organize your area, choosing tools contained in the given elements abacus.
- Organize your cultivated and convivial area matching the elements.

These elements contribute to the definition of a final masterplan suitable for everyone even if they're not experts in the field.

Figure 3. A sample of a printed toolkit.

4. Conclusion

This paper attempts to highlight the existing weakness in the spatial approach to design urban community gardens. A greater understanding of the spatial dynamics inside them, has been envisioned through a qualitative research in three different geographical contexts, as a device to understand how the design of spaces and services are interconnected with his community.

This represented the first step of a meta-design approach, through an abacus of the elements necessary for spatial success, with a diagrammatic path through variables of urban space configurations, examples of layout definition, with a pre-established reference community, which in this case operates in educational contexts.

This process has been helpful to develop and create some tools to be applied in educational contexts through a co-design process with the community involved. They are ordinary people, who need a guide in order to shift from users into architects and designers as

"experts of their experiences" (Visser et al., 2005).

Aiming at a systemic and integrated space with a cultivated and convivial area together, the expected results are a greater diffusion of the proposed methodology for an increase of the number of shared gardens in the urban context.

References

Bauman, Z. (2002). Foreword: Individually Together, in U. Beck & E. Beck-Gernsheim (eds), Individualization. London: Sage

Burns, C., Cottam, H., Vanstone, C., & Winhall, J. (2006). Red Paper 02. Transormation design. Design Council. Retrieved from https://www.designcouncil.org.uk/sites/default/files/asset/document/red-paper-transformation-design.pdf.

Christensen, C. (2013). The innovator's dilemma: when new technologies cause great firms to fail. Harvard Business Review Press.

De Certau, M. (2001). Relatos de espacios. Spatial stories. Quaderns D'arquitectura I Urbanisme, (228), 6–7.

Foucault, M. (1994). Eterotopia: luoghi e non-luoghi metropolitani (Vol. 2). Mimesis.

Gilles, C. (2004). Manifeste du tiers paysage. Paris, Éditions Sujet/Objet.

Gobo G. (2008). Doing Ethnography, SAGE Publications Ltd, London.

Guseynova, N. (2013). Emotions in design process. How to find an emotional touchpoint with the user (pp. 77–82). Presented at the ServDes. 2012 Conference Proceedings Co-Creating Services; The 3rd Service Design and Service Innovation Conference; 8-10 February; Espoo; Finland, Linköping University Electronic Press.

Hou, J., et al. (2009). Greening cities, growing communities. Seattle: Landscape Architecture Foundation in association with University of Washington

Illich, I., & Lang, A. (1973). Tools for conviviality.

Kuosa, T. & Westerlund, L. (2012). Service design: on the evolution of design expertise.

Lave, J., & Wenger, E. (1998). Communities of practice. Retrieved June, 9, 2008.

Lega, E., & Piccinno, G. (2012). Spatial design for in-between urban spaces. (first edition). Milano: Maggioli Editore.

Manzini, E. (2015). Design, when everybody designs: An introduction to design for social innovation. (R. Coad, Trans.) London: MIT Press.

Mulgan, et al. (2007). Social innovation: what it is, why it matters and how it can be accelerated. The Basingstoke Press. Retrieved from http://eureka.sbs.ox.ac.uk/761/

Murray, et al. (2010). The open book of social innovation (p. 2). London: National endowment for science, technology and the art.

Norman, D. (2016). The design of everyday things. Verlag Franz Vahlen GmbH.

Schank, R. C., et al. (1999). Learning by doing. Instructional-design theories and models: A new paradigm of instructional theory, 2, 161-181.

Twiss, J. et al. (2011). Community gardens: lessons learned from California healthy cities and communities. American journal of public health.

Union, I. (2010). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions-Europe 2020 Flagship Initiative, Innovation union.