

# MATERIART

Art and Science of Materiality in Architectural Design Education

ERASMUS KA-203 Strategic Partnership in Higher Education Project

“MATERIART: The Art and Science of Materiality in Architectural Design Education”

## PROJECT REPORT

### 01 - Architectural Design Studio Inspirations: Alternative Pedagogies



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# 1 INTRODUCTION

## 1.1 Output Description

“O1: Architectural Design Studio Inspirations: Alternative Pedagogies” consists of the review and mapping of existing learning-teaching-experiencing environments and pedagogical conditions, practices, tendencies, and implementations in architectural design studios found in both formal and non-formal learning environments. While this report maps existing practices in non-formal studio models organized worldwide, it also bridges four outputs, mainly on formal learning environments, created over the project activities. The first is the papers, presented at the MATERIART Symposium I and compiled in the book “**Materiality as Process**,” sailing readers across the multiple ways of thinking/making of architecture by consequence learning architecture in formal schools. The second is the **Glossary of MATERIART** that reflects on the renewed essence of architectural terms and concepts. The third and fourth books share and discuss formal and non-formal studio models pursued by MATERIART partner institutions. The new art and science of materiality interact with all the sub-disciplines. Hence rather than focusing on specific courses in curricula (heritage, sustainability, technology), the thematic approach of MATERIART gives a real breadth of the discipline.

For the project activities, O1 structured a ground for the development of O2 and O3.

“Architectural Design Studio Inspirations: Alternative Pedagogies” resulted from five main activities:

1. The scoping review of research outputs on Intensive Studios in Architectural Design (ISADs);
2. The mapping and analysis of previous short-term architectural design studio structures;
3. MATERIART partner institutions compiled their alternative pedagogies in architectural design studios in two books: “**Materiality in the Architectural Studio Process Good Practices**” and “**Architectural Models as Learning Tools**,”
4. Papers presented at the MATERIART Symposium I and published as a book entitled “**Materiality as a process**.” O1 retrieves several ISADs from this collection.
5. **The Glossary of MATERIART**

Apart from this introduction, this output includes six parts. The first two parts share the mapping and analysis of previous short-term non-formal architectural design studios. The subsequent two parts describes how the books and the symposium map the studios both in the partner schools and around Europe. Finally, this report positions the role of the glossary in complementing and furthering the objectives of MATERIART.

## 1.2 Setting the Scene

Tectonics/ways of doing/thinking of architecture face technical, aesthetic, and cultural implications of the emerging digital technologies, communication technologies, and new materialities. Architectural practices in all the fields of the discipline are thus in a reformation process.

In the last two decades, advances in information, communication, and fabrication technologies have stimulated the development of various strategies in instrumenting alternative architectural design process, not only in technical aspects but also from a creative design and materialization point of view. ART and SCIENCE of MATERIALITY of architecture have thus changed. Fluid exchanges of techniques/knowledge/perspectives among actors involved in architectural practice have triggered multi/para/inter-disciplinary approaches in designing and teaching. Relationships and responsibilities among architects, owners, fabricators, and managers; collaboration in design processes have changed

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via ICT that propels dynamically shared, information-rich models. All these developments have led to the redesign of practices within all the fields of the architecture discipline.

Architectural objects are materialized under the impact of numerous factors and components such as structural systems, surface technology, and materials besides their intellectual, spiritual, design, tectonic, functional, and formal qualities. Materiality is a concept that focuses on the materialization process of architectural thinking/architectural design idea.

Except for a few notable schools, there are various issues in architectural schools, in terms of capacity, teaching methods, and curricula, prohibiting the educational practices of architecture to absorb the challenges brought by the proliferation of new ways of thinking and making architecture. The following list provides an overview of specific issues prohibiting the formal education/learning/context to address these challenges instantly:

- Departmental curricula in a fixed program of studies that do not employ the latest pedagogical theories (Tanyeli, 2013);
- Course contents remain slow or even reluctant to adapt to these challenges;
- Lack of immersion of up-to-date research into education programs and professional practices, hence there is a weakness in fostering knowledge triangle to work in the field of education;
- Regulations prohibiting changes;
- Not all countries provide the opportunity to designate different types of schools;
- Lack of technological infrastructure (Gül et al., 2013);
- Impossibility to educate an all-knowing student for the diversity of architectural practices.
- Finding faculty members having pedagogical competences. Architecture is a growing profession in Europe; the number of architects in Europe has increased by 4% since 2016 (ACE, 2020). The number of architecture schools has grown vastly over the last 15 years (Ruhi-Sipahioğlu et al., 2019).
- Lack of innovative studio teaching approaches: Few professional practitioners tutoring studios innovate pedagogical approaches to studio models. Most rely on a more conventional and didactic system and take no notice of pedagogical improvements; their tutoring quality depends on their own experiences, awareness, and abilities. In architecture schools, not all academicians tutor studios, including those from various sub-disciplines of the field, such as theory, history, and building technologies.

Diverse cultures, attitudes, and geographies nourish the discipline. International effort and intense communication and knowledge sharing borderless platforms for both learners and tutors are paramount to sustain a dynamic and fertile ground for academia and the practice. The discipline has strong linkages between education, research, and profession on an international level via ACE, UIA, and EAAE. Various learners and tutors may not have direct opportunities to be a part of these linkages due to economic, geographical, procedural, and time-related limitations. This situation hinders stimulating students' intercultural and civic competences and the internationalization of HEIs.

Architectural education shall guarantee at least the acquisition of certain knowledge, skills, and competences as defined by Directive 2013/55/EU, in line with the UIA-UNESCO Charter on Architectural Education. Architectural Design Studio is the spine/backbone of architectural design education. It is where students weave all the knowledge, abilities, and skills gained via the other curricular courses into designing. It is a crucial interaction field that fosters the knowledge triangle of the discipline owing to the joint of work of tutors coming from research, academic, and professional fields. Rather than being an environment for implementing and/or motivating projects or instructing someone to carry them out, the studio relies on a student-centered approach strengthened with collaborative work, a multidisciplinary approach that directly improves innovative problem-solving competence.

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Enriching and extending current practices/models of the architectural design studio is a deliberate action. It holds a substantial innovation potential to enhance the relevance, quality, and impact of architectural design education/research in handling the transformations in practices interacting with the discipline.

In architectural education, design studios are the locus, where “students weave all their knowledge and skills gained via other formal, non-formal and informal learning into designing (Ruhi Sipahioğlu & Alanlı, 2020, p. 70).” Over the last 15 years, apart from compulsory curricular studios, extracurricular international intensive studios in architectural design (ISAD) have become a mainstream educational environment worldwide. ISADs cover an actual weight in non-formal architectural education (Turgut & Canturk, 2015).

The term workshop refers to “a small establishment where manufacturing or handicrafts are carried on (Merriam-Webster Dictionary, 2020).” In our context, it has two meanings: A place of education and an educational program. Brooks-Harris and Stock-Ward suggest a general definition of a workshop as “[...] a short-term learning experience that encourages active, experiential learning and uses a variety of learning activities to meet the needs of diverse learners (1999, p. 6).” They include possible workshop emphasis: problem-solving, skill-building, increasing knowledge, systemic change, personal awareness/self-improvement.

Existing literature categorizes workshops under informal education. In 2012, UNESCO Institute for Lifelong Learning (UIL) launched the *Guidelines for the Recognition, Validation, and Accreditation of the Outcomes of Non-formal and Informal Learning*“ to propose principles and mechanisms to assist Member States in developing or improving structures and procedures to recognize the outcomes of all forms of learning, particularly those of non-formal and informal learning (UNESCO Institute for Lifelong Learning, 2012, p. 3).”

The RVA of non-formal and informal learning aims to make the hidden and unrecognized competences that individuals have gained via non-formal or informal learning processes through various means, environments, and opportunities throughout their lives. UIL defines three learning types as follows:

**Formal learning** occurs as a result of experiences in an education or training institution, with structured learning objectives, learning time and support, leading to certification. Formal learning is intentional from the learner’s perspective.

**Non-formal learning** is not provided by an education or training institution and typically does not lead to certification. It is, however, structured (in terms of learning objectives, learning time or learning support). Non-formal learning is intentional from the learner’s perspective.

**Informal learning** results from daily life activities related to work, family or leisure. It is not structured (in terms of learning objectives, learning time or learning support) and typically does not lead to certification. Informal learning may be intentional but in most cases it is non-intentional (or “incidental”/random) (Yang, 2015, p. 9).

Based on this categorization, MATERIART considers ISADs as non-formal settings. We see that those awarding ECTS recognize the learning activities toward students’ degrees, and this learning is intentional from the students’ perspective.

There lie absolute differences between the formal and non-studios: Duration of the studio (Short versus a term/yearlong); Requirements students must fulfill (prerequisites/mandatory – voluntary basis without a pass-fail issue) (Ciravoğlu, 2003). Compared to formal design studios, ISADs are timewise, ranging from 15 days to 1 month long, fast to organize, and economical for international

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students to be part of a new education setting. Within the scope of the exigencies of the education field, MATERIART foresees the potential of ISADs in:

- overcoming time-related, geographical, economic limitations;
- providing fresh input of new approaches and/or renewed interpretations of content and methods regarding architectural education;
- expanding the formal, non-formal, informal, and intellectual resources of students; and enhancing students' qualifications in the face of competitiveness in economy and job creation;
- breeding an experimental/alternative/flexible learning and research environment in the 1<sup>st</sup> and 2<sup>nd</sup> cycles to absorb ever-changing tools/methods promoted in professional/research sides of the field;
- promoting the pedagogical update of studio tutors, including professional practitioners, with peer teaching method;
- enabling international collaboration between HEIs by transnational communication.

ISADs have the potential to become incubators for innovations in the studio models. However, except for a few, information about ISADs (call for applications, studio outcomes, models) are not well disseminated across European Architectural Schools. They (except IPs funded by EU) do not award ECTSs and are usually conducted only by the organizing school professors.

Up to date, there is no research on the methods, processes, and execution of extracurricular ISADs, especially run via an international collaboration of multiple HEIs.

“Architectural Design Studio Inspirations: Alternative Pedagogies” aims to reveal the potential of these activities first in ISADs and in partner institutions in innovating the studio models. Rather than focusing on specific courses in curricula (heritage, sustainability, technology), the thematic approach of MATERIART is specified to give a real breadth of the discipline, as the new art and science of materiality interact with all the sub-disciplines.

## 2 Literature Review: ISADs

The overarching goal of this review is to collect and synthesize all the research outputs that focus on the documentation and analysis of short-term architectural design workshops. This study adopted a scoping review approach as it provides an overview of the available research evidence without producing a summary answer to a discrete research question.

There exists no universal definition for this review type.<sup>1</sup> Still, it is mainly used in ‘mapping’ a research field (Levac et al., 2010). This study pursues the main stages defined by Levac et al. (2010):<sup>2</sup> (1) identifying the research question; (2) identifying relevant studies; (3) study selection; (4) charting the data; (5) collating, summarizing and reporting the results; and (6) consultation (optional stage).

### 2.1 The Scoping Study Stages

#### 2.1.1 Identifying the research question

Research questions are vital in guiding the subsequent study stages because they delineate the type of information needed for the study and inform the authors about keywords for searching and selecting relevant literature. The study set two broad research questions to provide the breadth of coverage:

*What kind of learning environments (including tools, methods, courses, curricula, context) are implemented in intensive short-term architectural design studios?*

*What is the potential of ISAD in ...?*

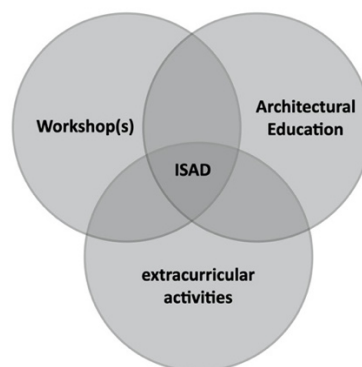


Figure 1: Representation of the research fields

#### 2.1.2 Identifying relevant studies

To identify the relevant studies that lie at the intersection between “architectural education,” “workshop(s), and “extracurricular activities,” the study used the keywords defined in Table 1 to query two online databases, Scopus and Web of Science, from January 1975 to September 2020. These databases were chosen as they were considered the most relevant and provide the highest impact journals and conference proceedings.

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<sup>1</sup> Including nomenclature ‘scoping reviews,’ ‘scoping studies,’ ‘scoping literature reviews,’ and ‘scoping exercises’ (Levac et al., 2010).

<sup>2</sup> For another study pursuing this method in the field of architecture, please see Ucci et al. (2015)

Table 1: Number of records per database

Database	Search query (Search date: 01/10/2020)	Number of records
Scopus	TITLE-ABS-KEY ( 10rchitecture* AND education ) AND TITLE-ABS-KEY ( workshop ) AND ( EXCLUDE ( PUBYEAR , 2021 ) ) AND ( EXCLUDE ( DOCTYPE , "cr" ) ) AND ( EXCLUDE ( LANGUAGE , "Spanish" ) OR EXCLUDE ( LANGUAGE , "Japanese" ) OR EXCLUDE ( LANGUAGE , "Portuguese" ) OR EXCLUDE ( LANGUAGE , "German" ) )	411
Web of Science	(AB=(10rchitecture* AND education) AND AB=(workshop) OR AK=(10rchitecture* AND education) AND AK=(workshop) OR TI=(10rchitecture* AND education) AND TI=(workshop)) <b>Timespan:</b> 1975-2020. <b>Indexes:</b> SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI. <b>LANGUAGES:</b> (ENGLISH)	207

To store all citations, we used Zotero, a bibliography management tool, to list the results of searches from each database and take out duplicates. Out of these 618 studies, 89 were duplicates hence removed using Zotero. In total, there were 529 publications. To store all citations, we used Zotero, a bibliography management tool, to list the results of searches from each database and take out duplicates. Out of these 618 studies, 89 were duplicates hence removed using Zotero. In total, there were 529 publications.

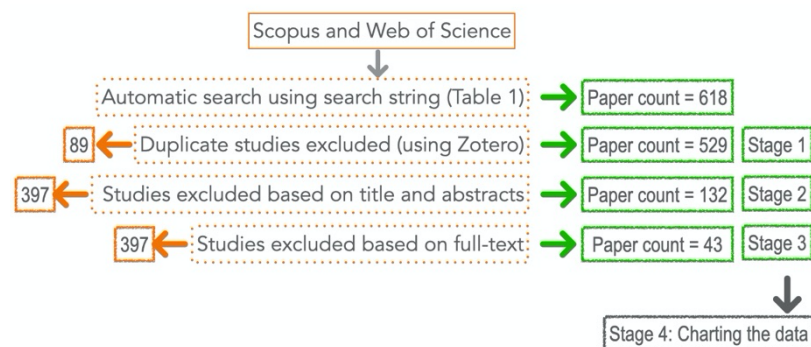


Figure 2: Search strategy and study selection process (Balaid et al., 2016)

### 2.1.3 Study selection

The study first specified the exclusion and inclusion criteria (Table 2) based on the research questions and new familiarity with the subject upon reading the studies.

Table 2: Inclusion and exclusion criteria

We included articles that are:	We excluded articles that:
Full text	Conference review papers, editorial papers. Had their full text not available
Published between January 1975 and September 2020	Were not related to our research questions (curricular workshops)
Were written in English	Were outside our search period
Were on the short-term extracurricular architectural design workshops	Were of duplicated studies

In the first step, we examined 529 studies against the inclusion and exclusion criteria using the Zotero report (exclusion based on the analysis of title, abstracts, and keywords). In this step, we also eliminated non-useful results (i.e., results not listed as journal articles, workshop, or conference

papers). In the second step, we excluded 397 studies, and 132 studies remained. We only took out studies that were clearly unrelated to the topic. In case there was doubt, we took the study to the next stage. In the third step, we examined the full texts of studies (excluded 30 studies without full texts) and further eliminated 59 studies. Finally, we had 43 studies (Figure 2).

#### 2.1.4 Charting the data

The study prepared a review protocol that specifies categories based on the central research questions and a prior research for coding identified studies (Ruhi Sipahioğlu & Alanlı, 2020). Table 3 details the classes, and Appendix A provides the full details of data extract.

*Table 3: Data extraction for each study<sup>3</sup>*

Extracted data	Description
Study ID	Unique identity for the paper
Bibliographical references	Authors, title, publication source, and publication year
Type of paper	Book chapter, journal, conference, or workshop article
Publication date	Publication year
Country	Indicates the country where the workshop is organized
Place of learning	Face-to-face or online (distance learning)
Number of partner institutions	Indicates the number of partner organization bodies
Partners	Name of partner organizations
Organizing Bodies	Nature of organizing bodies (university, NGO, etc.)
Number of students	Total number of students in the workshop
Workshop type	Short-term workshop / winter school / summer school
Workshop Name	The name of the workshop
Duration of workshop	The total duration of the workshop
Year	The year or the years the workshops are organized
Disciplines	The major disciplines of workshops
National / International	Indicates whether the workshop involves international or national collaboration
Workshop focus/topic (if relevant)	

Scoping studies have a thematic construction to provide the breadth of the literature in three steps (Levac et al., 2010): (1) the analysis with descriptive numerical summary analysis and qualitative thematic analysis); (2) reporting the results regarding the overall research questions; (3) to emphasize how results find their place in the knowledge pool and discuss future research implications.

In the first step, this study made the qualitative thematic analysis of research outputs by following Braun and Clarke's (2006) six-step framework developed for qualitative data. Hence the 1<sup>st</sup> and 2<sup>nd</sup> steps of the scoping study are carried with this six-step framework. There is no specific justification for this choice, except for its widespread use in social sciences. The study used qualitative data analytic software MaxQDA 2018.

*Table 4: Phases of thematic analysis, borrowed from Braun and Clark (2006, p. 87)*

Phase	Description of the process
1. Familiarising with data	Transcribing data (if necessary), reading, and re-reading the data, noting down initial ideas.
2. Generating initial codes	Coding interesting features of the data systematically across the entire data set, collating data relevant to each code.
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.

<sup>3</sup> This study used these workshop data also in the mapping of ISADs.



4. Reviewing themes	Checking if the themes work in relation to the coded extracts and the entire data set, generating a thematic map.
5. Defining and naming themes	Ongoing analysis for refining the specifics of each theme and the overall story that the analysis tells, generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a report of the analysis.

However, these steps shall not be considered a linear process, but as a more recursive process, where the analysis goes back and forth among these steps. The first step of thematic analysis involves familiarizing themselves with qualitative data. Over the study selection process, the researchers read the articles multiple times. The second step of thematic analysis involves the systematic organization of the data to moving from unstructured data to the development of ideas on the research topic through qualitative coding. Codes represent a feature of the data relevant to the “thematic” focus of the current study.

There are numerous different coding methods, and the method must be chosen based on the researcher's perspective and research questions. This study's analysis falls into the category of “thematic analysis” rather than an inductive one. The study questions are on the conduct of the studio. Therefore, researchers had initial codes in their minds. The study first coded the issues repeated over time among diverse research outputs. We extracted data based on qualitative thematic content analysis in an iterative process, and we coded separately.

Given the researchers’ vast knowledge in the field and thematic focus, the researchers had a list of initial codes (Deductive coding or theory-driven), like a codebook as a reference to guide the study through the coding process. However, these codes are broad code names for future reference. Along the process, the researchers also wrote down notes that define these codes. The researchers also conducted an inductive coding process or 'data-driven', which involves open-coding (coding without pre-set codes), then developed and modified over the coding process.

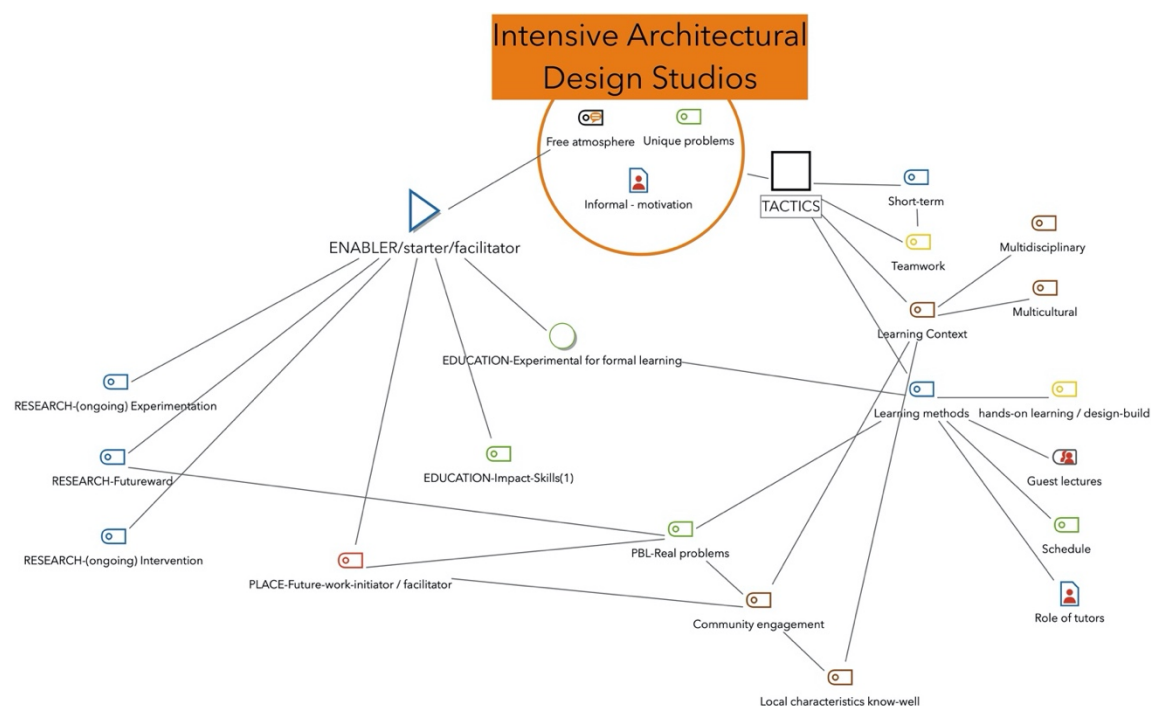


Figure 3: Representation of the relationships among emerging themes and codes at the end of the 3<sup>rd</sup> step



The third step of thematic analysis involves grouping the different codes into broader themes. These themes should have relevance to the research questions. In this study, the themes have descriptive nature and explain the data patterns that answer the research questions. MAXMaps, a mind-mapping tool in MaxQDA, is used to demonstrate the relationship among these themes, lie a thematic map of this early stage (Figure 3).

The fourth step is the finetuning phase, in which the researchers review the candidate themes to determine where there are enough data that justify them, or the data are too distanced from the meaning. MaxQDA allows visualizing all the data coded under one code and then one theme. By reading the data associated with each theme, the researchers checked the entire interviews. Themes must be coherent and distinct from each other (Maguire & Delahunt, 2017). As part of the refinement, the study identified whether or not a theme contains any sub-themes. Sub-themes are themes-within-a-theme. They are used to structure a particularly large and complex theme and represent the hierarchy of meaning within the data.

The fifth step started with the final thematic map of the data and required defining and naming themes upon determining the relationship between sub-themes and themes. The study continued with the fifth step of the scoping study to report the results based on defined themes regarding the overall research questions (Figure 4).

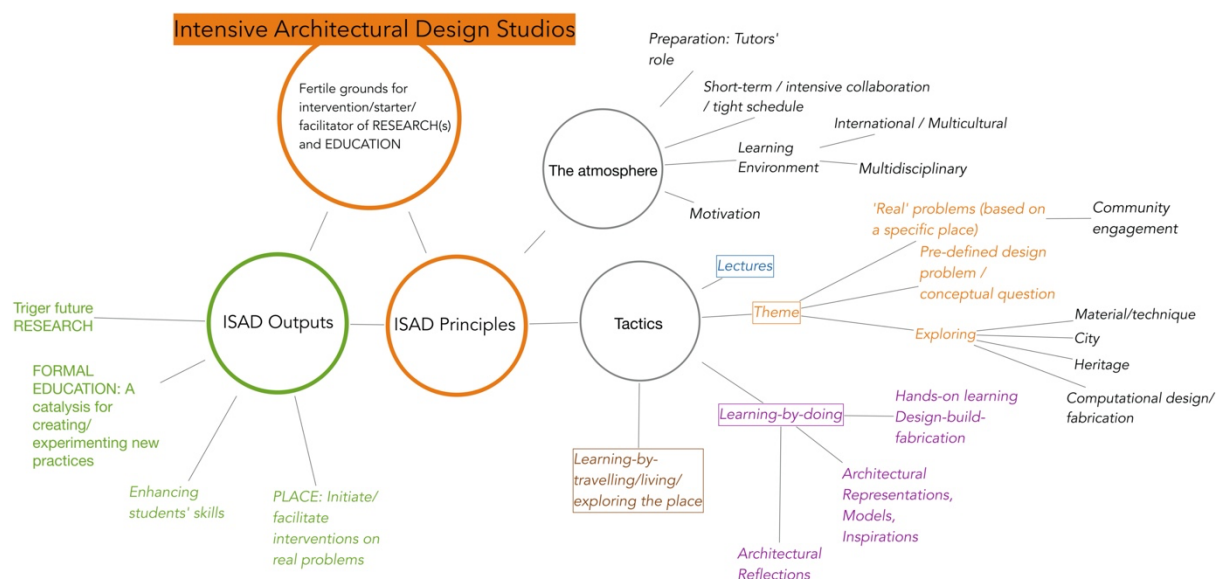


Figure 4: Representation of the relationships among emerging themes and sub-themes at the end 4<sup>th</sup> step

ISADs are fertile grounds for:

- intervening ongoing research, practice, or education;
- triggering future research fields;
- intervening for place-based problems;
- creating and testing alternative studio settings for formal learning;
- students to gain/enhance 'survival skills' (Sorguc et al., 2019).

In the reviewed studies, the objectives for the organization of workshops varied: (1) Research experimentation; (2) Creating ways to enhance architectural education via non-formal learning

settings; (3) Developing solutions for 'real problem.' Except for a few studies on experimental workshops, which are organized to test how certain teaching practices lead to improved students' skills, this study reveals common tactics that create the workshop 'atmosphere' and learning practices for these fertile grounds.

## 2.2 Intensive Architectural Design Studios: Principles

### 2.2.1 The atmosphere

The most crucial aspect differentiating workshop from formal settings lies in the atmosphere or ambiance that releases students from restrictions of formal processes (Orhan, 2017). Turgut and Canturk state that this "free atmosphere of workshops provides the medium for productivity and creativity of the students (2015, p. 89)."

[...] learning in a from desk-to-desk manner, within a teamworking group, seems to be better absorbed by students and is better perceived than the ex-cathedra educational manner, highlighting the importance of the interpersonal relationship between tutors and students, a model of project-based, goal-oriented teamwork in the overall design process and allowing for innovative thinking (Paszkowski & Gołebiewski, 2020, p. 56).

Our analysis showed that workshops share common tactics creating and supporting such a dynamic atmosphere: (1) the preparation phase; (2) Short-term and tight schedules require intensive collaboration; (3) the learning environment; (4) the motivation of tutors and students.

#### 2.2.1.1 *The preparation: The role of tutors and organization team*

Most ISADs are open for students from diverse disciplines, hence needs, levels of experience, and individual interests. Besides, the learning period is short compared to formal learning programs. This shortness results in difficulties in preparing assignments or the scope of lectures. Attaining a well-planned workshop requires a significant effort in its preparation phase and places a great deal of responsibility on the workshop organization team and tutors. Apart from the logistical organization, one of the significant aspects of creating this atmosphere lies in a detailed and thoughtful preparation by tutors (Garcia Saez et al., 2016; Momirski, 2019; Smatanová & Dubovcová, 2016).

A well-planned workshop enables achieving the primary objectives and overcomes possible obstacles via a flexible approach. The preparation phase includes:

- Research on learning priorities and research perspectives,
- Definition of objectives
- Assignment of tutors
- Definition of workshop theme, the main problem to solve in a particular workshop studio;
- Preparation of content;
- Invitation of critics and/or guest lecturers (if relevant) (Milovanovic et al., 2020; Paszkowski & Gołebiewski, 2020).

This unique student-centered atmosphere requires tutors' to act as a facilitator, ready to be adaptable to the diversity of workshop participants, for supporting experiential learning, rather than a teacher of instructor and encouraging learning between and among all participants (Brooks-Harris & Stock-Ward, 1999; Garcia Saez et al., 2016). Therefore, tutors hold multiple tasks and roles at the same time. On this issue, Sorguc et al. state that

[...] the role of mentors in the groups was very crucial and it was seen that they can effectively work in groups and be productive as long as mentors facilitate the design process by supporting

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them with proper assessments and coaching techniques with respect to the individual needs of the students and/or groups (2019, p. 136).

#### 2.2.1.2 *Short-term / tight schedule / intensive collaboration*

ISADs are apt to provide an optimum period of study for students' maximum concentration.

Limiting the period of workshop to 72 hours was essential in avoiding possible outside interactions and impacts of formal educational activities (Kahvecioglu et al., 2002).

These intensive but time limited group meetings work as an enabler to set of activities designed to promote learning, discussion and feedback by highly involvement and interaction of the participating students (Turgut & Canturk, 2015).

[...] students never lost their interest and their enthusiasm in these three days since each phase was new and challenging for them. They followed schedule and all the intermediate steps were means for them to have self-awareness of their progress. In every progressive step, it was observed that participants became more confident and more engaged in the learning process (Sorguc et al., 2019).

Short-term and tight schedule required collaboration in most of the reviewed workshops. Teamwork adds another level of complexity (Shatarova, 2015). The development of interpersonal skills (survival skills) required for teamwork is defined as one of the main objectives of workshops (Kahvecioglu et al., 2002; Smatanová & Dubovcová, 2016; Sorguc et al., 2019). Teamwork also supports collective learning and cooperation besides broadening horizons (Polatoğlu & Vural, 2012). For students' future practice, gaining the ability to work creatively under pressure is explained to become an essential critical skill (Paszkowski & Gołbiewski, 2020).

The format and scope of the workshops are characterized by effective, intensive and more demanding works. Such work effort requires tighter collaboration between students. Sometimes, the short-time frame also brings out a quite tense situation, through which students may develop tight relationships and learn to collaborate effectively (Smatanová & Dubovcová, 2016).

There are many debates in the field about the notion of "star architect." This notion drives architectural education in many parts of the world to focus on education for creativity. However, we observe that the profession requires professionals involved in complex collaborative and collective processes. These processes necessitate the distribution of design responsibility. In the context of education, studio teaching methods where the focus on one student's abilities and skills become problematic (Habracken, 2006; Tzonis, 2014). Previous research indicated that many architecture schools do not promote collaborative learning practices in formal design studios (Ruhi Sipahioğlu & Alanlı, 2020; Ruhi-Sipahioğlu et al., 2019). By promoting collaborative learning practices, ISADs have become fertile grounds for students to gain interpersonal skills.

#### 2.2.1.3 *The Learning Environment*

Organizing inter/multi-disciplinary design studios is a significant burden for fully booked departmental curricula and tight weekly and yearly schedules. Workshops are the locus for students to partake in interdisciplinary design processes (Milovanovic et al., 2020; Pereira & Roche, 2016). Smatanová and Dubovcová state that this environment provides "a safe ground for different actors to meet (2016)."

[...] the participation of the students in this multidisciplinary meeting has enhanced their capacity for self-criticism in several disciplines and has promoted their ability to perform learning and research strategies in an autonomous way by both interactive classes and practical exercises supervised by teachers, working individually and in groups (Tang, 2013).

Bringing people from diverse backgrounds is not an easy task requiring much effort from workshop tutors and organizers (Garcia Saez et al., 2016).

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A multidisciplinary team came together, and their individual personal and professional knowledge and experience contributed to understanding and assessing the same work from different perspectives within the workshops. Their varied concerns and interests also provided answers to a wide range of questions of varying importance during the workshop (Garcia Saez et al., 2016).

Increased international diversity yields challenges (Pereira & Roche, 2016) but benefits to learners and tutors (Umran Topcu & Taberna Torres, 2018). International workshops incorporate different cultural backgrounds. This diversity widens participants' perspectives in approaching design interventions and fosters students' working international teams' skills. As current architectural problems are globally widespread (Pereira & Roche, 2016), in some cases, foreign professionals may discern local problems from different viewpoints while yielding a polarity of ideas (Paszkowski & Gołębiewski, 2020).

#### 2.2.1.4 Motivation

In educational psychology, motivation is considered a critical factor for the success of learning. The lack of motivation has an impact on students' attention in class, hence the learning outcomes. It is maintained that "motivation to learn is directly proportional to the effectiveness of learning (Fernandez-Antolin et al., 2020)," because it stimulates students to learn and pursue learning activities. The will to delve into a specific subject correlates with students' motivation. Hence tutors need to determine the strategies that improve learning motivation (Fernandez-Antolin et al., 2020).

Existing literature details certain factors in improving learning motivation. The schedule, learning environment, and the tactics of ISADs represent diversities and this study cannot discern at this phase which factor best improve learning motivation.<sup>4</sup> Almost all the reviewed researches include a common factor triggering students' motivation, the informal learning. For the impact of informality, Smatanová & Dubovcová state that:

Students are mostly more motivated - to work, but also generally to participate. Informality, which aims at going beyond the normal and ordinary, provides an environment excluding the current order and rules where hierarchy is taken down. The most important benefits of informality are motivation, a communicative environment where different ideas come together, expressing oneself individually and gaining self-confidence (2016, p. 126).

#### 2.2.2 Tactics

The scoping study overlays multiple learning methods pursued in the reviewed workshops. This study follows the footsteps of Experiential Learning Theory that "considers learning as a cycle that begins with experience, continues with reflection and later leads to action that becomes a concrete experience for reflection (Demirbaş & Demirkan, 2003, p. 340)." Kolb's learning cycle defines four stages of the experiential learning model. The main idea is that learning occurs in a cycle, and learners learn best when their learning experience touches on every part of this cycle. Demirbaş and Demirkan (2003) underline that hypothetically learners can consciously move through all the learning cycle modes. However, existing research indicates that not all learners equally experience each stage of this cycle. Each learner then has a preferred learning style.

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<sup>4</sup> A number of studies detail that international learning environments, visiting a foreign country, improving lacking skills are among the main students' motivations. For example, Sorguç et al. state that "pushing students out of their comfort zone also plays a crucial role in the self-evaluation and increase self-motivation to make up their lacking knowledge and skills (2019, p. 136)" Paszkowski and Gołębiewski (2020) state that "the competition between student groups is an additional motivational factor. Fernandez-Antolin et al. (2020) state that the use of gamification increases students' motivation.

Teaching/creating learning environments in each quadrant supports retention, inspires recognition of applications, and serves the diversity of students' learning styles. The central practical applications of the theory include how a session, or a course, can be developed in a way that takes students systematically through the whole cycle and a consideration of the teaching methods that are incredibly valuable at certain stages of the cycle.

This study correlates workshop activities with the four learning modes of Kolb's Experiential Learning Theory: (1) Learning-by-doing (Active Experimentation); (2) Learning by thinking (Abstract Conceptualization); (3) Learning by experiencing (Concrete Experience); (4) Learning by reflecting (Reflective Observation).

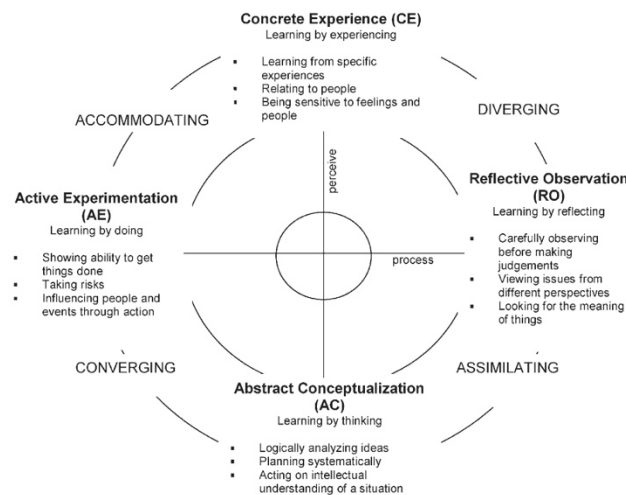


Figure 5: Four learning modes of Experiential Learning Theory, this figure is drawn by Demirbaş and Demirkan (2003) based on Kolb's learning cycles.

The studies revealed three learning activities: (1) Learning-by-doing (refers to studio conduct model); (2) Lectures; (3) Learning-by-travelling/living/exploring the place.

Almost all the reviewed workshop tracks shared a common approach: Cooperative learning that puts students in teams under conditions that stimulate teamwork skills while ensuring their accountability for the entire process.

#### 2.2.2.1 Workshop Themes

Among the reviewed workshops, the study determined different tracks in the assignment of workshop themes (1): Real problems (based on a place); (2) Pre-defined design problem / conceptual question; (3) Experimental for ongoing research; (4) Exploring (Material/Techniques; City; Heritage; Representation techniques; computational design and/or fabrication tools). Apart from these thematic classification, certain workshops are experimental organized for an ongoing research (Karadağ & Toker, 2020; Sorguc et al., 2019).

#### 'Real' problems

The workshop themes are 'real.' International Network for Traditional Building, Architecture, and Urbanism (INTBAU) Design Workshops organized since 2002 using the charette model exemplifies this approach.<sup>5</sup>

<sup>5</sup> INTBAU's summer school are still organized. Please see: <https://engelsberg.intbau.org>

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INTBAU's Transylvanian Village Development Workshop 2003, held in Laslea in Romania with the Mihai Eminescu Trust (MET), aimed at assisting in the sustainable development of the medieval 'Saxon' villages of Transylvania. The workshop involved 32 practitioners and students from Romania and abroad, working with citizens in a 5 day charrette. Participants analysed the village and produced traditional urbanist proposals integrating heritage preservation and sustainable development. The masterplan included design guidance for simple improvements to the streetscape and amenities of the village, and for new traditional buildings in the village and in extensions to it (Hardy, 2008).

Summer Schools organized by Architecture Sans Frontiere-UK is another exemplar.<sup>6</sup>

'Building Communities', suggests, this five-day course not only looked at the physical, construction-related aspects of improving slum neighbourhoods, but also - and perhaps more importantly - introduced the participants to the wider picture of encouraging positive change and regeneration by addressing key issues such as participatory practice, community development and environmental sustainability. Creating a dynamic between theoretical discourse and a practical hands-on building project, the Summer School focused on the importance of addressing the complexities of context, culture and community in development, and the potentially negative effects of remedial aid when this does not take these factors into account (van den Berg, 2008, p. 79).

Sas-Bojarska and Rembeza (2020), while explaining their workshop series organized between Portugal and Poland, discuss how workshop topics are presented from different problems of a contemporary city:

These included: investment pressure; new housing estates appropriating the most valuable natural and landscape areas; city fragmentation, cutting the city's fabric with communication arteries, hindering access to services and recreation through congested roads; adverse visual changes of appearance in the city's fabric; multiscale engineered objects; fragmentation of a forested ecosystem; degradation of landscape; destabilisation of geological structures (pits, slopes, bridgeheads, pillars); erosion processes; landscape changes, deforestation; changes in underground water level, pollution (air, noise, vibrations); negative effects on flora and fauna; chaotic-mix/use and architectural banality (Sas-Bojarska & Rembeza, 2020, p. 191).

They also reflect that studied local problems turn out to be common problems affecting all the cities in subsequent years, especially European ones. This relevance stems from their selection of design areas based on "the complexity of problems, the challenges and potential for creating new city values (Sas-Bojarska & Rembeza, 2020, p. 195)."

Either conceived as a hands-on studio, including the building phase, or a design studio, in these workshops, learners apply their knowledge or theory on real world problems and experiment in non-hypothetical conditions. Hence it is on the opposite side of "the abstract milieu associated with the virtual studio environment (Shatarova, 2015).

In place-based studios, learning from the place and its people is paramount. Ethnographic, demographic, social statistical, site analysis, and participant-observation measures are among the methods here. These place-based, problem-based learning practices require workshop participants to have intense interactions with the community. This process is explained as follows:

Students conducted surveys to better know the local point of view and tried to adjust workshop outcomes to the revealed needs. There were several approaches to the subject: from local community elicitation through common actions to conceptual designs of district revitalization.

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<sup>6</sup> Official page of ASF-UK: <http://www.asf-uk.org>



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Each time the local community was asked to attend the final presentation and discussion. (Twardoch & Stangel, 2016, p. 23)

These interactions with the community move the learning into the context.

When learning takes place in the community, working alongside local partners, the process can be empowering, participatory and more meaningful. Field based learning allows for complex problems to be approached from a number of angles in order to see the short-term and long-term implications, and the range of stakeholders involved. The perception of this complexity changes once one is able to break down the challenges into a process consisting of people and responsibilities (Ernst & Edwards, 2013, p. 99).

### **Pre-defined design problem/conceptual question**

These workshops challenge participants with a pre-defined design problem or conceptual approach. The workshop entitled “COVID-19 Challenges: Architecture of Pandemic” (Milovanovic et al., 2020) and the “Gazi University Winter Schools” best illustrate this approach (Paszkowski & Gołębiewski, 2020).

### **Exploring (Material/Techniques; City; Heritage; Use of computational design and fabrication processes)**

Various workshop organizations explore the potentials of materials by delving into new fabrication techniques and form generation processes (Guner et al., 2017; Orhan, 2017; Tang, 2013). Another theme focuses on exploring the city while aiming to immerse students in context. These workshops expect to derive new design interventions in the city, enhance students' ability to read the city based on architectural interpretations (Polatoğlu & Vural, 2012; Umrhan Topcu & Taberna Torres, 2018; Turgut & Canturk, 2015). Exploring cultural or modern heritage is seen to be an emerging theme. (Jimenez Delgado & Piedecausa-Garcia, 2013; Kuyrukcu & Kuyrukcu, 2015; Pereira & Roche, 2016). These workshops focus on developing either preservation or reuse of modern or cultural heritage by making direct documentation. Exploring computational tools' use and potentials is an emerging workshop theme (Cabral Filho, 2005; Karadağ & Toker, 2020; Sorguc et al., 2019).

#### *2.2.2.2 Studio Model: Learning-by-doing*

Most ISADs are built upon design studios enabling students' active experimentation while incorporating all the learning modes. Learning by working on 'unique' problems, students actively incorporate all the learning modes.

Because the unique falls outside the categories of existing theory and technique, the practitioner/student cannot treat it as an instrumental problem to be solved by applying one of the rules in his/her store of professional knowledge. In other words, this case is not 'in the book.' If one is to deal with it competently, then she/he must do so by kind of improvisation, inventing and testing in the situation strategies of his/her devising. From this point of view, short-term studies or workshops present unique potentials to deal with unique problematic cases. (Kahvecioglu et al., 2002).

All the workshops pursued group supervision, including desk-crits or panel crits, in terms of instructional methods. This study classified ISADs based on the studio actual outputs:

- (1) Hands-on learning with design-build or fabricate projects
- (2) Studios resulting with architectural design projects/proposals represented with diverse platforms
- (3) Studios resulting in architectural reflections.

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In the most design-build studio, researchers state having pursued project-based learning (PBL), Altay et al. define PBL as follows:

Project-based learning is the predominant learning method in design disciplines, where students are given a problem and they arrive at a tangible product as a final outcome, redefining, interpreting and developing the problem during the process. Using project-based methods, students must develop an understanding of the user(s) to develop possible solutions, and they need to integrate these understandings during the design development process. In that respect, the possible and multiple ways for users to interact with the proposed design is students' primary concern, a method that enhances empathic design (Altay et al., 2016, p. 1127).

**(1) Design Studio: Hands-on (Design-build and Design-fabricate):** Design-build workshops are studio models in which the construction of the designed project is articulated in the studio or their real place.

What is often referred to the hands-on approach is adopted not exclusively but predominantly in constructive and compound projects, during which participants actually materialise their conceptual designs in either prototypes or full-scale models (Shatarova, 2015).

The material and materiality (process) of architecture is mostly reflected in these types of studios. In these studios, students first develop a design model and build the project. Hence knowledge is explained to be assimilated better through first-hand experience (Garcia Saez et al., 2016).

The design-build workshops offer an educational environment that allows students to gain building experience and learn the construction area, structure, material and procession material, details etc. in practice besides design. In these workshops, the construction is a part of design process and the main purpose is to understand the building techniques and the process by consolidating the learning in architectural design studio with the knowledge that students will acquire by touching, seeing and experiencing during workshop. In this respect, design-build workshops are studio methods in which the construction of designed project is articulated into design studios in architectural education (Guner et al., 2017, p. 6868).

Especially construction workshops reinforce theory courses by taking learning out of classrooms and textbooks "Structural intuition can be developed through working with physical models (Tang, 2013).

Another emerging activity in the field is the design-to-fabrication workshops that allow students to explore the potentials of computational design processes combined with new fabrication technologies. These studios "provides students with the necessary technical skills required to make automated construction a reality (Shi et al., 2020)." In the mapping, the study separated this studio model into two categories to differentiate between building technologies used in the workshop: Design-build and design-fabricate.

The study found that most design-build workshops are organized for communities with low income affected by political and natural disasters living in rural areas that are not accessible to architectural services. In these workshops, sustainable, recyclable, or salvaged materials can be obtained locally, easily, and cheaply (Guner et al., 2017, p. 6868).

**(2) Design Studio (Speculative): Architectural Representations, Models, Inspirations**

These studios include architectural design exercises using architectural representation techniques, such as models, renders, etc. (Cabral Filho, 2005; Sorguc et al., 2019; Tzaka et al., 2010).

**(3) Studio: Experimental / Reflective Practice**

What differentiates this type of short-term from live projects lies in determining the studio topic and, in some instances in the studio outputs, ranging from urban sketching studies to stop-motion videos reflecting the urban experience (U. Topcu et al., 2015; Umran Topcu & Taberna Torres, 2018).



### 2.2.2.3 Lectures

In general, all reviewed workshops included lectures specifically prepared for the workshop themes or, if relevant special lectures for introducing participants to specific practical design (mostly computational tools) or construction techniques.<sup>7</sup> Lectures involve learning-by-thinking on the theme. Invitation of external guest lecturers into formal education is considered a burden, as lecturers, especially from different disciplines, cannot give long-term commitments. Hence, workshops benefit from external lecturers, including those from diverse fields and disciplines, owing to its short-term promise (Smatanová & Dubovcová, 2016). MATERIART team updated this output after the COVID-19 outbreak, given the proliferation of online ISADs. These new workshop experiences and partners' distance teaching experience have shown that guest lecturers' online seminars have become the new normal. It may be presumed that this practice will take its place shortly.

### 2.2.2.4 Learning-by-travelling/living/exploring the place

Learning by exploring the place or immersing in the cities is an educational tool used by ISADs for several objectives. First, they make “both students and professionals aware of this whole other world outside their studio design (van den Berg, 2008, p. 83).” Second, participants, either by researching the field or only by spending time in the new context, can grasp the meaning of lived space and the community. The following excerpts from reviewed publications better illustrate this learning experience:

We explained the relevance of feeling with the cities. We encouraged the students not just to walk, but to live the places and buildings. As Pallasmaa says “Architectural space is lived space rather than physical space, and lived space always transcends geometry and measurability”. We challenged the groups for trying to find this lived space, these personal feelings they had while they were going around different places (U. Topcu et al., 2015, p. 262).

Meetings, communication with locals, lunches and study took place all at the site so that students are conducted in the area to experience a longer period of time, to monitor the behaviors of local people, to perceive the use of space. One of the most important aims of these workshops was to gather students together from different cultures. For example in the first workshop Spanish students were hosted at Turkish student homes. Rituals of daily life such as lunch at the cost of Golden Horn, in the second workshop meeting-group discussion at a renovated old house used as a coffee house, sitting on the sidewalk of a street and sketching, or in the afternoon sitting on stools and watching Topkapı Palace while eating fish & bread were the examples of converging cultures (Polatoğlu & Vural, 2012, p. 483)

This lived space provides concrete experience (CE). In several workshops, we see that students also learn by reflective observation because they are asked to articulate this feeling via diverse mediums or techniques, like sketches, stop-motion videos (Umran Topcu & Taberna Torres, 2018), and photographs accompanied with literary texts (Kahvecioglu et al., 2002).

The Bedford program of Rensselaer Polytechnic Institute also benefits from this type of learning by integrating a travel-study workshop lasting 8-10 days as part of the year-long program. This workshop exposes students and faculty members of two disciplines to great works of architecture and to best practices which embrace collaborative work and have ambitious agendas for contemporary architecture and engineering (Symans et al., 2010).” The workshop destinations are international and include significant building-site visits and construction-site visits with in-office seminars. While keeping a diary enhance reflective observation, interdisciplinary student teams are given a particular

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<sup>7</sup> For a workshop on unique construction material and techniques, please see (2013); for a workshop dedicated to robotic applications, please see Doyle et al. (2018).

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task “the conceptual design of a project – a means of catalyzing discussion and conversation through and about collaboration (Symans et al., 2010).”

## 2.3 ISAD Outputs

The scoping study results point to a fertile ground workshop created by making the knowledge triangle of architecture, that is, the research, education, and professional fields to work. Among the reviewed workshops, the study determined that problem-based learning workshops are an ideal mix of practice, research, and education and balance “situations in which the transfer of practice into faculty programs influences the development of education in the form of an architecture office where educational criteria do not take priority (Momirski, 2019).”<sup>8</sup> Apart from this joint learning program, workshop outputs become three sources of inspiration: Place, future-ongoing research activities, innovations toward formal learning practices.

### 2.3.1 Place: An Inspiration and a facilitator

PBL based workshops in architecture and urban planning potentially bring benefit not only for practicing students but also for the world around as they are mainly concerned with socially relevant issues. The primary objective of these workshops is to explore “real problems” of the built environment.

Workshop outputs may not be fully elaborated for a direct professional application, given the students’ lack of experience or idealistic approach. However, the workshop is a “spark, an inspiration for further actions, a great opportunity for public education for all and for urban related issues awareness of building (Twardoch & Stangel, 2016).” Studied papers document how certain workshops have become inspirations for future actions. Twardoch & Stangel elaborate on these examples in their paper:

As a result of the workshop five unique conceptual projects of cohousing community were created, but, what was more importantly, participants were provided with practical knowledge on co-housing’s design process, and the idea was spread among the younger generation. As a continuation of the workshop, the public debate on housing, at the most popular Silesian summer place (Twardoch & Stangel, 2016).

Workshops organized by INTBAU record various examples of this type of inspirations (Sas-Bojarska & Rembeza, 2020). Van den Berg (2008) explains the impact of ASF-UK Summer School as follows:

A live hands-on building programme using waste material simulated resettlement and reconstruction, and explored the ways and means of building local capacities for preparedness and recovery (van den Berg, 2008).

Workshops are considered as a catalyst for socially active design and build activities.

Strategically, placing a workshop within an ongoing or emerging project can be a simple way of temporarily bolstering capacity (Ernst & Edwards, 2013).

The challenges inherent in the workshop are offset by the potential opportunities of positioning a learning experience, such as a workshop, as a catalyst within a long-term agenda. The parameters which form the pedagogy of the workshop can seem simple in isolation, but together they can expose students to the unique roles and responsibilities built environment professionals have when working in this sector and can contribute to a beneficial experience for all stakeholders. The success of the model/pedagogy can be critically evaluated against the success of this workshop to instigate and sustain a longer term project. The longer term programme is the only way to achieve

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<sup>8</sup> For a detailed analysis of architectural education programs, please see, (Ruhi-Sipahioğlu et al., 2019).

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meaningful engagement, positive change and sustained learning. While the workshop is only two weeks the fast-paced learning scenario, with skilled individuals from seven nationalities and a variety of backgrounds and experiences, can provide the momentum to drive forward a process (Ernst & Edwards, 2013).

Skills gained in a digital art workshop is seen to have triggered students in engaging new activities:

The group of students tested their general creativity, their ability to work as a team, and their inventive use of digital tools as they had to accomplish quite complex tasks in support of a series of workshops with the homeless group. In order to facilitate the participatory design process, they had to envisage an interface to evaluate the ability of lay people in the use computers; they had to set up a multi-functional web page; they had to sort out network issues in order to make one interface working across a dozen computers. Moreover, what is remarkable is that they were able to achieve these tasks by transferring the technical and creative knowledge they had developed in an otherwise playful situation, related to digital art (Cabral Filho, 2005).

However, Ernst and Edwards (2013) warn that the workshop should involve citizens and local communities' members in the workshop's proceeding not to lose interest in furthering the workshop outcomes. They suggest that

workshops with outsiders' participation, should rather take place under the aegis of foundations, NGOs, universities and other bodies ready to continue the work's outcomes, cause as it's much harder to gain lost interest than to induce it for the first time was held few months late (Ernst & Edwards, 2013).

### 2.3.2 Research and Education: Inspirations

Workshops are both a catalyst for ongoing research activities and a spark for future research. Their outcomes are visible faster, and outcomes are tangible (Smatanová & Dubovcová, 2016).

Cyborg sessions organized to address women's inequality in technology at the Iowa State University exemplifies such a role. Through these sessions, researchers test a pedagogical program's viability that provides a supportive environment and opportunities for women (Doyle et al., 2018). Diniz (2015) organizes a workshop for testing her hypothesis of using prototypes as the primary vehicle for 'research through design. Karadağ and Toker organize an ecology-based computational design workshop to understand whether the incorporation of computational thinking into the design process would "increase students' awareness of the ecological dimension and their ability to make this dimension an integral part of their projects (2020). All these applications correlate with the role of workshops in updating/renewing the existing formal learning environments. The following section will detail this issue further. These workshops also allow students to become part of ongoing research.

"I International Planning Preservation Workshop. Learning from Al Andalus" is explained to lead to establishing a permanent international work structure for the development of projects of the Historical City. Afterward, this network published several books that refer to this workshop and teaching proposals shared between the affiliated institutions (Jimenez Delgado & Piedecausa-Garcia, 2013). By the same token, Ernst & Edwards (2013) reports how an international workshop coordinated by ASF-UK and SEEDS India paved the way for "a new three-year project to promote appropriate shelter technologies and processes for disaster and climate resilience in the Himalayan Region (2013, p. 101). Orozco-Messana et al. (2020) explain how "ISALab Workshops" have become an initiator of new master thesis research.

Tzaka et al. (2010) point out how the experimentations in the "SKG\_Flux" on parametric urban design have relevance to developing the ways, the contents and forms of expression of the parametric approach to urban design are converted into teaching practices and educational outcomes. Cabral

Filho (2005) accounts for the role of a series of experimental workshops to include an artistic approach to the work in a computer lab dedicated to teaching and researching architecture. Shi et al. (2020), to develop a new didactic pedagogical approach that relies on robotic tectonics principles, organize four “Robotic Tectonics” workshops.

## 2.4 Education: Students’ skills

Reviewed studies detail the objectives of workshops concerning the students’ learning outcomes. Given the diversity of workshop themes, the competences, skills, and abilities provided by each workshop differ from one another. Article 46 of 2013/55/EU entitled “Training of architects” details the competences, skills, and abilities that an educational institution on architecture must provide to a student and the minimum length of education or internship (The European Parliament and of the Council of the European Union, 2013, p. 55).

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### Article 46 of 2013/55/EU

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1. Training as an architect shall comprise:

- (a) a total of at least five years of full-time study at a university or a comparable teaching institution, leading to successful completion of a university-level examination; or
  - (b) not less than four years of full-time study at a university or a comparable teaching institution leading to successful completion of a university-level examination, accompanied by a certificate attesting to the completion of two years of professional traineeship in accordance with paragraph 4.
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2. Architecture must be the principal component of the study referred to in paragraph 1. The study shall maintain a balance between theoretical and practical aspects of architectural training and shall guarantee at least the acquisition of the following knowledge, skills and competences:

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- a) the ability to create architectural designs that satisfy both aesthetic and technical requirements;
  - b) adequate knowledge of the history and theories of architecture and the related arts, technologies and human sciences;
  - c) knowledge of the fine arts as an influence on the quality of architectural design;
  - d) adequate knowledge of urban design, planning and the skills involved in the planning process;
  - e) understanding of the relationship between people and buildings, and between buildings and their environment, and of the need to relate buildings and the spaces between them to human needs and scale;
  - f) understanding of the profession of architect and the role of the architect in society, in particular in preparing briefs that take account of social factors;
  - g) understanding of the methods of investigation and preparation of the brief for a design project;
  - h) understanding of the structural design, and constructional and engineering problems associated with building design;
  - i) adequate knowledge of physical problems and technologies and of the function of buildings so as to provide them with internal conditions of comfort and protection against the climate, in the framework of sustainable development;
  - j) the necessary design skills to meet building users’ requirements within the constraints imposed by cost factors and building regulations;
  - k) adequate knowledge of the industries, organisations, regulations and procedures involved in translating design concepts into buildings and integrating plans into overall planning.
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3. The number of years of academic study referred to in paragraphs 1 and 2 may in addition be expressed with the equivalent ECTS credits.

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4. The professional traineeship referred to in point(b) of paragraph 1 shall take place only after completion of the first three years of the study. At least one year of the professional traineeship shall build upon knowledge, skills and competences acquired during the study referred to in paragraph 2 (The European Parliament and of the Council of the European Union, 2013, p. 55).

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Almost all the reviewed workshops address the acquisition of the knowledge, skills, and competences defined by the EU. This study reveals that:

- PBL workshops enhance the “understanding of the relationship between people and buildings, and between buildings and their environment, and of the need to relate buildings and the spaces between them to human needs and scale,” owing to its high focus on the context and communities.
- Workshops pursuing hands-on learning practices provide “the understanding of the structural design, and constructional and engineering problems associated with building design.”
- One reviewed workshop (Cabral Filho, 2005) was specially dedicated to understanding how the knowledge of the fine arts as an influence on the quality of architectural design has an impact of the design outcome. Numerous fine art techniques (stop-motion videos, collage techniques, etc.)
- Numerous workshops aim to foster students’ skills in addressing sustainability issues both in urban and building scale. Beyond providing “adequate knowledge of physical problems and technologies and of the function of buildings so as to provide them with internal conditions of comfort and protection against the climate, in the framework of sustainable development,” we observe that PBL workshops focus also skills and knowledge in addressing social sustainability. Another growing workshop strategy is the use of computational tools in designing environmental sensitive projects.
- All the reviewed workshops require students to work in teams. This strategy develops not only students’ communication skills but also interpersonal skills via group work.

Apart from these aspects, international workshops enhance students’ self-confidence in international environments and language proficiency (Orhan, 2017; Umran Topcu & Taberna Torres, 2018, 2018).

Various workshops are organized each year as part of the European Architecture Student Assembly (EASA). Shatarova (2015) explains the impact of this workshop atmosphere on students:

[...] the diverse dynamic, yet highly tolerant culture of EASA provides a hospitable prejudice free climate for open self-expression through both creation and demeanour. Owing to the coherence of the group - a logical consequence the communal setting, people at the event tend to let go of many inhibitions, which are external or imposed on them. They develop a better sense of self-awareness. In addition, liberated from the need to conform and the fear of rejection from the group, participants in the gathering achieve a state of truly authentic and straightforward communication. Moreover, this allows for a spontaneity and imagination to flourish. The opportunity for multilateral interactions that EASA presents also builds on one’s social skills and ability to convey ideas, arguments and feeling. Mere participating yet alone complete immersion in the spirit of the happen (Shatarova, 2015, p. 739).

### 3 MAPPING AND ANALYSIS OF SHORT-TERM ARCHITECTURAL DESIGN STUDIOS



*Figure 6: Please scan this QR CODE to access the interactive visualization*

The themes derived from this scoping study equipped MATERIART to map and analyze previous short-term architectural design studio structures. MATERIART pursued four strategies in reaching information about alternative pedagogies in ISADs.

- (1) Previous ISADs conducted by partner researchers;
- (2) Websites and books published on existing ISADs;
- (3) Research papers in the MATERIART call.
- (4) ISADs retrieved from the scoping study;

The study combined qualitative and quantitative analysis methods to map and analyze short-term studios. Based on a qualitative approach, it coded each ISAD with the codes and themes determined by the scoping study results and prepared a spreadsheet based (Table 5) on the data extraction table produced at the 4<sup>th</sup> stage of the scoping study (Appendix B). Afterward, the study used the data visualization software, Tableau, mostly used in big data analytics, owing to its ease in providing new perceptions from data and enabling an interactive analysis framework (Figure 6). To make the following analysis:

- (1) Quantitative analysis of ISADs (Geographical distribution; outputs; principles, as elements creating the atmosphere and tactics);<sup>9</sup>
- (2) Qualitative analysis to reveal (a) the role of ISADs in equipping participants (students) with the knowledge, skills, and competences defined in the EU directive 55/2013, (b) the impact of workshop outputs on the interested stakeholders (local communities and authorities, place).<sup>10</sup>

Finally, MATERIART aims to reveal the new integrative skills to keep pace with the advances in New Art and Science of Materiality and explore the role of interactions in fostering the studio model.

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<sup>9</sup> At the application phase, MATERIART had the objective of including the criteria used to determine project scope, student evaluation methodologies, and if existing criteria, studio hours, studio instructors' qualifications; however, these details are not provided on workshop websites; technical capacity of the host institution.

<sup>10</sup> MATERIART aimed to make the SWOT analysis of each studio category in equipping the students with the knowledge, skills and competences defined in the EU directive 55/2013. However, categorizing ISADs in terms of studio conduct methodologies and making a comparative analysis among these categories is impossible due to the number of involved tactics in each studio (Studio teaching and learning methods, assignment of studio theme, disciplinary backgrounds of participants, learning place). Also, at the application, MATERIART sought to determine student evaluation methodologies and criteria. Almost all ISADs evaluate participants' workshop outputs via a final panel discussion, and evaluation criteria are not discussed in examined databases and research outputs on workshops.

Table 5: Data extraction chart for ISADs

Extracted data			Description
Workshop Name			The name of the workshop
Source			Website link; scoping study reference
Workshop Type			Short-term workshop / winter school / summer school
Year Started			
Year Ended (If relevant)			End year of workshop series (if relevant)
Partners			Name of partner organizations
Organizing Bodies <sup>11</sup>			Nature of organizing bodies (university, NGO, etc.) <ul style="list-style-type: none"> <li>○ a public body at the local, regional or national level;</li> <li>○ a social partner or other representatives of working life, including chambers of commerce, craft/professional associations and trade unions;</li> <li>○ a research institute;</li> <li>○ a foundation;</li> <li>○ media publisher;</li> <li>○ a higher education institution (HEI)</li> <li>○ school/institute/educational center (at any level, from pre-school to upper</li> <li>○ large scale or small-medium size enterprise;</li> <li>○ secondary education, and including vocational education and adult education);</li> <li>○ a non-profit organization, association, NGO;</li> <li>○ a body providing career guidance, professional counselling and information services.</li> </ul>
Country			The country where the workshop is organized.
ISAD Principles	The atmosphere	Duration	<ul style="list-style-type: none"> <li>○ 1-4 DAYS</li> <li>○ 5-10 DAYS</li> <li>○ 10-15 DAYS</li> <li>○ 15-30 DAYS</li> <li>○ 31 OR LONGER</li> </ul>
		Place of learning	Face-to-face or online (distance learning)
		Mono/multi-disciplinary	Indicates the number of partner organization bodies
		Disciplines	The major disciplines of workshops
		National / International	Indicates whether the workshop involves international or national collaboration
		Number of students	Total number of students in the workshop: (1-15 participants; 16-30 participants; 31-50 participants; 51-100 participants; Above 100 participants)
	Tactics	Students	All students Students registered in affiliated organizations
		Theme	Experimental / Reflective; Problem-based (real problems); experimental for research for ongoing research
		Learning-by-doing	Hands-on learning (Design-build/fabrication); Design Studio: Architectural Representations, Models, Inspirations; Architectural Reflections
		Lectures	YES or NO (indicates whether workshops include lectures)
		Learning-by-traveling/living	Indicates whether the workshop program includes technical visits.
		Community Engagement	YES or NO (indicates whether workshop outputs or process involves local community or citizens)
ISAD Outputs	Place		Indicates whether workshop outputs have an impact on the local community
	Research and Education		Indicates whether workshop outputs have an impact on future/ongoing research agenda, including research on architectural education
	Addressed Skills		Classified according to the competences, skills, and abilities skills defined in the Article 46 of 2013/55/EU entitled "Training of architects."

<sup>11</sup> These categories are taken from the categorization applied in the ERASMUS application documents.



### 3.1 Visualizing the field: Quantitative analysis of ISADs

The study analyzed 47 ISADs in total. Out of 47 ISADs, two were held via distance learning, and the remaining is face-to-face activity.

Table 6: Number of workshops based on data source

Source	
Conference Paper (Scoping Study)	17
Journal Article (Scoping Study)	10
MATERIART Symposium Paper	3
Workshop website	17

#### 3.1.1 Geographical Distribution

O1 analyzed 47 workshops in total, Fig. 7 and Fig. 8 depict the distribution of the number of workshops across the countries in which the workshop is held.

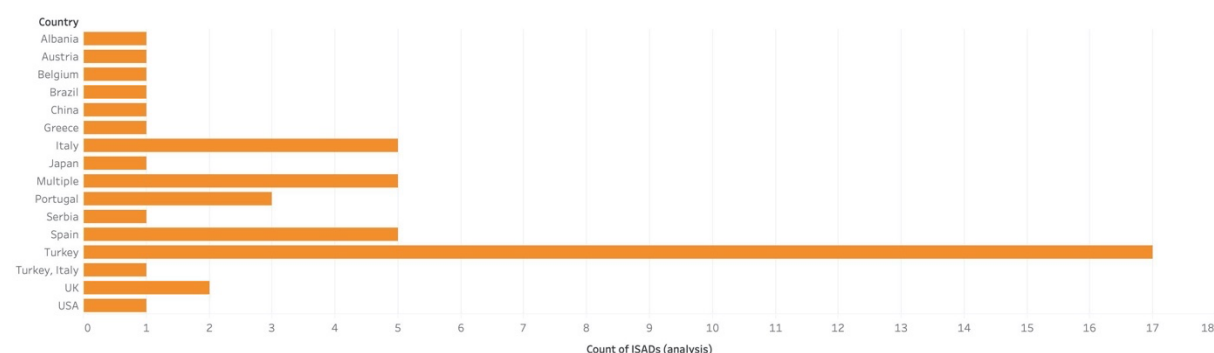


Figure 7: Number of analyzed ISADs across countries

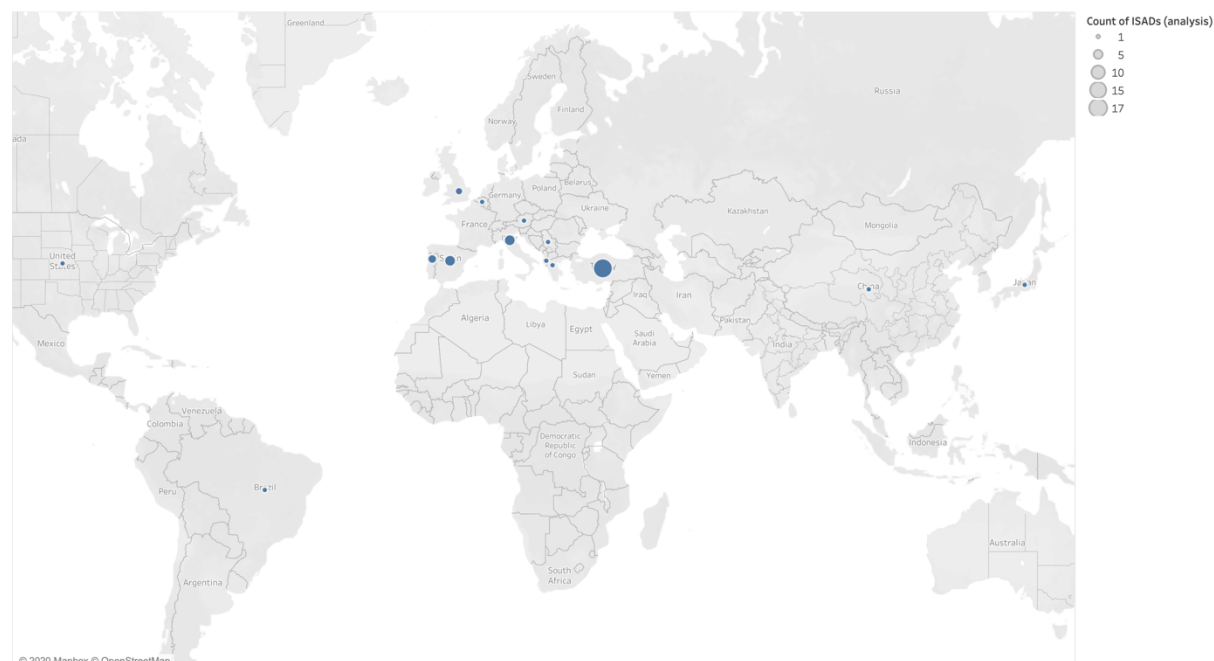


Figure 8: Analyzed ISADs across countries



### 3.1.2 Mapping the ISADs atmosphere

The short-term requires ISADs to plan a tight schedule. The study examined the duration of ISADs. Across examined ISADs

Table 7: Tables representing the number of workshops across their workshop name (type); participants' nationalities; participants' disciplines; the duration

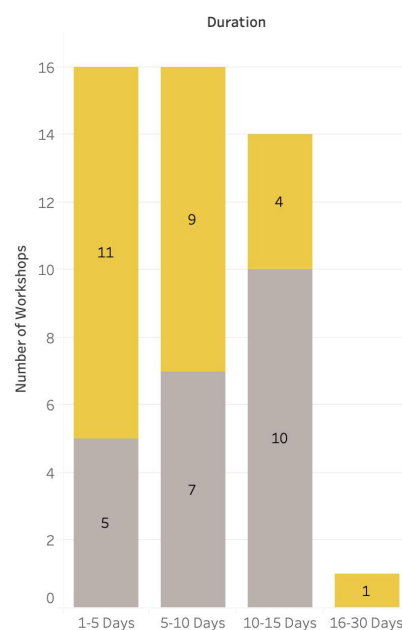
	Festival	Short-Term Workshop	Summer School	Summer Workshop	Winter Workshop
	1	29	9	5	3

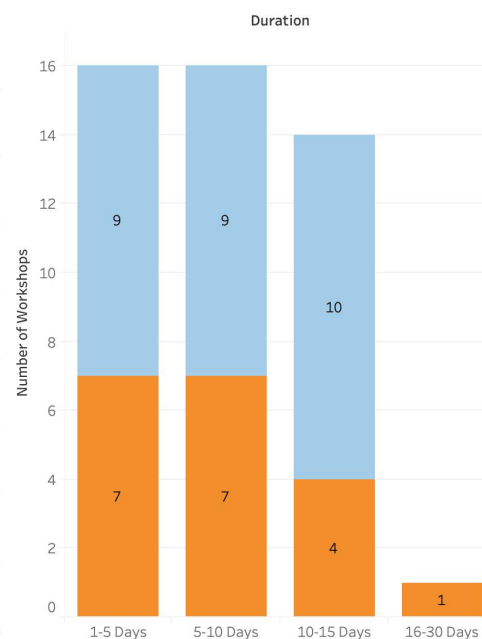
National/International		Mono/multi-disciplinary		Duration	
International	28	Monodisciplinary	25	1-5 Days	16
				5-10 Days	16
				10-15 Days	14
National	19	Multidisciplinary	22	16-30 Days	1

Even though the study does not attempt to make statistical analysis, we may deduce several remarks based on the cross-tabulation of these three sets of data. Compared to monodisciplinary ISADS, a considerable number of 10-15 days workshops are multidisciplinary. In terms of duration, the nationality of participants does not show a significant difference. What is more striking is that out of 28 international ISADs, 19 is multidisciplinary, while in national ISADs out of 19, only three is multidisciplinary.

Duration - Mono/Multi-disciplinary Workshop



Duration - International/National Workshop



Mono/multi-discipl..	National/International		Count of ISADs (analysis)
	International	National	
Monodisciplinary	9	16	3
Multidisciplinary	19	3	5

Count of ISADs (analysis) broken down by National/International vs. Mono/multi-disciplinary. Size shows count of ISADs (analysis). The marks are labeled by count of ISADs (analysis).

Figure 9: Figures representing cross-tabulation of the number of workshops across their workshop name (type); participants' nationalities; participants' disciplines; the duration

### 3.1.3 Mapping the ISAD tactics

The second set of data pertain to the mapping of workshop themes and teaching/learning methods (learning-by-doing). Learning-by-travelling is intentionally not included in this analysis because the scoping study indicated that most ISAD programs include technical city tours. As for lectures, out of 47 ISADs, only five did not include lectures.

Table 8: Tables representing the number of workshops across ISAD tactics: Themes and studio methods

		Theme	
		Exploring: City	7
		Exploring: Heritage	5
		Exploring: Material/technique	9
		Exploring: New Representation Techniques	1
		Exploring: Use of computational tools	7
		Learning-by-travelling	1
		Multiple themes (architecture, design, food, music, fashion)	2
		Pre-defined design problem/conceptual question	5
		Real' problems	10
Learning-by-doing			
Architectural Reflections	10		
Design Studio (Speculative): Architectural Represe..	21		
Design Studio: Hands-on (Design-build)	10		
Design Studio: Hands-on (Design-fabricate)	5		
Multiple	1		

Theme	Architectural Reflections	Design Studio (Speculative): Archite..	Design Studio: Hands-on (Design-buil..	Design Studio: Hands-on (Design-fab..	Multiple
Exploring: City	7				
Exploring: Heritage		5			
Exploring: Material/technique	1		6	2	
Exploring: New Representation ..	1				
Exploring: Use of computationa..		4		3	
Learning-by-travelling	1				
Multiple themes (architecture, ..		2			
Pre-defined design problem/co..		5			
Real' problems		5	4		1

Count of ISADs (analysis)

- 1
- 2
- 4
- 6
- 7

Figure 10: Cross-tabulation of themes and studio methods

The studio model 'Architectural reflections' focuses on exploring cities through various representation mediums, ranging from sketching, stop-motion videos, photography, etc. Hands-on learning via build-design workshops explores the potentials of materials, like gypsum, concrete, or timber.

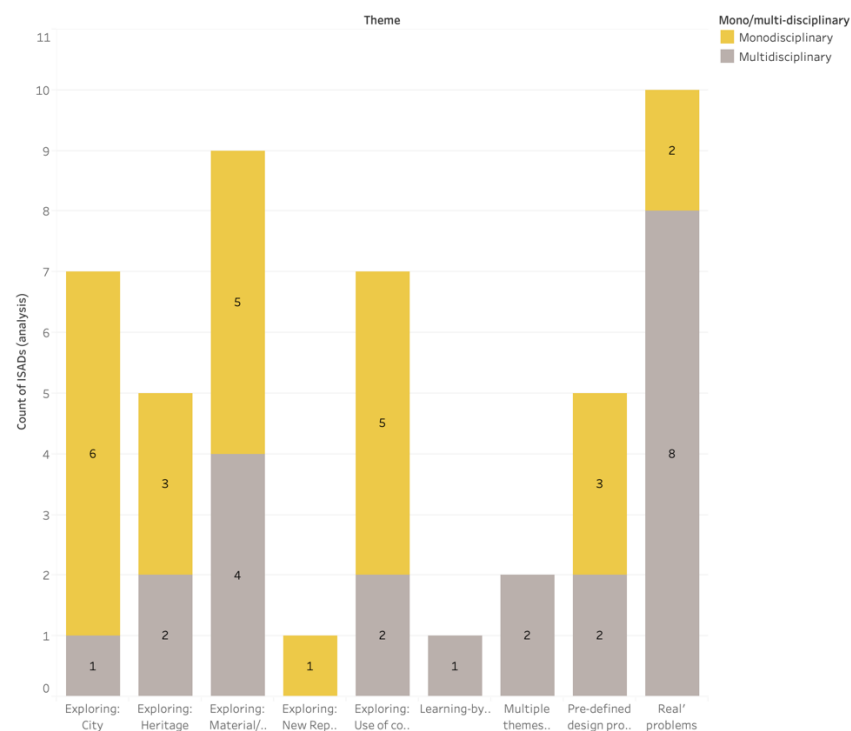
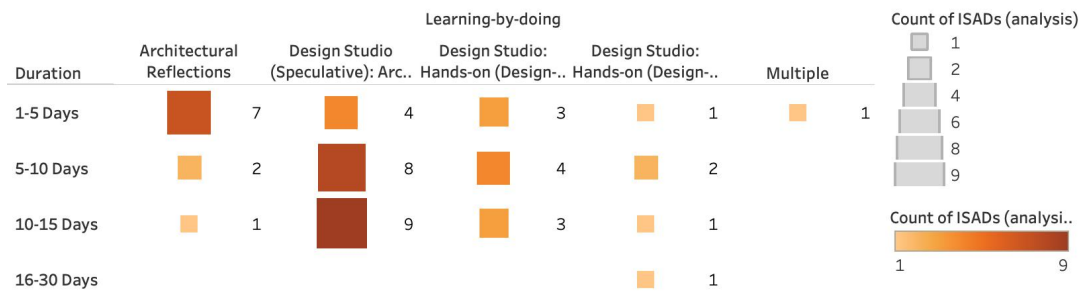


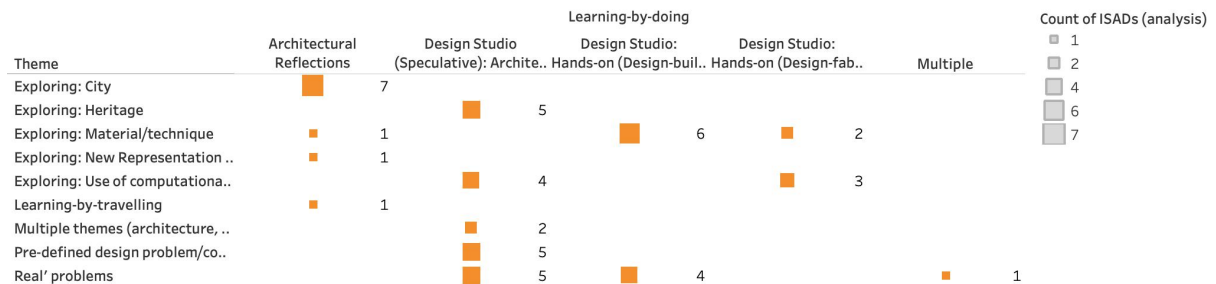
Figure 11: Cross-tabulation of themes and participants' disciplines

In terms of the learning environment, ‘real problems’ are seen to be studied in multidisciplinary teams. While exploring the city is a theme dedicated to architecture students.

Duration / Learning-by-doing



Learning-by-doing / studio themes



Studio Duration / Theme / Model

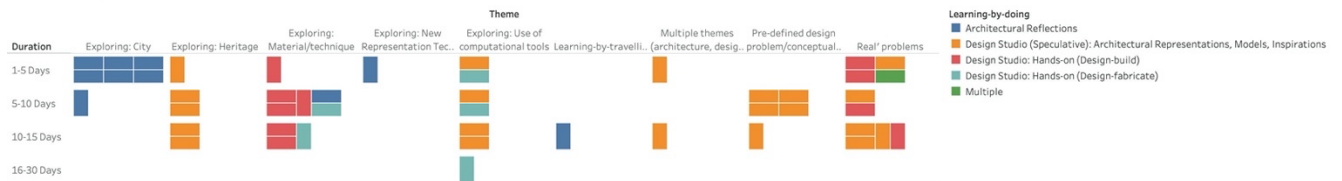
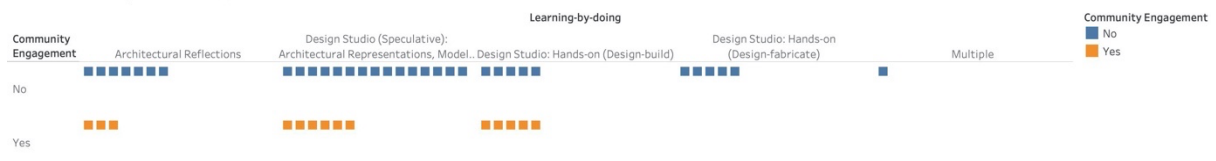


Figure 12: Cross-tabulation of studio models and duration of ISADs.

Fig. 11 indicates that majority of up to 5 days long ISADs were from ‘architectural reflections’ models. Through the interactive tableau visuals, it is possible to explore the diverse array of ISAD durations.

Studio models / community engagement



Studio themes / community engagement



Figure 13: Cross-tabulation of studio models and themes

Design-Fabricate studios is seen to have no direct contact with the community, while remaining detached from the local community.

### 3.1.4 Mapping the ISAD Outputs

The scoping study showed how a workshop might have diverse outputs beyond the actual ones (either built or designed). These outputs relate to three major categories: Place (either workshop hometown or the assigned place); Education (Formal); Research. The following figures represent the correlation between the studio model/theme and education/research, studio model/theme, and place.



Figure 14: Cross-tabulations of studio themes and their impact on place, research and education

Workshops on the use of computational design and fabrication tools are means of developing new formal education strategies. However, until today it is not possible to interact with the broader community in which the workshop is organized.

## Studio models / Place



## Studio models / Research and Education



Figure 15: Cross-tabulations of studio models and their impact on place, research and education

This analysis depicts that the design studio (speculative) model has become a means to support the research-by-design strategy. At the same time, design-build studios enhance students' understanding of the potentials of the material. One can make diverse interpretations based on the tableau visualization; therefore, the online table includes the details of all the analyzed ISADs and their references.

Another level of analysis pertains to examining the correlation between studio models/themes on the skills, knowledge, and abilities provided by the workshops. a and e are the most common articles addressed by ISADs. Working on 'real problems' and 'exploring: city' themes foster students' understanding of the context and the community.

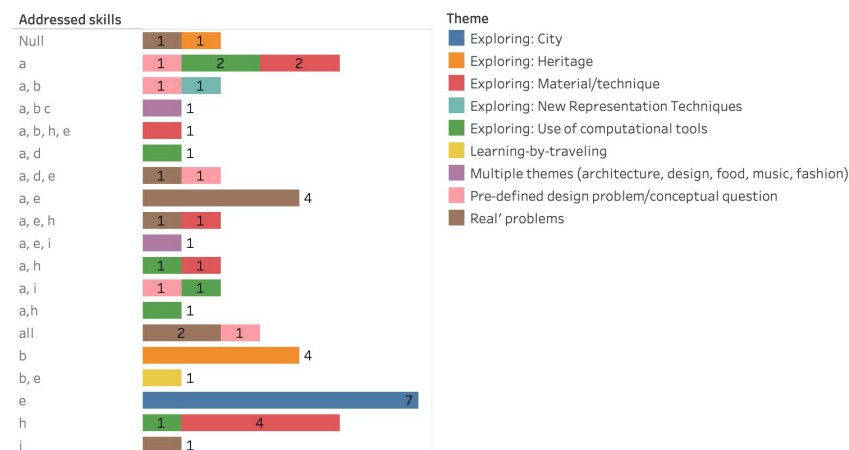
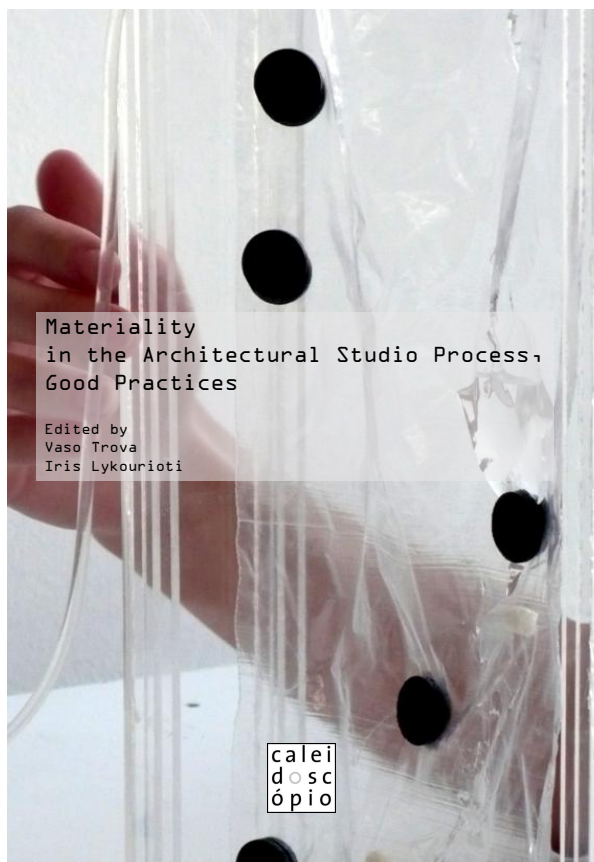


Figure 16: The relationship among the skills, knowledge, and abilities provided by each ISAD per studio themes.

## 4 ALTERNATIVE PEDAGOGIES IN MATERIART PARTNER SCHOOLS

The third strategy in documenting the alternative pedagogies involved delving into the teaching/learning practices in MATERIART partner schools. Before each MATERIART tutor workshop (C4 in Thessaly and C8 in Eindhoven), workshop organizing institution launched a call for papers. During these workshops, papers addressing this call are presented. These presentations provided the opportunity for researchers to discuss a vast array of studio teaching/learning strategies both in formal and non-formal settings. Based on the presented papers, MATERIART published two books: “Materiality in the Architectural Studio Process: Good Practices” and “Architectural Models as Learning Tools.”

### 4.1 Materiality in the Architectural Studio Process: Good Practices



The call prepared by the University of Thessaly was as follows: Materiality is a major component in architectural design education. Different methods are used depending on the level of students' education (introductory year, middle years, final year, post graduate studies), the curriculum and the identity of each architectural school.

Students are introduced into the use, aesthetics and mechanics of real materials; they learn how to use materials in symbolic ways in order to represent material reality; they learn how to experiment with non-material imageries (VReality) in order to rethink spatial materiality; they learn the techniques, the social aspects and impacts of material production. Handwork, manufacturing as well as high tech, digitalized material production processes are considered as distinct sets of knowledge to be equally taken into account. They are equally important for the overall training of students of architecture since they provide a diverse epistemology in the shaping of our material cultures.

This workshop aims at creating a platform of exchange of good practices between the participating schools in teaching materiality in architectural studios. Each participant will present an outline of a relevant design studio so that we can argue more systematically on the merits, the aims, and the learning outcomes of our programs.<sup>12</sup>

The book contains all the presentations at the C4 tutor workshop and invited papers from MATERIART partner and associated partner institutions.

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<sup>12</sup> For the book, please see the MATERIART outputs webpage, <https://www.materiart.org/publications> ; For the call, please see, <https://www.materiart.org/tutorworkshop1> ;

## 4.2 Architectural Models as Learning Tools



### **Architectural models in education**

*Should the model be physical? And what about a virtual model? A conceptual model or a scale model? A presentation model or a sketch model? ... but why should we make models?* These are the most frequently asked questions of the students attending architectural studies for their supervisors. While students expect a one simple answer, a wide range of answers is provided.

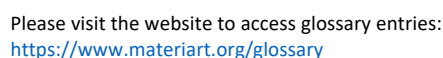
During this tutor workshop, MATERIART partners were expected to bring forth their diverse array of practices with both virtual and physical models.<sup>13</sup>

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<sup>13</sup> For the book, please see the MATERIART outputs webpage, <https://www.materiart.org/publications>



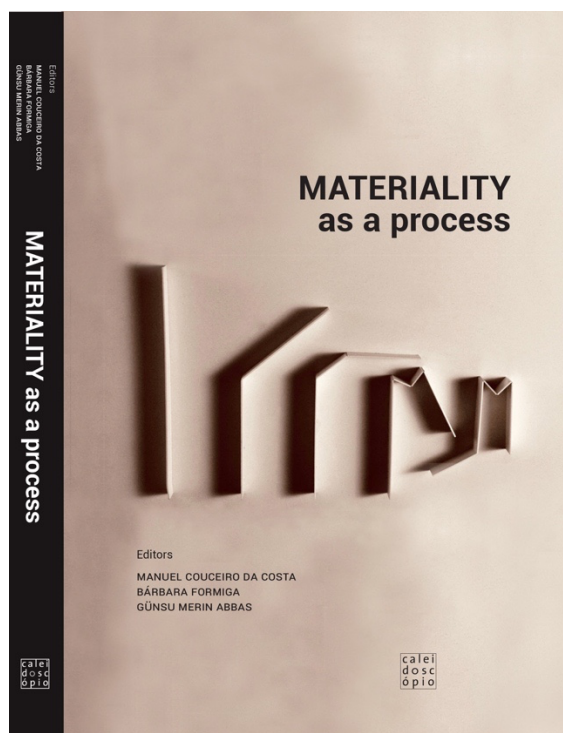
The technical, aesthetic, and cultural transitions occurring in the field of architectural design not only update/review existing terms/concepts but also introduce new terms in our lexicon. To this end, MATERIART partners initiated “Glossary of MATERIART,” which is expected to become a reference book in the upcoming years. The glossary entries are first published online and include 85 entries. The partners plan to publish the glossary in a paper-based format at its first milestone of 100 entries. The call is open on the MATERIART website, and partner institutions continue spreading the invitation for submission.



The entries will be collected (1000 words) and internationally published as chapters of the glossary.

## 6 MATERIART SYMPOSIUM I

MATERIART scientific committee aimed to extend the discussion with multiple voices from academia and practice. Hence MATERIART multiplier events, besides communicating intellectual outputs prepared by partners, were organized as symposiums, for which a call for papers was launched. This output shall be read in juxtaposition with the papers, which went through peer review and published as a book, “Materiality as Process.” O1 derived several ISADs directly from these papers.



The call for papers:

MATERIALITY as a PROCESS that involves both art and science.

As materiality is a process that starts with the ideation and ends up with the tangible object, we may focus on the process of materiality within the frame of alternative architectural design/making process, places, and designers (teams, people, etc.).

This alternative process may be observed in the context of a school studio, an architectural office or the construction site, with the people involved considering the changing conditions of architecture (technology, industry, culture, globalization, etc.)

An academic may tell us about his/her specific materiality studio methodology while a practicing architect may reflect on his office approach to design/making process or on-site construction definition. Or a person that is both practicing and academic may tell us the differences and similarities of both material processes.<sup>14</sup>

## 7 CONCLUSION

Workshops, including their processes and outputs, are an inspiration for the knowledge triangle of the field of architecture. Workshops hold two crucial roles: (1) A research-by-design activity to address socio-economic-ecological problems caused by the built environment; (2) A pioneer activity in improving curricula and teaching-and-learning practices.

The field requires enhancing the visibility of workshop process and results combined with regular reporting on workshop activities to raise awareness building among future professionals and the wider public. Hence, beyond doing a review of existing ISADs, this output provides the reader with an array of diverse teaching and learning practices in these non/informal grounds. The interactive mapping created via the Tableau is a tool open for interested parties in accessing previous ISADs. To conclude, we hope that this mapping will expand shortly by including workshops collected through the MATERIART Open Platform.

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<sup>14</sup> Call available at, <https://www.materiart.org/callforpaper1-lisbon>. While at the application, MATERIART limited the topic to “Alternative practices/methods/models pursued in short-term architectural design studios.” It was decided later that Materiality is part of each and every part educational, professional, and research process.

## REFERENCES

- ACE. (2020). *Architects in Europe*. Architects' Council of Europe. <https://www.ace-cae.eu/architects-in-europe/>
- Altay, B., Ballice, G., Bengisu, E., Alkan-Korkmaz, S., & Paykoc, E. (2016). Embracing student experience in inclusive design education through learner-centred instruction. *INTERNATIONAL JOURNAL OF INCLUSIVE EDUCATION*, 20(11), 1123–1141. <https://doi.org/10.1080/13603116.2016.1155662>
- Balaid, A., Abd Rozan, M. Z., Hikmi, S. N., & Memon, J. (2016). Knowledge maps: A systematic literature review and directions for future research. *International Journal of Information Management*, 36(3), 451–475. <https://doi.org/10.1016/j.ijinfomgt.2016.02.005>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Brooks-Harris, J. E., & Stock-Ward, S. R. (1999). *Designing and Facilitating Experiential Learning*. SAGE Publications Ltd.
- Cabral Filho, J. dos S. (2005). Digital Art—A Field of Inquiry for Contemporary Architecture. *INTERNATIONAL JOURNAL OF ARCHITECTURAL COMPUTING*, 3(3), 355–372. <https://doi.org/10.1260/147807705775377276>
- Demirbaş, Ö. O., & Demirkan, H. (2003). Focus on architectural design process through learning styles. *Design Studies*, 24, 437–456. [https://doi.org/10.1016/S0142-694X\(03\)00013-9](https://doi.org/10.1016/S0142-694X(03)00013-9)
- Diniz, N. (2015). The anatomy of a prototype: Situating the prototype and prototyping on design conceptual thinking. *ACADIA 2015 - Computational Ecologies: Design in the Anthropocene: Proceedings of the 35th Annual Conference of the Association for Computer Aided Design in Architecture, 2015-October*. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048349367&partnerID=40&md5=ddc1be36303803573dffe92d011e2ed4>
- Doyle, S., Forehand, L., Hunt, E., Loughrey, N., Schneider, S., & Senske, N. (2018). Cyborg sessions: A case study for gender equity in technology. *CAADRIA 2018 - 23rd International Conference on Computer-Aided Architectural Design Research in Asia: Learning, Prototyping and Adapting*, 1, 71–80. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055977341&partnerID=40&md5=4af687a0caf7a7eae0e852e9f4f11807>
- Ernst, S., & Edwards, A. (2013). REDUCING RISK AND PROMOTING SUSTAINABILITY IN THE FOOTHILLS OF THE HIMALAYAS A Pedagogy for Teaching and Practicing Sustainable Development. *ARCHNET-IJAR INTERNATIONAL JOURNAL OF ARCHITECTURAL RESEARCH*, 7(3, SI), 93–107.
- Fernandez-Antolin, M.-M., del Rio, J. M., & Gonzalez-Lezcano, R.-A. (2020). The use of gamification in higher technical education: Perception of university students on innovative teaching materials. *INTERNATIONAL JOURNAL OF TECHNOLOGY AND DESIGN EDUCATION*. <https://doi.org/10.1007/s10798-020-09583-0>
- Garcia Saez, M. S., Tomas Marquez, S., La Spina, V., Mileto, C., & Vegas Lopez-Manzanares, F. (2016). LEARNING BY DOING OF TRADITIONAL CONSTRUCTION TECHNIQUES. GYPSUM FLOORING. In Chova, LG and Martinez, AL and Torres, IC (Ed.), *INTED2016: 10TH INTERNATIONAL TECHNOLOGY, EDUCATION AND DEVELOPMENT CONFERENCE* (pp. 1684–1689).
- Gül, F., Çağdaş, G., Çağlar, N., Gül, M., Ruhi Sipahioğlu, I., & Balaban, Ö. (2013). *Türkiye’de Mimarlık Eğitimi ve Bilişim Teknolojileri*. 32–37.
- Guner, A. F., Benli, G., Karacar, P., & Kasapseckin, M. A. (2017). DESIGN-BUILD WORKSHOPS IN ARCHITECTURAL EDUCATION. A CASE STUDY; ADOBE BUS STOP IN NORTHERN CYPRUS. In Chova, LG and Martinez, AL and Torres, IC (Ed.), *9TH INTERNATIONAL CONFERENCE ON EDUCATION AND NEW LEARNING TECHNOLOGIES (EDULEARN17)* (pp. 6868–6876).
- Habraken, N. J. (2006). Questions that will not Go Away: Some Remarks on Long- Term Trends in Architecture and their Impact on Architectural Education. *Open House International*, 31(2), 12–19.

- Hardy, M. (2008). Experiments in traditional building, architecture and urbanism education: INTBAU's recent work. In Roaf, S and Bairstow, A (Ed.), *OXFORD CONFERENCE: A RE-EVALUATION OF EDUCATION IN ARCHITECTURE* (pp. 405–410). Bennetts Associates Architects; UK Green Bldg Council; TIA; Soc Bldg Sci Educ.
- Jimenez Delgado, A., & Piedecausa-Garcia, B. (2013). TEACHING-LEARNING PROCESS OF HISTORICAL HERITAGE: A JOURNEY AS A BEGINNING, PATH AND END. In Chova, LG and Martinez, AL and Torres, IC (Ed.), *EDULEARN13: 5TH INTERNATIONAL CONFERENCE ON EDUCATION AND NEW LEARNING TECHNOLOGIES* (pp. 5321–5326).
- Kahvecioglu, H., Erdem, A., & Paker-Kahvecioglu, N. (2002). Short term workshop: An alternative strategy in architectural design education. In Marjanovic, D (Ed.), *DESIGN 2002: Proceedings of the 7th International Design Conference, Vols 1 and 2* (pp. 997–1001).
- Karadağ, D., & Toker, C. (2020). A proposal for a computational design and ecology based approach to architectural design studio. *International Journal of Technology and Design Education*. <https://doi.org/10.1007/s10798-020-09594-x>
- Kuyrukcu, Z., & Kuyrukcu, E. Y. (2015). An educational tool the importance of informal studies/studios in architectural design education: A workshop summary. In Iaman, A and Eskicumali, A (Ed.), *INTERNATIONAL CONFERENCE ON NEW HORIZONS IN EDUCATION, INTE 2014* (Vol. 174, pp. 2666–2673). <https://doi.org/10.1016/j.sbspro.2015.01.950>
- Levac, D., Colquhoun, H., & O'Brien, K. K. (2010). Scoping studies: Advancing the methodology. *Implementation Science*, 5(1), 69. <https://doi.org/10.1186/1748-5908-5-69>
- Maguire, M., & Delahunt, B. (2017). Doing a Thematic Analysis: A Practical, Step-by-Step Guide for Learning and Teaching Scholars. *All Ireland Journal of Teaching and Learning in Higher Education*, 9(3), 3351–33514.
- Merriam-Webster Dictionary. (2020). *Merriam-Webster Dictionary*. Merriam-Webster Dictionary. <https://www.merriam-webster.com/>
- Milovanovic, A., Kostic, M., Zoric, A., Dordevic, A., Pesic, M., Bugarski, J., Todorovic, D., Sokolovic, N., & Josifovski, A. (2020). Transferring COVID-19 Challenges into Learning Potentials: Online Workshops in Architectural Education. *SUSTAINABILITY*, 12(17). <https://doi.org/10.3390/su12177024>
- Momirski, L. A. (2019). Urban Design Workshops in the Education Curriculum: Advantages and Disadvantages. *3RD WORLD MULTIDISCIPLINARY CIVIL ENGINEERING, ARCHITECTURE, URBAN PLANNING SYMPOSIUM (WMCAUS 2018)*, 471. <https://doi.org/10.1088/1757-899X/471/10/102048>
- Orhan, M. (2017). The Role and Importance of Workshops in the Architectural Design Education; Case of “Self Made Architecture I-II.” In Hursen, C (Ed.), *SELECTED PAPERS OF 5TH CYPRUS INTERNATIONAL CONFERENCE ON EDUCATIONAL RESEARCH (CYICER-2016), VOL 3, NO 3, (2017)* (Vol. 3, Issue 3, pp. 131–136). <https://doi.org/10.18844/gjhss.v3i3.1545>
- Paszowski, Z. W., & Gołębiewski, J. I. (2020). International design workshops as an intensive form of architectural education. *World Transactions on Engineering and Technology Education*, 18(1), 51–56.
- Pereira, S. M., & Roche, J. (2016). Across disciplinary and national borders: A pedagogical tool for reuse. *Proceedings of the 14th International Docomomo Conference - Adaptive Reuse: The Modern Movement Towards the Future*, 854–860. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994655389&partnerID=40&md5=8cb73ec24c5f7c19fd013420d08320dd>
- Polatoğlu, Ç., & Vural, M. (2012). As an Educational Tool the Importance of Informal Studies/Studios in Architectural Design Education; Case of Walking Istanbul 1&2. *Procedia - Social and Behavioral Sciences*, 47, 480–484.
- Ruhi Sipahioğlu, I., & Alanlı, A. (2020). A Threshold in-between Education and Profession: The Final Architectural Design Studio. In *Thresholds in Architectural Education*. Wiley-ISTE.



- Ruhi-Sipahioğlu, I., Acar, A., Alanlı, A., Aksu Dağlar, N. N., Ressano Garcia, P., Curulli, I. G., Roth-Cerina, M., Ciscic, L., İncedayı, D., Postalıcı, E., Coşkun, S., & Çağlar, T. N. (2019). *Mapping and Analysis of Final Architectural Design Studios (O1)* (ERASMUS+ Project Report No. 2016-1-TR01-KA203-034710; Exploring the Field of Interaction in Architectural Design Education). <http://www.efiade.org/wp-content/uploads/2019/10/e-FIADE-O1.pdf>
- Sas-Bojarska, A., & Rembeza, M. (2020). International architectural-urban-landscape design workshops to strengthen students' education, capabilities and mobility. *World Transactions on Engineering and Technology Education*, 18(2), 190–196.
- Shatarova, R. (2015). THE COMMUNE AS AN ALTERNATIVE LEARNING EXPERIENCE IN ARCHITECTURAL EDUCATION: THE CASE OF EASA (EUROPEAN ARCHITECTURE STUDENTS ASSEMBLY). In Uslu, F (Ed.), *ADVED 15: INTERNATIONAL CONFERENCE ON ADVANCES IN EDUCATION AND SOCIAL SCIENCES* (pp. 730–740).
- Shi, X., Fang, X., Chen, Z., Phillips, T. K., & Fukuda, H. (2020). A Didactic Pedagogical Approach toward Sustainable Architectural Education through Robotic Tectonics. *SUSTAINABILITY*, 12(5). <https://doi.org/10.3390/su12051757>
- Smatanová, K., & Dubovcová, A. (2016). Workshop as a tool in architectural education. *World Transactions on Engineering and Technology Education*, 14(1), 123–128.
- Sorguc, A. G., Yemiscioglu, M. K., & Ozgenel, C. F. (2019). A Computational Design Workshop Experience for 21st Century Architecture Education. In Sousa, JP and Henriques, GC and Xavier, JP (Ed.), *ECAADE SIGRADI 2019: ARCHITECTURE IN THE AGE OF THE 4TH INDUSTRIAL REVOLUTION, VOL 1* (pp. 127–136). Iberoamerican Soc Digital Graph; Autodesk; Graphisoft Archicad; Dassault Systemes; Bentley Inst; Educ & Res Comp Aided Architectural Design Europe; ACADIA; CAADRIA; ASCAAD; CAAD Futures.
- Symans, M., Mistur, M., & Danziger, B. (2010). Facilitating collaboration of engineering and architecture students via an international travel-study workshop. *ASEE Annual Conference and Exposition, Conference Proceedings*. <https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029043333&partnerID=40&md5=9678255ef3dc506eadf97f392feb8317>
- Tang, G. (2013). Timber gridshells: Beyond the drawing board. *Proceedings of Institution of Civil Engineers: Construction Materials*, 166(6), 390–402. <https://doi.org/10.1680/coma.12.00046>
- Tanyeli, U. (2013). Why Cannot (Even) Architectural Education Be Flexible in Turkey? In S. Lökçe, O. Turan, & B. B. Hisarligil (Eds.), *MIMED Forum IV : Flexibility in Architectural Education* (pp. 77–88). Cambridge Scholars Publishing.
- The European Parliament and of the Council of the European Union. (2013). Directive 2013/55/EU of the European Parliament and of the Council. *Official Journal of the European Union*, 132–170.
- Topcu, U., Taberna, J., & Hofert, K. (2015). A VISUAL TALE OF TWO CITIES: VIDEO AS A TOOL FOR REPRESENTATION THROUGH INFORMAL LEARNING. In GarciaEscudero, D and BardiMila, B (Ed.), *III WORKSHOP ON EDUCATIONAL INNOVATION IN ARCHITECTURE (JIDA'15)* (pp. 255–265). Gobierno Espana, Minist Econ & Competitiveness, R + D Competit Project; Univ Politecnica Catalunya, Barcelona Tech, Inst Educ Sci; Grp Educ Innovat & Logist Architecture; Erasmus+.
- Topcu, U., & Taberna Torres, J. (2018). MULTICULTURAL EDUCATION IN BARCELONA. In Chova, LG and Martinez, AL and Torres, IC (Ed.), *12TH INTERNATIONAL TECHNOLOGY, EDUCATION AND DEVELOPMENT CONFERENCE (INTED)* (pp. 2777–2785).
- Turgut, H., & Canturk, E. (2015). DESIGN WORKSHOPS AS A TOOL FOR INFORMAL ARCHITECTURAL EDUCATION. *OPEN HOUSE INTERNATIONAL*, 40(2), 88–95.
- Twardoch, A., & Stangel, M. (2016). BEYOND THE UNIVERSITY: SOCIALLY ENGAGED STUDENT'S WORKSHOPS ON PUBLIC SPACE AND HOUSING. In Perinkova, M and Nedved, M (Ed.), *8TH ARCHITEKTURA V PERSPEKTIV 2016* (pp. 23–25). Tech Univ Ostrava, Vysoka skola banska; Fakulta stave bni, katedra architektury.
- Tzaka, A., Kalogirou, N., Papakostas, G., & Symeonidou, I. (2010). SKG IN\_FLUX: An Urban 'Process-Plan'. In Schmitt, G and Hovestad, L and VanGool, L and Bosche, F and Burkhard, R and

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- Coleman, S and Halatsch, J and Hansmeyer, M and KonsorskiLang, S and Kunze, A and SehmiLuck, M (Ed.), *ECAADE 2010: FUTURE CITIES* (pp. 107–114). ETH Zurich; Autodesk; BASF; Bentley; IBM.
- Tzonis, A. (2014). Architectural education at the crossroads. *Frontiers of Architectural Research*, 3, 476–478.
- Ucci, M., Law, S., Andrews, R., Fisher, A., Smith, L., Sawyer, A., & Marmot, A. (2015). Indoor school environments, physical activity, sitting behaviour and pedagogy: A scoping review. *Building Research & Information*, 43(5), 566–581. <https://doi.org/10.1080/09613218.2015.1004275>
- UNESCO Institute for Lifelong Learning. (2012). *UNESCO Guidelines on the Recognition, Validation and Accreditation of the Outcomes of Non-formal and Informal Learning*. [https://unesdoc.unesco.org/ark:/48223/pf0000216360\\_eng](https://unesdoc.unesco.org/ark:/48223/pf0000216360_eng)
- van den Berg, H. (2008). (Re-)building communities: A case study in architectural education. *OPEN HOUSE INTERNATIONAL*, 33(2), 78–84.
- Yang, J. (2015). *Recognition, Validation and Accreditation of Non-formal and Informal Learning in UNESCO Member States*. UNESCO Institute for Lifelong Learning.

## APPENDIX A.

Table A. The extracted data of the publications included in the scoping study

Study ID	Bibliographical references	Type of Paper	Place of learning	Publication Year	Country	Number of partner institutions	Partners	Organizing Bodies	Workshop type	Workshop Name	Year	Duration	Disciplines	National/International	Number of Students	Workshop topic
2002-C-1	Kahvecioglu, HL, A Erdem, and N Paker-Kahvecioglu. 2002. "Short Term Workshop: An Alternative Strategy in Architectural Design Education." In DESIGN 2002: Proceedings of the 7th International Design Conference, Vols 1 and 2, edited by Marjanovic, D, 997–1001.	Conference Paper	Face-to-face	2002	Turkey	1	Istanbul Technical University	University	Short-term workshop	No name	2002	3 days	Architecture	National	20	Understanding existing environment
2003-J-1	Elger, D, and P Russell. 2003. "The Virtual Campus: A New Place for (Lifelong) Learning?" AUTOMATION IN CONSTRUCTION 12 (6): 671–76. <a href="https://doi.org/10.1016/S0926-5805(03)00046-3">https://doi.org/10.1016/S0926-5805(03)00046-3</a> .	Journal Article	Virtual	2003	Germany	6	University of Karlsruhe, the Brandenburg Technical University in Cottbus, the Bauhaus University in Weimar, the University of Sion, the UFMG	University	Blended learning	Liquid Campus	2001	12 weeks	Architecture	National	43	Campus Design
2005-J-1	Cabral Filho, Jose dos Santos. 2005. "Digital Art - A Field of Inquiry for Contemporary Architecture." INTERNATIONAL JOURNAL OF ARCHITECTURAL COMPUTING 3 (3): 355–72. <a href="https://doi.org/10.1260/147807705775377276">https://doi.org/10.1260/147807705775377276</a> .	Journal Article	Face-to-face	2005	Brazil	1		University	7 days	1999-2001	1999	7 days	Architecture	National		Art, digital technology and architecture
2008-J-1	Berg, Hanne van den. 2008. "(Re-)Building Communities: A Case Study in Architectural Education." OPEN HOUSE INTERNATIONAL 33 (2): 78–84.	Journal Article	Face-to-face	2008	UK	3	ASK-UK, IDEE, Eden Center	Foundations	Summer School	ASF-UK Summer School	2006	5 days				
2008-C-1	Hardy, M. 2008. "Experiments in Traditional Building, Architecture and Urbanism Education: INTBAU's Recent Work." In OXFORD CONFERENCE: A RE-EVALUATION OF EDUCATION IN ARCHITECTURE, edited by Roaf, S and Bairstow, A, 405–10. Bennetts Associates Architects; UK Green Bldg Council; TIA; Soc Bldg Sci Educ.	Conference Paper	face-to-face	2008	Multiple				Short-term workshop	2001-ongoing						International Network for Traditional Building, Architecture & Parametric Urban Design
2010-C-1	Tzaka, Anastasia, Nikos Kalogirou, Giorgos Papakostas, and Ioanna Symeonidou. 2010. "SKG IN_FLUX: An Urban 'Process-Plan'." In ECAADE 2010: FUTURE CITIES, edited by Schmitt, G and Hovestad, L and VanGool, L and Bosche, F and Burkhard, R and Coleman, S and Halatsch, J and Hansmeyer, M and Konsorskilang, S and Kunze, A and Sehmluck, M, 107–14. ETH Zurich; Autodesk; BASF; Bentley; IBM.	Conference Paper	Face-to-face	2010	Greece	1	Aristotle University of Thessaloniki	University	Intensive Workshop	SKG IN_FLUX		9 days	Architecture	National	27	Travel workshop
2010-C-2	Symans, M., M. Mistur, and B. Danziger. 2010. "Facilitating Collaboration of Engineering and Architecture Students via an International Travel-Study Workshop." In ASEE Annual Conference and Exposition, Conference Proceedings. <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029043333&amp;partnerID=40&amp;md5=9678255ef3dc506eadf97f392feb8317">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85029043333&amp;partnerID=40&amp;md5=9678255ef3dc506eadf97f392feb8317</a> .	Conference Paper	Face-to-face	2010	USA	3	Rensselaer Polytechnic Institute, ARUP, Buro Happold	University, Firm	Travel Workshop	edford Program	1998	8-10 days	Architecture and Engineering	International	12	
2011-C-1	Ko, K., and S.-J. Liotta. 2011. "Digital Tea House: Japanese Tea Ceremony as a Pretext for Exploring Parametric Design and Digital Fabrication in Architectural Education." In Circuit Bending, Breaking, and Mending - Proceedings of the 16th International Conference on Computer-Aided Architectural Design Research in Asia, CAADRIA 2011, 71–80. <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84873496924&amp;partnerID=40&amp;md5=b542b565ec217586cb861611b3c0589b">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84873496924&amp;partnerID=40&amp;md5=b542b565ec217586cb861611b3c0589b</a> .	Conference Paper	Face-to-face	2011	Japan	2	University of Tokyo, Columbia University GSAAP	University	Short-term (parametric design)	Digital Tea House	2010	30 days	Architecture	National	21	Digital Fabrication
2012-C-1	Polatoglu, Cigdem, and S. Mujdem Vural. 2012. "As an Educational Tool the Importance of Informal Studies/Studios in Architectural Design Education: Case of Walking Istanbul 1&2." In CYPRUS INTERNATIONAL CONFERENCE ON EDUCATIONAL RESEARCH (CY-ICER-2012), edited by Uzunboyulu, H, 47:480–84. Procedia Social and Behavioral Sciences. Cyprus Educ Sci Assoc; Acad World Educ & Res Ctr; Near E Univ; Eastern Mediterranean Univ; Ataturk Teacher Training Acad; Int Cyprus Univ; Gime Amer Univ; Cynnis Educ Sci Assoc. <a href="https://doi.org/10.1016/j.sbspro.2012.06.684">https://doi.org/10.1016/j.sbspro.2012.06.684</a> .	Conference Paper	Face-to-face	2012	Turkey	3	Yildiz Technical University, UPC, Zurich University of Applied	University	Short-term workshop	Walking Istanbul	2010	4 days	Architecture	International	60	Understanding existing environment
2012-C-2	Ozdemir, K. 2012. "Fostering the Endeavor: Architecture Education for Planetary Exploration." In Proceedings of the International Astronautical Congress, IAC, 13:11013–18. <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84883502835&amp;partnerID=40&amp;md5=f9b71805e023cc01405a9aef67f8b001">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84883502835&amp;partnerID=40&amp;md5=f9b71805e023cc01405a9aef67f8b001</a> .	Conference Paper	Face-to-face	2012	Turkey	-					Ongoing					
2013-C-1	Jimenez Delgado, Antonio, and Beatriz Piedecausa-Garcia. 2013. "TEACHING-LEARNING PROCESS OF HISTORICAL HERITAGE: A JOURNEY AS A BEGINNING, PATH AND END." In EDULEARN13: 5TH INTERNATIONAL CONFERENCE ON EDUCATION AND NEW LEARNING TECHNOLOGIES, edited by Chova, LG and Martinez, AL and Torres, IC, 5321–26. EDULEARN Proceedings.	Conference Paper	Face-to-face	2013	Spain	-	5	University	Short-term workshop (heritage)	I International Planning Preservation Workshop. Learning from A	-	15 days	multidisciplinary	International	0	Heritage



Study ID	Bibliographical references	Type of Paper	Place of learning	Publication Year	Country	Number of partner institutions	Partners	Organizing Bodies	Workshop type	Workshop Name	Year	Duration	Disciplines	National/International	Number of Students	Workshop topic
2013-J-1	Tang, G. 2013. "Timber Gridshells: Beyond the Drawing Board." Proceedings of Institution of Civil Engineers: Construction Materials 166 (6): 390–402. <a href="https://doi.org/10.1680/jcoma.12.00046">https://doi.org/10.1680/jcoma.12.00046</a> .	Journal Article	Face-to-face	2013	UK	1		University	Short-term workshop (construction)	No name	2011	4 days	Architecture	National		Timber gridshells
2013-J-2	Ernst, Sarah, and Andrew Edwards. 2013. "REDUCING RISK AND PROMOTING SUSTAINABILITY IN THE FOOTHILLS OF THE HIMALAYAS A Pedagogy for Teaching and Practicing Sustainable Development." ARCHNET-IJAR INTERNATIONAL JOURNAL OF ARCHITECTURAL RESEARCH 7 (3, 51): 93–107.	Journal Article	Face-to-face	2013	India	2	ASF-UK, SEEDS India	Foundations	Short-term workshop	Vulnerability and Risk: the role of green technology 2010	2010	14 days	Architecture	International	22	Promoting sustainability
2015-C-1	Topcu, U., J. Taberna, and K. Hofert. 2015. "A VISUAL TALE OF TWO CITIES: VIDEO AS A TOOL FOR REPRESENTATION THROUGH INFORMAL LEARNING." In III WORKSHOP ON EDUCATIONAL INNOVATION IN ARCHITECTURE (IIDA'15), edited by GarciaEscudero, D and BardiMila, B, 255–65. Jornades Sobre Innovacio Docent En Arquitectura. Gobierno Espana, Minist Econ & Competitiveness, R + D Competit Project; Univ Politecnica Catalunya, Barcelona Tech, Inst Educ Sci; Grp Educ Innovat & Logist Architecture; Erasmus+.	Conference Paper	Face-to-face	2015	Turkey	2	Escola Tècnica Superior d'Arquitectura de Barcelona, Bahçeşehir University	University	Winter Workshop	In the Pursuit of Sinan	2015	5 days	Architecture	International	52	Understanding existing environment
2015-C-2	Shatarova, Rosina. 2015. "THE COMMUNE AS AN ALTERNATIVE LEARNING EXPERIENCE IN ARCHITECTURAL EDUCATION: THE CASE OF EASA (EUROPEAN ARCHITECTURE STUDENTS ASSEMBLY)." In ADVED 15: INTERNATIONAL CONFERENCE ON ADVANCES IN EDUCATION AND SOCIAL SCIENCES, edited by Uslu, F, 730–40.	Conference Paper	Face-to-face	2015	Multiple	0		Students	Students workshop	EASA	1981	14 days	Architecture	International	400	
2015-C-3	Kuyrukcu, Zafer, and Emine Yildiz Kuyrukcu. 2015. "An Educational Tool the Importance of Informal Studies/Studios in Architectural Design Education: A Workshop Summary." In INTERNATIONAL CONFERENCE ON NEW HORIZONS IN EDUCATION, INTE 2014, edited by Iaman, A and Eskipumali, A, 174:2666–73. Procedia Social and Behavioral Sciences. <a href="https://doi.org/10.1016/j.sbspro.2015.01.950">https://doi.org/10.1016/j.sbspro.2015.01.950</a> .	Conference Paper	Face-to-face	2015	Turkey	15	Selcuk University	University	Winter workshop	No name	2011	14 days	Architecture	National	15	Understanding existing environment and surveying
2015-C-4	Ertas, Sebnem, and Tulay Samlioglu. 2015. "Architecture Education and Fashion Design: 'Fashion - Reject Studio' in International Architecture Students Meeting." In 4TH WORLD CONFERENCE ON EDUCATIONAL TECHNOLOGY RESEARCHES (WCETR-2014), edited by Ozdamli, F, 182:149–54. Procedia Social and Behavioral Sciences. <a href="https://doi.org/10.1016/j.sbspro.2015.04.750">https://doi.org/10.1016/j.sbspro.2015.04.750</a> .	Conference Paper	Face-to-face	2015	Turkey	-		UMOB	International architecture students meeting	Fashion – Reject Studio	2014	3 days	Architecture	National	11	Fashion design and architecture
2015-C-5	Diniz, N. 2015. "The Anatomy of a Prototype: Situating the Prototype and Prototyping on Design Conceptual Thinking." In ACADIA 2015 - Computational Ecologies: Design in the Anthropocene: Proceedings of the 35th Annual Conference of the Association for Computer Aided Design in Architecture. Vol. 2015-October. <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048349367&amp;partnerID=40&amp;md5=ddc1be36303803573dffe92d011e2ed4">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85048349367&amp;partnerID=40&amp;md5=ddc1be36303803573dffe92d011e2ed4</a> .	Conference Paper	Face-to-face	2015	China	1	Xi'an Jiaotong-Liverpool University	University	Summer Workshop	Anatomy of a Prototype	2014	10 days	Architecture	National	0	Prototyping
2015-J-1	Turgut, Hulya, and Emel Canturk. 2015. "DESIGN WORKSHOPS AS A TOOL FOR INFORMAL ARCHITECTURAL EDUCATION." OPEN HOUSE INTERNATIONAL 40 (2): 88–95.	Journal Article	face-to-face	2015	Turkey	1	Istanbul Technical University	University	Short-term workshop	Istanbul as a Palimpsest City and Imperfection	2012	5 days	Architecture	National	0	Understanding the environment
2015-J-2	Joklová, V., and H. Pifko. 2015. "Innovation in Architectural Education - OIKONET Experience." Global Journal of Engineering Education 17 (3): 124–31.	Journal Article		2015		-										
2016-C-1	Twardoch, Agata, and Michał Stangel. 2016. "BEYOND THE UNIVERSITY: SOCIALLY ENGAGED STUDENT'S WORKSHOPS ON PUBLIC SPACE AND HOUSING." In 8TH ARCHITEKTURA V PERSPEKTIV 2016, edited by Perinkova, M and Nedved, M, 23–25. Tech Univ Ostrava, Vysoka skola banska; Fakulta stavebni, katedra architektury.	Conference Paper		2016		-										
2016-C-2	Smatanová, K., and A. Dubovcová. 2016. "Workshop as a Tool in Architectural Education." World Transactions on Engineering and Technology Education 14 (1): 123–28.	Conference Paper		2016		-										
2016-C-3	Pereira, S.M., and J. Roche. 2016. "Across Disciplinary and National Borders: A Pedagogical Tool for Reuse." In Proceedings of the 14th International Docomomo Conference - Adaptive Reuse: The Modern Movement Towards the Future, 854–60. <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994655389&amp;partnerID=40&amp;md5=8cb73ec24c5f7c19fd013420d08320dd">https://www.scopus.com/inward/record.uri?eid=2-s2.0-84994655389&amp;partnerID=40&amp;md5=8cb73ec24c5f7c19fd013420d08320dd</a> .	Conference Paper	Face-to-face	2016	Portugal	15	Multiple	University	Short-term workshop (2 months preparation)	"Contemporary Living Patterns in Mass Housing in Europe	2014	7 days	Multidisciplinary	International		

Study ID	Bibliographical references	Type of Paper	Place of learning	Publication Year	Country	Number of partner institutions	Partners	Organizing Bodies	Workshop type	Workshop Name	Year	Duration	Disciplines	National/International	Number of Students	Workshop topic
2016-C-4	Meister, U., and C. Rist-Stadelmann. 2016. "Material, Structure, Tectonics: The Power of Full Scale in the Education of Architects." In Structures and Architecture - Proceedings of the 3rd International Conference on Structures and Architecture, ICSA 2016, 429–34. <a href="https://doi.org/10.1201/b20891-58">https://doi.org/10.1201/b20891-58</a> .	Conference Paper		2016												
2016-C-5	García Saez, M., Soledad, Salvador Tomas Marquez, Vincenzina La Spina, Camilla Mileto, and Fernando Vegas Lopez-Manzanares. 2016. "LEARNING BY DOING OF TRADITIONAL CONSTRUCTION TECHNIQUES. GYPSUM FLOORING." In INTED2016: 10TH INTERNATIONAL TECHNOLOGY, EDUCATION AND DEVELOPMENT CONFERENCE, edited by Chova, LG and Martínez, AL and Torres, IC, 1684–89. INTED Proceedings.	Conference Paper		2016	Spain			University	Short-term workshop (Gypsum)	20th Workshop on Traditional Architecture of Rincón de Ademuz	2015	7 days	Multidisciplinary	National		Construction material
2016-C-6	Aalto, P., and S. Rintala. 2016. "Phases of Intensive Design and Build Workshops in Architectural Education." In Structures and Architecture - Proceedings of the 3rd International Conference on Structures and Architecture, ICSA 2016, 405–12. <a href="https://doi.org/10.1201/b20891-54">https://doi.org/10.1201/b20891-54</a> .	Conference Paper		2016												
2016-J-1	Symeonidou, I. 2016. "Flexible Matter: A Real-Time Shape Exploration Employing Analogue and Digital Form-Finding of Tensile Structures." International Journal of Architectural Computing 14 (4): 322–32.	Journal Article	Face-to-face	2016	Austria	1	Graz University of Technology	University	Short-term workshop	Flexible Matter	2014	5 days	Architecture	National	16	Digital and Analogue Form Finding
2016-J-2	Kyllika, Aiki, and Kyveli Anastasiadi. 2016. "Viral Institute of Performance Architecture." PERFORMANCE RESEARCH 21 (6): 87–93. <a href="https://doi.org/10.1080/13528165.2016.1251113">https://doi.org/10.1080/13528165.2016.1251113</a> .	Journal Article	Face-to-face	2016	Greece		Viral Institute of Performance		Short-term workshop			4 days	Multidisciplinary	International		
2016-J-3	Altay, Burcak, Gulnur Ballice, Ebru Bengisu, Sevinc Alkan-Korkmaz, and Eda Paykoc. 2016. "Embracing Student Experience in Inclusive Design Education through Learner-Centred Instruction." INTERNATIONAL JOURNAL OF INCLUSIVE EDUCATION 20 (11): 1123–41. <a href="https://doi.org/10.1080/13603116.2016.1155662">https://doi.org/10.1080/13603116.2016.1155662</a> .	Journal Article	Face-to-face	2016	Turkey	1	Yaşar University	University	Short-term workshop	Overcoming Disabilities by Design	2013	2 days	Architecture	National	47	Inclusive design
2017-C-1	Orhan, Melike. 2017. "The Role and Importance of Workshops in the Architectural Design Education; Case of 'Self Made Architecture I-II.'" In SELECTED PAPERS OF 5TH CYPRUS INTERNATIONAL CONFERENCE ON EDUCATIONAL RESEARCH (CYICER-2016), VOL 3, NO 3, (2017), edited by Hursen, C, 3:131–36. New Trends and Issues Proceedings on Humanities and Social Sciences. <a href="https://doi.org/10.18844/gjhss.v3i3.1545">https://doi.org/10.18844/gjhss.v3i3.1545</a> .	Conference Paper	Face-to-face	2017	Turkey, Italy	2	Politecnico di Bari, Atılım University	University	Short-term workshop	Self-Made Architecture I	2016	10 and 5 days	Architecture	International	45	Learning environment based on working with material
2017-C-2	Guner, Aysun Ferrah, Gulhan Benli, Pelin Karacar, and Mustafa Adil Kasapsekkin. 2017. "DESIGN-BUILD WORKSHOPS IN ARCHITECTURAL EDUCATION. A CASE STUDY; ADOBE BUS STOP IN NORTHERN CYPRUS." In 9TH INTERNATIONAL CONFERENCE ON EDUCATION AND NEW LEARNING TECHNOLOGIES (EDULEARN17), edited by Chova, LG and Martínez, AL and Torres, IC, 6868–76. EDULEARN Proceedings.	Conference Paper	Face-to-face	2017	Turkey	1	Medipol University	University	Short-term workshop (design-build)	Buyukkonuk Ecovillage	2016	7 days	Architecture	National	11	Design-build
2018-C-1	Topcu, Umran, and Judit Taberna Torres. 2018. "MULTICULTURAL EDUCATION IN BARCELONA." In 12TH INTERNATIONAL TECHNOLOGY, EDUCATION AND DEVELOPMENT CONFERENCE (INTED), edited by Chova, LG and Martínez, AL and Torres, IC, 2777–85. INTED Proceedings.	Conference Paper	Face-to-face	2018	Spain	3	BAU, ETSAB, Tiwari Collage	University	Short-term workshop (video)	BCN Step by Step: GAUDI and his Time	2017	5 days	Architecture	International	24	Understanding the environment
2018-C-2	Doyle, S., L. Forehand, E. Hunt, N. Loughrey, S. Schneider, and N. Senske. 2018. "Cyborg Sessions: A Case Study for Gender Equity in Technology." In CAADRIA 2018 - 23rd International Conference on Computer-Aided Architectural Design Research in Asia: Learning, Prototyping and Adapting, 1:71–80. <a href="https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055977341&amp;partnerID=40&amp;md5=4af687a0caf7a7eae0e852e9f4f11807">https://www.scopus.com/inward/record.uri?eid=2-s2.0-85055977341&amp;partnerID=40&amp;md5=4af687a0caf7a7eae0e852e9f4f11807</a> .	Conference Paper	Face-to-face	2018	USA	1	Iowa State University	University	Short-term workshop	Cyborg Sessions: Women in Robotics	2017	6 weeks (1 day per week)	Multidisciplinary	National	21	Robotics
2018-J-1	Gregor, P. 2018. "Alternative Methods for Education and Training at the Architectural Research Centre for Heritage and Art Education (ARCHA) at Banská Štiavnica." World Transactions on Engineering and Technology Education 16 (2): 151–55.	Journal Article		2018						Detached Workplace in Banská Štiavnica						

Study ID	Bibliographical references	Type of Paper	Place of learning	Publication Year	Country	Number of partner institutions	Partners	Organizing Bodies	Workshop type	Workshop Name	Year	Duration	Disciplines	National/International	Number of Students	Workshop topic
2019-C-1	Sorguc, Arzu Gonenc, Muge Krusa Yemiscioglu, and Caglar Firat Ozgenel. 2019. "A Computational Design Workshop Experience for 21st Century Architecture Education." In ECAADE SIGRADI 2019: ARCHITECTURE IN THE AGE OF THE 4TH INDUSTRIAL REVOLUTION, VOL 1, edited by Sousa, JP and Henriques, GC and Xavier, JP, 127–36. Iberoamerican Soc Digital Graph; Autodesk; Graphisoft Archicad; Dassault Systemes; Bentley Inst; Educ & Res Comp Aided Architectural Design Europe; ACADIA; CAADRIA; ASCAAD; CAAD Futures.	Conference Paper	Face-to-face	2019	Turkey	1	METU	University	Short-term workshop (STEAM)	Cocoon Workshop	2018	3 days	Multidisciplinary	National	36	Computational Design
2019-C-2	Momirski, Lucija Azman. 2019. "Urban Design Workshops in the Education Curriculum: Advantages and Disadvantages." In 3RD WORLD MULTIDISCIPLINARY CIVIL ENGINEERING, ARCHITECTURE, URBAN PLANNING SYMPOSIUM (WMCAUS 2018). Vol. 471. IOP Conference Series-Materials Science and Engineering. <a href="https://doi.org/10.1088/1757-899X/471/10/102048">https://doi.org/10.1088/1757-899X/471/10/102048</a> .	Conference Paper	Face-to-face	2019												
2020-J-1	Bruijn, Willem de. 2020. "The Collage Workshop: Exploring the Image as Argumentative Tool." INTERNATIONAL JOURNAL OF ART & DESIGN EDUCATION 39 (2): 290–305. <a href="https://doi.org/10.1111/jade.12259">https://doi.org/10.1111/jade.12259</a> .	Journal Article	Face-to-face	2020	UK	1	Architecture at the Arts University Bourne-mouth	University	Short-term workshop	The Collage Workshop	2014	1 day	Architecture	National	12	Representation via visuals
2020-J-2	Fernandez-Antolin, Maria-Mar, Jose Manuel del Rio, and Roberto-Alonso Gonzalez-Lezcano. 2020. "The Use of Gamification in Higher Technical Education: Perception of University Students on Innovative Teaching Materials." INTERNATIONAL JOURNAL OF TECHNOLOGY AND DESIGN EDUCATION. <a href="https://doi.org/10.1007/s10798-020-09583-0">https://doi.org/10.1007/s10798-020-09583-0</a> .	Journal Article	Face-to-face	2020												
2020-J-3	Karadağ, Derya, and Cetin Toker. 2020. "A Proposal for a Computational Design and Ecology Based Approach to Architectural Design Studio." International Journal of Technology and Design Education, May. <a href="https://doi.org/10.1007/s10798-020-09594-x">https://doi.org/10.1007/s10798-020-09594-x</a> .	Journal Article	Face-to-face	2020	Turkey	1	PhD	University	Short-term workshop	Urban Dreams Workshop	2017	10 days	Architecture	National	15	Computational Design and ecology
2020-J-4	Milovanovic, Aleksandra, Milos Kostic, Ana Zoric, Aleksandra Dordevic, Mladen Pesic, Jovana Bugarski, Dejan Todorovic, Neda Sokolovic, and Andrej Josifovski. 2020. "Transferring COVID-19 Challenges into Learning Potentials: Online Workshops in Architectural Education." SUSTAINABILITY 12 (17). <a href="https://doi.org/10.3390/su12177024">https://doi.org/10.3390/su12177024</a> .	Journal Article	Distance learning (online)	2020	Serbia	2	UB-FA, Novi Sad	University	Online workshop	COVID-19 Challenges: Architecture of Pandemic	2020	6 days	Architecture (urban)	National	98	COVID
2020-J-5	Orozco-Messana, Javier, Elena de la Poza, and Raimon Calabuig Moreno. 2020. "Experiences in Transdisciplinary Education for the Sustainable Development of the Built Environment, the ISALab Workshop." SUSTAINABILITY 12 (3). <a href="https://doi.org/10.3390/su12031143">https://doi.org/10.3390/su12031143</a> .	Journal Article	Face-to-face	2020	Spain	10	UPV	University	Short-term workshop	ISALab	2017	5 days	Multidisciplinary	International	30	Sustainable architecture
2020-J-6	Paszkowski, Z.W., and J.I. Golebiewski. 2020. "International Design Workshops as an Intensive Form of Architectural Education." World Transactions on Engineering and Technology Education 18 (1): 51–56.	Journal Article	Face-to-face	2020	Turkey	10	Multiple	University	Winter School	Winter School	2003-2009	10 days	Architecture	International	55	
2020-J-7	Sas-Bojarska, A., and M. Rembeza. 2020. "International Architectural-Urban-Landscape Design Workshops to Strengthen Students' Education, Capabilities and Mobility." World Transactions on Engineering and Technology Education 18 (2): 190–96.	Journal Article	Face-to-face	2020	Poland, Portugal	Over 15	Multiple	University	Short-term workshop	Towards the Eco-city, Gdańsk Seashore Area Development, Gdańsk, 2011; Limits and Interface: Designing the In-between Spaces of an Urban Ring Road in Lisbon, Lisbon, 2012; From Splinters to Parks, Lisbon, 2013; Connecting City Spaces, Kwiatkowski Route in Gdynia, Gdańsk, 2014; Esmoriz 109 - the Urban Meaning of National Road 109, Aveiro, 2015.	2011-2015					
2020-J-8	Shi, Xinyu, Xue Fang, Zhoufan Chen, Tyson Keen Phillips, and Hiroatsu Fukuda. 2020. "A Didactic Pedagogical Approach toward Sustainable Architectural Education through Robotic Tectonics." SUSTAINABILITY 12 (5). <a href="https://doi.org/10.3390/su12051757">https://doi.org/10.3390/su12051757</a> .	Journal Article	Face-to-face	2020												

## APPENDIX B

Table B. Coding of ISADs included in the mapping study

Workshop Name	Website	Workshop type	Year Started	Year Ended	Partners	Organizing Bodies	Country	ISAD Principles										ISAD Outputs		
								The atmosphere					Tactics					Place	Research and Education	Addressed skills
								Duration	Place of learning	Mono/multi-disciplinary	Disciplines	National/International	Number of Students	Theme	Learning-by-doing	Lectures	Learning-by-travelling /living	Community Engagement		
Betonart Summer School	https://betonart.com.tr/su	Summer School	2002	COVID force majeure	Turkish Cement Manufacturers' Association (TÇMB), Department of Architecture (Turkey), A	HEI, Association, Large scale enterprise	Turkey	10-15 Days	Face-to-face	Monodisciplinary	Architecture	National	16-30 participants	Exploring: Material/technique	Hands-on learning (Design-build)	Yes	No	No	Research by design: Material	a, h
Yahşibey Design Workshops	http://yahsiworkshops.com	Summer School	2006	COVID force majeure	Emre Sanan Design Foundation	Foundation	Turkey	10-15 Days	Face-to-face	Multidisciplinary	Architecture, Design, Urban	International	1-15 participants	Multiple themes (architecture, design, food, music, fashion)	Design Studio (Speculative): Architectural	Yes	Yes	Yes	Drawings shared with local	a, e, i
MediterraNew Architectural Design Workshop	http://www.mediterraneanworkshop.org	Winter Workshop	2014	2014		association, media publisher	Italy	5-10 Days	Face-to-face	Multidisciplinary	Architecture, Design	International	16-30 participants	Real' problems	Design Studio (Speculative): Architectural Representation s, Models,	Yes	No	No	Drawings shared with local authorities /communit	a, e
e-FAIDE Workshop	http://www.efiade.org/category/activities/workshop/	Short-Term Workshop	2018	2018	TOBB University of Economics and Technology, Mimar Sinan Fine Arts University, Eindhoven, University of Zagreb, University of Lusofona	HEI	Turkey	5-10 Days	Face-to-face	Monodisciplinary	Architecture	International	16-30 participants	Pre-defined design problem/conceptual question	Design Studio (Speculative): Architectural Representation s, Models,	Yes	Yes	No	Improving all formal education	
QC INTERNATIONAL SUMMER SCHOOL	http://www.qcinternational.it/index_20en.html	Summer School	2010	COVID force majeure (Online)	POLITECNICO DI MILANO, Escuela Técnica Superior de Arquitectura de Barcelona (ETSAB), Escuela Técnica Superior de Arquitectura de Sevilla (ETSAS)	HEI	Italy	10-15 Days	Face-to-face	Multidisciplinary	Architecture, Design, Engineering, Planning	International	Above 50 students	Pre-defined design problem/conceptual question	Design Studio (Speculative): Architectural Representation s, Models,	Yes	Yes	No	Problems of the city	Research by design: Landscape
Bademlik Design Festival	https://bademlikfestivali.wordpress.com	Festival	2013	COVID force majeure	Eskişehir Osmangazi University, Chamber of Architects	HEI, professional association	Turkey	1-5 Days	Face-to-face	Multidisciplinary	Open	National	Above 100 participants	Multiple themes (architecture, design, food, music, fashion)	Design Studio (Speculative): Architectural Representation s, Models,	No	Yes	No		a, b c
CASA (Coimbra Architecture Summer Atelier)	https://www.casa.pt/ctuc/da/casa/	Short-Term Workshop	2019	COVID force majeure	University of Coimbra	HEI	Portugal	10-15 Days	Face-to-face	Multidisciplinary	Open	International	31-50 participants	Real' problems	Design Studio (Speculative): Architectural Representation s, Models, Inspirations	Yes	Yes	No	Problems of the city	a, d, e
Global Summer School	http://globalschool.iac.net	Summer School	2008	COVID force majeure (Online)	Institute for Advanced Architecture of Catalonia	HEI	Spain	10-15 Days	Face-to-face	Multidisciplinary	Open	International	Above 100 participants	Exploring: Material/technique	Hands-on (Design-fabricate)	Yes	No	No	Formal Education: New practices	a,
Meetings of Design Students (MEDS)	http://medsworkshop.com/	Short-Term Workshop	2010	COVID force majeure	MEDS – Meeting of Design Students	Association	Multiple	10-15 Days	Face-to-face	Multidisciplinary	Open	International	Above 100 participants	Exploring: Material/technique	Hands-on (Design-build)	No	Yes	Yes	Interventions in the city	a, b, h, e
Reuse of Modernist Buildings	http://www.reuseofmodernistbuildings.eu.com	Short-Term Workshop	2016	2019	HS OWL, Detmold School for Architecture and Interior Architecture, ITU, Ulsisboa, Universidade de Coimbra, University of Antwerp, DOCOMOMO International	HEI, Association	Multiple	1-5 Days	Face-to-face	Monodisciplinary	Architecture, Design, Urban Planning	International	16-30 participants	Exploring: Heritage	Design Studio (Speculative): Architectural Representation s, Models,	Yes	Yes	No	Interventions for modern heritage	Research by design: Heritage



Workshop Name	Website	Workshop type	Year Started	Year Ended	Partners	Organizing Bodies	Country	Duration	Place of learning	Mono/multi-disciplinary	Disciplines	National/International	Number of Students	Theme	Learning-by-doing	Lectures	Learning-by-travelling /online	Community Engagement	Place	Research and Education	Addressed skills
Hands on Lisbon	http://warehouse.pt/projects/hands-on-	Summer Workshop	2019	-	COLECTIVO WAREHOUSE	SME	Portugal	10-15 Days	Face-to-face	Multidisciplinary	Open	International		Real' problems	Hands-on (Design-build)	No	Yes	Yes	Interventions in the city		a, e
CityLAB Summer School	https://www.untwerpen.be/en/research-groups/urban-	Summer School	2015	2019	University of Antwerp's Urban Studies Institute	Research Institute	Belgium	1-5 Days	Face-to-face	Multidisciplinary	Open	International		Real' problems	Design Studio (Speculative): Architectural Representation s, Models,	Yes	Yes	No			a, e
SpaRe.Life 2019	http://sparelife.epoka.edu.al/2019/category-spare-life-2019-	Short-Term Workshop	2019	-	Epoka University	HEI	Albania	10-15 Days	Face-to-face	Multidisciplinary	Open	International		Real' problems	Design Studio (Speculative): Architectural Representation s, Models,	Yes	Yes	Yes	Interventions in the city		a, e
MOBILE HOME ECOLAB - International design summer school	http://www.4.unipv.it/amli/index.htm	Summer School	2019	COVID force majeure (Online)	Architectural Maker Lab, Università di Pavia	HEI	Italy	5-10 Days	Face-to-face (switched online)	Monodisciplinary	Architecture	International		Pre-defined design problem/conceptual question	Design Studio (Speculative): Architectural Representation s, Models,	Yes	No	No	Research by a design		
Laboratory of Places	http://www.3dsurvey.polimi.it/?page_id=328	Summer School	2011	2019	3DSurvey Laboratory of the Politecnico di Milano, Canova Association	HEI, Association	Italy	5-10 Days	Face-to-face	Monodisciplinary	Architecture	International	16-30 participants	Exploring: Heritage	Design Studio (Speculative): Architectural Representation s, Models,	Yes	Yes	No	Place: Opportunities	Research by design: Heritage	b
International urban regeneration festival	https://www.archistart.net/passed-workshops/	Summer School	2013	COVID force majeure	Architstart Network	media publisher	Italy	5-10 Days	Face-to-face	Multidisciplinary	Architects, engineers, designers, interior designers, graphic	International	16-30 participants	Real' problems	Studio: Hands-on (Design-build)	No	Yes	Yes	Interventions in the city		a, e, h
Model Making in the Digital Age	http://www.atelierlajunta.com/SummerWorkshop	Summer Workshop	2016	COVID force majeure	Atelier Juntana	SME	Spain	5-10 Days	Face-to-face	Multidisciplinary	Open	International		Exploring: Material/technique	Studio: Hands-on (Design-fabricate)	Yes	No	No			a
Digitalized Urban Tales (D.U.T)	MATERIART Symposium Paper	Summer Workshop	2018	COVID force majeure	Istanbul Bilgi University	HEI	Turkey	5-10 Days	Face-to-face	Monodisciplinary	Architecture	National	16-30 participants	Exploring: City	Architectural Reflections	Yes	Yes	Yes	Formal Education: New practices		e
Günlük Atölyeler Serisi/gas.arch	MATERIART Symposium Paper	Short-Term Workshop	2018		GAS	People	Turkey	1-5 Days	Face-to-face	Multidisciplinary	Open	International		Exploring: City	Architectural Reflections	Yes	Yes	Yes	Formal Education: New practices		e
Casting Geometries Summer Workshop	MATERIART Symposium Paper	Summer Workshop	2017		Istanbul Bilgi University	HEI	Turkey	5-10 Days	Face-to-face	Monodisciplinary	Architecture	National	16-30 participants	Exploring: Material/technique	Hands-on (Design-build)	Yes	No	No	Formal Education: Supplementary		h
Short Term Workshop (2002-C-1)	Scoping Study	Short-Term Workshop	2002		Istanbul Technical University	HEI	Turkey	1-5 Days	Face-to-face	Monodisciplinary	Architecture	National	16-30 participants	Exploring: City	Architectural Reflections	Yes	Yes	Yes	Formal Education: New practices		e

Workshop Name	Website	Workshop type	Year Started	Year Ended	Partners	Organizing Bodies	Country	Duration	Place of learning	Mono/multi-disciplinary	Disciplines	National/International	Number of Students	Theme	Learning-by-doing	Lectures	Learning-by-travelling /Online	Community Engagement	Place	Research and Education	Addressed skills
Digital Art (2003-J-1)	Scoping Study	Short-Term Workshop	1999		UFMG	HEI	Brazil	5-10 Days	Face-to-face	Monodisciplinary	Architecture	National	31-50 participants	Pre-defined design problem/conceptual question	Design Studio (Speculative): Architectural Representation s, Models, Inspirations	Yes	No	No		Formal Education: New practices	a, b
ASF-UK Summer School (2005-J-1) - (2013-J-2)	Scoping Study	Summer School	2003	2013	ASF	Foundation	Multiple	1-5 Days	Face-to-face	Monodisciplinary	Architecture	International		Real' problems	Hands-on (Design-build)	Yes	Yes	Yes	Interventions in the city		all
INTBAU's Workshop (2008-C-1) Series	Scoping Study	Short-Term Workshop	2001	COVID force majeure	INTBAU, other organizations	Association	Multiple	10-15 Days	Face-to-face	Multidisciplinary	Open	International		Real' problems	Design Studio (Speculative): Architectural Representation s, Models, Inspirations	Yes	Yes	Yes	Initiate new projects	Formal Education: New practices	all
SKG IN_FLUX (2010-C-1)	Scoping Study	Short-Term Workshop	2010		Aristotle University of Thessaloniki	HEI	Greece	10-15 Days	Face-to-face	Monodisciplinary	Architecture	National	16-30 participants	Exploring: Use of computational tools	Design Studio (Speculative): Architectural Representation s, Models, Inspirations	Yes	No	No		Formal Education: New practices (computational)	a, d
Travel-Study Workshop, The Bedford Program (2010-C-2)	Scoping Study	Short-Term Workshop	1998		Rensselaer Polytechnic Institute, ARUP, Buro Happold	HEI, Large scale enterprise	Multiple	10-15 Days	Face-to-face	Multidisciplinary	Open	International	1-15 participants	Learning-by-travelling	Architectural Reflections	Yes	Yes	Yes		Formal Education: Supplementary	b, e
Digital Tea House (2011-C-1)	Scoping Study	Short-Term Workshop	2010		University of Tokyo, Columbia University GSAAP	HEI	Japan	16-30 Days	Face-to-face	Monodisciplinary	Architecture	National	16-30 participants	Exploring: Use of computational tools	Hands-on (Design-fabricate)	Yes	No	No		Formal Education: New practices (computational)	a
Walking Istanbul ()	Scoping Study	Short-Term Workshop	2010		Yildiz Technical University, UPC, Zurich University of Applied	HEI	Turkey	1-5 Days	Face-to-face	Monodisciplinary	Architecture	International	51-100 participants	Exploring: City	Architectural Reflections	Yes	Yes	Yes		Formal Education: Supplementary	e
I International Planning Preservation Workshop. Learning from Al Andalus (2013-C-1)	Scoping Study	Short-Term Workshop	2013		University of Alicante, the University of Granada, Politecnico di Milano, Hunter College, City University of New York	HEI	Spain	10-15 Days	Face-to-face	Multidisciplinary	Open	International		Exploring: Heritage	Design Studio (Speculative): Architectural Representation s, Models, Inspirations	Yes	Yes	Yes	Place: Opportunities	Research for new formal learning	b
Timber Gridshells (2013-J-1)	Scoping Study	Short-Term Workshop	2011		Sheffield Hallam University	HEI	UK	1-5 Days	Face-to-face	Monodisciplinary	Architecture	National		Exploring: Material/technique	Hands-on (Design-build)	Yes	No	No		Formal Education: New practices (computational)	h
In the Pursuit of Sinan (2015-C-1)	Scoping Study	Winter Workshop	2015		Escola Tècnica Superior d'Arquitectura de Barcelona, Bahçeşehir University	HEI	Turkey	1-5 Days	Face-to-face	Monodisciplinary	Architecture	International	51-100 participants	Exploring: City	Architectural Reflections	Yes	Yes	Yes		Formal Education: Supplementary	e
Workshop (Selcuk University) (2015-C-3)	Scoping Study	Winter Workshop	2011		Selcuk University	HEI	Turkey	10-15 Days	Face-to-face	Monodisciplinary	Architecture	National	1-15 participants	Exploring: Heritage	Design Studio (Speculative): Architectural Representation s, Models, Inspirations	Yes	Yes	Yes	Drawings given to local authorities	Formal Education: Supplementary	b

Workshop Name	Website	Workshop type	Year Started	Year Ended	Partners	Organizing Bodies	Country	Duration	Place of learning	Mono/multi-disciplinary	Disciplines	National/International	Number of Students	Theme	Learning-by-doing	Lectures	Learning-by-travelling /online	Community Engagemen	Place	Research and Education	Addressed skills
Anatomy of a Prototype (2015-C-5)	Scoping Study	Summer Workshop	2014		Xi'an Jiaotong-Liverpool University	HEI	China	10-15 Days	Face-to-face	Monodisciplinary	Architecture	National		Exploring: Use of computational tools	Design Studio (Speculative): Architectural Representation s, Models, Installations	Yes	No	No		Research by design: Computational Tools	a
Istanbul as a Palimpsest City and Imperfection (2015-J-1)	Scoping Study	Short-Term Workshop	2012		Istanbul Technical University	HEI	Turkey	1-5 Days	Face-to-face	Monodisciplinary	Architecture	National		Exploring: City	Architectural Reflections	Yes	Yes	Yes		Formal Education: New practices	e
Contemporary Living Patterns in Mass Housing in Europe (2016-C-3)	Scoping Study	Short-Term Workshop	2014		OIKONET	Erasmus Partners	Portugal	5-10 Days	Face-to-face	Multidisciplinary	Open	International		Exploring: Heritage	Design Studio (Speculative): Architectural Representation s, Models, Installations	Yes	Yes	Yes	Place: Opportunities	Research by design: Building Reuse	
20th Workshop on Traditional Architecture of Rincón de Ademuz (2016-C-5)	Scoping Study	Short-Term Workshop	2015		Politécnica de València, Politécnica de Cartagena	HEI	Spain	5-10 Days	Face-to-face	Multidisciplinary	Open	National		Exploring: Material/technique	Hands-on (Design-build)	Yes	No	No		Formal Education: Supplementary	h
A 3D Experience to Increase Universal Design Awareness (2016-J-3)	Scoping Study	Short-Term Workshop	2013		Yaşar University	HEI	Turkey	1-5 Days	Face-to-face	Monodisciplinary	Architecture	National	51-100 participants	Real' problems	Hands-on (Design-build)	Yes	No	No		Formal Education: Supplementary	j
Self-Made Architecture (2017-C-1)	Scoping Study	Short-Term Workshop	2016		Politecnico di Bari, Atılım University	HEI	Turkey, Italy	5-10 Days	Face-to-face	Monodisciplinary	Architecture	International	16-30 participants	Exploring: Material/technique	Architectural Reflections	Yes	No	No		Formal Education: Supplementary	h
Buyukkonuk Ecovillage (2017-C-2)	Scoping Study	Short-Term Workshop	2016		Medipol University	HEI	Turkey	5-10 Days	Face-to-face	Monodisciplinary	Architecture	National	1-15 participants	Exploring: Material/technique	Hands-on (Design-build)	Yes	Yes	Yes		Formal Education: Supplementary	a, e, h
BCN Step by Step: GAUDI and his Time (2018-C-1)	Scoping Study	Short-Term Workshop	2017		Bahçeşehir university, ETSAB, Tiwari Collage	HEI	Turkey	1-5 Days	Face-to-face	Monodisciplinary	Architecture	International	16-30 participants	Exploring: City	Architectural Reflections	Yes	Yes	No		Formal Education: New practices	e
"Cyborg Sessions" (2018-C-2)	Scoping Study	Short-Term Workshop	2017		Iowa State University	HEI	USA	5-10 Days	Face-to-face	Multidisciplinary	Open	International	1-15 participants	Exploring: Use of computational tools	Hands-on (Design-fabricate)	Yes	No	No		enhancing formal learning capacities of women	h
Cocoon Workshop (2019-C-1)	Scoping Study	Short-Term Workshop	2018		METU	HEI	Turkey	1-5 Days	Face-to-face	Multidisciplinary	Open	International	16-30 participants	Exploring: Use of computational tools	Design Studio (Speculative): Architectural Representation s, Models, Installations	Yes	No	No		Formal Education: New practices (computational)	a,h
The Collage Workshop (2020-J-1)	Scoping Study	Short-Term Workshop	2014		Architecture at the Arts University Bourne-mouth	HEI	UK	1-5 Days	Face-to-face	Monodisciplinary	Architecture	National	1-15 participants	Exploring: New Representation Techniques	Architectural Reflections	No	No	No		Formal Education: New practices	a, b
Urban Dreams Workshop (2020-J-3)	Scoping Study	Short-Term Workshop	2017		Chamber of Architects, Mimar Sinan Fine Arst University	HEI, professional association	Turkey	5-10 Days	Face-to-face	Monodisciplinary	Architecture	National	1-15 participants	Exploring: Use of computational tools	Design Studio (Speculative): Architectural Representation s, Models, Installations	Yes	No	No		Formal Education: New practices (computational)	a, i



Workshop Name	Website	Workshop type	Year Started	Year Ended	Partners	Organizing Bodies	Country	Duration	Place of learning	Mono/multi-disciplinary	Disciplines	National/International	Number of Students	Theme	Learning-by-doing	Lectures	Learning-by-travelling / <i>Living</i>	Community Engagement	Place	Research and Education	Addressed skills
COVID-19 Challenges: Architecture of Pandemic (2020-J-4)	Scoping Study	Short-Term Workshop	2020		UB-FA, Novi Sad	HEI	Serbia	5-10 Days	Distance learning	Multidisciplinary	Architecture, Design, Urban Planning	National	51-100 participants	Pre-defined design problem/conceptual question	Design Studio (Speculative): Architectural Representation s, Models, <i>Installations</i>	Yes	No	No		Formal Education: New practices (online)	a, i
ISALab Workshop (2020-J-5)	Scoping Study	Short-Term Workshop	2017	2020	University of British Columbia, Carnegie-Mellon University, University of Cambridge, Universite Paris-Saday, TU Berlin, TU Delft, University College Cork, Universitat Politècnica de Valencia	HEI	Spain	1-5 Days	Face-to-face	Multidisciplinary	Open	International	16-30 participants	Real' problems	Multiple	Yes	No	No		Formal Education: New practices	
Flexible Matter (2016-J-1)	Scoping Study	Short-Term Workshop	2014		Graz University of Technology	HEI	Austria	1-5 Days	Face-to-face	Monodisciplinary	Architecture	National	16-30 participants	Exploring: Use of computational tools	Hands-on (Design-fabricate)	Yes	No	No		Formal Education: New practices (computational)	a, h