Teaching complexity through organizing students' communications sessions
(Applied Research and Urban Design discipline)

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ABSTRACT

The aim of the paper is to present, from an analytical perspective, the students' communications session organized within the activities of *Applied Research and Urban Design (ARUD)* discipline for the 4th year students in urban planning and landscape design from Ion Mincu's department of *Urban Planning and Territorial Development*.

The topic that was announced for 2022-2023 edition was centered on the **circular city concept** that is also the core concept for the *Circular City Challenge* research project (Urban Europe ERA-Net program) in which UAUIM is a partner in an international consortium.

A comparative perspective on teaching methods is allowed by having two editions of ARUD communication sessions that are connected to research projects: the 2021 edition was based on *InClimate* international project within the Erasmus program).

In the case of ARUD, the learning results are to be achieved through a frame in which points are given for presenting a paper in an online public event. The public presentation is prepared during the semester, with guidance from the teaching team, in order to be able to formulate an applied research question in connection to urban design principles and then to select and apply the methods for finding the answers (literature review, case-studies, interviews). Also, it is a discipline engaging students in current professional debates from participating in summer schools, workshops, editorial projects, etc.

Teaching about circularity or climate change in relation to urban design is an ambitious endeavor. The flexibility of this discipline that is focused on developing critical thinking through experiential learning is allowing students to explore complexity of content. Besides, it is an approach that is preparing students to increase their level of autonomy by building on transversal competences such as team work, communication, learning how to learn.

Keywords:
Communication session, experiential learning, complex concepts, circular city, climate resilience, current professional debates

1 LEARNING BY DOING: TEACHING THROUGH STUDENTS COMMUNICATION SESSIONS

1.

Training to become both an urban designer and an architect means a lot of learning by doing. Specific literature on the pedagogy of studio work with students is already demonstrating the importance of experiential learning in relation to these professions.

Concerning urban design more specifically, the variety of approaches depends on the genesis of that particular teaching program, departments or schools organizing these programs now, and also the context for practicing this profession in one particular country. [1]

Learning through studio work is usually a simulation of reality that is not involving the risks of the real world but it attempts to create the conditions to explore real world practice. [2]

The most cited model when discussing learning theories is the Kolb model (concrete experience, reflective observation, abstract conceptualization, and active experimentation again in an iterative manner) [3] and although there are various interpretations of the Kolb's experiential learning cycle, the principles remain the same:

- learners should be active participants,
- knowledge is situated in relation to a context that is setting specific conditions of space and time,
- learners do get in touch with something that is new to them
- this novelty is bringing some level of risk taking since it is connected to real life issues,
- meaningful learning is helped by a critical reflection of the learning process itself [4]

Experiential learning in higher education is also based on the Kolb model and although some scholars have argued that the concrete learning experience in higher education needs to have a degree of complexity that is not required in other settings of experiential learning, it is used to plan and structure learning in universities as well. Designing instructional models for higher education experiential learning is a recent concern. Radovics & al published in 2021 an article on both the theoretical foundations and practical guidelines for teaching with this approach at university level. [5]

And if frames for experiential learning are developed for the general content at bachelor level, limited scholarly focus has been given to the pedagogy of research. Hence, inspired by these reflections on the studio pedagogies in urban design, but also applying principles for achieving the benefits of experiential learning, this paper draws on the teaching experiences that were part of several editions of "learning by doing" when the challenge is to introduce students to applied research in relation to urban design.

The discipline entitled ***Applied Research and Urban Design - ARUP*** is part of the curriculum for the fourth year of both Urban Design and Planning and also Landscape Design and Planning bachelor degrees in Ion Mincu University of Architecture and Urban Planning. Since the very beginning, this discipline has been different from others since it allowed, for the two ECTS (European Credit Transfer System), the possibility of participating in events of various sorts or for publications including the ones organized by Ion Mincu University especially for this discipline. [1]

The general teaching objective of this discipline is to cultivate interest and involvement in the professional community by encouraging students to participate in competitions, workshops, communication sessions, conferences, seminars, and also, if possible, to identify their interests for research at an early stage of their career.

[1] This new approach was introduced in the curriculum as a way of giving flexibility to students to connect to the professional world outside the university but also to introduce a Student Communication Sessions or Workshops as part of their training encouraging students to present to the general public their interests and skills

A distinction has to be made between the objectives of the professional practice disciplines and those specific to this one because, unlike an internship in which students learn the current ways of working in private or public teams that are doing urban design, this discipline aims to connect students to reflection, synthesis or innovative initiatives that are not yet fully integrated in the current practice.

The discipline therefore aims at the ability to use, in professional practice of urban design, a variety of methods for documentation and analysis, as well as the knowledge and skills achieved through other disciplines already studied in the bachelor's program. These already achieved competences as well as the ones that are developed though this discipline refer not only to being able to propose content in practicing urban design profession, but also to communication and working in multidisciplinary teams – transversal competences that are of great importance for urban designers.

The events that are recognized with points on the basis of a specific table with the scoring grid[2] and these events can be organized both internally (by Ion Mincu University) but also by other higher education institutions, professional organizations or associations.

In time, a solid experience was accumulated within the teaching team not only for the recognition mechanism[3] but also for organizing specific opportunities as part of this discipline. In order to offer more visibility of results of students applied research approaches, the teaching staff[4] introduced the students' communication session on the basis of a call for presentations.

These calls for students' communication sessions have the advantage of being defined in close relationship to the teaching objectives. Applied research in urban design is understood as an approach that involves the ability to ask questions (applied research) about phenomena that have spatial manifestations that can be improved by design.

To participate in the communication session, students will be guided by the teaching team through several stages:
- formulating a research question within the given topic and that is adapted to the time frame and the already acquired competences of the students in the 4th year,
- evaluating the potential for multi-disciplinary approaches since this call is also welcoming students from other faculties in Ion Mincu or from other universities (Ion Mincu students get bonus points if they succeed in forming teams with students from other programs and universities),
- identifying the sources of information in order to correctly and completely define the basic terms for the study of those phenomena (from the literature),
- documenting and presenting examples that have worked elsewhere to improve similar situations that have faced the same type of phenomena (one case study relevant to the chosen subject)
-synthesizing some conclusions in answer to the research questions and in the form of action recommendations that can guide the urban

[2] the initial scoring grid allocated for involvement in events and publications was divided on chapters such as: scientific activities, exhibitions, workshops, competitions, publications

[3] The credits related to the discipline are now obtained based on the cumulation of points related to the eligible activities that are divided into two sections: the first section of the grid is requiring either preparation and presentation in the Communications Session or participation in workshops, competitions, professional events or publications for which the student had do give an intellectual input. The second half of the grid is with eligible activities of volunteering or listening to presentations in events that do not require content input. Both sections are to be demonstrated with a portfolio which must include evidence of participation. activities carried out specifying the professional benefits obtained, and also some results of that participation (content elements). The minimum score is 10 points corresponding to grade 5.

[4] The first editions of the workshops or communication sessions were organized by Gabriel Pascariu and Laura Tucan

design approach in spaces that face the analyzed phenomenon (the chosen subject is reflected in that space).

By practicing and being aware of the stages of this research approach applied to a subject chosen by students, they will increase their autonomy, as well as the skills of synthesis and presentation in an imposed format. These skills are useful in preparing the bachelor diploma project.

Besides, the communication sessions became more accessible to the general public. Due to the teaching conditions during the Pandemic, the teaching team decided to organize online presentations and the popularity prize for the student's presentations is given on the basis of an online survey (see Fig. 1) in which the public is asked to select their preferred team and to give also the reasons for their choice.

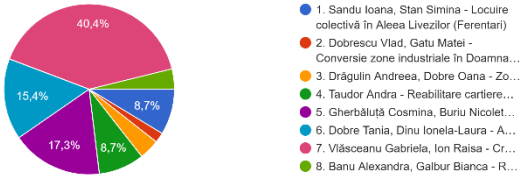

Fig. 1 online survey for the popularity prize from the public online event

For the same teaching objectives, in 2021/2022 and in 2022/2023, the methods that are applied within this discipline were designed around the topics of two research projects that were undergoing within the Urban Planning and Territorial Development Department.

2 TEACHING COMPLEXITY

2.1 Teaching about climate resilience

InClimate[5] - ***Integrating Climate Resilience in E.U. Higher Education*** was an Erasmus Plus project that was implemented in a partnership led by the University of Salonic. The main topic was centered on introducing in the current curriculum more content on climate change both in terms of adaptation and mitigation.

Among the activities of this project, there were workshops with students that were introduced in connection or as part of several existing courses. The students were asked to define the concepts related to climate resilience with a specific mind mapping tool and after the international consortium has developed a common frame for defining the topic of climate resilience, the teaching team for ARUP has produced a reference that was more adapted to the teaching objectives of this discipline (see Fig 2).

The experiential learning of this discipline requires the students to define applied research questions that are relevant in connection to a given topic. Through these questions, one subject was defined by each team of students in relation to key-concepts that were presented as a conceptual map together with the call for presentations.

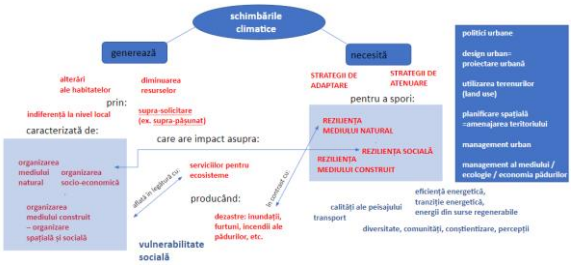

Fig. 2 referential frame for the relation between the topic of climate resilience and various subjects that are relevant to urban design for climate resilience

By requiring to focus on climate resilience topic, various subjects were selected by students:

-infrastructure for adapting the cities to flooding risks

-community gardens for resilient communities

-urban forests as green infrastructure for climate mitigation

-green roofs for housing – adapting to higher temperatures in cities

-spaces for recycling at in systems at regional level

-smart mobility urban infrastructure for carbon free cities

-energy efficiency in large housing ensembles

Each such subject from a team was then integrated in the referential frame for the topic of

[5] https://inclimate.eu/ project financed within the Erasmus program - Cooperation for innovation and the exchange of good practices KA203 – strategic partnerships for higher education

climate resilience (see figure 3 for the particular case of urban forests). The tendency in the students' approaches was to collect information from the abundant online sources on climate mitigation or adaptation that was not leading to a coherent result in terms of guiding principles for urban design. Hence, experiential learning is meant to insist in building the capacity of students to keep their focus on the urban design principles that they have to identify in relation to that particular subject.

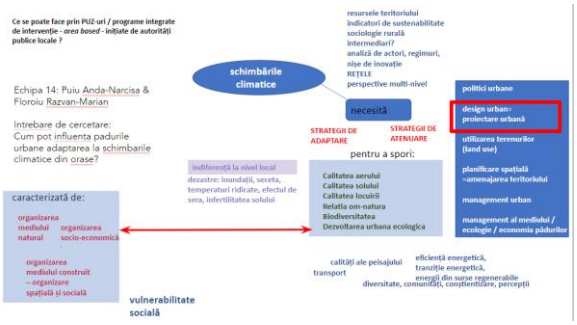

Fig. 3 an example of integration of a subject in the overall frame: urban design for urban forests

The content was very much depending on each team, but all these subjects were addressed with the same common structure of steps to be taken:

a. Formulating the applied research question
b. Defining key terms for that particular subject from literature review
c. Selecting a case study that is relevant for the chosen subject
d. Defining principles for urban design in places where the chosen subject needs to be addressed – as synthetic answers to the research question
e. Preparing a visual presentation with the results from each of the previous steps.

Although every team had to organize for each of these steps, for the literature review part, there was an indication that the students had to derive their understanding of the specific notions for their subject from some level of common overview of the climate resilience topic. Hence, the members of the teaching team who were also part of the Ion Mincu University team in the InClimate research project consortium suggested several bibliography references that were given to all teams.

The selection of these references was a real challenge because the intention was to focus already on publications that address professional interests from the urban designers' perspectives. The challenge is even more difficult because of language barriers but also because, at the bachelor level, students in architecture or urban design do not necessarily have previous requirements in their curriculum to read scientific papers from peer reviewed journals.

One common reference was taken from such a journal (European Planning Studies) and the feedback received from students was that Mehmood's text was hard to follow although it has an extensive introduction that is presenting the evolution of the resilience concept not only in the UK theoretical approaches but also in planning practices. [6] Another reference from the common list was taken from a journal that brings academic research towards professionals and it was based on the pragmatic analysis of several examples when Swedish municipalities developed adaptation plans for climatic extremes.[7] The main reason to select this article was that the standing point of the authors was to be helpful to practicing professionals especially to those who work within or for public administration. The table of possible measures in relation to hazards from various sectors (water and sanitation infrastructure, housing, transportation, urban regulations, environment and natural resources management) was considered by the teaching team for this discipline as an important tool to have urban design students considering the physical realities they will be working with in relation to climate adaptation needs.

2.2 Urban circularity teaching

Based on the previous edition of this discipline that allowed the exploration of the climate resilience concept from an ongoing research project in relation to an experiential learning method, the circularity within the urban environment was selected as topic for the call for students communication session for the 2022/2023 academic year.

The decision was influenced also by the fact that ***CircularCityChallenge***[6] is a research project that is implemented through ERA-Net Urban Europe Program[7]. Moreover, as demonstrated by the subtitle of this project – "Creating a Next Generation Participatory Contest for Young People to integrate Circularity in School Curricula", CircularCityChallenge is already focused on capacity building for high school pupils to understand and explore potential ways to more circularity in their built environment.

One of the main objectives of this research project is precisely the definition of a circular city that will make sense to high schoolers. Based on this understanding of the circular city, young people will be asked to build scenarios or real demonstrations of circularity with stakeholders they already know or they meet during this process.

Similar to the previous edition, the teaching team connected urban design to the circular cities topic and they made available several scientific publications as a common reference for the literature review. The research-based book of Jo Williams [8] defines the circular city and circular development in relation to the spatial issues of a city and it goes from an economic concept towards planning and design for urban development that is aiming at circularity. Examples from four European cities (Amsterdam, London, Paris and Stockholm) are given and this was considered very important for ARUD teams who were also required to present a solid case study in relation to their subject. The other selected author, Elzbieta Rynska, has published a book that is connecting emerging research to opportunities for professionals to contribute to developing and designing circular cities. [9] Although this edition house from the United States is not familiar to European researchers, the book was selected because it offers a solid perspective on how this abstract concept of circularity applies to cities and several case studies from Poland are presented. Also, this is one of the few publications that also offers an interesting perspective on how the concept of circular cities is to be considered in the brief that is given to a designer.

Based on the feedback from the previous edition, and also on the complaints of students about the extensive length of these two publications indicated for the second edition, the cover of the call (see figure 4) was already sending students to one of the main resources on this topic [10] for both the literature review and the case studies steps of the ARUD discipline. In comparison to the previous edition on climate resilience, the topic of circular cities was addressed in this publication, not as scientific literature that is difficult to use by bachelor students, but as so called "gray literature" that was put together through a program in which several contributors tried to forming a bridge between research and practice: Circle Lab for Cities Program[8]

This publication is not the only result of the applied research program – and the web platform that was generated [9] is based on a solid taxonomy (see Table 1) that was of great importance in the selection of the case studies for ARUD discipline

[6] https://www.uauim.ro/en/research/circular-city-challenge/

[7] ERA-NET Cofund Urban Transformation Capacities call in which the project was selected is "Capacity for urban transformation for sustainability, resilience and increasing the quality of life in European cities."

[8] The partners of the Circle Lab for Cities are: ICLEI, Ellen MacArthur Foundation, Metabolic and Circle Economy. The program is funded by MAVA Foundation.

[9] https://knowledge-hub.circle-lab.com/cities

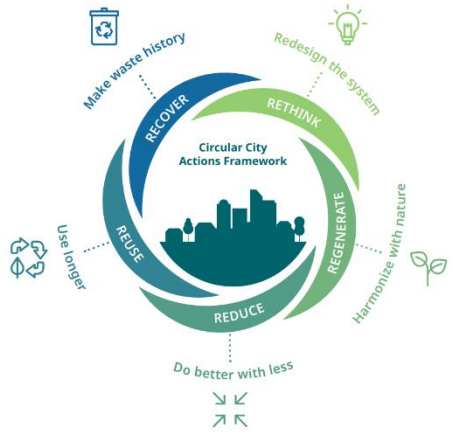

Fig. 4 the frame for understanding circular cities

Source: Explanatory material published by ICLEI – Local Governments for Sustainability within Circle Lab for Cities Program, page 4

The case study in the methodology of this discipline is to be selected with a special concern of finding answers to the research question in real situations in which, through urban design approaches, concrete results have been achieved. But the visible results are not the only elements of interest for a case-study. The students are required to go beyond the description of that case. Studying a case means also being able to understand how and why something happened. This analytical approach is defining the case study method that allows the understanding of the complexity of a real context.

Table 1 – some of the aspects included in the taxonomy for examples of circularity in cities

Source: Circle Lab for Cities knowledge online hub

VARIABLE	LIST OF CATEGORIES
Key elements of circular cities	-Prioritize regenerative resources, -Stretch the lifetime -Use waste as a resource -Rethink the business model -Design for the future -Incorporate digital technology -Team up to create joint value -Strengthen and advance knowledge
Policies	inform, manage, regulate, incentivize, mobilize
Actions frameworks RETHINK	-Eliminate linear incentives and set goals for circularity -Support close loop systems and cross sectoral synergies -Enable sustainable lifestyles
REGENERATE	-Protect and restore local ecosystems -Promote solutions inspired and supported by nature -Prioritize renewable resources
REDUCE	-Design infrastructure and built environment for resource efficiency -Support circular business innovation -Support local low impact economies
REUSE	-Design and regulate for extensive use -Facilitate second-hand markets and sharing and exchange platforms -support reuse, repair, remanufacturing, maintenance of products, spaces and infrastructure
RECOVER	-design and regulate for separation and recovery -collect and sort waste to facilitate recovery -process waste and ensure its re-entry into industry at its highest value
Thematic areas	Built environment Energy systems Food systems Consumer goods Water systems Mobility systems

The teams of students could apply the taxonomy also for the selection of examples that are connected to their chosen subject (research question). Although the presentations on the online knowledge hub are rather short, the ARUD students could develop them further as case-studies also because of this solid frame that was already ensuring this bridge between theoretical approach and the complexity of reality.

3 CONCLUSIONS FROM A COMPARATIVE PERSPECTIVE

Addressing circularity or climate change in relation to urban design is an ambitious endeavor. As demonstrated above, the flexibility of this discipline in terms of content but not in terms of method has allowed this learning by doing experience. The approach is structured not in the cognitive competences about climate resilience or circularity, but in the rigorous implementation of the stages for preparing the public presentation. Acquiring specific knowledge on a topic is a secondary objective The main aim is to develop critical thinking and autonomy through experiential learning. With this freedom, students are encouraged to explore complexity in terms of content.

Both editions have shown that bachelor degree students in urban design programs are not willing or prepared to get invested in reading scientific

literature of extensive lengths. One lesson for the teaching team was to select the references (even from gray literature) that are already on the operational side.

In both editions, the teaching team could notice that the students' documenting approach is based on searching for images of realities that seem to be connected to their chosen subject. But when guided to analyze processes and not just to describe results, the case study method, although more difficult, becomes obviously useful in answering the research question and in defining guiding principles for urban design.

This teaching experience was fruitful also in both editions for taking high level ambitions in research projects and making them more accessible to bachelor degree students. And although not many of the students became eager to read peer reviewed articles from scientific journals, there was an opening towards the benefits of applied research methods for preparing a good basis for urban design proposals.

4 ACKNOWLEDGMENTS

Although the author of the present article had the coordination of this discipline since the academic year of 2020/2021, special recognition is to be given to Gabriel PASCARIU who created this flexible mechanism of ECTS from participating in various relevant events and introduced it in the curriculum.

Also, the teaching team for this discipline[10] is not only giving guidance for each step of the process for preparing the Student Communication presentation, but they are also doing extra-work for connecting this discipline to undergoing research projects and to organize the communication session. Hence, special appreciation has to be given to: Laura TUCAN, Eugen MARINESCU, Matei CHOCHECI, Dana MILEA.

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