Journal of Engineering Sciences and Information Technology
Volume (4), Issue (2) : 30 June 2020
P: 70 - 89

ISSN: 2522-3321

مجلة العلوم الهندسية وتكنولوجيا المعلومات
المجلد (4)، العدد (2) : 30 يونيو 2020م
ص: 70 - 89

Storytelling as A Learning Tool in Architecture Design Studio

Danah Munir Tuffaha
Faculty of Art, Design & Architecture || Istanbul Okan University || Turkey
Mehmet Harun Batirbaygil
Faculty Engineering & Architecture || Istanbul Gelisim University || Turkey

Abstract: This research examines the effect of applying Storytelling as a learning tool in architecture design studios classes. It aims to help overcome some of the current learning challenges and shortcomings in students' design skills learning. Newly graduated students from schools of architecture are encountered with challenges surrounding their design skill capability when entering the professional practice. The researcher believes that these difficulties start in design studio classes. The gap between academic learning and practicing profession is a concern many scholars are continuously trying to tackle. The researcher investigates the shortcomings in design studio learning and suggests that Storytelling can be a learning tool to help students and teachers overcome these shortcomings. The researcher conducted a two-phase experiment in a design studio class at Okan University. In the first phase the Researcher collected data using quantitative and qualitative methods that illustrate the current condition of students' design skills, as well as areas of shortcomings and challenges that need to be addressed. In the second phase, the Researcher used action research methodology and applied Storytelling as a strategy of combining reflective and experiential learning theories in design studio class. According to the outcomes at the final jury and collected questionnaires, the results of this experiment were generally successful. Most of the students proved significant progress in terms of design skills and creativity. Moreover, students' presentation skills showed broad improvement and in return their self-confidence and understanding of submissions have advanced drastically. The researcher recommends this research to work as a model study for other scholars to adopt, develop and lead more similar researches in the future in other universities and design schools. The researcher also recommends this research to be applied to earlier design studio classes.

Keywords: Creative Problem-Solving, Design Skills, Design Process, Design Studio, Design Tool, Learning, Narrative, Reflective and Experience, Storytelling, Teller, Listener, Decision Making.

السرد القصصي كأداة تعليمية في استوديو التصميم المعماري

دانة منير تفاحة
كلية الفنون والتصميم والعمارة || جامعة أوكان || إسطنبول || تركيا
محمد هارون باتربايجل
كلية الهندسة والعمارة || جامعة جيليشم || إسطنبول || تركيا

الملخص: يدرس البحث تأثير تطبيق استراتيجية السرد القصصي كأداة تعليمية في مساقات استوديو التصميم المعماري. يهدف إلى المساعدة في التغلب على بعض التحديات التعليمية الحالية وأوجه القصور في تعلم مهارات التصميم المعماري لدى الطلاب. يواجه الطلاب الذين تخرجوا حديثًا من كليات الهندسة المعمارية تحديات تحد من قدرتهم على مهارات التصميم عند الدخول في التدريب المهني. ويعتقد الباحث أن هذه الصعوبات تبدأ في مساقات استوديو التصميم المعماري حيث إن الفجوة بين التعلم الأكاديمي وممارسة المهنة

مصدر قلق لكثير من العلماء؛ الذين يحاولون معالجتها بشكل مستمر. ويدرس الباحثان أوجه القصور في تعلم مساقات استوديو التصميم المعماري ويقترحان أن السرد القصصي يمكن أن تكون أداة تعليمية لمساعدة الطلاب والمعلمين على التغلب على هذه الصعوبات. وأجرى الباحثان تجربة على مرحلتين في مساقات استوديو التصميم المعماري في جامعة أوكان. في المرحلة الأولى، قام الباحثان بجمع البيانات باستخدام الأساليب الكمية والنوعية التي توضح الوضع الحالي لمهارات تصميم الطلاب، وكذلك مجالات أوجه القصور والتحديات التي تحتاج إلى معالجة. أما في المرحلة الثانية، استخدم الباحثان منهجية البحث الإجرائي وتطبيق السرد القصصي كاستراتيجية تجمع بين نظريات التعلم التأملية والتجربة في استوديو التصميم. ووفقًا للنتائج التي عرضها على هيئة التحكيم النهائية والاستبانات التي تم جمعها، فقد كانت نتائج هذه التجربة ناجحة بشكل عام. إذ أظهر معظم الطلاب تقدمًا ملحوظًا من حيث مهارات التصميم والإبداع. علاوة على ذلك، فقد تبين تحسناً ملحوظاً في مهارات العرض لدى الطلاب وفي المقابل ظهر تقدم في الثقة بالنفس وفهم الشروحات بشكل كبير. وبناء على ما سبق، يوصي الباحثان بتبني وتطوير وإجراء المزيد من البحوث المماثلة في المستقبل في الجامعات وكليات التصميم الأخرى. ويوصي الباحثان أيضًا بتطبيق هذا البحث على مساقات استوديوهات التصميم السابقة.

الكلمات المفتاحية: حل المشكلات الإبداعي، مهارات التصميم، عملية التصميم، تصميم الاستوديو، أداة التصميم، التعلم، السرد، التأمل والخبرة، سرد القصص، الراوي، المستمع، اتخاذ القرار.

INTRODUCTION

Architecture as a study is different than architecture as a profession. While at universities it's considered an art related field, in practice it is treated it as a technical profession. Both are right but focusing on one part without considering the other creates a gap. In the past, there was a balance between practice and education but in recent years, especially after 1900 the problem started to appear. Several scholars tried to address the problem from different theoretical, historical and cultural angles, but in this study the researcher addresses a new related symptom which is (the decision making in design process). To address the problem, the researcher believes that the problem starts in the first stages of design education. Therefore, the Researcher will go back to the beginning of architectural learning in design studio classes and examine the problem.

As a professional architect and a design studio teacher herself, the researcher had always been curious toward how to form a creative design solution that can be learned, trained, executed in design classes and marketed by the designers to their clients. Many scholars influenced her through her professional experience, but the one the Researcher kept remembering is her teacher's words: "Telling something" when you design. And this was the first spark in finding an alternative tool. The researcher here proposes that one way for students to overcome this difficulty is to learn Storytelling as a reflective skill.

Problem Statement

Previous scholars have explored the gap between theory and design (Yeşilkaya, 2001, p. 149), theory and practice (Ioan, 2001, p. 144), design conflict (form following function and critical design theorization) (Raman, 2001, p. 29), or architectural meaning void (Box, 2007, p. 131). The researcher postulated weak design skills might stem from the lack of exposure to decision making in design classes where the students do not solve the problem but create issues. The curriculum stifles creativity, promoting

technical functionality in design tasks. Nevertheless, the lessons neglect learners justifying design decisions and choices to their professors or peers. Therefore, architecture programs must update their learning strategies to incorporate the new standards (Saeid, 2001, p. 1).

Research Questions

The researcher of this study is interested in knowing how learning design skills and through storytelling in one of design studios classes in Okan University, as implemented by the researcher, could first, help the student to really understand the importance of design process , and secondly, by using storytelling within the design process, it will motivate student's design decision making with a creativity approach. All assumptions, prescriptions, and explanations were directed towards achieving this goal.

This research model includes a main question: How to assets students of architecture in design studio classes to be better in Design skills and be more creative? This question is followed by a small number of sub-questions. that deal with the shortcomings and challenges of learning design skills in design studio. The grand tour question is a statement of the problem that is examined in the study in its broadest form, posed as a general issue, so as not to limit the inquiry. The sub-questions are used as guides for the methodology and methods used to enable the researcher to answer the broad-based grand tour question. Having answered the sub-questions, the researcher believes that the main question will be answered accordingly.

Hypothesis

The researcher of this study is interested in knowing how learning design skills and through storytelling in one of design studios classes in Okan University, as implemented by the researcher, could first, help the student to really understand the importance of design process , and secondly, by using storytelling within the design process, it will motivate student's design decision making with a creativity approach. All assumptions, prescriptions, and explanations were directed towards achieving this goal.

The researcher hypothesis relies on qualitative method. Hence, results must rely on the human factor of evaluation and analysis. Does applying storytelling as a learning tool in design studio class will improve any of the following design skills?

1. Help students to gain better design skills and understanding of design process across the disciplines of design studio classes?
2. Benefit student's critical thinking for unique design concepts and problem solving?
3. Stronger transferability of accumulated knowledge for good future professional development?

Research Aims & Objectives

The two major aims of this research are directed in the general area of architectural education, specifically:

Developing an "interactive" learning strategy in design studio environment.

Developing an "alternative" design tool within the project design process.

Since the subject of architectural design teaching and learning in design studio, the objectives of this research could include various related issues. However, the specific objectives related to the described aims of this research could be outlined as the followings:

1. To investigate and review the background of student learning education and what related to design education. (This could be accomplished through literature reviews and enquiries),
2. To develop a teaching model for the design process based on Storytelling technique. (This could be accomplished through analyzing the findings and examining the results in the form of a case study and to come up with a criteria).
3. To investigate about adding storytelling within design process affects creative thinking and the critical thinking process during the design. (This could be accomplished through literature review and enquiries, i.e., interviews),
4. To investigate and review the views architectural educators/students of using storytelling in architectural design process teaching / learning in design studio. (This could be accomplished through literature review and enquiries, i.e., questionnaires)

Research Importance

Using reflective and experience as a learning theory in higher education facilities has been discussed and research before by scholars in the last decades. Storytelling as one of its strategies has been used as a learning tool in both elementary education like, kindergarten and first years in schools and higher education especially nursing faculties. As the researcher knowledge this is the first research about applying storytelling as a learning tool in architecture design studio and what effects does it have on student design skill learning. the motivation of this research is studying alternative learning tools to develop the learning environments, creativity, motivation and collaboration in architecture design studio.

i. RESEARCH METHODOLOGY

This is research follows qualitative methods. The purpose of following a qualitative research expresses the assumptions of the researcher in attempting to understand and interpret students' experiences and learning curves in design studio class. The research, due to the nature of its questions and aims of the research - which are related to informal observations of students' performances - can be categorized as a qualitative approach which involves human performance in an educational experience.

Methods of Data Collection

Although quantitative method was applied in some parts of the data collection such as in questionnaire, qualitative method was the dominant method that was used in most of the data collection

and experiment. The researcher gathers most of the data in recognition of the assumption about the subjective nature of the research. Data collection in this sense requires access to the study site. Access and entry to the study site are important and sensitive issues that was addressed to the university for which they granted a generous access to design studio students and classes. Through this access to the site, the researcher established a rapport and authentic communication patterns with the students so that you she can capture the subtle nuances of meaning from their voices.

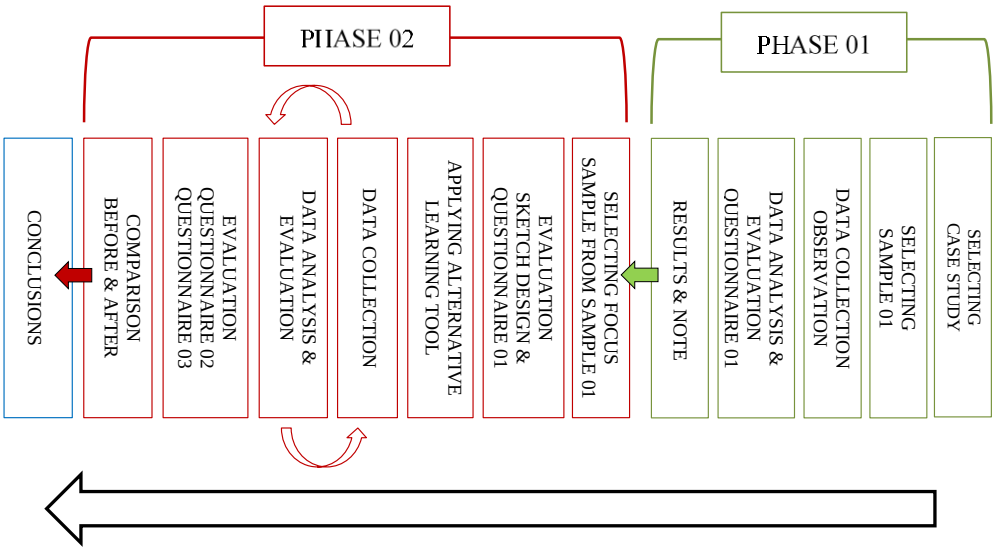

Figure (1) Research Methodology

ii. LITERATURE REVIEW

Architecture not only engenders people created spacing for specific uses but also creates lively public art (Jones, 1961, p. 1), evoking social, political, economic and cultural feelings, art, design, market, personal preferences, and demand. Communities band together to imagine and fabricate their surroundings (Wasserman, Sullivan, & Palermo, 2000, p. 15). However, institutions, including academia, have erroneously negated socially derived aesthetics when reengineering. Thus, since actors fail to realize the designer's role in promoting a successful outcome, they often neglect architectural contributions to a project (Fisher, 2000, p. 9).

Decision making remains essential for the student to learn design problem-solving skills. Students, as designers, initiate and solve issues, isolating the problem to identify the crux of the matter to resolve it efficiently (Adams, 1986, p. 23). Design learning entails experientially enlighten decision making, converting knowledge into experience represents embodiment (Piotrowski & Robinson, 2001). Architecture continually makes decisions, directing toward the optimal solution to value-driven and noble pursuits. Architect students encounter tasks requiring judgment, respect, and trust (Wasserman, Sullivan, & Palermo, 2000), honing their decision-making aptitude. An architect uses judgment skills, fostering quality judgments (Wasserman, Sullivan, & Palermo, 2000).

The architect learns to design in the design studio, the crucial action, providing an opportunity for architect students to develop into respectable designer (Corona-Martínez & Quantrill, 2003). Principally design studio culture centers on the student, instructor, and the project, and one element cannot function independently because participants and projects in the studio intersect, permitting learners to interact with instructors and peers concerning the project (Lueth, 2008, p. 58; Stevens, 1998). Numerous specialists have asserted universities have fundamentally failed to prepare learners to function in the real architectural arena (Fisher, 1989; Forbes, 1985; Smith, 1984).

Scholars have professed studio education engenders an unrealistic microcosm (Fowler, 1985; Fox. 1984; Gutman, 1987; Pawley, 1983; Stubbs, 1987; Wines, 1984), unclearly revealing the design studio objective (Ledewitz, 1985, p. 2). Indeed, Anthony (1991), Cuff (1991), Koch, Schwennsen, Dutton, and Smith (2002), Salama (1995, 1998, 2002), Sanoff (2003), Schön (1981, 1983, 1985, 1988), Seidel (1994), and Stamp (1994) have corroborated Ledewitz's (1985) critique. Trivial cliques have driven faculty (Rapoport, 1982) to impose impractical student guidelines (Carolin, 1992) devoid of practical reality (Heinlein, 1981). The curriculum abandons the design process goal to promote intuition, critical, and rigorous (Lueth, 2008, p. 59; Salama, 2005), plus practical industry thinking (Carolin, 1992; Fowler, 1985; Gutman, 1987; Muir, 1991). Mavens have not only recommended integrating practical courses (management and technical) but also limitedly bringing back apprenticeships (Cobb, 1985; Filson, 1985; Mitchell, 1984). Simply, design studio deficiencies are reflected in graduate design inadequacy (Bairstow & Roaf, 2008; Saeid, 2001).

Architecture education needs to restructure to satisfy practical needs. While operating in an unregulated global economy, architectural academics must confront severe obstacles without public or private assistance (Piotrowski & Robinson, 2001). Critics have asserted the isolated design studio overstressed the individual, inadequately equips students with expertise to transcend from education to practice (Centra, 2000). While creative potential as broad as possible, design schools must reengineer to teach prospective designers learners to think critically (Fisher, 2000, p. 5).

The goal is to break these siloed realms distinguishing theory from practice, challenging the traditional approach.

Architects must question seriously, looking to resources to transform the functionally physical structure into architectural representation successfully (Box, 2007, pp. 49-50). Design studio education includes "teaching styles, pedagogy, student learning, the project, learning experiences in the design studio" (Lueth, 2008, p. 98). However, critically design studio education in architecture must teach design as a creative process (Hargrove, 2007); and foment innovative ingenuity, constructing and promoting a cognitively accepting procedural awareness fostering creativity (Hargrove, 2007).

Design skills require the designer to generalize their design. After designers discover the overall subject, they subsequently engross themselves obsessively in it to spark an abrupt, instinctive design

decision, equivalent to fundamental research (Cowdroy, 2000). The researcher asserts an obstacle to improving student design skills resides in learner dependence, and the quest for instructor approval. Seeking help throughout the design process prevents students from unveiling new concepts to fix problems students have created in design solutions. After redefining tutorial design process involvement, students must attack design matters themselves (unaffected by professor design preferences).

Learning engenders how people decipher reality, decoding the world to create meaning. Therefore, when instruction comprehensively delves into a topic, it transcends the superficiality traditional rote learning embraces. Design skill mentors should incorporate this in-depth learning in design studios where professors fashion curriculum and instruction to satisfy definite objectives, promoting active learning (Wiggins & McTighe, 2005). Education must equip students to take their learning and use it to apply, generalize, judge, synthesize, and create innovatively (Fry, Ketteridge, & Marshall, 2003).

While the instructional designer must adhere to national, state, district, or institutional standards, as well as student objectives, an architect must obey building codes, budgets, and community appeal. Standards frame education primacies, controlling evaluation, and curriculum. Hence, criteria are not only shaped externally but also internally, accommodation diverse student learning goals and styles.

Architecture curriculum offers hands-on, self-regulated learning, encouraging the student to reflect on experiences developing a well-versed professional (Iyer, 2018). However, the learners must not lose focus and examine more closely what they are performing, not the professor, for comprehending their actions remains paramount (Biggs, 1993). Even though postsecondary learners navigate and engage in learning, instructors must create educational experiences to promote this constructivist paradigm. Hence, teachers must examine the learning as transcending the rote learning innovatively designing coursework fomenting critical cognition (Fry, Ketteridge, & Marshall, 2003). As designers begin to master these skills, they employ the critical learned skills to tackle issues, not backing down, exceeding mediocrity, and employing unconventional strategies (Wiggins & McTighe, 2005).

The unknown elicits reflection, prompting deep contemplation. Reflective practice stresses experience, minimizing theory (Schön, 1983). Knowing and doing work synonymously, as practicing professionals confront multifaceted conditions; therefore, rational learning proves inadequate (McDrury & Alterio, 2003, p. 24). Reflecting on experience causes meaningful learning, making student, apply the experience to additional circumstances, interpreting learning into action, and appraising the action consequences (McDrury & Alterio, 2003).

When reflective and experience theories unite, it relevantly links the learning process, transforming learning into a five-stage map: noticing, making sense, making meaning, working with meaning, and transformative meaning (Moon, 1999). In-depth learning mandates the superior intellect to reason conceptually, linking the situation to previous knowledge, uncovering patterns and fundamental principles, verifying evidence concerning assumptions, probing logic and argument vigilantly and

critically, and actively maintaining interested in the course material (Entwistle, 1996). Students, thus, independently select measures needed to boost their subject mastery, creating an autonomy.

Reflection, as an interactive, social process, cannot exist without action or context, especially involving others to question individual assumptions (McDrury & Alterio, 2003). Vygotsky's sociocultural theory situates context as vital to learning. Context setting allows students to uncover socially-derived meaning through interaction, empowering students to familiarize themselves with the circumstances and seek support with issues exceeding their capability (McDrury & Alterio, 2003) (Lueth, 2008, p. 41). Hence, the zone of proximal development (ZPD) defined by Vygotsky (1987) the gap separating the independent problem solving (actual development) and problem-solving under adult guidance or in collaboration with more capable peers (potential development).

Architects' buildings reflect how they perceive themselves (self- image). The architecture profession has progressed to understanding the architect behind the object. In the past, the architectural design had to be free from traditions, constraints, and limitations, but, recently, architects have moved from building monumental to bringing their expressive talents to the daily environment. Designing for everyday settings demands sharing values, incorporating changes while maintaining permanence, and distributing design responsibility to deliver an architecture design energetically revealing sophistication and wonder (Habraken, 2003). Using reflection and experience as a learning tool should foster a passionate design experience, and a deep understanding of its process since gleaning experiential knowledge requires narrative rendition for its grasp (Grillner, 2000, p. 214).

Student curiosity finding what they want to tell in their design, as the researcher refers to it as the wow factor, should happen when design studio students reflect on their experiences and outcomes because it creates individual identities relaying life stories. Language, symbols, cultural, and social context form narrate a lived experience. Collecting what is impossible expresses a single image into a momentarily experienced whole.

As architects gain real experience, they conquer intermediate language challenges, creating their product beyond representation to actualize architecture. Conversely, while mastering design, learners rigidly adhere to representation, speaking the standard professional dialect to convey their ideas. Since they master the language rudimentarily, students fail to express their intentions. In the beginning, the language syntactically obfuscates student conceptions where the code eclipses the novices' wishes and vision. Hence, perfect representation supersedes reality, diverting students to focus on imageries, not actual architecture. The researcher proposes to avoid compromising design language students must learn reflective skills in design courses using storytelling.

iii. SOLUTION APPROACH

Storytelling as a learning and design tool within the design process engenders distinctive traits augmenting the learning experience for the learners in the design studio. Storytelling is enjoyable, solidifies abstract concepts and simplifies complex messages, creative, responsive and an active process, inclusive and flexible, emotional, and transformative. Besides the educational and professional objectives for using storytelling, all-aged people from diverse cultures enjoy it because this activity crafts a jubilant environment positively, evoking feeling within the listener. (Fox Eades, 2006, pp. 13-14). Designers and enterprises simply and offer effectively branded products and design value. Marketers relay stories to represent the complicated item abstractly. The story relates intangible notions using concrete concepts (Decker, 2019). Story epitomizes art, and each artwork discloses its maker to the world (Fox Eades, 2006, p. 14). When developing a story, the creator produces new or recycled narratives, using resources and references gleaned from the maker's social network, culture, or experience (McDrury & Alterio, 2003, p. 36).

Frequently, storytelling occurs in a group where spectators either assume the teller or listener role. Tellers and listeners both grow, especially during the dialog in the processing phase (McDrury & Alterio, 2003, p. 52). The aware teller should tailor the storytelling style and the content in response to listener feedback (Fox Eades, 2006, p. 15). Listeners do not passively receive the story, but they actively engage in creativity. (Fox Eades, 2006, p. 15), molding the storytelling and engaging tellers in reflective dialogue. Listeners can markedly affect dialogue through reflective questioning. Listeners transform into co-authors advancing from the activity. Multifaceted listener learning may transpire through involvement in various storytelling processes, listening to teller experiences (they may have encountered) and engaging in reflective discourse (McDrury & Alterio, 2003, pp. 51-52). Stories simultaneously work on multiple planes where listeners glean from them what they wish, achieving multilevel learning experiences ranging from superficial to comprehensive understanding (McDrury & Alterio, 2003, p. 45).

Since a story varies depending on the listener and purpose, storytelling reusing a plot develops unique, not replicable products (Fox Eades, 2006, p. 16). Even though storytelling resides on tellers and listeners, fundamentally the teller's perspective drives the narrative, for tellers choose the included and excluded components, determine the presentation, and control emotional involvement (McDrury & Alterio, 2003, p. 47). Moreover, tellers and listeners can switch roles when the listener assumes the narration to alter viewpoint and refine storytelling expertise (Fox Eades, 2006, pp. 20-21). Choosing story medium (printed, articulated, or drawn using images, audio, or digital animation) further represents storytelling's malleability.

Many academic programs turn out graduates unequipped to articulate their design in professional practice (Wiggins G. E., 1989), for the novice engineers lack the critical thinking and design cultural awareness needed in the real world. However, enhancing the curriculum with storytelling may

minimize this education-practical gap. Storytelling as a learning tool stems from learning constructivist paradigms— learning via reflection (Fry, Ketteridge, & Marshall, 2003; Saeid, 2001). Reflective theory in higher education has promoted storytelling in instruction. Inter and intradisciplinary faculty have implemented storytelling to inspire student critical thinking, encourage self-reflection, and reveal practical truths (McDrury & Alterio, 2003).

Hence, the researcher will review the vast literature regarding adult learning, instructional design, especially exploring the way it intertwines with architectural design to demonstrate how to incorporate storytelling into the architectural design curriculum.

iv. CASE STUDY: DESIGN STUDIO

In this section the researcher will integrate the given analysis and literature review together to come up with a proposed teaching methodology addressing Storytelling as the main reference in designing the class assignments, tasks, submissions and evaluation. After the proposed teaching methodology is approved, the researcher will design a teaching methodology pilot for in-class testing. In this stage, the researcher will evaluate the proposed teaching methodology and analyze in efficiency and deficiency which later to be amended, changed and resubmitted again until a final version of the proposed methodology to be approved. The testing and evaluation stage will be conducted with agreement with Okan University.

4.1 Experiment Phase One: Observation Data

the researcher conducted observation phase and its outcomes and elaborate on the impressions the Researcher built upon. The researcher attended design classes to observe only. Referring to the literature review, the researcher divided observation notes into two sections, to facilitate the analysis process later. First Part is: Architectural Education Culture, and the second is: Student Design Skills.

- Part 01: Architectural Education Culture

Under this category, the researcher observes and documented skills are related to the learning process in design studio, like (1) Teaching Style and Communication, (2) Feedback and Discussions, (3) Student Verbal Skills presenting Ideas, (4) Students Written Skills for Presenting Ideas, (5) Design Project Schedule and Tasks , (6) Useful use of Data Collection and Analysis.

- Part 02: Student Design Skills

For this category, the researcher observed, and documented strength of skills related to design process learning, like (1) Design Process Understanding, (2) Creative Problem Solving, (3) Defining Project Problem, (4) Concept Creating process, and (5) Design Decision Making.

Questionnaire Analysis and Finding

The purpose of this Sketch Design Exam Evaluation- Questionnaire (1) is to find another source of data collection to confirm the researcher observations notes scientifically. The researcher uses quantitative method. This questionnaire is divided into two section as previously, all of which covered six factors related to design skills learning. These factors are:

1- Understanding of design process
2- Critical thinking
3- Creativity in concept finding & critical thinking
4- Independent thinking-strong design decision making
5- Ability of transforming information throughout design process
6- Student design culture & emotional connection with design

After analyzing the findings and the results of this phase, existing challenges were noticed by the researcher as summarized in the table below:

Table (1) Summary of Observation Data Analysis

1	Design Studio Learning Environment	2	Student Design Skills
	Teaching Style and Communication	■	Design Process Understanding
■	Feedback and Discussions	■	Creative Problem Solving
■	Student Verbal Skills presenting Ideas		Defining Project Problem
■	Students Written Skills for Presenting Ideas	■	Creating Concepts Process
	Design Project Schedule and Tasks	■	Design Decision Making
■	Useful use of Data Collection and Analysis		

■ Existing Shortcomings and challenges Noticed by the Researcher in Design Studio Sample (need to be addressed in this research)

4.2 Experiment Phase Two: Applying Storytelling

In this phase the researcher applied storytelling as learning and design tool. The goal is to create a storytelling culture in design studio environment. As storytelling in this research is a strategy of reflection and experience learning. The researcher divided the application of storytelling model into two part, one for learning purposes and the other to be used in design process.

- Model One: Teaching and Learning Model

The researcher designed a general teaching model built on literature readings and previous design tasks the Researcher conducted in other universities the Researcher taught design courses in. the model criteria are: (a) creating a design task that has a brief from a client, (b) the location of the project should be unified between all students, (c) the function of the project should be unified too, and finally (d) no architecture style should be forced on them . the reason behind unifying some of the major elements of

the design project, is it will give the juror and the student a fare judgment relating their design outcome by minimizing the changing factors. In this way, students will be forces to work harder to distinguish their project from each other , on the other hand, the tutors with the juror can focus more on the project design outline after passing a certain stage in the design process, and then they can compare between the outcomes for evaluation.

To evaluate the expected improvement of students, design skills, new questionnaire will be presented to them regarding their feedback at the end of the semester, and another questionnaire will be presented to juror members to fill after discussing each student in their final jury. The researcher here will have no input in any of these questionnaires or as a design juror in the final jury day.

- Model Two: in Design Process

It is important to point out the role of the researcher in design process will be minimized, the researcher will play the role of the listener and the students will be the storyteller. The researcher will give her opinion regarding if the student as a storyteller convinced her with their design reasoning and design decision. In this way, any undesired design culture transitions between the researcher and the student that might affect their creativity will be prevented. On the other hand, when the researcher minimize her involvement in design process to just follow up the development and just to insure that the students are in the right path within the process according to their stories choices, the students will rely on them self to finds design solutions and to take design decision, in this way they will be responsible for their designs and the final outcomes.

The researcher is interested in using storytelling as a design tool that helps in creating the object, not justifying it after it is finished. Storytelling should create the wow factor in the project and helps the students to reflects their design preferences, backgrounds, and values in clear messages and point of view regarding their community or culture. For the purpose of this researcher, the researcher will use Janice McDrury and Maxine Alterio (2003) the five-stage learning through Storytelling approach, which are: (1) story finding, (2) storytelling, (3) story expanding, (4) story processing, (5) story reconstruction. but, redefine these stages to be used within the design process and as a learning environment tool. Storytelling as a design tool will be added between programming and schematic design as it will generate project concept creation.

the researcher for this phase, focused on one sample of students from the previous sample of student in the observation stage. the chosen sample were 12 students of architecture design studio (04), in their second year, spring semester 2016-2017, English class. This group will be introduced indirectly to storytelling as an education tool by using an interactive approach. Students will be subject to design tasks and exercises that they will apply research theory in different stages of design process.

The final jury day was held after nearly two weeks, as each student presented full documentation and architectural works of their final product, and a model. The jurors were drawn from the faculty. The

researcher prepared a Questionnaire (2) for Design Final Jurors Feedback. The questionnaire consisted of 12 questions to be filled by jurors. It was intended to evaluate each student work and progress after his/her presentation to the jury. I did not fill out this questionnaire, nor was I part of the jury committee. Students Feedback after Applying Storytelling- Questionnaire (3) was prepared too, so that the researcher could record student reflections and evaluation regarding the use of storytelling in design studio. the questionnaire was filled based on informal conversations with students after they finished their jury presentations. This questionnaire consists of ten questions.

v. EXPERIMENT FINDINGS AND RESULTS

After finishing all research experiment phases, the researcher studied the results of questionnaire (01), (02) and (03) to detect if improvements occurred to student's design learning curve and design skills after applying Storytelling in design studio as a learning and design tool. To achieve this, the researcher conducts a comparison of questionnaires results between phases (before and after). As mentioned before, there are 6 factors to be evaluated before and after applying storytelling in design studio. any changes in results will affect the student level of improvement.

4.3. Understanding of Design Process

Understanding design process is important to improve student design skills. To evaluate progress for this factor, findings of (before / after) for questions: 1) Design Process Phases Order, 2) Information Analysis Benefits, 3) Starting with Project Related Ideas, are examine. Regarding understanding the design process order, before applying storytelling in class, 5 out of 12 students know the importance of moving from one phase to another in designing, and what to do in each phase. But after applying storytelling, 9 out of 12 understand the importance of following the order of design process, and to give each phase the proper effort especially in project design initial phases. This is connected to question (2) which is related to benefiting from project data and information they collect in the beginning of the design process.

Before the experiment, 7 out of 12 students did not benefit from the provided information and data they had when designing, and they didn't know how to use them and when. But after the experiment, 11 of 12 students, understood that provided data regarded any project should be collected, research and analyze in manners that will help them to achieve better design choices. And these data are important in all design process. Saying this, the third question is about starting design with proper idea or concept for the project. before only 4 of 12 students started design with a concept, but after applying storytelling, 11 of the 12 understand that when they start designing they should have clear, related design concept in the beginning of design process, as it what will keep them focus on what they are trying to create throughout the process.

Referring to these figures, an improvement in result can be detected related to students understanding of design process after applying storytelling in design studio, these improvements are reflected in the juror's feedback too. Students better understanding of design process order and how should they start the process and benefit from each phase especially in the initial stages, help them not to jump to design conclusion without studying and analyzing the different project merits like, clients demands, zoning laws, social fabrics,..., etc. and by using storytelling as a tool they combined these data with their personal feedback from actual experiences to guide them to create suitable design solution/ concept for any project task they might deal with in the future.

4.4. Critical Thinking

Referring to question about Enhancement of Creative Critical Thinking , only 3 out of 12 students knew the difference between an idea and a concept of design , as ideas usually are direct problem solving like the need to have direct connection between two spaces, concepts are connected to how this problem solution will be implemented in a way that is related to the design as a whole. This factor is connected to understanding of design process factor, especially regarding finding creative and proper concepts to work with at the beginning of the design process. By using storytelling as a tool to improve the learning environment in the studio, by becoming a tool to practice critical thinking by reflecting on research and analysis findings time after time, and each time to reconstruct these findings from different point of view will generate different outcomes of design.

After the experiment, 9 out of 12 knows the difference between an idea and a concept. This result shows they understand the relationship between an idea and a concept, were design concept is the tent that all the design ideas falls under it, and learned to understand collected data and research findings in a deeper level by reflecting repeatedly on them using different approaches, then try to look beyond what is in front of them until they build the final story structure . This improvement was noticed by the final jurors too. This factor is related to the next factor which is Creativity in Concept Finding

4.5. Creativity in Concept Finding

This factor is related to enhance student creativity toward design solution. As mentioned above in design process phases, the initials phases usually are the hardest ones because concept finding is within these stages. Students may get lost in this stage and might don't know how to find concept inspiration. Referring to Inspiration References question, 8 out of 12 students before the experiment their concepts -if found- was direct functional. This was reflected in tier jury discussion as they start explaining their design by pointing to construction elements and tier location in plans or elevation. Other students may present 3D sketches that has no connection to the project program or location.

connecting with the previous factor, using storytelling as a tool to practice critical thinking when approaching design problem-solving give them the chance to look for inspiration from different sources

related to their project like program, location, social and cultural elements, user, myths, etc. this is reflected in Thinking Outside of The Box question findings after the application, 11 out of 12 students found that practicing story finding can help in concept finding. We don't want them to literally copy/ paste what they found, but to reconstruct their findings in a creative way, and to push them self to think out of the box. Applying storytelling help to do this, as Originality of Concepts question finding shows that 9 out of 12 students agreed that using storytelling in design process helped them to think in broader ways to create their design concepts, and these concepts has some originality to them, as they reflect what they understand from the collected data and ideas, but had the chance to reflect their personal preferences into the design without losing the project original purposes and values. These analyses agreed with the improvement percentage from jurors.

4.6. Independent Thinking and Design Decision Making

This factor has connection to improve design skills for architect design students. After the student learn how to find a concept and from where, then to reflect his/ her experience in it, they become more aware why they chose their design concepts, as Concept Selection Process question findings shows that 10 out of 12 students benefit from using storytelling to advance this skill.

When student have clear concept statement, they can defence their design solutions in front of juries or to their colleagues in clear and simple sentences verbally or written , as Strong Decision Making question findings shows, because they learn to take design decisions throughout the design process by keeping referring to their final story and emotions that created the concept statement. The improvement in this factor was noticed by jurors in the final jury day, each student was responsible to present design concept and design development and decision by them self without any help from their teacher.

4.7. Ability of Transforming Information

The ability of transforming information in a coherent manner between stages is one of many ways to improve the learning in design studio. Student ability to move from the verbal and written presentation of concepts to physical design elements and configuration is a long process to master, but using storytelling help them to start learning this skill. Coherent Manner Throughout Design Process question and Successful Transformation of Concept Between phases questions findings shows, keeping expressing the story they created in different stages with different mediums deepened student understanding of her/his concepts merits and unique characteristics, then to choose the proper references or design compositions. This was a good improvement for student design skills as before the experiment only 3 out of 12 students know how to do this, but after the experiment 10 out of the 12 learned how to so. This improvement can be sense from juror feedback as most of the final designs output can be traced back to the beginning of the design process.

4.8. Student Design Culture & Emotional Connection with Design

This factor connected to enhancing student creativity, as mentioned in previous factors, the idea of using storytelling in as design tool to achieve a level of emotional connection between students and their designs. These emotion connections are built on students experience regarding an event related to the project and their personality as designers. Question about Student Design Culture Reflection shows that before the experiment, 9 out of 12 students had no emotional connection to their designs and they didn't think it reflect them as designer. As they learned how to reflect their experiences and personality with project findings and data analysis, 8 out of 12 managed to build a level of emotional connection with their designs, and as teachers we could sense their designer's personality in their design's outputs. Another advantage of this factor is, emotional connection between student and her/his design make them aware of their design decisions and can do it by them self because these designs reflect their preference.

DISCUSSION

As shown in experiment findings and results chapter, applying storytelling as a design tool between programming and schematic design phases has proved this method to leave a positive impact and significant improvement on student design skills. A written illustration of this improvement can be sensed from the moment students go on a site visit and collect information about the project site. Each student has their own personal interpretation of the site information based on their previous experiences and preferences. This interpretation combined with the experience resulted in an initial story board in their mind. These stories kept developing and evolving into better stories until one final story is focused on for next step of design. Building up stories each time gives the students a space for critical thinking as they are introduced to different beginnings and endings of their stories. Critical thinking gives the student the ability to see the prospect design from different angles and in peer-review feedback. On a personal level, students learned how to collaborate with peers and classmates as storytelling requires engagements with the surroundings. Communication with the teacher and structuring feedbacks has become more effective. This in combination with the student emotional and cultural input will later widen student's imagination to create design concepts that reflect the project site and information.

As the concept and story develop, students became critically attached to their designs. They start to independently criticize what they do and make better decisions when they are encountered with a problem. It will also develop their ability to transform their ideas into both digital and verbal presentations which will result in a more profound submission. Eventually, and this is a very important note of the process, students learn step by step how their concept, design process and development are being taken care of from the early stages of design until the final submission. This eliminates any unexpected or unwanted problem at the submission phase. Thus, they become more confident and aware of what they do when confronted with a jury or third party.

Constraints limited the results of the experiment that both the teacher and students had no take on it such as the project program sector, site location level of complexity, experiment time, students' academic level and other minor restrictions that can be dealt with in later experiments which the researcher highly recommends.

In overall, this experiment has proved storytelling to be an effective learning tool in design studio classes, among other tools, that can help students gain efficient learning, meaningful learning, deeply understand the design process, collaborate and interact.

CONCLUSION

Implementing storytelling in design studio learning was achieved in two ways; The first way as a reflection and experience learning environment strategies, were the interaction between the tutor and architecture students in the class takes the roles of teller/ listener to transition knowledge and ideas between them. And students to play the role of the teller to reflect on their experiences that is related to design task to achieve deeper level of learning by achieving emotional connection. The other way is to apply storytelling in design studio as a step within design process; after site visit and data collection and before concept statement. Students can learn concept finding or creating by applying the five steps of storytelling, this help them to understand better their concepts merits to be able to make better design decisions regarding their projects and to be independent by donning so.

In reference to the case study findings and results:

1- An improvement can be seen in students design skills and their learning, they become more aware of the importance of connecting with their surroundings and project environment, to use these connections to create concepts and designs which are unique by relating the project matrix like social and cultural context, clients or users' requests, regulation…etc. with their experiences and stories.
2- By using storytelling to find unique design concepts, students understood the importance of moving from one phase to other in order, especially the initials phase which conclude data collection, site visiting, project programming and research to avoid jumping into conclusion
3- Another skill improved by using storytelling is transitioning these information and decision throughout the design process. By doing so, they became more independent in their design decisions and more confident about it, the role of the teacher was to supervise more than interfering.

RECOMMENDATIONS

Although this study was conducted in one university, it is hoped to be part of a continuous journey that will contribute to the development and improvement of education in architecture not only in

this institution, but also in other universities as well as other faculties. I hope this research will build a model study for other scholars to adopt and to lead more researches in the future. Many architectural institutions are eager to conduct similar studies where students are examined directly and researcher qualitatively on the topic of design studio improvement.

The researcher suggests the experiment to be (1) conducted in other universities, modification of how to apply the technique can be done accordingly to its needs and conditions, (2) research to be done in other design related sectors like interior design , and (3) a third party to cross examines the results. The researcher also recommends that this research to be applied to earlier design studio classes. The more experiments to be conducted, the better the results are to be confirmed.

REFERENCES

- !!!Corona-Martínez, A., & Quantrill, M. (2003). The Architectural Project. College Station, TX: Texas A&M University Press.
- Adams, J. L. (1986). Conceptual blockbusting: A guide to better ideas. Cambridge, MA: Perseus Publishing.
- Boud, D., Keogh, R., & Walker, D. (1985). Reflection: Turning Experience into Learning. London: Routledge.
- Box, H. (2007). Think like an architect. Austin, TX: University of Texas Press.
- Braskamp, L. A. (2000). Toward a More Holistic Approach to Assessing Faculty as Teachers. In K. E. Ryan, Evaluating Teaching in Higher Education: A Vision for the Future (pp. 19-33). San Francisco: Jossey-Bass.
- Bu., B. (2017, Aug 16). Storytelling in Design. Retrieved from Muzli - Design Inspiration: https://medium.muz.li/storytelling-in-design-6ca275068f32
- Centra, J. A. (2000). Evaluating the teaching portfolio: A role for colleagues. New Directions for Teaching & Learning, 2000(83), 87-94. doi:10.1002/tl.8307
- Cleempoel, K. V. (2003). Report on the sixth meeting of heads of school of architecture in Europe. In C. S. Voyatzaki, Shaping the European Higher Architectural Education Area (pp. 13-23). EAAE.
- Corona-Martínez, A., & Quantrill, M. (2003). The architectural project. College Station, TX: Texas A&M University Press.
- Cowdroy, R. (2000). Point zero. In S. Hanrot, Research and architecture (pp. 23-35). Paris, France: Art of text S.A.
- Curran, K., & Kearney, J. (2012). Introduction. Criticism, 54(3), 353.
- Decker, A. (2019, June 22). The Ultimate Guide to Storytelling . Retrieved from HubSpot : www.blog.hubspot.com/marketing/storytelling

- Entwistle, N. (1996). Recent Research on Student Learning and the Learning Environment. In P. Knight, & T. Jo (Eds.), The Management of Independent Learning (pp. 79-112). London: SEDA/Kogan Page Limited.
- Fisher, T. R. (2000). In the scheme of things: Alternative thinking on the practice of architecture. Minneapolis, MN: University of Minnesota Press.
- Fox Eades, J. M. (2006). Classroom Tales: Using Storytelling to Build Emotional, Social and Academic Skills across the Primary Curriculum. Philadelphia: Jessica Kingsley.
- Fry, H., Ketteridge, S., & Marshall, S. (2003). A Handbook for Teaching & Learning in Higher Education. London: Kogan Page.
- Grillner, K. (2000). Ramble, Linger, and Gaze: Philosophical Dialogue and Architectural Research. In S. Hanrot, Reaseach and Architecture (pp. 205-220). Paris: EAAE.
- Habraken, J. N. (2003). Questions That will not go away: Some remarks on long-term trends in architecture and their impact on architectural education. In C. Spiridonidis, & M. Voyatzaki, Shaping the European higher architectural education area (pp. 32-41). Greece: EAAE.
- Habraken, J. N. (2003). Questions That will not go Away: Some Remarks on Long-Term Trends in Architecture and Their Impact on Architectural Education. In C. Spiridonidis, & M. Voyatzaki, Shaping the European Higher Architectural Education Area (pp. 32-41). Greece: EAAE.
- Hargrove, R. A. (2007). Creating creativity in the design studio: Assessing the impact of metacognitive skill development on creative abilities. Raleigh, NC: North Carolina State University.
- Iyer, A. G. (2018, July 16). Classification of the Approaches to Learning Adopted by Students of Architecture in Their Design Coursework. Welsh School of Architecture: Cardiff University.
- Jones, C. (1961). Architecture today and tomorrow. New York, NY: McGraw-Hill.
- Kahvecioğlu, N. P. (2007). Architectural design studio organization and creativity. Istanbul, Turkey: Istanbul Technical University Faculty of Architecture.
- Lueth, P. L. (2008). The architectural design studio as a learning environment: A qualitative exploration of architecture design student learning experiences in design studios from first- through fourth-year. Ames, IA: Lowa State University.
- Lueth, P. L. (2008). The Architectural Design Studio as a Learning Environment: A Qualitative Exploration of Architecture Design Student Learning Experiences in Design Studios from First-Through Fourth-year. Ames, Lowa: Lowa State University.
- McDrury, J., & Alterio, M. (2003). Learning through storytelling in higher education: Using reflection & experience to improve learning. London, England: Kogan.
- McDrury, J., & Alterio, M. (2003). Learning Through Storytelling in Higher Education: Using Reflection & Experience to Improve Learning. London: Kogan.

- Moon, J. A. (1999). Reflection in learning and professional development. London: Kogan Page Limited.
- Ory, J. C. (2000). Teaching Evaluation: Past, Present, and Future. In K. E. Ryan, Evaluating Teaching in Higher Education: A Vision for the Future (pp. 13-18). San Francisco.: Jossey-Bass.
- Piotrowski, A., & Robinson, J. W. (2001). The discipline of architecture. Minneapolis, MN: University of Minnesota Press.
- Saeid, M. A. (2001). The design process in architecture- A pedagogic approach using interactive thinking. Leeds, West Yorkshire: University of Leeds.
- Saeid, M. A. (2001). The Design Process in Architecture- A Pedagogic Approach Using Interactive Thinking. Leeds, West Yorkshire: University of Leeds.
- Salama, A. M., & Wilkinson, N. (2007). Design Studio Pedagogy: Horizons For The Future. Gateshead: The Urban International Press.
- Schön, D. A. (1983). The Reflective Practitioner: How Professionals Think in Action. New York: Basic Books Inc.
- Thévenaz , P. (1962). What Is Phenomenology?And Other Essays. Chicago: Quadrangle Books.
- Wasserman, B., Sullivan, P., & Palermo, G. (2000). Ethics and the practice of architecture. New York, NY: Wiley.
- Wiggins, G. E. (1989). Methodology in Architectural Design. Massachusetts Institute of Technology.
- Wiggins, G., & McTighe, J. (2005). Understanding by Design. Alexandria, VA: Association for Supervision and Curriculum Development.