Bridging interdisciplinary knowledge for sustainable urban landscapes: results from the international student competition UrbanFarm2019

(Article begins on next page)

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Bridging interdisciplinary knowledge for sustainable urban landscapes: results from the international student competition UrbanFarm2019.

F. Orsini[1,a], G. Pennisi[1] , A. D'Alessandro[1], D. Kratochvilova[1], G. Steffan[1], M. Paoletti[1], G. Sabbatini[1], M. D'Ostuni[2], A. Trombadore[2], and G. Gianquinto[1]

[1]RESearch Centre on Urban Environment on Agriculture and Biodiversity (RESCUE-AB), University of Bologna, Italy
[2]Department of Architecture (DIDA), University of Florence, Italy

Abstract

In a rapidly urbanizing world, urban agriculture represents an opportunity for improving food supply, health conditions, local economy, social integration, and environmental sustainability altogether. While a diversity of farming systems is encountered in the different world regions, it is estimated that about a third of urban dwellers is involved worldwide in the agro-food sector. In recent times, urban agriculture projects have sprouted across the world, both guided and promoted by governments and born by bottom-up community based initiatives. Accordingly, the concept of edible urban landscapes (edible cities, foodscapes) is today finding application all over the world. In order to facilitate a wider uptake of innovative policies and tools for the promotion of the sustainable goals associated with urban agriculture, it is crucial to create awareness on both institutional actors and the civil society as a whole through innovative and interdisciplinary approaches. The international student challenge "UrbanFarm2019" aimed at tackling the current need for cooperation between different disciplines by bringing together students from different fields of study into international teams addressing the regeneration of three vacant urban spaces in Italy. Among the choosen projects ,which differ from their original purpose, we can find a former agricultural farm that was absorbed by the urban-sprawl in the second half of the XX century and acquired by the Bologna city council in the late eighties. A factory of domestic appliances, that largely contributed to the evolution of Conegliano city in the last 70 years, but was finally closed in 2003 after the company moved away the production. Lastly a primary school that suffered from the progressive abandonment of Belluno city outskirts and was closed in 1992. The three locations shared their current vacant status and the fact that they all constitute a cost and a missed opportunity for their cities. The UrbanFarm2019 challenge aimed at showing that another use for these spaces is possible, overall contributing to creating cities that are more attractive, liveable, inclusive and sustainable. To reach this target, young minds from all over the world were engaged in international and interdisciplinary teams. The challenge became an opportunity to link viewpoints and approaches while integrating state-of-the-art technologies and design for urban farming and urban planning. Innovative ideas, visions and approaches were brought together by teams of student with enthusiasm and dedication. Starting from these project ideas, local administrators and urban planners will have tools to foster sustainability and liveability of their cities. Beyond the elevate project quality, the major achievement of the UrbanFarm2019 competition stands upon the geographical distribution and expertise covered by the participating teams. The UrbanFarm international student challenge, achieved to engage a network of experts and urban agriculture practitioners from universities from all over the world in the evaluation of 35 projects prepared by teams involving more than 130 students.

[a]E-mail: f.orsini@unibo.it

Looking at the projects it clearly appears how competences were successfully integrated and communicated in both project redaction and visual materials.

INTRODUCTION

Compared to traditional education models, Problem Based Learning (PBL) is based on a concept of active education for which the learner cannot do it passively, but must elaborate new ideas inspired by everyday problems (Beachey, 2007). In a university setting where frontal and unilateral teaching still prevails, UrbanFarm2019 represented an alternative and effective educational model in which the students had to apply their knowledge in real contexts, dealing with public administrations, private companies and legislative frameworks. This competition can therefore be a teaching tool in the hands of educators to stimulate the individual and team skills of their students, and to raise a greater awareness of the applicability of theoretical concepts and their adaptability to the new global ethics of sustainable development.

The objective of this paper is therefore to give an analytical picture of the competition, describing the criteria for the selection of locations, sponsors and promotional activities as well as to provide a global picture of the typology of participants, their geographical origin and distribution and the main skills represented.

METHODS

UrbanFarm2019 was inspired by the international competition "Student Challenge: Urban Greenhouse" organized by Wageningen University and Research (The Netherlands). On this basis, Professors Francesco Orsini and Giorgio Gianquinto Prosdocimi have created a working group of students, PhD students and researchers from the Alma Mater Studiorum - University of Bologna and the University of Florence. From a temporal point of view, the competition was divided into:

- Identification of participating municipalities (1st September 2018 – 1st October 2018);
- Identification of sponsors and collaborators (1st September 2018 - 1st October 2018);
- Enrolment of students (1st October 2018 - 1st December 2018);
- 1st submission (1st October 2018 - 1st December 2018);
- 2nd submission (1st December 2018 – 15th January 2019);
- Online voting for the best video (15th January 2019 - 10th February 2019);
- Grand Finale (13-14th February 2019);

In the following sessions, the methodology used for organizing the challenge will be described and analyzed.

RESULTS AND DISCUSSION

CALL TO CITIES AND PARTNER IDENTIFICATION

Initially, municipalities interested in promoting and hosting the challenge were identified, i.e. those municipalities that have abandoned structures or spaces in their territories and have the desire to convert these places in environments of sociality, education, food production and agricultural innovation, thus developing transversally the concept of urban agriculture. The representatives of the identified sites were contacted, and offered to join the UrbanFarm initiative. Subsequently, bilateral meetings were organized: on one hand the organizers and on the other hand the owners of the locations. The use of these abandoned places allowed us to pursue two main objectives:

1.   To have students work in groups, putting their theoretical knowledge into practice and comparing their ideas and notions with those coming from different disciplines;
2.   To produce projects and ideas that can be used, partially or entirely, to revive abandoned sites.

The Municipalities that collaborated in the organization were Bologna, Belluno and Conegliano:

•   Bologna – Fantoni Farm: The building is part of a 6 hectares farm, owned by the municipality of Bologna since the late '80s. Since 2017, part of the agricultural land of the farm hosts 108 urban gardens.
•   Belluno - former primary school of Orzes: In 1912 technical building authority of Orzes in Belluno designed a primary school, which was implemented in years 1920-1921. Between years 1981-1982, city made a complete makeover of the school. Until 1992, the building hosted a primary school, but has been abandoned ever since.
•   Conegliano – Ex-Zanussi: The former "Area Zanussi" is located in the city center of Conegliano (TV), covering an area of 165˙000 m². Nowadays this place is still dismissed, and years later there is an intense debate around the possible solution for the "black hole" of Conegliano.

The organization of UrbanFarm was made possible by the collaboration and financial support received from various partners and sponsors. During the same period, the collaborators and sponsors of the competition were also identified. The organizations that contributed economically to the 2019 edition, in addition to the participating municipalities, are educational institutions, banks and private companies that produce goods and services related to the agri-food and environmental sector.

Type of organisation	Description of the Collaboration
University	Production of technical and educational material and promotion of the competition among registered students
Organizations and Public/Private Bodies	Promotion of the competition, management of economic flows and organisation of the "Grand Finale".
Magazines, Newspapers and Educational Information Sites	Promotion of the competition and publication of information on the various stages
Professors - Jury	Evaluation of the materials produced in the 2 submissions and participation in the "Grand Finale", evaluating and rewarding the best teams
Professors and Researchers - Scientific Committee	Evaluation of the materials produced in the 2 submissions

Table 1. Partners and sponsors.

The sponsors made it possible to pay the various items costs of the competition, the most important of which concerned the payment of the prizes ~~offered~~ (7500 Euros), the logistical costs of the various events ~~organised~~ and the materials necessary for the organisation of the Grand Finale. The partners, on the other hand, helped the organizing committee to give media resonance to the competition, presenting it in the university classrooms and publishing articles on the various websites. Thanks to the collaboration with various newspapers, magazines and informative and educational websites, 31 articles and TV reports were published on the various websites. In the last week of September the last agreements with the municipalities were defined, these allowed us to produce the "GuideBook" [RIF.4], which contains all the information related to the competition (structural organization, purposes and deadlines, the material to be produced and the introduction to the chosen locations) and the

material that contain the basic information necessary for the students to draft their project; in particular, for each of the locations, were made available to students:

Cadastral maps, geometric drawings and photos	Descriptive videos	Historical documents
Urbanistic-architectural documents	Documents concerning the social situation of the site and the municipality in which it is located	Future forecasts for the use of abandoned space

Table 2. Material used for design.

STUDENT INVOLVEMENT

On 1st October, registration was opened and students who, based on their knowledge and friendships, formed multidisciplinary teams with the aim of participating in the competition. Various channels have been used to try to introduce UrbanFarm2019 to interested students, the most important of which concerns the organisation of events and meetings (formal and non-formal) with students from the Universities of Bologna and Florence. To this end, on October 11, 2018, Professor Francesco Orsini organized a seminar as part of the didactic program of the course he held at the School of Agriculture of the University of Bologna. From this moment on, the first teams began to register, some of which were very disoriented about the objectives to be achieved, and, at the same time, several students who had not been able to create/find their own team to participate with were also present. Wanting to find solutions to these two problems, the organizing committee of UrbanFarm2019 has scheduled two days of meeting, called "Rendezvous", with the aim of promoting the creation of new teams and to help to produce the necessary material for participation in the competition. In addition was also created an official Facebook page [RIF.6] where students could introduce themselves, indicating their skills and educational backgrounds, and get in touch with other students interested in enrolling in the contest.

In the end 35 teams have joined the competition, whose members are enrolled at 28 universities located around the world. In total, 134 university students from different disciplines enrolled. Only 16 teams have passed the various tests, winning the opportunity to participate in the Grand Final. Most of the groups entered in the competition, especially those who produced the best projects, were composed of members from different backgrounds and this highlights the importance of multidisciplinarity, especially in today's world, where we have so many technologies, discoveries and innovations that the real problem is not the lack of technology but the ability to use it in the right way, in the right place and at the right time.

Disciplinary Area	Percentage of all members	Disciplinary Area	Percentage of all members
Philosophy	1%	Engineering	15%
Economy	5%	Design	12%
Chemistry	1%	Biotechnology	1%
Architecture	33%	Agricultural	21%
Humanistic-Social	11%		

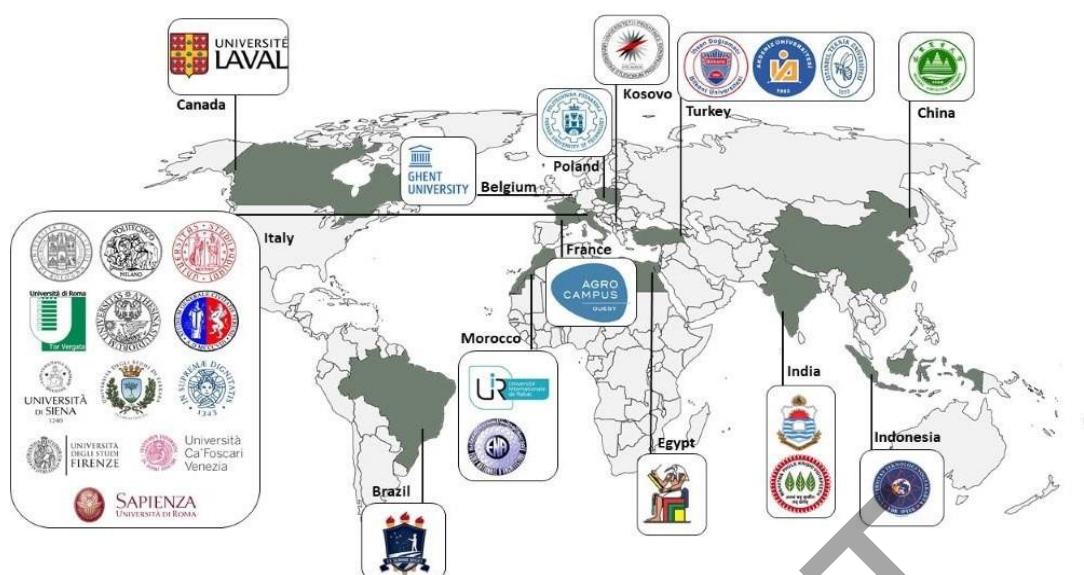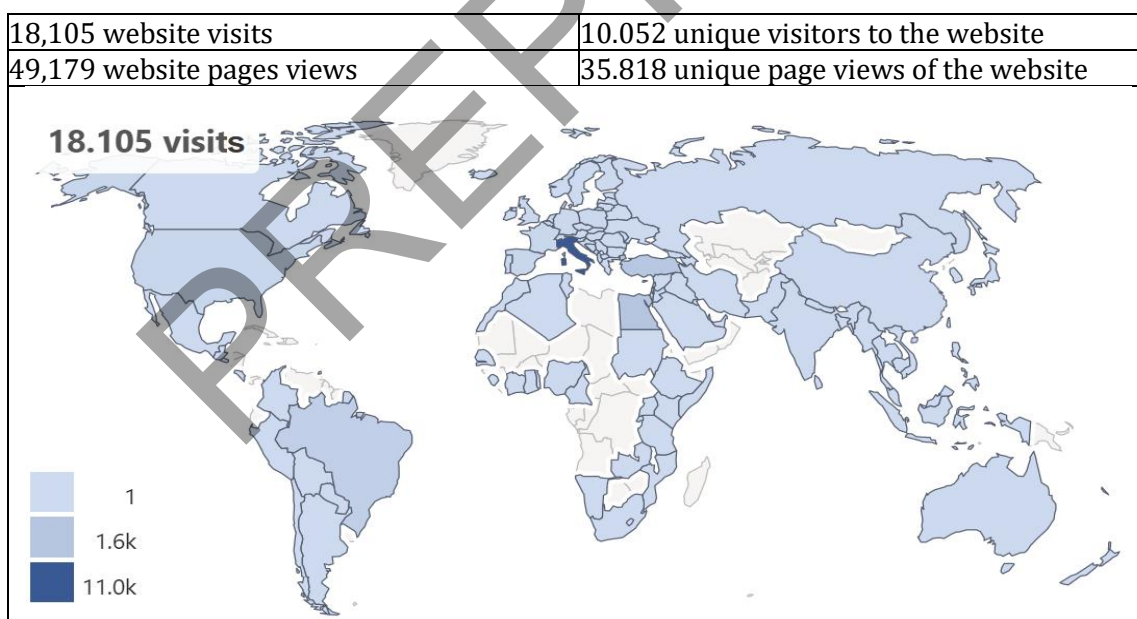Table 3. Disciplinary areas of registered students.

Figure 1. University and nationality of the teams that participated in UrbanFarm2019.

WEBSITE

Another fundamental part of the organization is the creation of an online platform that allowed to manage all phases and all participating actors. The platform is based on a website with domain unibo.it [RIF.5], within specific sections have been created containing all the information and references related to the competition. With regard to the Urban Farm website, the following results were obtained for the period from October 1, 2018 to August 11, 2019:

18,105 website visits	10.052 unique visitors to the website
49,179 website pages views	35.818 unique page views of the website

In the weeks leading up to the Grand Final there was a boom in website visits. This is justified by the fact that, at that time a vote was open to choose the best video from all those produced by the groups: all participating students asked to family members, friends and acquaintances to go to the site and vote for the best video. Thanks to this ~~word of mouth~~, in just 5 days (January 18th, 2019 - January 22 th, 2019) there were 6,341 visits and 4,650 unique visitors, allowing to spread exponentially the objectives of UrbanFarm2019.

1st SUBMISSION

After Registration all teams needed to deliver abstract (short anonymous summary of the project, main ideas in max 3 pages + 3 pages of annexes) and video interview (3-minute video in which all teams will introduce themselves and share reasons for participation) to be assesed in 1st Evaluation and to be selected for 2nd Submission. Analysis of Abstracts and Videos was provided by the Scientific Committee, where each judge could value each section with up to 5 points (for 1st Submission teams could earn up to 10 points for abstract and video in total). As a special award for extraordinarily well made videos , the video jury was asked to choose the 3 best ones. Those teams earned extra points (1 point for 1st place, 0.5 points for 2nd place and 0.2 points for 3rd place) for their final score. When all members of the Scientific Committee delivered evaluations we completed the scoring. All teams who earned at least 50 % of the total amount of points (5 points) were selected for 2nd Submission. First of all, the results of 1st Evaluation have been announced by personal e-mail to each team (with a short note "what to improve in your project" and the exact amount of points per section). Secondly of all, the results have been shared in 3 separate charts per each location on UrbanFarm website and as a final step, those charts have been shared on Urbanfarm2019 facebook page.

2nd SUBMISSION

Teams selected according to results from 1st Evaluation had to deliver a written document (complete design of a project in max 30 pages + 30 pages of annexes), a video (short description of the final project and what is unique and extraordinary about the project) and a proof of concept (proof that technologies used in a project were real). Scientific Committee evaluated and commented on all projects divided to sections by location (Belluno, Bologna, Conegliano). These raw evaluations have been shared with the Jury, who made the final scoring and evaluation (50 points for the written document, 5 points for the video and extra 5 points for the best video, 3 points for the 2nd best video and 1 point for the 3rd best video). After receiving all evaluations from the Jury the results of 2nd Evaluation have been announced by personal e-mail to each team (with the exact amount of points in each section). Next, the results have been shared in 3 separate charts per each location on UrbanFarm website and as a final step, those charts have been shared on UrbanFarm2019 facebook page.

VIDEO ONLINE VOTING

On Friday (18th January) team of UrbanFarm implemented a public Voting System on the website which remained open until the 10th February. Through this system, everyone could vote once for a team according to their preferences. Thanks to this online voting system one team per each location earned 5 points. During Public Voting, UrbanFarm team collected all votes within its website (names, surnames and valid email addresses with GDPR information bellow). It managed to separate valid and invalid email addresses as well as double voting (all of those votes were eliminated from the final results) to purify the very final outcome of the Online Voting. Information and link to the Public Voting System were sent by a personal email to each team, as well as shared on UrbanFarm2019 facebook page.

THE JURY

The Jury had two important roles during the competition and at the final event of the Challenge:
- made final scoring and evaluation of the 2nd submission projects
- contribute to the final score at the "Grand Finale", by evaluating each project with up to 20 points, based on the final picth of the teams.

Because of its significant influence on the final results of the challenge, it was very important to create a jury member composition very close to the main principles of UrbanFarm2019: multidisciplinarity and internationality, two basic concempt connected together by the urban farming topic. Thereby, at the end, the Jury was made up of four members:

- One professor and reasercher at the Departement of Chemical, Biological and Environmental Engineering and Researcher Institute of Environmental Science and Technology of Universitat Autonoma de Barcelona.
- The head of the Reasearche Group "Built Environment" at ILS, Research Institute for Regional and Urban Development, located in Dortmund and Aachen.
- One reasercher at the WUR in "Greenhouse Horticultural" Group.
- The Director of SOA architects, one of the main projects is "La Fabrique Agricole" (Paris XIX, France)

FINAL EVENT

The finale phase of the competition, "The Grand Finale", took place on 13th and 14th February at Novelfarm, a fair of international importance concerning new cultivation techniques, especially vertical farming and soiless cultivation, organized by Pordenone Fiere. Each of the 16 selected teams was invited to set up a stand at the fair to present and illustrate their project to visitors. Visitors to the fair were able to express their preferences for the projects presented, which were added to the points collected by the various teams during the different stages of the competition. In the afternoon of 14th February, the teams presented their projects to the international jury with a pitch of 3 minutes.

The jury completed the evaluation of the submitted projects by selecting the four best teams. These teams were called back to the stage for the final debate during which they had to answer the jury's questions. On the basis of the scores obtained during the previous stages of the challenge and the pitches, the final classification was prepared, as shown in Table ...

Belluno		Conegliano		Bologna	
PINEcube (1st)	78,6	The Wanderers (2nd)	75,8	ReGenius Loci (3rd)	75,6
Future-A	76,1	Symbiosis	72,1	ARCHAEA	67,7
MiCRO	51,2	YS Designs	62,3	UPTeam	49,9
N.Y.N.	42,2	Green Senses	58,6	LANDERZ	47,5
FAMA Architecture	41,1	Phoenix	52,3	Eco-Gazers	38,9
		Agro d'Érable	35,2	Agro d'Érable	33,4

Table 4. Final classification of the teams slected to the Grand Finale.

FINAL SCORE

During Grand Finale each team presented their own project through prototype and poster but also through a presentation. Thanks to this, one team per each location could earn 5 points from Public Voting during the Grand Finale. During final presentation the Jury was present to evaluate each project with up to 20 points.

POST COMPETITON

Urban Farm didn't stop working after the end of the 1st edition of this Challenge, but it preserved its activity by writing a series of articles published in several newspapers and magazines (reported in the press section of the website of UrbanFarm); elaborating and publishing the book "UrbanFarm2019 Book Finale Challenge" , where are reported various interviews of the scientific committee and the jury along with the integral projects of the 16

teams passed in the final; organizing events and meetings with the different figures who contributed both before and after the knowledge and the realization of UrbanFarm2019.

All these actions were carried out with the aim of transmitting the message of UrbanFarm to as many people as possible, that is, to demonstrate how urban agriculture is an educational tool, a means of social and economic improvement, as well as an ideal alternative system of sustainable agriculture. UrbanFarm has tried and continues to try to increase the number of followers of this school of thought, promoting the creation and the realisation of Urban farming projects.

Furthermore, as its current main goal, Urban farm intends to do everything to continue the work begun in 2018 with the second edition planned for the year 2019-2020.

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