

Academic Excellence in Architectural and Design Education

Strategic
Framework
& Guidance

Version 1

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Introduction



A&D Academic Development Initiative

As part of the Architecture and Design Commission's (ADC) commitment to developing the Architecture and Design (A&D) sectors, we embarked on an initiative to foster excellence in academia in A&D programs across the Kingdom's universities. The initiative, referred to as "Architecture and Design Academic Development," is centered around the nurturing of excellence in local academic programs through a strong educational foundation so that it can compete with international counterparts, develop the A&D sub-sectors through enabling the academic educational programs, and create a learning ecosystem that provides equal opportunities for students and academics.



The Analysis

To achieve the initiative's objectives, the Commission developed a comprehensive analysis of the current state of the A&D educational landscape through conducting field visits to A&D with Saudi universities and benchmarked some of the world's top academic programs and academic accreditation institutions to identify best practices within the A&D fields.

The activities of the analysis phase covered several areas of inquiry as follows:



Current State Assessment

- Visiting A&D programs in a sample of six universities to understand the current state of academic excellence and academic accreditation.
- Interviewing faculty members, program's administrators, students, and alumni.



Benchmarking Best Practices

Seven international A&D academic programs in five different countries.

1. Massachusetts Institute of Technology – Bachelor of Science in Architecture.
2. TU Delft – Bachelor of Science in Architecture.
3. National University of Singapore – Bachelor of Landscape Architecture.
4. UCL The Barlett School of Planning – Bachelor of Science in Urban Planning.
5. University of the Arts London – Bachelor of Art in Interior Design.
6. Parsons The New School – Bachelor of Fine Arts in Graphic Design.
7. RMIT University - Bachelor of Industrial Design.

Six pioneering accreditation entities in the A&D field.

- 1.** National Architecture Accreditation Board (NAAB).
- 2.** Council for Interior Design Accreditation (CIDA).
- 3.** Landscape Architecture Accreditation Board (LAAB).
- 4.** Planning Accreditation Board (PAB).
- 5.** National Association of Schools of Art and Design (NASAD).
- 6.** Royal Institute of British Architects (RIBA).

As the analysis unfolded, unveiling gaps and opportunities within A&D Academic Programs in the Kingdom, the importance of having a guide that can steer A&D programs toward excellence became evident—particularly in areas such as leadership, making change, gaining international accreditation among other relevant matters. In response to the identified challenges and opportunities, the Architecture and Design Commission started working on the “Excellence in Architectural and Design Education Guide.”, positing it as a compass guiding A&D programs towards excellence.

ADC team have collaborated with renowned architect, researcher, and educator Professor Ashraf Salama who is the Head of Architecture and the Built Environment at the University of Northumbria at Newcastle, United Kingdom, and the Co-Director of the UIA Education Commission and the UNESCO – UIA Validation System at the International Union of Architects (UIA) in Paris, France. Professor Salama has published over 200 outputs in the international refereed press, authored and co-edited more than 17 books on design pedagogy, architectural education and various aspects related to Gulf cities.

After ADC's team aligned with Professor Salama on the main components of the guide based on previous findings from the initiative, the guide was initially designed and developed by him in collaboration with ADC's team. The first draft of the guide was presented to a group of faculty members and administrators in several A&D Academic Programs in the Kingdom's Universities and their feedback was incorporated into the guide to accommodate the challenges the programs are facing. Moreover, a virtual workshop was held with a group representatives from A&D programs on the most recent version of guide to gain their insights on the topics/sections the guide has addressed and whether the guide is clearly reaching its audience and achieving its key objectives. The participants provided their comments and feedback regarding the implementation of the guide which were taken into consideration when developing the final iteration of this version of the guide.

We believe that this is more than a guide; it's a call to action, an invitation to join us in shaping the future of A&D education in the Kingdom of Saudi Arabia. Welcome to a journey where excellence becomes the norm!



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Executive Summary

The Saudi Arabian educational system in architecture and design has evolved over the past five decades into a well-established system of higher education institutions, providing high-quality programs, departments, and colleges that offer various undergraduate, postgraduate, and colleges that offer various undergraduate, postgraduate degrees. As stated by the national policy, the main goal of education in general is to fulfill the Kingdom's needs while also reflecting cultural practices and social norms. Thus, higher education institutions of architecture and design have been afforded special attention since the 1970s, when an era of rapid development and major growth took place in the country.

Historically, the Kingdom has developed a well-established foundation in architectural education, with its origins dating back to the establishment of the first "architecture engineering" program in 1967 at King Saud University (KSU). Initially integrated within the College of Engineering, the program underwent a significant transition within a year, shifting its focus exclusively to architecture. Subsequently, in 1983/1984, it became an integral part of the College of Architecture and Planning. This pioneering initiative paved the way for the development of architectural education in the Kingdom.

Following the success of the provision of architectural education at KSU, other esteemed institutions also recognized the importance of architectural education. King Abdulaziz University in Jeddah (KAU), King Faisal University in Dammam (KFU)- Imam Abdulrahman Bin Faisal University now, and King Fahd University for Petroleum and Minerals (KFUPM) took notable steps forward by establishing their own architectural programs in 1975 and 1976. These institutions played a crucial role in expanding the scope of architectural education in the Kingdom and nurturing a new generation of skilled architects.

In 1983, Umm Al Qura University (UQU) contributed to the architectural education landscape by founding the Department of Engineering and Islamic Architecture as part of the College of Engineering and Applied Sciences. Subsequently, in 1989, the department underwent a name change to become the Department of Islamic Architecture. This department aimed to provide a specialized focus on the intersection of architecture and Islamic principles, following the UQU mission.

Collectively, with some variations, these educational institutions adopted the American model of architectural education, which encompassed a comprehensive five-year program divided into three stages: the introductory stage, the intermediate stage, and the professional stage. This structure ensured a well-rounded education that covered both theoretical knowledge and practical skills, preparing students for successful careers in architecture.

In addition to architectural education, these colleges at KSU, KFU, and KFUPM also integrated urban planning departments, into their provisions . Furthermore, landscape architecture programs were offered exclusively at KAAU and KFU. Over the past three decades, these programs have undergone regular periods of modifications and upgrades to ensure their alignment with the evolving industry standards and practices.

Recognizing the importance of design education, interior design and graphic design, as separate disciplines were introduced as vital components of the provision in several universities during the late 1990s and early 2000s. These additions expanded the scope of design education and provided students with comprehensive training in multiple design disciplines. Notably, industrial or product design represents a recent addition that took place over the past decade or so.

In response to the growing demand for higher education in architectural and design disciplines, the provision of architectural and design education expanded beyond government universities to private universities in the 2000s. This expansion aimed to cater to the increasing needs and aspirations of individuals from all sectors of society, as well as fulfill the workforce requirements in these dynamic fields.

In summary, the Kingdom's architectural education. The inclusion of planning and urban studies, landscape architecture, interior design, and graphic design in various colleges of architecture and design reflects a commitment to comprehensive design education in the creative, construction, and built environment fields. With the transition to private universities, the Kingdom has responded to the evolving demands for higher education in these disciplines, fostering a vibrant and competent pool of architects and designers to meet the needs of society and the workforce.

With a new fast-track development process in recent years toward achieving the Kingdom's Vision 2030, many institutions are advancing their curricula, updating their infrastructure, and attracting and retaining high-caliber academic staff to educate the best talents in architecture and design disciplines. This represents a great opportunity to advance the discussion on improving current curricula in architecture and design, infrastructure and physical resources, and academic staff and human resources. Consequently, this document presents a strategic framework and guidance towards fostering a culture of excellence in architectural and design education. It aims to provide a lens through which leaders and decision-makers in colleges and schools of architecture and design, as well as mid-career and early-career academics, can capture key aspects of excellence towards further enhancements and improvements.

Education in architecture and design disciplines is the cornerstone of the design professions that make major contributions to shaping the built environment of today and of the future. Hundreds of design educators in the Kingdom of Saudi Arabia are involved in teaching activities on a daily basis and have chosen their careers to nurture future designers and budding professionals. However, despite this dedication, there has been a glaring shortage of awareness of the changing focus of pedagogy in architecture and design and the scholastic endeavors involved in remedying this.

There has been a lack of clearly expressed understanding of the progressive aspect of teaching methods in design and its current state both globally and within the Saudi context. Due to recent concerns about outdated, unchanging, and rigid teaching approaches in architecture and design within higher education, there are fresh possibilities for educators in these fields. They can seize the opportunity to renew and strengthen their programs to improve the overall quality of education.

Discourse on architectural and design education typically concentrates on fragmented or disconnected topics, often approached through subjective criticism or incomplete and untested solutions. Instead, it is crucial for educators and decision-makers to shift their focus toward examining the broader context surrounding these issues.

Design education provides a rich and fertile field for discussions, one that can help provide a discerning insight into aspects of theoretical and practical discourse while enhancing excellence. Towards achieving a culture of excellence, this strategic guide presents architectural and design education as a series of paradigms whose evolutionary processes, underpinning theories, content, methods, and tools have been critically probed, examined, and evaluated in the recent body of knowledge in the field.



This guide encompasses five key sections that feature a comprehensive discussion on key aspects of excellence in architectural and design education, readily acknowledging the design studio as the principal pillar of that education and as the main forum not only for creative exploration and interaction but also for knowledge acquisition, assimilation, reflection, production, and reproduction. The guide is structured around a series of themes, each of which instigates a discussion in response to a set of clearly outlined themes:

- A Culture of Excellence
- Stewards of Excellence
- Components of Excellence
- Enhancing Excellence
- Overview of Selected International Standards for Achieving Excellence



The first section, **Towards a Culture of Excellence in Architecture and Design Disciplines**, addresses the key qualities of excellence and how they can be achieved. Setting the stage for a culture of excellence, it argues that in today's rapidly changing academia, critical thinking and inquiry, creativity and innovation, research and investigation, collaboration and civic engagement, and environmental awareness and technical competence are increasingly valued and are now being viewed as salient and integral qualities of contemporary pedagogy in architecture and design. Yet, for these qualities to be fostered, enhanced, and practiced effectively in the Saudi context, an all-inclusive recognition of the value of architecture and design disciplines, the higher education institutions that underpin them, and what they offer to the intellectual and professional life of the Kingdom is needed. The key message of this section is that the development of a culture of excellence requires carefully looking at the pedagogical and disciplinary levels of excellence.



The second section, **Stewards of Excellence in Schools and Colleges of Architecture and Design**, focuses on leadership in higher education and the significant role it plays in establishing parameters of excellence. In schools of architecture and design, there are models of leadership that can be followed with a focus on operational, organizational, transformational, and pedagogical aspects. Within these models, there are best practices that can be pursued for an effective learning environment characterized by a robust vision, an established quality, and a learning culture of common values. Likewise, faculty members and teaching assistants, as stewards of excellence, should be seen as active participants with leadership in the effective management of schools of architecture and design. However, mentoring programs and continuing professional development (CPD) both in the relevant disciplines as well as in advanced pedagogical practices are indispensable for an effective contribution to the governance of colleges and schools of architecture and design. The section maintains that best practices always manifest when shared governance, effective coordination, and the development and implementation of roles and responsibilities take place in colleges and schools of architecture and design.



The third section, **Components of Excellence in Schools and Colleges of Architecture and Design**, argues that fostering a culture of excellence coupled with effective leadership requires a comprehensive understanding of key components pertinent to teaching, learning, and the production of knowledge. While components vary across various areas of focus within architectural and design education, there are key elements that need to be outlined. The profile of the curriculum, together with its structure and content, the relevant students' admission policies, the support administrative structure, and the physical resources, including the design studio as a place for design and critical inquiry, and laboratories and software, all play vital roles in shaping the culture of excellence. The section establishes that the production of knowledge and the engagement with construction and creative industries through a robust integration with teaching and learning are critical aspects that would instigate a productive learning community not bound by the physical setting of the university campus.



The Fourth Section, **Enhancing Excellence in Architectural and Design Education**, is premised on the need for best practices and learning approaches for knowledge delivery and production. The identification of best practices adopted by colleges and schools of architecture and design worldwide generates a lively and focused discussion on how excellence in teaching and learning can be nurtured and supported through effective pedagogical practices. The section places emphasis on key learning approaches that are important to identify, debate, adopt, and adapt. In essence, key best practices demonstrate relevant differentiation between knowledge production and knowledge consumption, a unique distinction inherited in architecture and design teaching and learning. Aspects of inquiry-based, experiential, and active learning are important practices that put students, as future architects and designers, at the heart of teaching and learning processes. Trans-disciplinarity, authentic learning, and collaborative pedagogy ensure excellence in tackling the fragmented nature of knowledge in architecture and design. Particularly, relating and reacting positively to international guidance on key developmental aspects such as the United Nations Sustainable Development Goals and Heritage Conservation should be treated as guidance to strengthening excellence in architectural and design education, which is reflected in the knowledge content and the nature and type of projects undertaken by architecture and design students.



The Fifth Section, **Overview of Selected International Standards for Achieving Excellence in Architectural and Design Education**, provides glimpses of key accreditation agencies and their commitment to excellence in education and research in their respective disciplines.

The section demonstrates that academic accreditation is a quality assurance process under which programs of educational institutions are assessed and verified by an external body to determine whether applicable and recognized standards are satisfied. In the architecture and allied design fields, accreditation is a quality assurance scheme for programs in various areas. Some of the accreditation agencies are linked to or associated with professional organizations while others places emphasis on the quality of teaching and learning irrespective of the professional focus. The overview of accreditation in this section is not to provide an exhaustive list of all possible accreditation agencies that validate or accredit architecture and design programs but to demonstrate the key values, approaches, and aspects of a selection of important organizations that have the authority to monitor quality towards maintaining benchmarking standards.

Key Messages

The recognition of the diverse landscape of schools of architecture and design in the Kingdom of Saudi Arabia sets the stage for a significant endeavor: **to establish a culture of excellence in architectural and design education**. This goal requires a comprehensive guide that serves as the foundational resource for enhancing, articulating, and implementing this culture of excellence. Such a guide would play a pivotal role in unifying the efforts of educational institutions, faculty members, and students toward a shared vision of excellence in architectural and design education. It provides a framework for fostering innovation, creativity, and critical thinking within the field while also emphasizing the importance of technical proficiency and practical skills.

In this guide, **key principles and best practices** are outlined to demonstrate the highest standards of education in architectural and design disciplines. It delves into various aspects, including curriculum development, pedagogy, faculty development, research opportunities, and industry collaborations.

Curriculum development is a central focus, as it forms the backbone of any educational program. The guide encourages schools of architecture and design to develop curricula that are holistic, interdisciplinary, and future-oriented. It advocates for the inclusion of courses that address emerging challenges in the field, such as sustainable design, digital technologies, social equity, cultural preservation, and health and wellbeing. Moreover, the guide emphasizes the need for a balance between theory and practice, encouraging hands-on experiences, research-based design studios, and real-world projects.

Pedagogy is another crucial aspect addressed in the guide. It promotes student-centered approaches, fostering active learning, critical inquiry, and collaborative problem-solving. The guide also advocates for innovative teaching methods, including project-based learning, experiential learning, and the integration of emerging technologies. Additionally, it emphasizes the importance of mentorship and guidance, creating a supportive environment where students can thrive and develop their unique talents.

Faculty development is underscored as a key element in cultivating excellence. The guide stresses the importance of attracting and retaining highly qualified faculty members who possess a combination of academic expertise and professional experience. It encourages continuous professional development opportunities for faculty members, including research grants, conferences, workshops, and industry partnerships. By fostering a culture of lifelong learning among faculty, schools of architecture and design can stay at the forefront of advancements in the field and effectively impart knowledge to their students while enabling them to develop ethical positions.

Research discussions are given prominence in the guide, as research is integral to the advancement of architectural and design knowledge. It encourages schools to establish research centers or institutes that focus on relevant areas of inquiry, enabling faculty members and students to contribute to the body of knowledge through scholarly publications, design innovations, and technological advancements. The guide also advocates for research collaborations with industry and practice partners, fostering a mutually beneficial relationship that drives innovation and prepares students for the demands of the professional world.

Furthermore, the guide emphasizes the importance of **collaboration and engagement with design practices**, encouraging schools to establish strong connections with professional organizations, architectural firms, design studios, government agencies, and community stakeholders. These collaborations would provide students with practical experiences, internships, and mentorship opportunities while bridging the gap between academia and practice.

In conclusion, the guide to **enhancing excellence in architectural and design education** in the Kingdom of Saudi Arabia would serve as a fundamental resource, providing a roadmap for schools of architecture and design to cultivate a culture of excellence. By focusing on curriculum development, pedagogy, faculty development, research opportunities, and industry collaborations, this guide would pave the way for a transformative educational experience that prepares students to become innovative and ethical practitioners in the field.

How To Use the Guide?

The following matrix demonstrates the relevance of each section of the guide to various types of users or individuals involved in managing, teaching and research, and support activities in a school of or program of architecture or design. Perceived levels of engagement are mapped to each section ranging from mindset building and strategic direction, to competence and efficiency, understanding, and awareness.

user	Chapter 1 Culture of Excellence	Chapter 2 Stewards of Excellence	Chapter 3 Components of Excellence	Chapter 4 Enhancing Excellence	Chapter 5 Values of Excellence
Academic Leaders Deans, Chairpersons, Quality Assurance Unit Heads	Highly Significant	Highly Significant	Highly Significant	Moderately Significant	Highly Significant
	Mindset Building	Competence	Competence	Understanding	Strategic Direction
Senior Academics Full Professors Associate Professors	Moderately Significant	Highly Significant	Highly Significant	Highly Significant	Highly Significant
	Understanding	Competence	Competence	Competence	Competence
Early-career Academics & Professionals Assistant Professors Lecturers Teaching Assistants	Moderately Significant	Moderately Significant	Highly Significant	Highly Significant	Highly Significant
	Understanding	Understanding	Competence	Competence	Competence
Admin and Support Lab Technicians Secretarial/ Admin Support	Slightly Significant	Moderately Significant	Highly Significant	Moderately Significant	Highly Significant
	Awareness	Understanding	Competence	Understanding	Understanding

01

Towards a Culture of Excellence in
Architecture and Design Disciplines



1

Towards a Culture of Excellence in Architecture and Design Disciplines

In today's rapidly changing academia, critical thinking and inquiry, creativity and innovation, research and investigation, collaboration and civic engagement, and environmental awareness and technical competence are increasingly valued and are now being viewed as salient and integral qualities of contemporary pedagogy in architecture and design.¹

For these qualities to be fostered, enhanced, and practiced effectively in the Saudi context, an all-inclusive recognition of the value of architecture and design disciplines, the higher education institutions that underpin them, and what they offer to the intellectual and professional life of the Kingdom is needed. This would warrant the development of a culture of excellence both at the pedagogical and disciplinary levels.

¹(Salama, 2015)

²(Teaching Excellence Framework (TEF), 2016)

This section responds to the following questions:

1

How can pedagogical excellence be developed?

2

How can schools and colleges of architecture and design raise the profile of excellence?

3

How can excellence be enabled at the individual level?

4

What are key values that could be embedded in achieving design excellence?

1.1

Pedagogical Excellence

Colleges and schools of architecture and design should strive to achieve excellence in their programs across the following three levels:

- Developing Excellence
- Raising the Profile of Excellence
- Individual and Academic Excellence



1.1.a Developing Excellence:

Colleges and schools of architecture and design should demonstrate commitment to and the impact of ongoing professional development regarding teaching, learning, and learning support. This should be evidenced through:

- Continuously reviewing and enhancing teaching, learning, and assessment practices through periodic reviews undertaken at departmental or college levels.
- Continuously engaging their faculty and academic staff members in professional development activities that enhance their expertise in teaching and learning support. This may include developing a career plan with key milestones reviewed annually while benchmarking their work and performance in relation to others.
- Continuously making concerted efforts that enable significant improvements in students' learning outcomes and experiences. This is reflected in the actual course delivery, which is demonstrated by the teaching quality and students' feedback.



1.1.b Raising the Profile of Excellence

Colleges and schools of architecture and design should demonstrate commitment to enabling their faculty and academic staff members to influence student learning and advance pedagogy in higher education. This should be evidenced through:

- Enabling senior faculty to make outstanding contributions to their junior colleagues' professional development in relation to promoting and enhancing student learning. This is achieved through various mechanisms that include mentoring programs, joint teaching, and continuous guidance.
- Requiring their faculty members to contribute to departmental, college, institutional, and national initiatives that facilitate and positively impact on students' learning. Instilling a sense of community would be indispensable to maximizing contributions.
- Enabling their faculty members to work on supporting meaningful and positive change with respect to pedagogic practices and emerging trends in teaching and learning. This is achieved by introducing academic development programs that provide inspiration for innovative pedagogies.



1.1.c Individual Academic Excellence

Colleges and schools of architecture and design should demonstrate commitment to inspire their faculty members to contribute to enhancing and transforming student outcomes and to demonstrate impact relevant to the individual faculty and university context and operations. This should be demonstrated and evidenced through:

- Stimulating students' inquisitiveness and interest in ways that inspire a commitment to learning. Various forms of learning and pedagogical approaches are outlined in Section 4 of this guide.
- Organizing and presenting high-quality resources in accessible, coherent, and imaginative ways, which in turn clearly enhance students' learning.
- Recognizing and actively supporting the full diversity of student learning requirements. This involves the recognition that students have different capacities and learn differently.
- Drawing upon the outcomes of relevant research, scholarship, and professional practice in ways that add value to teaching and students' learning. This could be achieved by linking learning to real-life situations, as outlined in the various approaches and learning strategies discussed in Section 4.
- Engaging with and contributing to the established literature or to the individual faculty's own base for teaching and learning. This means having a strong commitment to teaching and learning and becoming a pedagogue.
- Various ways and examples to achieve academic excellence can be envisaged; these include: professional development in understanding and practicing new forms of pedagogy; instigating annual events focused on pedagogical practices and organized jointly by academics and students; and developing students-led events where they can reflect on their learning and generate recommendations to departments and colleges leaderships.

1.2

Architecture and Design Excellence

At a disciplinary level, the term 'Design Excellence' is often used to define the expected or required level of design quality of a design project or a completed building or product. It should be viewed as "... the highest standard of architectural, urban and landscape, product design..."³ In essence, design excellence describes a spectrum of requirements aimed at enhancing design quality.

Broadly, the Arab world and the Gulf region, including the Kingdom of Saudi Arabia, are facing complex challenges that threaten every aspect of life. The architect's and designer's call to develop a quality design that recognizes the needs and abilities of users and that protects the health, safety, and welfare (HSW) of the public has a significantly wider meaning in the context of contemporary challenges, such as increasing social inequity, climate change, migration, desertification, and natural disasters and displacement.

Colleges and schools of architecture and design must recognize that the architecture and design professions can employ the power of design to contribute to solutions addressing the most significant needs and challenges witnessed in recent years and that this must be reflected in how teaching and learning are undertaken in the academic setting.

Every educational project in architecture and design can be utilized as a platform for addressing and debating key challenges and providing creative solutions. Every line drawn, manually or digitally, should be conceived with a view to its social, environmental, and economic implications.

The American Institute of Architects (AIA) has developed a Framework for Design Excellence that represents the major principles of design excellence in the 21st century. In the context of this guidance, this framework is adopted and adapted to reflect the unique particularities of the Saudi context.

³(Government Architect–New South Wales, 2023)



1.2 a Framework for Design Excellence

Embraced by ten values, the Framework seeks to inform progress toward a zero carbon, equitable, resilient, and healthy built environment. Irrespective of the scale or nature of the project, building or product, client requirements, or the type and use of the building, the Framework is pertinent to every educational project in architecture and design.

1.The value of integration

design should elevate any project with a thoughtful process that delivers beauty, function, and cost in balance.

2.The value of equitable communities:

design solutions affect more than the client and current occupants; they should make positive impacts on future users and the wider social and environmental context

3.The value of ecosystems

design should mutually benefit human and nonhuman inhabitants; it should offer solutions that do not compete with nature but complement nature.

4.The value of water

design should conserve and improve the quality of water as a precious and priceless resource, given the costs of desalination in the Saudi context.

5. The value of economy

design should add value for owners, users, the community, and the planet, irrespective of the project size/scale and of the budget.

6. The value of energy

design should reduce energy use and eliminate dependency on fossil fuels; it should improve building performance, function, comfort, enjoyment, and overall use.

7. The value of health and well-being

design should support health and well-being for all people, considering physical, mental, and emotional impacts on building users and the surrounding context.

8. The value of environmental resources

design should be based on an informed and careful selection of materials. It should balance priorities to achieve durable, safe, and healthy projects with an equitable, sustainable supply chain to minimize negative impacts on the planet.

9. The value of flexibility

design should consider adaptability to change, resilience, and reuse as essential qualities; it should aim to enhance usability, functionality, and value over time.

10. The value of precedents

every design activity should be seen as an opportunity to apply lessons learned from previous projects; it should be preceded by research, gathering relevant information on past successful and unsuccessful experiences.



1.2.b Applicability of the Framework to Graphic and Industrial Design

In graphic design, the principles of design excellence and the values derived from the built environment realm can be extended to create impactful visual messages that promote environmental consciousness and community well-being. Students working on graphic design projects should strive to incorporate these values into their work, focusing on themes such as ecosystems, water conservation, responsible consumption and production, and the health and well-being of communities.

The visual messages conveyed through graphic design projects should aim to inspire positive behaviors and attitudes toward the environment and local culture. This can be achieved by using design elements and techniques that effectively communicate these values to a diverse audience, taking into consideration their socio-economic conditions. By considering the broader impact of their designs, graphic designers can contribute to fostering a sense of environmental stewardship and cultural appreciation among viewers.

Similarly, industrial and product designers have a crucial role to play in developing solutions that prioritize sustainable practices and align with the values of design excellence. When designing products, careful consideration should be given to the materiality of the products and how they align with the effective use of environmental resources. This includes using eco-friendly materials, minimizing waste and energy consumption throughout the product lifecycle, and considering the impacts on human health and well-being.

Moreover, product designers should be mindful of the cultural practices and values embedded in the local society they are designing for. By acknowledging and integrating these cultural elements into their designs, they can create products that resonate with the collective psyche of the community, fostering a sense of identity and belonging.

The values of flexibility and learning from precedents are essential in both graphic and product design disciplines. By studying and analyzing previous design efforts, designers can gain insights and lessons that enhance the quality of their future designs. This iterative approach encourages continuous improvement and innovation.

Additionally, both designed products and visual messages should cater to a wide range of users, ensuring flexibility of use and adaptability to various contexts. Designers should also consider the potential for recycling and repurposing their creations with a long-term view of social, economic, and environmental sustainability. By designing with flexibility and sustainability in mind, designers can contribute to the longevity and relevance of their work while positively impacting society and the environment.

In conclusion, the principles of design excellence and the values derived from the built environment are not limited to the realm of architecture, landscape architecture, urban planning and interior design. . Graphic and industrial designers can incorporate these values into their work, creating products and visual messages and products that promote environmental responsibility, cultural appreciation, and community well-being. By considering the broader impact of their designs, embracing flexibility, and learning from precedents, designers can contribute to a more sustainable and inclusive future.

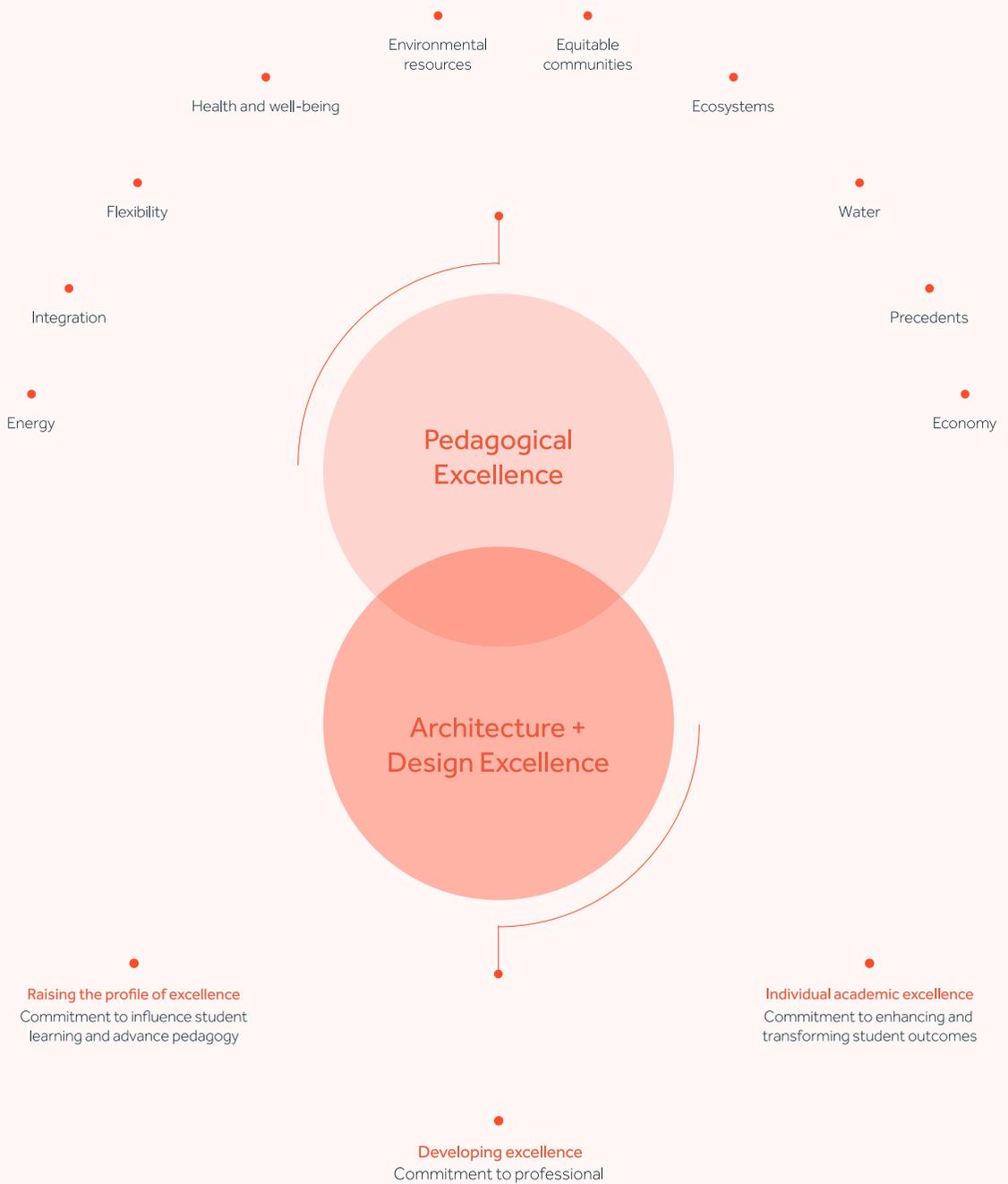


Figure 1: Key elements for nurturing a culture of excellence in architecture and design in universities and higher education institutions in the Kingdom of Saudi Arabia.

1.3

Reflections

Striving for excellence in a school of architecture or design goes beyond the complexities of program validation or accreditation procedures. While these procedures remain crucial for a school's regional and international positioning, the true pursuit of excellence lies in returning to the core principles of teaching and learning as well as research as they relate to architecture and design fields. It involves reexamining how education should be conducted and delivered, how the educational environment can foster and uphold quality in every area of academic work, and how to craft a vision for excellence that establishes a distinctive and exceptional approach to teaching, learning, and research.

The elements of excellence may vary depending on the unique contextual aspects of each college or school of architecture and design. It is acknowledged that each school operates within its own distinct operating environment, leading to variations in management structures and operational procedures. Therefore, it becomes vital for colleges and schools to thoroughly consider these elements at both the pedagogical and content levels, aligning them with the operational environment, faculty and student profiles, and the specific and unique characteristics of their curricula.

Annual and periodic reviews of curriculum content and teaching methods provide crucial platforms for evaluating and incorporating these various aspects of excellence. By engaging in these reviews, schools can ensure that their educational offerings remain relevant, effective, and in line with their vision for excellence. Furthermore, conducting annual performance reviews of academic staff creates mechanisms through which excellence-related matters can be discussed, and developmental needs can be identified and addressed.

In a rapidly evolving architectural and design education landscape where regional and international benchmarking, rankings of teaching and research quality, student experiences, and the need for professional competence hold significant sway, concerted efforts towards achieving excellence become not only a necessity but also an obligation. Adapting to the changing educational landscape and the rapid development pace within the Kingdom, embracing innovative approaches, and continuously striving for excellence are imperatives for schools of architecture and design to meet the demands of the modern world and provide a high-quality education to their students.

1.4

Enabling Actions



Encourage a Culture of Continuous Improvement

It is crucial for both institutional leaders and faculty members to foster a culture of continuous improvement. This involves promoting an environment where faculty and staff are encouraged to reflect on their teaching practices, seek feedback, and actively engage in professional development.

Mechanisms:

- Introduce approaches and tools for collecting feedback from students, faculty, and staff (surveys, focus groups, suggestion boxes, regular meetings).
- Engage in peer observation and feedback (implement a peer observation system where faculty members observe and provide constructive feedback to their colleagues).
- Ensure the effectiveness of quality assurance processes (evaluation of educational programs, including accreditation reviews, internal audits, and assessments).
- Embed professional development opportunities (conducting or attending workshops, seminars, conferences, and training programs focused on teaching practices, curriculum development, and assessment strategies).
- Benchmark best practices (attending conferences, participating in professional networks, and collaborating with external partners to gain insights and inspiration).
- Introduce recognition and rewarding mechanisms (mechanisms to acknowledge and reward faculty, staff, and students who demonstrate a commitment to continuous improvement and contribute to a culture of excellence).



Establish Strong Industry Partnerships

Both institutional leaders and faculty members have a responsibility to establish and nurture strong partnerships with the industry. Institutional leaders should take the lead in creating avenues for engagement with industry professionals, architectural firms, and design organizations.

Mechanisms:

- Establish Industry Advisory Boards (form industry advisory boards consisting of design professionals; conduct regular meetings to discuss industry trends, curriculum relevance, and collaboration opportunities).
- Include internship and co-op programs: Develop internship and cooperative education programs; collaborate with local design firms, construction companies, and other relevant organizations to provide students with hands-on experience and real-world projects; establish clear guidelines and assessment criteria to ensure the quality and relevance of these programs.
- Conduct professional networking events (organize events such as career fairs, design practice, industry symposiums, and networking sessions that bring together students, faculty, and industry professionals).
- Perform reviews towards industry/design-driven curriculum development (engage industry and design professionals in the curriculum review process to ensure that the educational programs align with industry needs and expectations).
- Establish industry and design practice research collaborations (encourage faculty and students to collaborate with practice partners on research projects. This can involve joint research funding, sharing of resources, and access to industry data and expertise).



Provide Comprehensive Student Support Services

Both institutional leaders and faculty members share the responsibility of providing comprehensive student support services. Institutional leaders would need to ensure the availability of services such as academic advising, career counseling, and mentoring programs. They should allocate resources and establish a supportive framework for students' holistic development.

Mechanisms:

- Enhance academic advising (establish an academic advising system to provide personalized guidance and support to students; involve trained advisors who can assist students in course selection, academic planning, and career development).
- Establish financial aid and scholarship mechanisms (offer comprehensive financial aid services to support students in managing their expenses; provide information on scholarships, grants, loans, and work-study programs).
- Establish cultural and diversity support programs (create a welcoming and inclusive environment that celebrates diversity; offer cultural events, workshops, and support groups to foster understanding and appreciation of different backgrounds).
- Establish tutoring and peer mentoring programs (develop tutoring and peer mentoring programs to provide academic assistance and support; offer structured tutoring sessions in specific subjects or skill areas; pair upper-level students with incoming students to provide peer mentoring and guidance).
- Establish health and wellness programs (promote physical well-being through health and wellness programs; offer fitness facilities, sports activities, and health-related and mental health workshops).



Foster Collaborative Design Processes

It is the responsibility of both institutional leaders and faculty members to create an environment that encourages and supports collaborative design processes. They should establish platforms for interdisciplinary collaboration, promote knowledge sharing, and allocate resources to facilitate collaboration among architects, designers, planners, and other professionals.

Mechanisms:

- Consider collaborative design studios as an integral component of the curriculum (establish design studios that promote collaborative work among students; provide shared workspaces, flexible furniture arrangements, and collaborative tools and digital collaboration platforms).
- Engage in interdisciplinary projects (encourage interdisciplinary collaboration; facilitate cross-disciplinary interactions through joint studio courses, interdisciplinary workshops, or design charrettes).
- Develop collaborative design tools and technologies (utilize digital collaboration tools and technologies to facilitate remote collaboration and real-time design collaboration). Platforms such as cloud-based design software, virtual reality tools, or online collaboration platforms enable students to collaborate on design projects regardless of their physical location.
- Develop and implement design thinking and innovation workshops and training (offer workshops and training sessions on design thinking methodologies; teach students collaborative problem-solving techniques, ideation processes, and iterative design approaches).
- Engage in reflective teaching practice and team reflections (integrate reflective practice into collaborative design processes; encourage students to reflect on their teamwork dynamics, communication strategies, and individual contributions).



Incorporate Socially Inclusive Design Practices

Institutional leaders and staff have the responsibility to prioritize socially inclusive design practices. They should ensure that projects consider the diverse needs and aspirations of all stakeholders, including future users and the wider community.

Mechanisms:

- Integrate education on social inclusion into the curriculum; offer courses, workshops, or modules that focus on topics such as equity, diversity, accessibility, and social justice in design.
- Emphasize the principles of user-centered design, where the needs, preferences, and experiences of diverse users are at the forefront of the design process.
- Include case studies and best practices that highlight successful examples of socially inclusive design; showcase projects that have addressed social barriers, improved accessibility, or promoted inclusivity in their design solutions.
- Collaborate with experts in the field of inclusive design, accessibility, and social inclusion; invite guest speakers, practitioners, or researchers who can share their expertise and experiences.



Self Reflection:

- ☑️☰ Read the content of the chapter: Towards a Culture of Excellence in
- ☑️☰ Architecture and Design Disciplines with a focused reading on the
- ☑️☰ enabling actions and the associated mechanism / catalyzing measures.

You can also use the initial questions raised in the chapter as a trigger for your responses:

- How can pedagogical excellence be developed?
- How can schools and colleges of architecture and design raise the profile of excellence?
- How can excellence be enabled at the individual level?
- What are key values that could be embedded in achieving design excellence?

Self Reflection:

<p>Enabling Actions</p>	<p>Self-Reflections</p> <p>To what extent do the college or program implement the actions? What mechanisms are used in the implementation?</p>	<p>Prioritized Actions</p> <p>Arrange actions in order of priority, then select the relevant mechanisms appropriate to the conditions of your college or program.</p>
<p>1. Encourage a Culture of Continuous Improvement</p>	<p>_____</p>	<p>_____</p>
<p>2. Establish Strong Industry Partnerships</p>	<p>_____</p>	<p>_____</p>
<p>3. Provide Comprehensive Student Support Services</p>	<p>_____</p>	<p>_____</p>
<p>4. Foster Collaborative Design Processes</p>	<p>_____</p>	<p>_____</p>
<p>5. Incorporate Socially Inclusive Design Practices</p>	<p>_____</p>	<p>_____</p>

02

Academic Leadership, and Strategic Direction for
Architecture and Design Educational Institutions





2

Stewards of Excellence in Schools and Colleges of Architecture and Design

Leadership in higher education plays a significant role in establishing parameters for excellence. In schools of architecture and design, there are models of leadership that can be followed with a focus on operational, organizational, transformational, and pedagogical aspects. Within these models, there are best practices that can be pursued for an effective learning environment characterized by a robust vision, an established quality of pedagogy, and a learning culture of common values.

Faculty members and teaching assistants should be seen as active participants with leadership in the effective management of schools of architecture and design. However, mentoring programs and continuing professional development (CPD) both in the relevant disciplines as well as in advanced pedagogical practices are indispensable for an effective contribution to the governance of colleges and schools of architecture and design. Best practices always manifest when shared governance, effective coordination, and the development and implementation of roles and responsibilities take place.

Primarily, including students in decision-making is an important aspect of effective leadership by offering the necessary opportunities for engaging them through committees, faculty-student liaison committees, and faculty-student program review committees.

This section responds to the following questions:

1

What are the types of leadership in a school of architecture and design?

2

How can we capture a comprehensive understanding of models of leadership?

3

What are the profile characteristics of faculty and teaching assistants, and how can their capabilities be continuously enhanced?

2.1

Leadership and Academic Leadership

There are several standpoints on and definitions of leadership as portrayed in many studies,⁵ which present three ways of conceptualizing leadership:

- a) Leadership in
- b) Leadership of
- c) Leadership for

These provide a useful definitional umbrella when considering the various concerns of leadership in schools of architecture and design.

2.1.a Leadership In (disciplinary)

This is about being at the vanguard of the creation of new architectural and design knowledge and practices, the exploration of new territories, and areas of knowledge that aim to enhance design professions. This aligns with the academic mindset of the leader being seen as a leader in a subject area by his/her peers and fellow academics. Leaders in this category are interested in being recognized for excellence and may not implore organizational followers but rather intellectual followers. In essence, the academic excellence of a leader may attract followers naturally and beyond organizational boundaries.

2.1.b Leadership Of (relational)

is about motivating faculty and academic staff in pursuit of a set of aims adopted by the school/college. It involves close relationships with others and requires the leader to take responsibility for others as well as themselves. This conception sees leadership as being relational and, therefore, subject to negotiation between the leader and an individual faculty member or group of faculty members.⁶

2.1.c Leadership For (institutional)

involves leading for the achievement of an institutional, wider university goal or a societal and community goal. This may involve the creation of a vision of the future for a school of architecture and design, which should cascade from that of the university down to academic units. In essence, the creation, development, and pursuit of a vision are central to the activities of a leader.⁷

⁵Lawton and Páez, 2015)

⁶(Hunt and R. Weintraub, 2016)

⁷(Bryman, 2007)

The typical argument that “academics like to lead but they don’t like to be led;”⁸ that in higher education institutions, it is not possible to order people—requires a considered approach by universities in defining the standpoint of leadership they aspire to have for a dean of a college or a head of a school of architecture and design. However, an integration of qualities within the three standpoints would enable innovative practices.

The notions of leadership, management, and administration have interconnected and overlapping characteristics, and their roles are shaped by the specific operational environment and the context of a university. The usage and understanding of these terms can vary across countries and professional cultures. In the English-speaking countries of Australia, Canada, New Zealand, the United Kingdom, and the United States. The position of a leader, such as a dean of a college or head of a school or department, is considered crucial for elevating the standards of teaching, learning, and research, as well as fostering continuous improvements.

However, this perspective may not necessarily hold true in other countries, like the Netherlands and Scandinavian countries, where the leader’s role is more focused on managerial responsibilities. These differences reflect variations in how these university systems vary across historical, national, and regional contexts, influencing the leader’s level of influence and expectations. In essence, all three aspects of leadership mentioned earlier involve some form of management, whether it is formal or informal in nature.

⁸(Garrett and Davies, 2001)

Advancing design professions through teaching and research.
Creating new architectural and design knowledge and practices.
Exploring new territories and areas of knowledge.

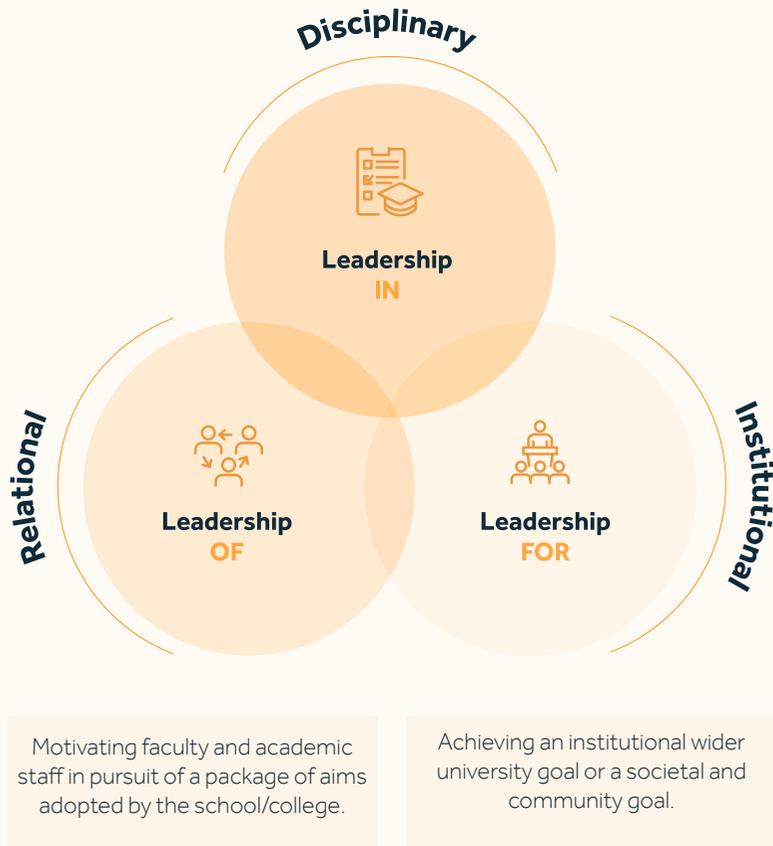


Figure 2: Three standpoints in academic leadership of architecture and design in universities and higher education institutions in the Kingdom of Saudi Arabia.

2.2

Models of Leadership for Schools of Architecture and Design

Most operations in colleges and schools of architecture and design, considered in isolation, have only minor effects on student learning and graduate outcomes. To achieve wider effects, both leaders and academic staff need to create synergy across various relevant operations. Academics in leadership positions are uniquely well-positioned to ensure the necessary synergy.⁹

Achieving the desired synergy requires a shift away from the conventional, hierarchical patterns of bureaucratic control toward what has been referred to as a network pattern of control, that is, a pattern of control in which faculty and staff are actively involved in making organizational decisions, with cooperation and collegiality replacing the hierarchy as a means of coordinating workflows and resolving operational challenges in teaching delivery, student achievement, and faculty research.¹⁰

Colleges and schools of architecture and design would need to consider two types of leadership that demonstrate the shift from the dean or head of department as the manager to the dean or head of department as both manager and leader.

⁹ (Wahlstrom et al., 2010)

¹⁰(Miller and Rowan, 2006)

2.2.a Transformational Leadership

This model of leadership is most often associated with vision, setting directions, restructuring and realigning the school within a dynamic visioning process, developing faculty, teaching assistants, staff, and the curriculum, and involvement with the external community.¹¹ The model invigorates four core sets of leadership practices that include:

- **Building vision and setting directions** for the school and its sub-disciplines and programs (architecture, interior architecture/design, graphic design, industrial design, landscape architecture/urban design).
- **Understanding, developing, and supporting the college/school community** (faculty, teaching assistants, administrative staff, students, and the wider community).
- **Redesigning the college and its programs** in response to quality assurance and accreditation exercises, a wider university vision, and emerging trends in the concerned disciplines.
- **Managing the teaching, learning, and research programs**, ensuring that the vision is reflected in all the curricula and being pursued in the research work conducted by the faculty, their associates, and students where relevant.

2.2.b Pedagogical Leadership

While transformational leadership typically emphasizes vision and inspiration, pedagogical leadership places emphasis on establishing clear educational goals, planning the curriculum, evaluating faculty, teaching delivery, assessment mechanisms, and student satisfaction. It views the leader's primary effort to be responsible for promoting better outcomes for graduating students, emphasizing the importance of teaching and learning, and enhancing the quality of their learning.¹² The pedagogical model stimulates the following core sets of leadership practices:

- **Establishing goals and expectations** for the teaching delivery and assessment.
- **Resourcing strategically** with a focus on optimizing resources for teaching delivery, assessment, and the overall operating environment.
- **Planning, coordinating, and evaluating teaching**, learning, assessment, and the curriculum.
- **Promoting and participating** in faculty and teaching assistants' learning and professional development.
- **Ensuring an organized and supportive academic working environment** that is inclusive and accommodates inputs from the college/school community

¹¹(Burns, 1978)

¹²(Robinson et al., 2009)

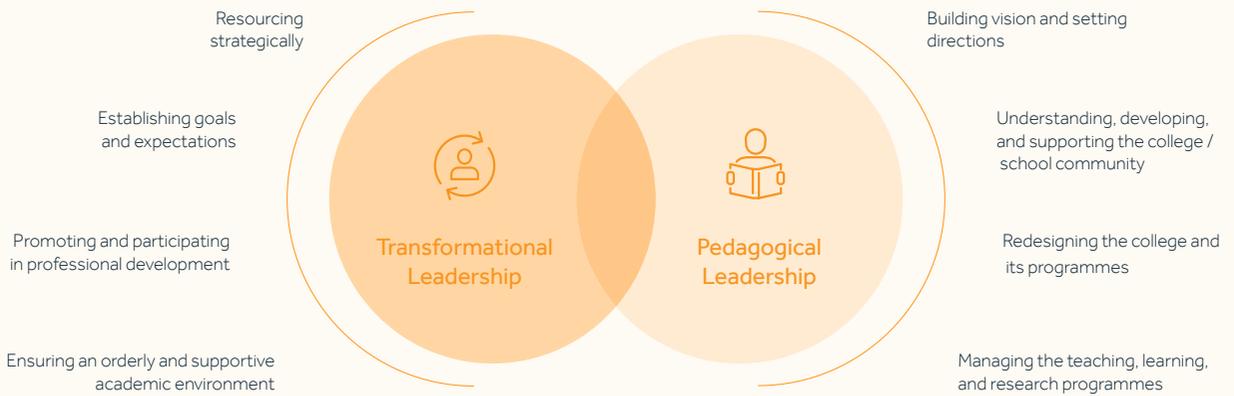


Figure 3: Two models of leadership for colleges and schools of architecture and design in universities and higher education institutions in the Kingdom of Saudi Arabia.

The two core sets of transformational and pedagogical leadership practices need to be acknowledged by the university's senior management and adopted as performance expectations for the dean of college or head of school/department roles.

2.3

Best Practices for Successful Leadership in Schools of Architecture and Design

Reviews of international evidence and experience ¹³ point to improving design work and learning outcomes in colleges and schools of architecture and design due to effective transformational and pedagogical leadership at all levels.

The quality of the senior management team, especially the head of department/school and or the dean, represents a critical factor in determining the quality of the psychological, physical, and social environments as well as the operational environment within which teaching and learning take place.

Consequently, this influences the motivations, expectations, attitudes, and conduct of students and faculty members in studios, laboratories, and lecture halls. Best practices suggest that there are eight key dimensions of successful leadership, which are substantiated by vision, strategic direction, and core values.

¹³ Beerkens and der Hoek, 2022) -- (Salama, 2021) -- (Waring, 2017) -- (Niewiesk and Garrity-Rokous, 2021) -- (Cook, 2016)



Defining the vision, values, and strategic direction

Effective leaders of departments and colleges of architecture and design should have a very strong and clear vision and a set of clear core values for their school/department, which profoundly influence their actions and the actions of others.

They should establish a clear sense of direction and purpose for the school where aspects that are shared widely and collectively are clearly understood and supported by all faculty members, students, and staff. Visions should be distinct and relate to the context of the college or department, its faculty profiles, and expertise to form an ethos and the distinguished character of the college/department. They also need to align with the university's vision, cascading from the university's vision, mission, ethos, and focus. .



Continuously enhancing the conditions for teaching and learning

Effective leaders of departments and colleges of architecture and design should be able to identify the need to improve the conditions in which the quality of teaching can be maximized and students' learning, and performance can be enhanced.

They should develop strategies to improve the operational environments and the school buildings and facilities. This may involve annual planning for updating and upgrading facilities, including classrooms, studios, laboratories, and students' social spaces.

Operationally, it may involve updating the management structure in response to the emerging needs of both students and faculty. By continuously enhancing the physical environment and improving the learning environment, including design studios, workshops, laboratories, and lecture halls, leaders of colleges or schools should demonstrate the important link between high-quality conditions for teaching and learning and the well-being and achievement of both faculty and students.



Enhancing research performance and productivity

Successful leaders of departments and colleges of architecture and design should continually look for new ways to improve research as it relates to architecture and creative practices in design.

They should provide an enabling, collaborative, and structured environment for faculty and teaching/research assistants, and where relevant, students, to apply for internal or university-wide funding schemes, external funding from research organizations, and national and international organizations.

They should promote and nurture the research culture as integral to all academic activities within the department/school, support staff in generating publications out of their independent and funded research, and strategize research-led teaching.

They should apply the necessary rigor and rules that prevent them from seeing the value of research only as part of the evaluation or promotion requirements.

This can be enabled by integrating research into teaching (research-led teaching) and by recognizing alternative forms of research, such as practice-based research, that most Middle Eastern universities do not value.



Redesigning roles and responsibilities

Effective leaders of departments and colleges of architecture and design should strategically, purposefully, and progressively redesign their organizational structures, redefine roles, and distribute leadership at times and in ways that promote greater faculty and staff engagement and ownership, which, in turn, provide greater opportunities for student learning.

They need to establish a consistent pattern of broadening participation in decision-making at the teaching, learning, and research levels.

Notably, the standard re-design of structures and roles takes place based on a triennial cycle. Yet, this is not a fixed rule, and roles, responsibilities, and management structures can change based on emerging needs of, for example, expansion and growth, or a rise in students' populations, and other operational factors.



Redesigning and enriching the curriculum

Effective leaders of departments and colleges of architecture and design should have a sustained focus on redesigning and enriching the curriculum as a way of deepening and extending engagement and improving achievement in all aspects, including approaches to design studio instruction.

Characteristically, they need to adapt the curriculum to broaden learning opportunities and improve access for all students, with an emphasis on design creativity while developing life-long learning soft skills in communication, public speaking, and collegiality. This includes the provision of a wide spectrum of extracurricular activities, including field trips, site visits, and learning from practices as integral components of the academic environment. Typically, annual program reviews are the key channel through which leaders can decide whether substantial or minor enhancements should take place.



Enhancing faculty quality (including succession planning)

Effective leaders of departments and colleges of architecture and design should provide a plan to provide a rich variety of professional learning and development opportunities for faculty members and teaching assistants as part of their effort to raise standards, sustain motivation and commitment, and retain talented and committed academics.

They should place emphasis on internally led professional development and learning, where academics and support staff are encouraged to take part in a wide range of in-service training and are given opportunities to train for external qualifications. This combination of external and internal continuing professional development (CPD)¹⁴ is utilized to maximize potential and develop faculty and teaching assistants in both pedagogic and disciplinary areas.

Succession planning and targeted recruitment should also be adopted by heads of departments and deans as effective strategies for enhancing excellence.



Building relationships inside the school/department community

Effective leaders of departments and colleges of architecture and design should develop and sustain positive relationships with faculty at all levels, teaching assistants, and administrative staff, making them feel valued and involved to embed and enhance a sense of belonging.

They should be able to empathize and demonstrate concern for the professional and personal well-being of faculty, teaching assistants, and staff. Positive relationships can be established through several mechanisms, including open dialogue between the students, faculty, and dean at the end of each semester, annual social gatherings, outdoor and sporting events, as well as social media platforms. At the heart of these activities, faculty members and students' interests, needs, wants, and aspirations are valued and recognized.

¹⁴ See section 3 Faculty Members & Teaching Assistants, under Continued Professional Development (CPD) and Educating the Educators.



Building relationships with the wider community, practices, and creative industries

Building and improving the reputation of the department or school and engaging with the wider community are essential to achieving the long-term success of the school/college and its graduates. Effective leaders of departments and colleges of architecture and design should develop positive relationships with the surrounding community, architectural and design practices, and creative industries.

They should build a web of links across the school that extends to other professional organizations and individual design practices of various scales, areas of focus, and interests. In addition to periodically engaging with practices and creative industries in teaching delivery, organizing joint events, architectural competitions, and design debates are key elements of enhancing reputation and building positive relationships.

Additionally, establishing community design centers or units, where community members can approach the school with requests for design assistance, can enable further engagement with the surrounding community as well as benefit students' learning.



Establishing and pursuing common values

Successful leaders of departments and colleges of architecture and design should focus on achieving continuously improved performance, not only through the strategies they use but also through the core values and personal qualities they demonstrate in their daily interactions with faculty members, teaching assistants, students, and administrative staff.



Figure 4: Eight key dimensions characterizing successful leadership in schools of architecture and design. Defining vision and strategic direction, together with establishing common values and building trust, are the core focus of effective leaders.

2.4

Faculty Members & Teaching Assistants

2.4.a Profile and Key Attributes

The profile of faculty members should cover the specializations and expertise of the school that is required to deliver a distinctive curriculum and conduct research efficiently and effectively. It is noted in this regard that each university has its own expectations of the research outputs, the quality of these outputs, and the attempts at securing research funding, which are also based on faculty specializations and areas of focus. Specializations should include, by and large, core faculty members with expertise in:

- Design studio teaching,
- Cultural studies (history and theory, person-environment interactions),
- Technological studies (design computing -or computational design, structures, construction technologies, manufacturing),
- Professional studies (building regulations and by -laws, professional practice, and professional ethics).

With the following addition for architecture for example:

- Environmental studies (environmental control systems, environmental performance of buildings),
- Urban studies (urban infill, sustainable communities, conservation of urban heritage),

And for the graphic and industrial design, this may include specialization in developing design and graphic representation skills, specialization in design theories, methods, and histories, expertise in environment and technology as it relates to materiality, simulation, and IT applications, and professional practice-related expertise that aims to bridge perceived or potential gaps between the academic and professional realms. All these types of specialization and expertise are expected to underpin design teaching practices undertaken in studios.

In genera, best practices¹⁵ suggest that, for effective delivery of the curriculum, schools should have two types of faculty members: a core group and a practice-based group.

The core group of faculty members are full-time academics and PhD holders, and the practice-based group is made up of part-time professionals with expertise in design practice and creative industries. Naturally, the core group contributes to all aspects of curriculum delivery depending on their expertise, in addition to conducting research and contributing to management.

The practice-based group is involved only in design studio teaching and practical courses. The ratio of the two groups is typically 70%/30%. When this ratio is not attainable, the school should make a concerted effort to appoint full-time academics who are PhD holders and, at the same time, have professional and practical experience. This is applicable in most cases to programs in both architecture and design.

¹⁵(Salama,2015)

Diversifying the faculty body enriches the learning process. A complement of faculty who received advanced degrees in different countries, not necessarily in the English-speaking world, is a unique quality that offers students multiple learning opportunities and exposure to various schools of thought. Having faculty members who are bilingual is an important characteristic in schools of architecture and design; they need to be able to communicate effectively in their own language (Arabic) as well as in another language, which would be, naturally, English. Yet, this does not exclude other languages, including French, Spanish, Italian, or German where design disciplines have flourished. Likewise, the practice-based faculty group would be diverse in terms of their areas of focus and experience and represent various professional interests.

Given that the design studio is the core of the education of future architects and designers and occupies a central position in the curriculum, ranging from 50% to 60% of the whole academic curriculum, it is critical to consider that the faculty-student ratio does not exceed 1 to 15.

Experienced teaching assistants can be considered in this ratio, which also applies to all practical courses and laboratory teaching, including visual modeling and simulation and digital fabrication labs.

In lecture-based instruction, the faculty-student ratio can go higher, reaching 1 to 30.

Both design studio instruction and lecture-based instruction should involve the contribution of teaching assistants as future full-time academics and the roles vary based on their experience.

The engagement of teaching assistants in the academic life within a school of architecture and design in the context of the Kingdom of Saudi Arabia is essential and is considered part of their training as future faculty members. As future talented academics, they should be given attention by the leadership of the school, receive the necessary training in teaching and research, and be prepared to be future educators in their fields of specialization.

Faculty Expertise and Specializations within

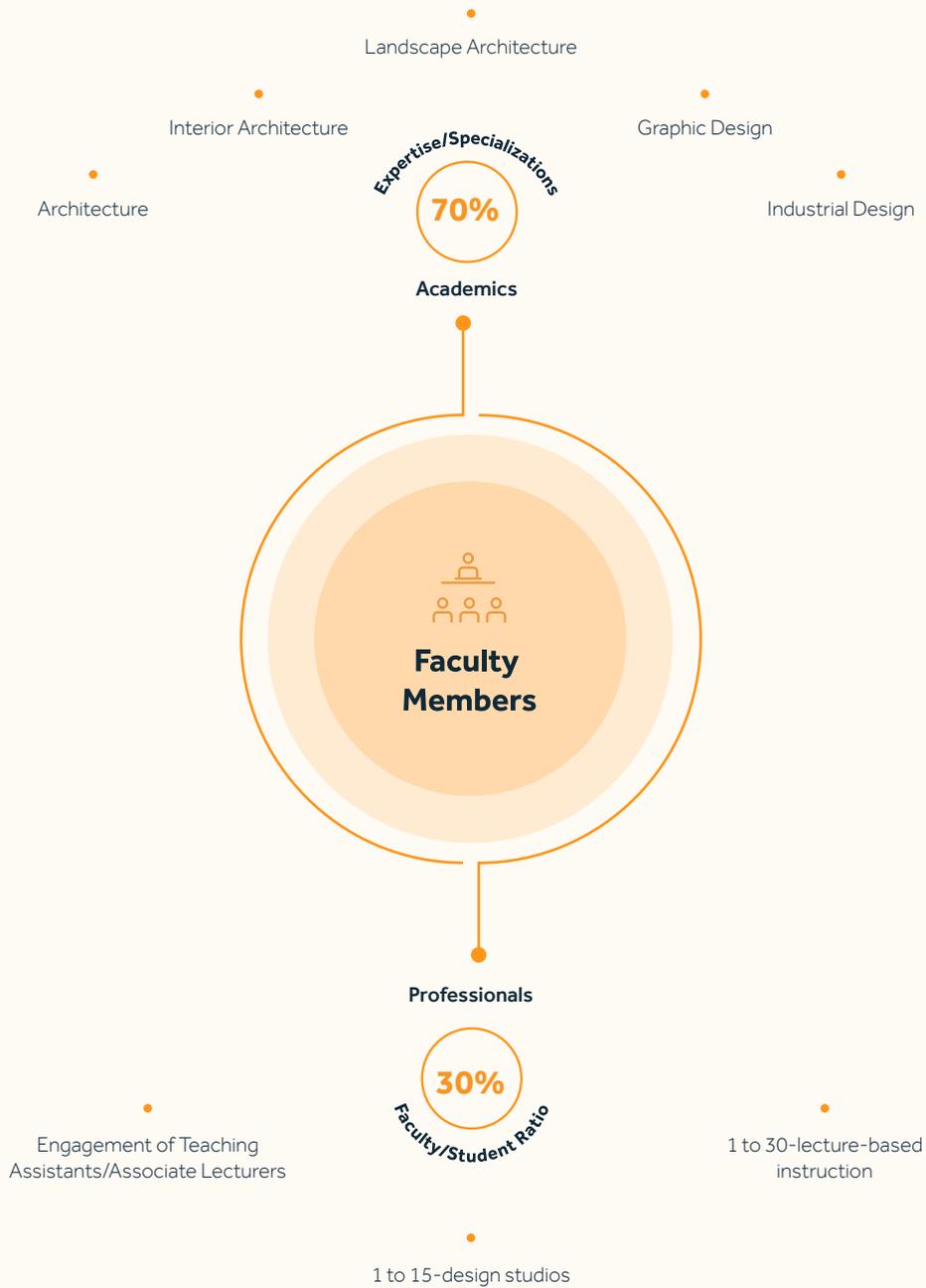


Figure 5: Standard faculty expertise/specializations and faculty/student ratio in schools of architecture and design. The figure demonstrates an example related to the discipline of architecture, which is typically replicated in other design disciplines.

2.4.b Mentoring Teaching Assistants and Early Career Faculty Members

Mentoring is a relationship in which a more experienced faculty member shares their knowledge and experience with a less experienced faculty member, teaching assistant, research assistant, or associate lecturer to support their learning and development. The role of the mentor is to support the development of new knowledge, understanding, and skills, to help their mentee work out what they want to achieve and why, and what action they can take to bring about change.¹⁶ They do this by listening, challenging thinking, acting as a role model and critical friend, helping to build networks, and supporting their mentee to develop personal resourcefulness.

In the context of this discussion, it is important to distinguish between mentoring and shadowing, as they involve distinct forms of engagement and learning opportunities. On the one hand, mentoring entails a personalized relationship between a junior faculty member or teaching assistant (mentee) and a more experienced faculty member (mentor). The mentor provides guidance, advice, direction, and encouragement to the mentee, supporting their professional and personal growth. On the other hand, shadowing is a different activity that offers a unique level of engagement and learning. It involves the junior individual accompanying an experienced faculty member throughout a typical workday or workweek. During this time, the junior faculty observes the senior faculty members as they make decisions, engage in teaching, interact with students, conduct meetings, and perform other activities relevant to their role.

¹⁶(Office of the Provost, 2016)

Shadowing provides a valuable opportunity for the junior faculty or teaching assistant to gain firsthand exposure to the daily tasks, responsibilities, and decision-making processes of an experienced faculty member. By observing and immersing themselves in the senior faculty member's work environment, the junior faculty member or teaching assistant can deepen their understanding, acquire practical insights, and develop a more comprehensive perspective on their field of study or profession.

While mentoring focuses on building a supportive relationship and providing individualized guidance, shadowing complements this by offering a more experiential and observational approach. Both mentoring and shadowing contribute to the professional development of the junior individual, albeit in different ways, fostering learning, skill-building, and confidence within their chosen field.

Early-career academics and teaching assistants can benefit from mentoring at various stages of their career and development, for example, when they are starting in a new role, when they need to learn a new skill or acquire knowledge, or when they are getting ready to take the next step in their career.

As a best practice, meetings between the mentor and the mentee should take place four times during the academic year. The benefits of mentoring are widely recognized, not just for mentees but for mentors, the school, and the university. The benefits listed below apply to higher education, but their significance is particularly pronounced in the fields of architecture and design. These disciplines require a teaching approach that emphasizes active engagement, interaction, collaboration, and ongoing dialogue with students.

- Support with transition into a new role.
- Development of knowledge, skills, and behaviors.
- Improved performance and results.
- Increased confidence and self-awareness.
- Development within current role and for the future.
- Expanded networks and awareness of key figures in their fields.
- Ongoing career development.
- Increased potential for promotion.



Figure 6: Benefits of mentoring schemes for the mentees, mentors, and the institution.



Benefits to the Mentees

- Development of knowledge, skills, and behaviors.
- Support with transition into a new role.
- Improved performance and results.
- Ongoing career development.
- Development within the current role and for the future.
- Increased confidence and self-awareness.
- Expanded networks and awareness of key figures in their fields.
- Increased potential for promotion.



Benefits to the Mentors

- Opportunity to use and enhance valuable soft skills such as listening and questioning.
- Increased self-confidence through mentoring and shadowing, including twining, observation, and reflection.
- Opportunity to role model the university values and behaviors.
- Expanded networks.
- Increased job satisfaction from helping others and sharing skills and knowledge.
- Exposure to new ideas, approaches, and perspectives from mentees (reciprocal mentoring).
- Opportunity to demonstrate good leadership.



Benefit to a School of Architecture and Design

- Opportunities for enhanced collaboration and the breaking down of silos/ departments across the school.
- Opportunity to demonstrate commitment to the university's values and behaviors.
- Creation of an inclusive environment.
- Transfer of knowledge across teams with different design expertise.
- Improved communication and engagement.
- Creation of a culture of continuous improvement.
- Retention of talent.

Overall, the benefits of mentorship in higher education are applicable across various disciplines, but their relevance to architecture and design is significant due to the interactive and collaborative nature of teaching and learning in these fields. These benefits contribute to the holistic development of faculty, preparing them to make meaningful contributions as future academic architects and designers.

2.4.c Continued Professional Development (CPD): Educating the Educators

Continuing Professional Development (CPD) enables academics in architecture and design to future-proof their careers through a program of lifelong learning. CPD enables them to develop their skills and knowledge in the rapidly changing design professions, ensuring that they remain up-to-date with the latest legislation, guidance, standards, and best practices throughout their careers.

Whether part of the core academic group or part of the practice-based group, faculty members must enroll in continued professional development (CPDs) so they are equipped with knowledge of the latest trends in architecture and design and creative industries and practices.

CPDs should be conceived at two levels:

- a)** discipline-specific level, where the purpose is to update their knowledge and skills relevant to the specific design field within which they operate; and
- b)** advanced teaching practices, where the purpose is to advance their knowledge and skills in design studio teaching practice and in-classroom lecture-based instruction, feedback, and assessment.



Discipline-Specific CPDs

Taking the example of architecture as a discipline and a profession, there are established best practices provided by professional organizations such as RIBA (Royal Institute of British Architects) and RAIA (Royal Australian Institute of Architects) that have well-recognized provisions for CPD programs.¹⁷ Discipline-specific CPD has key benefits for faculty members, which can be outlined as follows:

- They can gain new knowledge and abilities to reach their development and career objectives, both as professionals and educators.
- They can maintain currency with evolving technical, legislative, and regulatory standards, which provide them with up-to-date knowledge that feeds into their design teaching.

¹⁷(Royal Institute of British Architects, n.d.) -- (Australian Institute of Architects, n.d.)

The core CPD program offered by RIBA includes courses in Ethical Practice, Health and Life Safety, Dispute, Building Regulations, Procurement Essentials, Climate Literacy, Inclusive Environments: Adaptive Reuse, Heritage Conservation, and Legislative Frameworks; and Material Systems and Structural Innovation. The RAI provides an expanded list of CPD and short courses under wider themes that include Design, Professional Ethics, Indigenous Design, Heritage, Innovation, Legislation, and Practice Management.

Notably, some universities offer a spectrum of CPD and short courses in specialized areas that include Urban and Landscape Design Representation, Decision-Making for Place Making, The Social Benefits of Innovative Lighting, and Designing out Construction Waste. Other universities consider attending specifically recognized conferences and other forms of participation and engagement in international design exhibitions and curation activities as part of faculty development.

Involving the faculty members in the learning experiences above would equip them with up-to-date information, as well as enabling leading colleges and schools of architecture and design in Saudi universities to champion the development of a program of CPD and short courses offered nationally to all academics in architecture and design. This would involve an analysis of current advanced provisions in universities to identify gaps and then develop bespoke programs unique to the Saudi context and professional standards.



Advanced Teaching Practice CPDs

One of the best practices is found in the UK that has an established system of CPDs for all academics working in the higher education sector, which was initially launched for British universities in the early 2000s and was later expanded for academics worldwide. Through this system, most universities ensure that all academics undergo a specialized training in university teaching and learning during their first three years of academic employment. This training leads to receiving the FHEA (Fellowship of the Higher Education Academy). Training for the fellowship includes a focus on three areas:¹⁸

Professional Values: underpin all forms of Core Knowledge and Areas of Activity. They are the foundation of professional practice in higher education and include demonstrating the following:

- Respect for individual learners and diverse groups of learners.
- Promote engagement in learning and equity of opportunity for all to reach their potential.
- Use scholarship, research, or professional learning as a basis for effective pedagogical practice.
- Respond to the wider context in which higher education operates.
- Collaborate with others to enhance pedagogical practice (team teaching).

¹⁸(Higher Education Academy, 2011)

Core Knowledge: informed by the Professional Values, representing key forms of knowledge required to undertake the Areas of Activity. There are multiple and diverse forms of knowledge, which are connected to and shaped by communities and contexts. This includes demonstrating the application of:

- How learners learn and within specific subject areas/disciplines.
- Approaches to teaching and supporting learning.
- Critical evaluation as a basis for effective practice.
- Appropriate use of digital technologies and resources for learning.
- Requirements for quality assurance and enhancement and their implications for teaching practice.

Areas of Activity: bring together the Professional Values and forms of Core Knowledge, showing the essential activities that support the delivery of effective pedagogical practice, including:

- Designing and planning learning activities and/or programs.
- Teach and/or Support learning through appropriate approaches and environments.
- Assessing and providing feedback for learners.
- Support and guide learners through close supervision and academic counseling.
- Enhancing practice through own continuing professional development.

It is noted that the Higher Education Academy (now called Advance Higher Education) has several routes to the fellowship. One of them is a recognition scheme through which interested experienced applicants study the requirements on their own, prepare documentation reacting to the above list of professional values, core knowledge, and area of activities, demonstrate examples and evidence, and pass an interview. Another route is to organize specific, bespoke programs for interested academics from other countries.

Unique to architecture and design, training of emerging as well as experienced academics on how to teach may take place through three essential approaches:

Twining: Whether between professional and student, senior architect/designer and junior architect, tutor and trainee tutor, or tutor and students, good twinning – or mentoring – gives both sides the opportunity to listen and learn from one another. However, it may not always be possible to match the two based on their desires, and frustration and disappointment may become an integral part of the learning process. An unresolved dispute will harm all parties involved. This approach is important for new academics as they should receive assistance, such as supervision from more seasoned and experienced design studio academics, in which obstacles and difficulties that may emerge when teaching in the design studio are addressed collaboratively.

Observation: academics in architecture and design can improve their experiential skills by observing how students and other academics interact with one another, discussing project briefs, and the learning environment within which they operate. This is critical because it enables one to be fully present without needing to engage, formulate, or evaluate. Observation, which can be supplemented by supervision and seminars, aids in the development of a trainee academic's observational abilities and provides a rich learning environment.

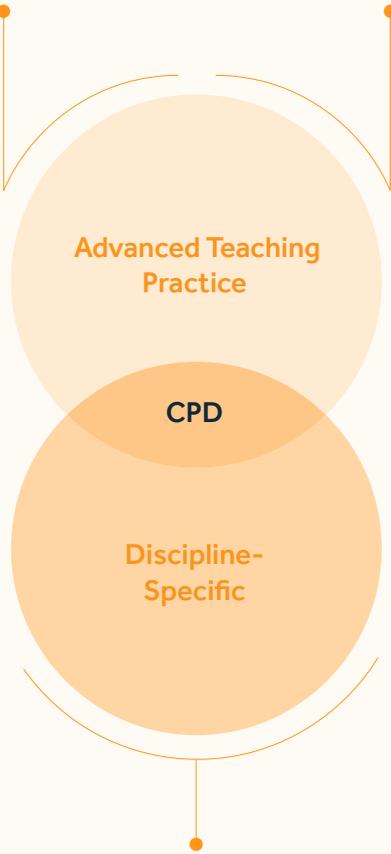
As a condition of employment and the required professional development in advanced teaching practices, academics would be expected to spend a certain number of hours each week observing tutor groups, while academics being observed could benefit from assistance to help manage this process.

Reflection: Reflection is essential to the creative process. Thus, reflective practice enhances creative teaching and learning. The greater our comprehension of our learning, the more we learn, and the more we are in a better position to deliver teaching effectively. Reflective practice enhances observation and sensitivity. An effective first assignment for architectural tutors-in-training is to write a reflection on their educational experiences during pre-university education and in a school of architecture and design. Typically, trainees will not have previously researched the topic of teaching, learning, and reflection, and what they uncover is inspiring. When do they feel their creativity and learning were most stimulated, and when were they most inhibited, and why? These are important questions that enable them to reflect on their own practices as academics and can be expanded further through sharing and discussion with other tutors and faculty in seminars.

Professional architects or designers who both practice and teach at universities serve as a vital link between academia and the profession. Following a simple framework centered on twinning, observation, and reflection as part of a community of practice could be one method to satisfy some of the professional development goals of teacher-practitioners and ensure that they can serve the diverse learning needs of architecture and design students. This applies to faculty at different levels. However, it depends on how this is treated within a school of architecture and design, whether as a mandatory requirement or as one of the pathways for development, but not the only one.

Training in Architecture and Design Teaching

Qualification in Higher Education Teaching



Advancing discipline specific knowledge for



Figure 7: Continued Professional Development (CPD): Educating the Educators (discipline-specific CPDs and advanced teaching practice CPDs).

2.4.d Faculty Contribution to Governance and Emerging Roles

While the role of faculty members in governance was at one time largely advisory, over time, the role of faculty members has become increasingly engaged in policy formation and the direction of academic units, departments, and schools. In many cases, faculty members possess significant authority over academic affairs. The formal authority of the faculty may be codified in institutional charters or in the standing rules of institutional/university-wide governing boards.¹⁹

As part of the constituents of excellence in architectural and design education, several roles are conceived to ensure the effective delivery of curricula, to motivate both faculty members and students, and to organize the overall learning environment. These roles go beyond the key leadership roles of deans, associate deans, and heads of departments. Best practices in schools of architecture and design worldwide suggest several emerging roles²⁰ that need to be included in the governance structures in colleges and schools of architecture and design. The roles vary depending on the size of the college or school and the diverse number of specializations.

- Head of Discipline (Sub-Unit of a Department).
- Teaching and Learning Coordinator
- Research and Knowledge Exchange Coordinator
- Research Ethics Coordinator
- Employability Coordinator
- EDI (Equality, Diversity, and Inclusion) Coordinator

¹⁹(“Colleges and Organizational Structure of Universities - Governing Boards, The President, Faculty, Administration and Staff, Students, Future Prospects”, n.d.)

²⁰Based on reviews of best practices at various universities worldwide with a focus on the UK, including these universities Cardiff, Newcastle, Northumbria, Oxford Brookes, Strathclyde, UCL, and York.



While the preceding roles involve an exhaustive list of tasks, as outlined in this section, it should be noted that they are based on an ideal condition and are not necessarily taking place in every school or department. They are presented as a form of demonstrating various levels of involvement as part of the faculty's contribution to governance.

Additionally, some of these roles are based on the scope of the department, school, or college, and thus, they do not have to take place at a departmental level but could be undertaken at a college level.

For example, in many instances, employability and ethics coordination is undertaken at the college level. In this context, it is important to note that most universities implement various contractual agreements with faculty, and that the general expectation is that the faculty member's load is calculated based on 40% teaching, 40% research, and 20% contribution to governance (management/administration). These percentages are not totally fixed and can change annually.

Dean/ Head of School

Dean/Head of School Office
Heads of Departments

Department/ School Management Group

Coordinators - Emerging Roles

Head of
Discipline

Teaching &
Learning

Research &
Knowledge
Exchange

Research
Ethics

Employability

Equality,
Diversity,
Inclusion

Faculty Contribution to Governance

Figure 8: Faculty contribution to governance and emerging roles within departments/ schools of architecture and design.



Head of Subject (Sub-Unit of a Department)

Work with other stakeholders and professional support teams to:

- Take responsibility for the strategic academic leadership of a defined Subject/Subject cluster for the Department, areas of academic activity including education, research, international, and knowledge exchange.
- Working closely with the Teaching and Learning Coordinators, responsibility includes ensuring all subject-based aspects of development and improvement are dealt with through periodic reviews and quality assurance processes.
- Working closely with the Research and Knowledge Exchange Coordinator to ensure research is fully embedded into the subject's educational portfolio and activities.
- Ensure the subject's educational portfolio of programs is vibrant, current, and attractive to potential applicants through effective leadership of academic staff in the subject area.
- Ensure appropriate accommodation and physical/virtual resources are in place to support the subject's education and research requirements within the department, placements, and other learning settings.
- Contribute to the recruitment of staff within the subject, liaising with the Head of Department/School and other team members as appropriate.
- Lead on the subject's relationships with external organizations, including professional bodies, and their accreditation requirements.
- Work closely with the Head of Department to ensure appropriate work-loading arrangements are in place.



Teaching and Learning Coordinator.

Work with other stakeholders and professional support teams to:

- Lead, coordinate, and develop the Department's/School's approach to all educational provision, as defined by the Head of Department/School. This would include UG and PG courses).
- Be responsible for the Department's contribution to national quality assurance requirements by leading the development of the departmental understanding of the requirements.
- In consultation with the Head of Department/School, teaching teams, and Academic Registry, take lead responsibility for the quality and standards of student learning, teaching excellence, and student satisfaction and experience within the Department.
- Working with the Academic Registry and the Head of Department/School and being responsible for departmental readiness for periodic review (every five years) alongside external subject/discipline-specific reviews and accreditations.
- In conjunction with the Head of Department/School and the Head of Discipline, support the strategic development of new programs within the Department.
- Be responsible and accountable for all aspects of periodic reviews, including course evaluations and student engagement.



Research and Knowledge Exchange Coordinator.

Work with other stakeholders and professional support teams to:

- Lead, coordinate, and develop the Department's/School's approach to research, innovation, KE, and impact, including promoting high-quality research outputs at discipline-appropriate volumes; driving income generation to agreed levels and targets set by the university; achieving research impact; managing research budgets; contributing to workforce planning and recruitment; ensuring that research, innovation, and knowledge exchange with practices and industries are embedded in learning and teaching and other practice/creative industry-related activities.
- Develop the departmental research, innovation, KE, and impact culture (including the establishment of active research groups, capacity building, development and mentoring of academic staff, peer review of outputs and grants prior to submission, and encouraging cross-university and cross-college/school multi-disciplinary research activities).
- Lead research audit processes and national quality assurance research schemes.
- Lead the ongoing internal peer review of new publications.
- Working alongside various university units, lead the academic development of activity with external partners and other relevant stakeholders and funders



Research Ethics Coordinator.

Supported by the Research and Knowledge Exchange Coordinator, work with other stakeholders and professional support teams to:

- Lead ethics and integrity training for staff and students within the Department.
- Implementation lead for the Ethics Online System (if exists) and first point of contact for queries.
- Ensuring systems and processes remain fit for purpose.
- Contribute to college (and higher levels) research ethics committees as a member and to the annual audit process and implementation of recommendations and actions arising.
- Maintain up-to-date knowledge of integrity ethics, professional standards, and best practices and seek to embed these within the culture of the department.



Employability Coordinator.

Supported by the Teaching and Learning Coordinator, work with other stakeholders and professional support teams to:

- Coordinate and develop the Department's/School's approach to student employability and placements in response to external drivers and in line with the university's vision and approach, liaising with the senior management team in the department and relevant stakeholders across the wider context of the university.
- Coordinate to ensure that student employability and professional development are embedded within the curriculum of the department's portfolio of courses, liaising with the Department Teaching and Learning Coordinator, Heads of Subjects Disciplines, and course coordinators as appropriate.
- Coordinate incoming student placements and exchange programs for existing students, working with colleagues across the Department and the wider university.
- Foster and lead the Department's relationships with external organizations, including support for employer liaison boards (if available) and career fairs to support student employability and undergraduate and postgraduate placements, liaising across the university as appropriate.



EDI (Equality, Diversity, and Inclusion) Coordinator.

Work with other stakeholders and professional support teams to:

- Liaise with the college's/ university's Director or Dean of Equality, Diversity, and Inclusion, other Coordinators of EDIs within the school or college, and other relevant stakeholders to coordinate and develop the approach to equality, diversity, and inclusion in line with the university's vision and strategy, the university's key EDI priorities, and in response to external drivers.
- Take responsibility for leading, coordinating, and implementing activities that support the development of a collaborative, collegiate, and inclusive culture and community across academics and students within the Department.
- Coordinate and lead on the Department's/school's approach to developing a consistently positive culture, well-being, induction, and development, liaising as appropriate with the Head of Department/School, departmental teams, and services such as Human Resources.
- Liaising with other coordinators of EDIs in other departments/schools and other key stakeholders to share ideas and good practices.
- Provide timely updates regarding the progress made against the university's EDI priorities.

To encourage academic excellence, practitioners can participate in the academic programs by teaching A&D subjects or supervising research. Academics at universities that are subject to the university law can also engage in practice in the sector, which enhances the exchange of experiences and contributes to skill development and innovation.



2.5

Reflections

Different perspectives of leadership in schools of architecture and design are highlighted: leadership in, leadership of, and leadership for, with a view on the importance of a balanced approach that integrates qualities from all three perspectives to foster innovation and achieve institutional goals. Synergy among various academic operations, with academic leaders playing a crucial role in shifting to a network pattern of management that involves faculty, students, and staff in decision-making. The significance of effective transformational and pedagogical leadership, as well as the importance of faculty specializations and continuous professional development, are important elements of managing effective colleges and schools of architecture and design. The evolving role of faculty members in governance is discussed, along with the inclusion of emerging roles in architectural and design education curricula for such effectiveness.

It is important to further the discussion and stress the value of including students in decision-making processes through committees and programs, promoting collaboration, and enhancing the overall educational environment. Inclusive leadership practices empower students, foster engagement, and contribute to the improvement of the schools and colleges of architecture and design. Recognizing the value of student perspectives and contributions, educational leaders understand the importance of providing opportunities for students to actively engage and participate in shaping their learning experiences. This can be achieved through various avenues, such as faculty-student liaison committees and faculty-student program review committees.

By involving students in decision-making, leaders create platforms for open dialogue and collaboration between faculty, administration, and students. These committees serve as spaces where students can voice their opinions, concerns, and ideas regarding academic programs, policies, and initiatives. They offer a unique opportunity for students to contribute their valuable insights, experiences,

and suggestions, ultimately enriching the educational environment. Through faculty-student liaison committees, students can interact directly with faculty members, sharing their perspectives on curriculum development, teaching methodologies, and learning resources. This collaboration allows students to provide feedback on their educational experiences, advocate for their needs, and work together with faculty members to enhance the overall quality of teaching and learning.

Additionally, faculty-student program review committees provide a platform for students to actively participate in the evaluation and improvement of academic programs. By involving students in program reviews, leaders acknowledge their expertise as first-hand participants in the learning process. Students can provide valuable feedback on the effectiveness, relevance, and alignment of the program with their educational goals. This collaborative approach ensures that programs are continuously refined to meet the evolving needs and aspirations of students.

Including students in decision-making not only empowers them to take ownership of their education but also fosters a sense of belonging and engagement within the academic community, including leadership, faculty, and staff. It demonstrates a commitment to shared governance, where diverse perspectives are valued, and decisions are made collaboratively. Such inclusive leadership practices not only enhance student satisfaction and success but also contribute to the overall improvement and effectiveness of colleges and schools of architecture and design.

Effective leaders understand that students are not just passive recipients of knowledge but active partners in the learning process. By providing opportunities for student involvement, leaders demonstrate their commitment to student-centered education and ensure that student voices are heard and respected. This inclusive approach ultimately contributes to the development of a vibrant and dynamic educational community that nurtures the growth and success of all its members while continuing to strive for academic excellence.

2.6

Enabling Actions

Develop and Communicate a Compelling Vision

Leaders bear the primary responsibility for developing and communicating a compelling vision for a school of architecture and design. This vision should align with the wider institutional or university goals and encompass the aspirations of the faculty, staff, and students. By crafting a clear and inspiring vision, leaders provide a sense of direction and purpose, motivating stakeholders to actively participate in its realization.

Mechanisms:

- Organize workshops or facilitated sessions involving faculty, staff, and students to collectively brainstorm and contribute to the development of the school's vision; encourage open dialogue, idea generation, and consensus-building.
- Establish a strategic planning committee consisting of key stakeholders, including faculty, staff, and student representatives; assess the current state of the school; identify, goals and priorities; and formulate a comprehensive vision that aligns with the institution's overall objectives.
- Establish regular channels of communication, such as newsletters, emails, or dedicated websites, to consistently share updates on the vision development process and progress.
- Conduct surveys or distribute questionnaires to gather input and perspectives from the faculty, staff, and students to gain insights into their aspirations, values, and expectations.
Utilize visual aids, multimedia presentations, or videos to effectively communicate the vision.
Involves faculty, staff, and students in the decision-making process related to the vision through town hall meetings, focus groups, or advisory committees.
Use storytelling techniques to articulate the vision in a compelling and relatable manner. Leaders can share narratives that illustrate the envisioned future, highlighting the positive impact it will have on the school, its stakeholders, and the wider community.



Establish a Culture of Risk-Taking and Innovation

Foster a culture that encourages leaders to take risks, experiment with new ideas, and innovate. Provide resources and support for innovative projects, and celebrate and recognize leaders who demonstrate creativity and breakthrough thinking.

Mechanisms:

- Create an environment that encourages leaders to take risks, explore new ideas, and think outside the box by conducting brainstorming sessions and providing resources, technology and research facilities.
- Allocate resources, such as funding, research facilities, and technology, to support innovative projects and initiatives, establish innovation grants, and create mentorship programs.
- Celebrate and recognize leaders who demonstrate creativity, breakthrough thinking, and innovative practices through awards, acknowledgments, or public recognition.



Promote Collaborative Decision-Making

Involve leaders in collaborative decision-making processes. Seek their input and ideas when shaping the strategic direction of the institute and encourage them to engage in meaningful dialogue and debate. This approach fosters ownership and commitment among leaders and creates a sense of collective responsibility for the institute's success.

Mechanisms:

- Establish structured mechanisms, such as committees, task forces, or working groups, that encourage open dialogue, active participation, and diverse perspectives and where leaders can contribute their ideas and expertise in shaping the strategic direction of the institute.
- Use collaborative tools or software to document decisions, action items, and follow-up tasks discussed during collaborative meetings; communicate the outcomes and decisions made through clear and transparent communication channels to keep leaders informed and maintain accountability.
- Offer training sessions or workshops on collaborative decision-making to enhance leaders' skills in effective communication, active listening, and consensus-building; assign trained facilitators to guide collaborative meetings, ensuring that all voices are heard, ideas are explored, and consensus is reached.



Provide Supportive Feedback and Growth Opportunities

Provide regular feedback and coaching to leaders, helping them identify their strengths and areas for improvement. Offer opportunities for professional development, including workshops, seminars, and conferences, to enhance their leadership skills and knowledge.

Mechanisms:

- Establish a system of regular feedback and coaching for leaders, providing them with constructive feedback on their performance, strengths, and areas for improvement.
- Encourage leaders to engage in self-reflection and self-assessment by providing resources such as leadership journals, reflection frameworks, or self-assessment tools.
- Offer a range of professional development opportunities, such as workshops, seminars, mentoring programs, and leadership training, to enhance leaders' skills, knowledge, and capabilities.



Foster a Culture of Empowerment and Autonomy

Grant leaders the authority and autonomy to make decisions within their areas of responsibility. Encourage them to delegate tasks, empower their team members, and create an environment that fosters innovation, collaboration, and individual growth.

Mechanisms:

- Promote a culture of delegation where leaders are encouraged to delegate tasks and responsibilities to their team members through training, mentoring, and networks.
- Encourage shared leadership and promote a collaborative leadership approach where leaders involve team members in decision-making processes and seek their input and perspectives.
- Recognize and reward leaders who effectively empower their team members and foster a sense of ownership and autonomy.



Establish Collaborative Platforms and Structures for Pedagogical Leadership

Create a collaborative culture where faculty and educational leaders actively share best practices, engage in professional dialogue, and collaborate on curriculum development, instructional design, and assessment strategies. Encourage opportunities for cross-disciplinary collaboration and peer observation to facilitate the exchange of ideas and promote innovation in teaching and learning.

Mechanisms:

- Create dedicated platforms or spaces (both physical and virtual for faculty members and educational leaders to share best practices, engage in professional dialogue, and collaborate on curriculum development, instructional design, and assessment strategies).
- Implement peer observation and feedback (establish a peer observation program where faculty can observe each other's classes and provide constructive feedback to promote continuous improvement).
- Organize Professional development opportunities (conduct regular meetings, workshops, or conferences that facilitate cross-disciplinary collaboration and provide opportunities for educators to exchange ideas and innovations).



Promote Reflective Practice

Promote a culture of reflective practice among faculty and educational leaders. Encourage them to regularly reflect on their teaching practices, seek feedback from colleagues and students, and engage in self-assessment and professional growth. Provide support and resources for self-reflection, such as reflective journals, mentoring programs, and structured reflection frameworks.

Mechanisms:

- Develop professional development programs focused on reflective practice and provide resources to support self-reflection among faculty and educational leaders.
- Encourage faculty members to keep reflective journals, engage in self-assessment, and seek feedback from colleagues and students.



Prioritize Student-Centered Approaches

Emphasize a student-centered approach to teaching and learning where the needs, interests, and aspirations of students are at the forefront. Encourage pedagogical leaders to incorporate student voice and choice in instructional decision-making, promote active learning strategies, and create inclusive and engaging learning environments.

Mechanisms:

- Encourage pedagogical leaders to involve students in decision-making processes, such as by soliciting their input on instructional methods and creating opportunities for student voice and choice.
- Promotes the use of active learning strategies, collaborative projects, and real-world applications to engage students and address their diverse needs and interests.
- Allocate resources to create inclusive and engaging learning environments, incorporating technology and adaptable spaces that support student-centered instruction.



Self Reflection:

- ☑️☰ Read the content of the chapter: Stewards of Excellence in Schools and Colleges of Architecture and Design with a focused reading on the enabling actions and the associated mechanism / catalyzing measures.
- ☑️☰
- ☑️☰

You can also use the initial questions raised in the chapter as a trigger for your responses:

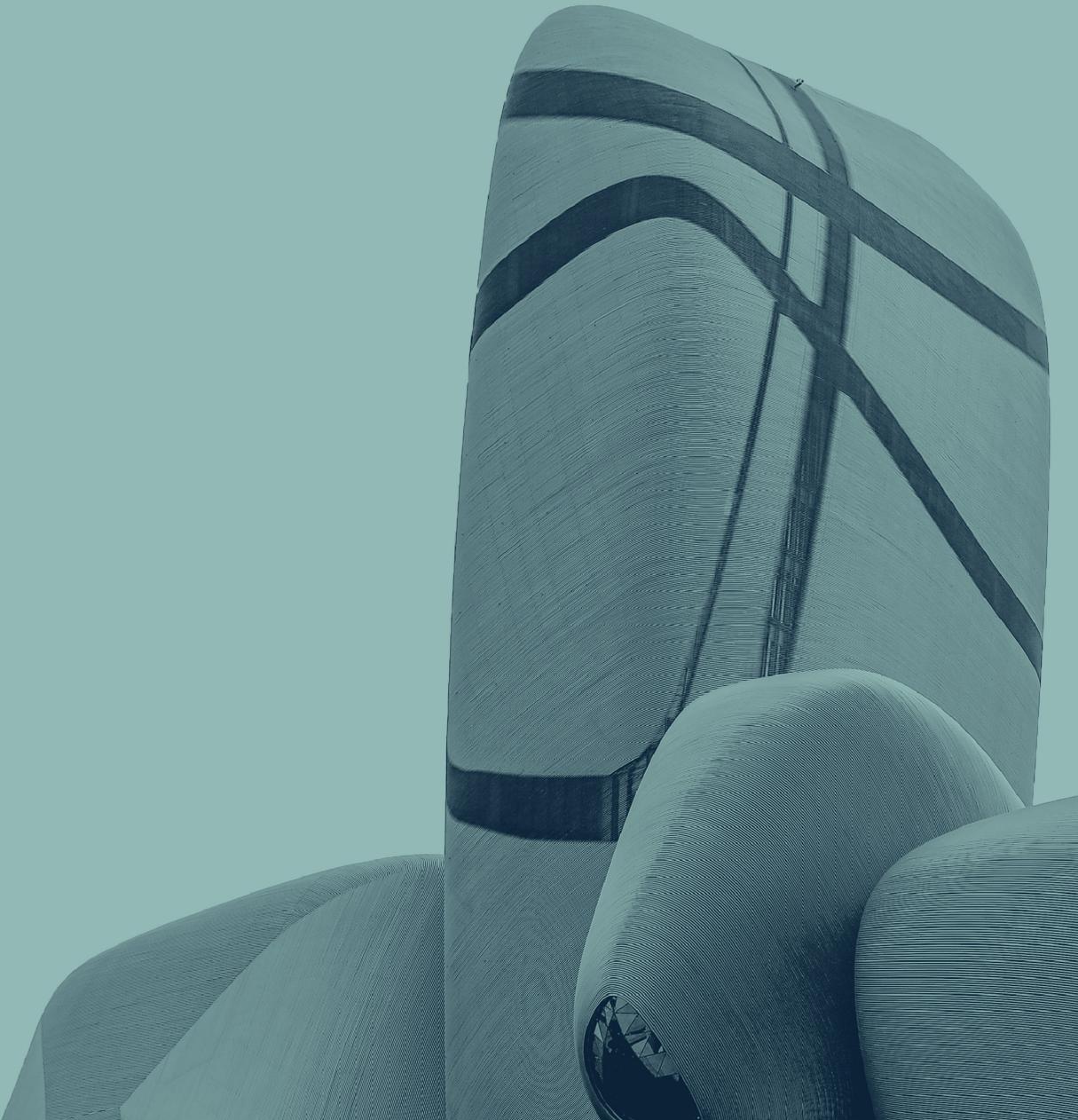
- What are the types of leadership in the school of architecture and design?
- How can we capture a comprehensive understanding of models of leadership?
- What are the profile characteristics of faculty and teaching assistants, and how can their capabilities be continuously enhanced?

Self Reflection:

Enabling Actions	Self-Reflections	Prioritized Actions
	To what extent do the college or program implement these actions? What mechanisms are used in the implementation?	Arrange actions in order of priority, then select the relevant mechanisms appropriate to the conditions of your college or program.
1. Develop and Communicate a Compelling Vision	_____	_____
2. Establish a Culture of Risk-Taking and Innovation	_____	_____
3. Promote Collaborative Decision-Making	_____	_____
4. Foster a Culture of Empowerment and Autonomy	_____	_____
5. Establish Collaborative Platforms and Structures for Pedagogical Leadership	_____	_____
6. Promote Reflective Practice	_____	_____
7. Prioritize Student-Centered Approaches	_____	_____

03

Components of Excellence for Educational Institutions of Architecture and Design





3

Components of Excellence in Schools and Colleges of Architecture and Design



Fostering a culture of excellence coupled with effective leadership requires a comprehensive understanding of key components pertinent to teaching, learning, and the production of knowledge. These components vary across various areas of focus within architectural and design education. The profile of the curriculum, together with its structure and content, the relevant students' admission policies, the support administrative structure, and the physical resources, including the design studio, as a place for design and critical inquiry and dialogue, and laboratories and software, all play vital roles in shaping the culture of excellence. The production of knowledge and the engagement with construction and creative industries through robust integration with teaching and learning are critical aspects that would instigate a productive learning community not bound by the physical setting of the university campus.

This section responds to the following key questions:

1

What are the key characteristics of curricula across architecture and allied design fields?

2

What is the current state and role of admission policies?

3

How can the design studio's pedagogical culture be conceptualized?

4

What is the role of research in the architecture and allied design fields?

5

How can engagement with practicing architects and construction and creative industry professionals take place as part of the teaching-learning process?

6

What are the necessary physical resources and IT solutions, including software packages, that enable effective learning and research?

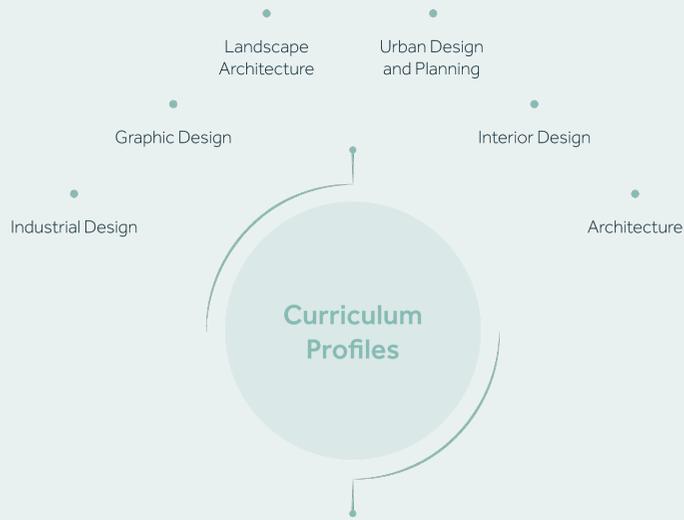


3.1

Curriculum Profiles

A review was undertaken to examine course profiles leading to bachelor's and master's degrees in architecture and other design fields in various universities in the United States, United Kingdom, and Australia, which are typically viewed as established and enjoy effective models and programs that proved successful through international benchmarking and quality assurance.

We will define the degree title for each specialization, as commonly recognized by the majority of universities in the aforementioned countries. Additionally, we will identify the key courses for each specialization, linking them to their outcomes and orientations where possible.



8 Potential Student Admission Policies



Administrative & Technical Staff



Physical Resources-Labs & Software



Figure 9: Selected components of excellence pertinent to teaching and learning in architecture and design.

3.1.a Architecture

In the United States, there is a clear and explicit structure for professional degrees in Architecture.

- **Bachelor of Architecture (BArch):**

The Bachelor of Architecture (BArch) is the conventional first architectural degree. Typically, the BArch is completed in five years. The coursework is intended to satisfy the academic criteria of the National Architectural Accrediting Board, the professional accrediting organization (NAAB). A NAAB-accredited program typically includes general studies, professional studies, and electives. It also provides training through a design studio in which students gain the skills necessary to create architectural designs that are suitable and buildable and respond to cultural and environmental contexts. In addition to completing an authorized BArch curriculum, students must do internships or practical training.

- **Bachelor of Science in Architectural Studies/Bachelor of Science in Architecture (BS Arch)/Bachelor of Arts in Architectural Studies (BA Arch):**

These alternative architecture degrees are often completed in four years, in contrast to the BArch's five-year duration. In general, however, they are not NAAB-accredited because they do not have an architectural design focus but place more emphasis on building science and building performance aspects. Frequently, they are considered pre-professional degrees because, in order to complete an accepted program leading to licensure, students must earn a Master of Architecture (MArch), which is two years following one of these degrees.

▪ **Master of Architecture (MArch):**

Typically, a coursework with studio component is required for the Master of Architecture, which is a terminal professional degree. It is not intended to prepare students for doctoral-level study. Those without a professional degree in architecture or a five-year Bachelor of Architecture program (the BArch or its equivalent) must finish a three-year MArch I program. Typically, students who hold a professional degree in architecture or have completed a Bachelor of Architecture degree in five years are eligible to enroll in a two-year MArch II program. Those with advanced standing may be qualified to obtain the MArch degree in one year in some instances.

▪ **Master of Science in Architecture (MS Architecture):**

The Master of Science in Architecture is a nonprofessional, nonterminal degree typically earned in less than two years. It is suited for students who wish to deepen their understanding of a specific component of the field or who intend to pursue a PhD degree in the future.

In the United Kingdom: Architecture in universities emphasize the technological, design, cultural, and historical aspects of the topic, and lectures on art and 3D design are taught alongside lectures on history and theory.

Architect certification requires seven years, including five years of education, followed by two years of professional training and practical work before certification professional exams. After completing a three-year undergraduate degree, students will become members of the Royal Institute of British Architects (RIBA) prior to enrolling in a BArch, Diploma, or MArch degree.

■ A Bachelor of Architecture degree

is the initial step toward becoming a fully trained architect, and upon completion of the program, students will be exempt from RIBA Part 1 (considering RIBA has 3 Parts). In some cases, this degree is called a Bachelor of Architectural Studies, or a Bachelor of Architecture and Design. Additionally, in some cases, they are called BSc in Architecture if they have a strong engineering component or are housed within a college of engineering.

■ Master of Architecture (MArch), Master of Science (MSc) in Architecture, and Master of Art (MA) in Architecture

degrees are offered to graduates who wish to continue their architectural education (MA). If they are not studio-focused and follow the specifications of professional organizations, they are seen as having graduate degrees but not professional degrees.

An example from the Manchester School of Architecture, is that it offers the full suite of architectural programs from Part 1 to Part 3. Below is an example of how courses fit into the standard path to becoming a registered architect.

- BA (Hons) Architecture RIBA Part 1 – Three Years Full-Time
- Practical Experience stage 1 – Typically one year
- Master of Architecture (MArch) RIBA Part 2 – 2 Years Full Time or 4 Years Part-Time
- Practical Experience stage 2 – Typically one year
- PgCert Architecture & Contemporary Practice RIBA Part 3 – Part-Time

In Australia: Australia has a structure like that of the United Kingdom with slight variations. The Bachelor of Architecture or equivalent is typically three years, followed by two years of Master of Architecture or its equivalent. In some cases, depending on the student's achievement in the first degree, the duration of the Master of Architecture could be one year.

The preceding outlines of professional programs in the United States, the United Kingdom, and Australia show that there is a significant diversity of approaches and pathways leading to degrees in architecture.



3.1.b Interior Design

In the United States: The subjects covered during the program may vary depending on the level (bachelor's, master's, or higher), the chosen concentration, and the department's overall objectives. A key feature is that students can customize their education by selecting electives, practical training, and internship opportunities, all of which promote multifaceted growth.

▪ Bachelor in Art in Interior Design

An undergraduate degree that takes from three to four years in interior design is intended to provide students with a firm grounding in the fundamentals of the field such as selecting colors and materials and to hone skills like communication, pattern interpretation, design studio and creative thinking in design.

▪ Master of Interior Design

Postgraduate programs that take from one to three years at interior design colleges. They are mostly studio-based but place a greater emphasis on research, integrating classical and modern approaches, and including multiple contexts. These programs deal with advanced concepts of architecture, design, problem identification, space planning, and a series of specialized electives.

▪ Certificate/Diploma in Interior Designing/Basic Interior Design certificate programs (6 months-2 years):

Offered to students who have UG degrees in interior design or design and art-related fields, the focus of short-term degrees at interior design colleges is on providing hands-on training in a specific area of interior architecture and design to develop specialization, while equipping students with skills relevant to the workplace.



The United Kingdom,

- Bachelor in Art in Interior Design
- Bachelor in Art in Interior Architecture
- Bachelor in Art in Spatial Design

The Above degrees are mostly three-year degrees that qualify their graduates to practice interior designing. An example from the University of the Arts London, is that it offers three Interior Design undergraduate courses, all of which are three years long: BA (Hons) Interior Design, BA (Hons) Interior and Spatial Design. It also offers Interior Design postgraduate courses, the duration of which is one year: Graduate Diploma in Interior Design and MA in Interior and Spatial Design.

In Australia, different levels of interior design courses are offered and range from short-term certificate level to professional degree level. Major study units include Foundations in Interior Design, Interior Design CAD, Color and Light Studies in Interior Design, Multi-sensory Spaces, Interior Modeling Techniques, Interior Design and Industry. The degree is typically named Bachelor of Design Arts (Interior Design) and can be completed over three years full-time or two years fast-tracked full-time. Students can also study interior design on a part-time basis. In most cases, the academic year is divided into three twelve-week study periods (3 semesters per year).

In various contexts worldwide, interior design degrees are named interior architecture degrees. While the boundaries are not clear, this reflects the focus of the program leading to the degree. If they focus on art, interior decorations, and spatial design, they are typically called interior design. If they focus on indoor environmental quality, indoor space planning, and human behavior as it relates to thermal conditions, they are typically called interior architecture.



3.1.c Landscape Architecture

In the United States, most landscape architecture programs are offered at the bachelor's degree level. However, depending on the university, a student can choose to study BA, BSc, or BLA (Bachelor of Landscape Architecture). Many programs are offered as Bachelor of Liberal Arts degrees (BA), which are taught over four years and can be more focused than other liberal arts programs. Typically, there are only minor distinctions between BA and BSc degrees; for instance, a BA may feature more art and design courses, while a BSc may emphasize sustainability and science. A student can pursue a master's in landscape architecture. One or two years of study are required to earn an ML.Arch (Master of Landscape Architecture) or an MA in landscape architecture. Degrees name: BA, BSc, or BLA (Bachelor of Landscape Architecture). an ML.Arch (Master of Landscape Architecture) or an MA in landscape architecture.

In the United Kingdom, landscape architecture is not a common profession where there is no regulatory body that oversees the practice of landscape architecture (unless it is integrated with urban design, and in this case, the regulatory body is the Royal Town Planners Institute). This is despite the fact that there are more than 50 programs in landscape architecture offered by UK universities. Some schools of architecture offer students the opportunity to earn a professional certificate from the RIBA and the Landscape Institute at the same time. It consists of fundamental courses in both architecture and landscape design, as well as specialized courses that address the primary objective of integrating architecture and landscape design, leading to certification in both disciplines. Typically, these are the first professional degrees and are completed over a period of three or four years. At the postgraduate level, **there are two types of degrees:**

▪ **Master in Landscape Architecture (MLA):**

This is a two-year master's degree that enables individuals without an undergraduate degree or expertise in landscape architecture to pursue a career as a landscape architect. The first year is a preparatory year, as most incoming students will be new to the discipline of landscape architecture. The second year places a strong emphasis on design research, with a large-scale design studio project and research project complementing one another and allowing students to graduate with highly developed portfolios.

▪ **Master in Art in Landscape Architecture (MALA):**

This is a one-year master's degree for students with a bachelor's degree in landscape architecture from the United Kingdom or its international equivalent who wish to pursue a career in landscape architecture. Like the MLA, the Master of Architecture in Landscape Architecture offers a significant emphasis on design research, with a major design studio project and research project complementing one another and allowing students to construct excellent portfolios upon graduation.

Degree names: MLA Master in Landscape Architecture MALA Master in Art in Landscape Architecture

In Australia, the Landscape Architecture curriculum includes studio sessions, site visits, and theoretical studies of landscape architecture's history and practice, community outdoor facilities, the history of gardens and landscapes, and the preservation of natural resources. Typically, the first- and second-year students complete subjects on the foundations of design and are introduced to the design studios.

In the third year, students usually undertake four subjects of study that are more specialized, with a focus on design and architecture.

Both the United States and Australian universities offer opportunities for students to complete a double major with some study areas as follows:

- Architecture + Landscape Architecture
- Computing + Landscape Architecture
- Digital Technologies + Landscape Architecture
- Mechanical Systems + Landscape Architecture
- Property + Landscape Architecture
- Urban Planning + Landscape Architecture
- Civil Systems + Landscape Architecture
- Construction + Landscape Architecture
- Graphic Design + Landscape Architecture
- Performance Design + Landscape Architecture
- Spatial Systems + Landscape Architecture

Double majoring is beneficial as it offers additional opportunities and enhances employability prospects.



3.1.d Graphic Design

In the United States, typically, bachelor's degree programs are required for entry-level positions in a variety of design fields. At the master's level, students concentrate on the development of studio abilities, expert techniques, project management, and advanced design theory and applications. Bachelor's degree programs in graphic arts usually take four years to complete and are comprised of 120–180 credit hours of classes, which are divided into general education, core studies in graphic design, and electives. Students can choose from the following degree options:

- **Bachelor of Arts (BA) or Bachelor of Science (BS):**

The BA or BS degree in graphic arts is designed to be a well-rounded general degree, providing graduates with key artistic and production skills, and a foundation in graphic design theory.

- **Bachelor of Fine Arts (BFA) in Graphic Arts:**

Considered a professional degree, the BFA curriculum is based on studio practice and concentrates on the development of skills and knowledge in interactive design, typography, and motion graphics.

- **Master's Degree in Graphic Design:**

Two graduate degrees are normally available to graphic design students: the Master of Arts (MA) and the Master of Fine Arts (MFA). The MA is an academically and theoretically advanced degree, but the MFA is the highest professional degree for graphic artists and allied design specialists. The MA student concentrates on a single academic specialty, perhaps in preparation for teaching, whereas the MFA student is free to explore a wide variety of skill applications and optional disciplines. MA candidates must complete research or a theoretical study, whereas MFA candidates must complete a creative dissertation or portfolio. Depending on the curriculum and graphic design colleges, both degrees can be completed in two to three years.

In the United Kingdom, any design-related field, such as 3D design, communication design, photography, illustration, or visual art, can lead to a job in graphic design. Yet, a degree in graphic design would be the most beneficial. A variety of colleges offer graphic design courses. During the first year of the BA Graphic Design program's three-year duration, students study the principles of visual language, research, methodologies, and design practice. They utilize typography, print, drawing techniques, photography, and screen-based media.

In the second year, they participate in workshops and studio's, critical evaluations, and seminars. They study aspects such as audience, context, distribution, and ethical considerations. In the third year of study, they are taught how to develop a design portfolio while learning more about professional practice, business and marketing, and project management. In some schools, the degree is four years long, one of which includes a placement year or internship.

▪ A Master's in Graphic Design

is typically a one-year degree and includes subjects such as Research Method and Project Proposal, Graphic Design Concepts, Creative Innovation and Entrepreneurship, and Graphic Design Processes. Students' work is guided by industry specialists. Prior to completing the course, most of the modules/courses are followed by a substantial project.

In Australia, the graphic design major provides students with practical and conceptual skills to undertake professional graphic design work. Graphic design is typically offered as a concentration or major rather than a full degree though a few universities offer a full B. A. Degree in Graphic Design.

Graphic designers work within print and digital-based mediums to present information in ways that are both memorable and accessible. They are visual communicators, assembling illustrations, typography, images, and motion graphics to create distinctive design works.

The graphic design major integrates design theory, digital and analog approaches, and modern industry practices so they are industry-ready. Students must complete a design portfolio and learn to critically interpret and integrate historical, social, cultural, and stylistic concepts in graphic design. The typical course structure involves completing foundations in design theory and simple applications, coupled with various design studio assignments. All subjects in the first two years are prerequisites to the third year, and students must have good standing to be eligible for entry into the third year, where they complete four key subjects, coupled with studio-based projects.



3.1.e Industrial Design

In the United States, the four-year professional degree (first/undergraduate degree) in industrial design supports collaborative and immersive learning with varied disciplines. In most schools, the delivery of industrial design attempts to establish a learning atmosphere that fosters creative discovery in addition to helping students develop critical thinking and problem-solving abilities, while promoting a wide grasp of and sensitivity to environmental and social issues. The key principle in most courses is that user needs, universal design, sustainability, human-centered design, and ergonomics all play a vital part in conceptualizing and developing products. In addition to expanding students' industrial design knowledge, students are expected to cultivate aesthetic sensibilities, and improve material circumstances, human requirements, and environmental conditions. They gain expertise in sketching, visual communication, graphic layout, form creation, and physical model making. In addition, the integration of technology into the curriculum appears to be on the rise in most universities offering industrial design programs, such as advanced computer modeling, photorealistic rendering, quick prototyping, and CNC milling.

The Master's degree in Industrial Design typically offers both thesis and non-thesis tracks, allowing students to specialize their studies in particular areas of industrial design (and, in some cases, systems engineering). Students can select from a variety of specialization options, including human factors, management systems, manufacturing systems, operations research, and the general industrial design or engineering route. The program prepares graduates for Ph.D.-level studies and careers in the public and private sectors in the field of industrial design and product development. Whether with a design focus or an engineering focus, a master's-level program promotes systems thinking and problem reframing. It emphasizes strategic and creative thinking, design innovation, and the creation of human-centered solutions. The curriculum challenges students to approach problems from fresh angles, span diverse fields, and develop innovative and sustainable solutions. It typically combines the three pillars of design—people, business, and technology—to create value and competitive advantage in societal, economic, and environmental contexts.

In the United Kingdom, industrial designers are expected to design and develop a range of new products; these may include common products, mobile applications, and other specialized products.

A bachelor's degree in industrial design develops a foundational understanding of the field and includes modules that address the fundamental concepts and theories of the discipline. These courses may consist of fluid physics, engineering mathematics, solid materials and structures, computer-aided design (CAD) techniques, and production systems. Teaching and learning are undertaken in lectures and seminars, as well as in practical design studio sessions, field trips, and site visits. Some programs offer work placement for a summer session before graduation.

Normally, the BA or BS in Industrial Design offers a variety of professionally constructed required and elective modules. Through practical and skill-based modules, Years 1 and 2 emphasize the development of foundational design knowledge and skills. In the final year, students apply this knowledge to a year-long, self-directed, industrial design-focused major project while also completing additional elective modules.

The MSc in Integrated Industrial Design is a degree offered by several universities and enhances students' critical knowledge of significant industrial design practice, hence enhancing their contribution capacity and value to employers. The study typically spans the full design process, beginning with a design challenge or opportunity and concluding with a mass- or batch-production-ready finished product. It is appropriate for both new graduates and working professionals who wish to develop their fundamental design knowledge and specialized abilities. It includes topics like sketching, visual layouts, presentation techniques, qualitative and quantitative design research methods, enterprise and business, design for behavioral change, collaborative design, creating product design briefs, project management, advanced CAD application, and design practice.

In Australia, Industrial Design is seen as a field that is more focused on engineering; it applies a systematic approach to transform designs and concepts into tangible products and services through a wide range of industrial systems. Industrial engineers are expected to ensure a company's competitiveness from design and production to business strategy by maximizing efficiency and effectiveness in the organization.

They look at how to improve processes or design things that are more efficient and waste less money, time, resources, and energy while meeting customer needs and regulatory obligations. Therefore, students are expected to develop a comprehensive engineering and business skillset in manufacturing technologies, systems and simulation, advanced manufacturing and operations techniques, and business management. In both undergraduate and postgraduate degrees, the curriculum covers topics such as manufacturing processes and technology, manufacturing automation and IT, industrial systems and simulation, sustainable and life cycle engineering, industry digital transformation and optimization, and business management.

3.2

Student Admission Policies – First Professional Degrees

Admission policies for the first professional degree play a significant role in developing an effective learning environment within departments/schools of architecture and design. Admission policies vary across the world and across schools in one country. Due to the unique nature of architecture and design disciplines in terms of the basic intellectual, conceptual, and graphic skills required, admission policies play a significant role. Therefore, admission requires parameters that go beyond high achievements in high school.

- **In architecture**, standard practices illustrate a range of policies. In the United States, there are technical requirements for entry into a program in architecture, and these include a strong academic record, a creative portfolio, letters of recommendation, an interview with a department head (variable), a minimum GPA of 3.0 in high school; and an essay. If an undergraduate student does not yet have a creative portfolio, there are schools that accept architecture and design students based on other criteria. In most cases, having letters of recommendation from current teachers or instructors helps with entry into the school of choice.

Though some universities do not require an interview, most architecture schools will require it. However, there are schools, such as Cornell, that accept a 'written' interview in which the applicant writes answers to interview questions when they cannot meet face-to-face.

In the United Kingdom, performance in high school seems to be the key requirement. However, English language, art and design, and mathematics are all preferable subjects to have studied before applying to an architecture degree. Applicants are expected to enjoy drawing freehand and have an interest in designing and producing 3D work. Notably, entry requirements vary significantly across UK universities, especially with respect to high school records.

In Australia, prerequisites for entry into schools of architecture must be fully fulfilled before admission, though they still vary across various schools. Yet, every university follows a common set of requirements that include academic qualifications, successful completion of higher secondary education, and a design portfolio. Additional requirements apply and include transcripts, a letter of recommendation, and a statement of purpose.

In interior design or interior architecture, requirements for admission are like those for architecture, though performance in high school is not expected to be as high as what is required for architecture. In the United States, the United Kingdom, and Australia, requirements are similar with slight variations. In the United States, for an applicant to be considered for admission into interior design/interior architecture, there are several requirements that include certification of high school graduation or the equivalent official high school transcript(s). In evaluating candidates, the Committee on Admissions takes into consideration individual interests, motivation to succeed in a chosen design profession, and prior academic achievement. Basic requirements for admission include graduation from an accredited high school or equivalent and an entrance exam or SAT scores. A personal interview is strongly emphasized by some schools.

- **Landscape and urban design are** not common first professional degrees in many countries. However, schools that offer these degrees employ admission requirements like those in architecture and interior architecture. This is because, in many cases, they do not have bodies that validate or accredit them or organize them as professions.²¹ However, in the UK, the Royal Town Planning Institute (RTPI) validates urban design courses at both the master's level and, in rare cases, at the bachelor's level.
- **Graphic design**, as part of schools of architecture and design, is not as common as undergraduate provision. However, in most cases, it is offered by an exclusive school of design or a school of art and design. Each university has its own system that allows future students to apply for and enroll in their degree programs. Yet, some of the basic requirements include good performance in high school with art and design subjects studied as part of the high school certificate, letters of recommendation, portfolios, and writing samples.

Likewise, entry into **industrial design** programs involves meeting a set of standard requirements in the United States and the United Kingdom that are notably like those of graphic design. An emphasis on the quality of portfolios and writing samples is also witnessed in many schools.

²¹ "Validation", "accreditation", "recognition" are three terms that are used to mean the process of transforming competences that originate in practical experience into credits or formal certification of degrees. Each of these terms has a different meaning. In Collins English Dictionary and Thesaurus (2001): To accredit means to certify as meeting required standards; To recognize means to give formal acknowledgement and approval of competences; and To validate means to confirm, corroborate and give official force to competences.

3.2.a A critique and overview of worldwide admission policies to schools of architecture

The discussion on admission policies as a theme within the overall context of architectural and design education worldwide is receiving considerable interest among design educators. Architects receive their education and training in hundreds of schools of architecture around the world. Practice is usually locally regulated, sometimes licensed, with examinations set by professional organizations or other licensing bodies. The practice of architectural design education is remarkably similar in many parts of the world due to the overriding primacy given to the design studio as the main forum for exploration, interaction, and assimilation. In the new globalized era, it can be argued that such a similarity enables greater and more significant mobility of architects among firms, areas of expertise, and locales, even where cultural differences are dominant.

As pointed out by Goldschmidt et al. (2000), it is still rather unclear how the various similarities and differences between schools of architecture affect the experience and performance of graduates.²² In actuality, very little is known about architecture students, and next to nothing is known about ways in which schools exercise control over their student intake via admission criteria they adopt and practice.

²² (Goldschmidt et al., 2001)



Tracing the history of admission policies, one can find three types of admission mechanisms. The Beaux-Arts school adopted a specific and rigorous system for admission that ran like a confederation of ateliers. Each atelier was distinctly characterized by the qualities and abilities of its patron, usually an accomplished architect. After joining the atelier, students were trained to perform well in the stiff Beaux-Arts entrance competition. The Bauhaus and Vkhutemas adopted somewhat different policies; nonetheless, the focus was still on the skills required for carrying out different art and design assignments. These three schools, to varying degrees, have had a major but stagnant influence on admission criteria and policies to architectural schools worldwide; in fact, not much has changed.

What has changed, however, is the complexity and diversity of tools used to determine the suitability and the appropriate performance of applicants. Schools of architecture now have eight admission criteria; these include high school records, general scholastic aptitude tests, special architecture aptitude tests, interviews, portfolios, essays, written statements, and finally, letters of recommendation. The results of two surveys²³ demonstrate the admission criteria adopted by over 100 schools of architecture at the end of the 20th century. The results of the analysis reveal that some admission criteria are more dominant than others. For example, most of the schools surveyed (93.2%) placed emphasis on good high school records; however, less than half (40%) utilized a skill-based aptitude test.

²³ (Salama, 2005) – (Salama, 2021)



By and large, admission policies reflect the tendencies of most schools of architecture to punctuate skills in drawing and form manipulation, an aspect of design pedagogy that continues to be emphasized throughout the duration of study in schools at the expense of other pedagogical aspects such as diverse knowledge contents and learning outcomes (Figure 8). While these results cannot be generalized, such widely divergent admission policies reflect a sustained emphasis on the skills needed for enrolment, while the knowledge and critical thinking abilities of applicants as they relate to the built environment appear to take a back seat. While there are no clear studies or statistics on the relationship between admission policies and retention or completion rates, it is safe to argue that effective admission policies that include various parameters for testing various students' skills ensure effective learning and reduce failure rates while ensuring a smooth learning process.

On a more positive note, there appear to be some responsive endeavors to redress the imbalance between the two categories of skills and knowledge in entrance tests and exams. One such policy is the exam approach adopted by Rizvi College of Architecture in Mumbai, India: while the first part of the exam heavily emphasizes the applicants' abilities in drawing and conceptualizing spaces, the second part of the exam measures the way in which applicants can critically understand issues that pertain to the city and its underlying social, cultural, and human elements.



Schools
responded
118

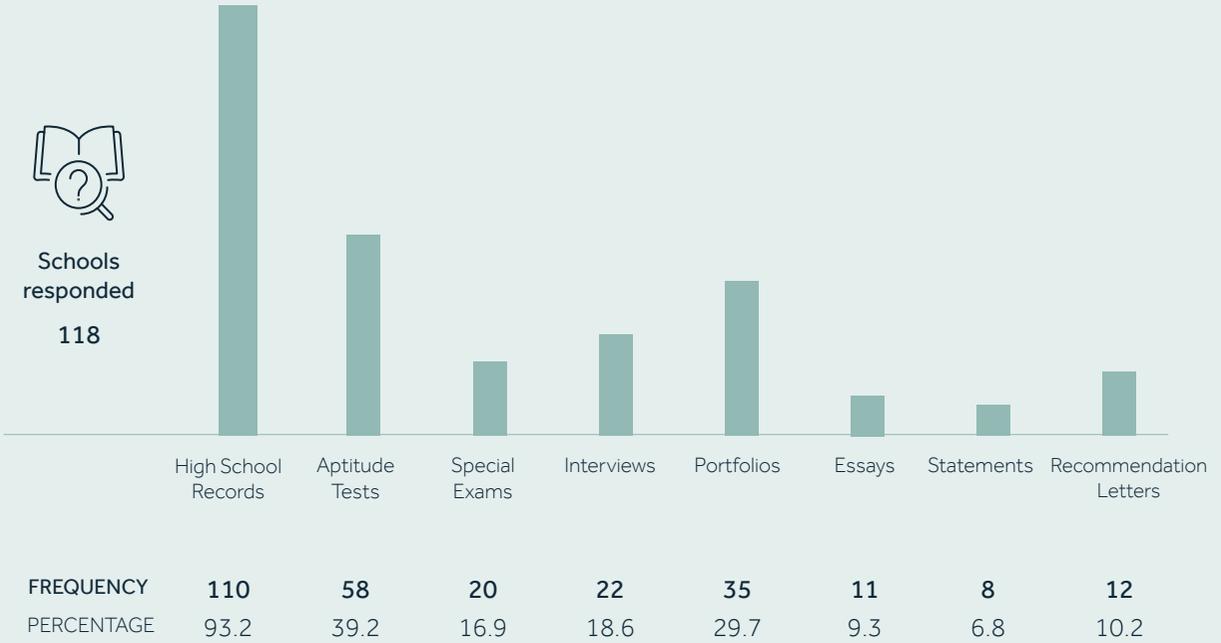


Figure 10: Compiled admission criteria adopted by 118 schools of architecture worldwide.²⁴

²⁴ (Salama, 2015)



Another example is an approach embraced by the Department of Architecture and Urban Planning at Qatar University in Doha, Qatar, with an all-female student body, where a three-hour aptitude test consisting of four components measures such abilities as, firstly, the applicant's logical thinking and pattern recognition; secondly, her abilities of developing and composing three-dimensional objects; and thirdly, her design skills, with the option of designing a poster, a pamphlet, or a sign. The fourth test examines the applicant's comprehension skills: they are requested to read an architectural essay and answer a series of close-ended to open-ended questions, as well as comment on what they have learned from the essay.

Based on the test results, students are shortlisted, and the selected applicants are invited for a 20-minute follow-up interview. While the survey results shed light on some current practices in admission policies, the impact of such policies on the performance of students in schools and after graduation and on their skills and knowledge needed for creating humane environments remains a challenge.

Very little is known about the success or failure of admission criteria and the way in which they may shape the attitudes, progress, and performance of students throughout their years of study. The lack of measurable data on admission policies and their consequences indicates an urgent need for more in-depth investigations in this area. The question begs asking: how many potentially gifted architects are turned away from schools of architecture because they failed to meet the so-called acceptable and standardized admission criteria?

3.3

Administrative and Support Technical Staff

The running and management of schools/departments of architecture and design require an effective cohort of administrative and technical staff. While management functions involve secretarial and clerical support that includes administrative officers, depending on university structures, a number of roles are important to consider. These include:

- Admission officer.
- Student affairs/ exams officer.
- Research administrator.
- Financial administrator.
- Resource management and planning administrator.

The role of technical staff, or technicians, is crucial for a successful teaching and learning process in a school of architecture and design. They need to be effective and specialized (in some cases, licensed) in various technical aspects. Best practices suggest the presence of at least (per department or school):

- Two IT specialists with expertise in both hardware and software, web development, and virtual reality laboratories.
- One technician for building the science laboratory.
- One technician for building construction and technology laboratories.
- One technician for woodwork and model-making laboratory.

It is noted that the preceding figures of technical expertise are the minimum, and they would increase based on an increase in the student population or the introduction of more than one program.

Overall, the effective management of schools of architecture and design requires a strong presence and expertise of administrative and technical staff.

3.4

Design Studio Pedagogical Culture

Each certified school of architecture is required by the National Architecture Accreditation Board (NAAB) in the United States to have a documented policy describing the studio culture as a pedagogical setting. This requirement is based on the 2002 study of the American Institute of Architecture Students Studio Culture Task Force, which emphasized an atmosphere that promotes the principles of optimism, respect, sharing, participation, and innovation.

²⁵Schools of architecture have various approaches to documenting their studio culture. By and large, it involves criteria for respect, intellectual engagement, experimentation, cooperation, collaboration, and time management. Reviewing some of the schools, it is evident that Princeton University's School of Architecture has communicated a comprehensive yet concise policy to all students and faculty.

²⁶Such a policy includes expected behavior, routines of students and faculty members, opening and closing hours, and other related operational matters.

By and large, the design studio's pedagogical culture is not unique to the discipline of architecture. All other design-related disciplines, including interior design and graphic and industrial design, have graphic studio's, skill development components, and design project components that reach or exceed 50% of the curriculum.

These components are delivered in studio settings, and thus, the design studio pedagogical culture prevails. The discussion below, however, is offered with a focus on architecture due to the wealth of studies available on the pedagogical culture of architectural design studio's when compared to discussions in other design fields. Nonetheless, the key message remains the same for both architecture and other design fields, where design studio's are at the heart of the teaching and learning processes.

²⁵ (Koch et al., 2002)

²⁶ (Princeton University - School of Architecture, n.d.)

3.4.a The Role of the Design Studio

Architecture is simultaneously a technical, artistic, and social discipline. Consequently, it requires a wide range of intellectual and practical skills. Perhaps the most important characteristic of architectural thought is the capacity to synthesize knowledge from a variety of professions or fields of expertise. This talent for synthesis and problem resolution is best taught and understood within the context of design studio work. The design studio is the backbone of the education of future architects and designers and the main forum for creative exploration and interaction, as well as knowledge acquisition, assimilation, and reproduction.²⁷

Studio work commences with the precise definition of a problem, continues with the identification of pertinent facts through research, and concludes with the empirical testing and development of design solutions. Research and conceptualization, as well as drawing and model making, are all necessary skills (graphic, model-making, intellectual, negotiation and collaboration, and decision-making).

Parallel to design work, students are encouraged to work with a variety of mediums and to consider concerns about process and representation. In studio work, the full curriculum comes into play; students are encouraged to include content from design, building technology, history/theory, and professional practice courses and modules. Studio work is a collaborative endeavor: a constant dialogue with faculty instructors, peers, visiting critics, and practicing architects.

²⁷(Salama, 1995)



The design studio is where students investigate, propose, test, develop, and present design propositions that combine information from a variety of sources within and beyond the curriculum. It is a hub for student and faculty collaboration, intellectual exchange, and innovation.



The design studio is a hands-on learning environment that fosters creativity and embraces the values of invention and discovery. The studio is also a venue for students to assume responsibility for their creations and to publicly display and defend their work. Lastly, architecture is a collaborative art form; many design projects at schools of architecture and design are group-based, and studio work always involves teamwork. Every unique effort contributes to the design culture of a school. Students are highly encouraged to work in Studios in order to participate in and benefit from this vital communal discussion.

3.4.b The Studio Environment and the Design Process

Schools of architecture and design should promote an environment of mutual respect among students, faculty, staff, and administration in the studio, reviews, classes, and across the school. They should offer an intellectually curious environment in which new ideas and diverse perspectives are instigated and debated. They should encourage cooperative comprehension and regard the studio as a space where architectural concepts are discussed and discourses and where opposing viewpoints can coexist.

Schools of architecture and design should instill dialogue, critical thinking, and independent study. Not only should they encourage students to participate, but they should also encourage them to begin conversations. The studio is a laboratory for new ideas; one of the most fruitful characteristics of studio culture is its informality; often, the best ideas emerge independently of a particular class, structure, or event as a result of an after-hours conversation or spontaneous interactions. Examples include Pidgin, a film series; ad hoc events; pizza nights; and other such activities and gatherings where fresh ideas frequently germinate.



The studio culture encompasses a number of distinct aspects of design teaching: class sessions and group meetings in which ideas, studio design problems, or readings are discussed; individual tutorials and desk crits, which are perhaps the most important striking characteristic of design studio teaching; public reviews of varying degrees of formality—with or without outside critics; and private time spent in the studio to generate and develop ideas, where individual or group projects are initiated, developed, and practiced. Each of these elements or activities has specific protocols and requirements that must be honored and respected. In design education, production is essential, but the design process must also be emphasized. Students are urged to clarify their thought processes and present a comprehensive array of materials documenting their design process. Individual desk critiques are always more fruitful when students bring their own ideas and sketches to the table for discussion. Frequently, critiques in reviews are centered on the methodology, proposing various paths for exploration or alternate techniques. Individual students and the school as a whole gain from a fruitful studio culture. Ideas, methods, and approaches may vary across design studio groups, but everyone is working toward the same end. The aim is to enable students to discover that this environment of common purpose informs and enhances the work of everyone.

There is no expectation that students live in studio's. Studio tasks can and should be done within realistic timeframes without requiring students to spend entire nights at school. The faculty and tutors are obligated to clearly communicate all expectations, requirements, and deadlines and to work with their students to ensure that these may be met within a reasonable timeframe. Schools of architecture and design should encourage students to maintain a balance between their academic and personal responsibilities, including proper sleep, physical activity, and healthy food. Students should be made able to manage their time to avoid all-nighters, and if a problem with course deadlines emerges, it is normally advised that they address the matter as soon as the conflict becomes apparent.

3.4.c The Jury System, Critiques, Reviews, and their Educational Value

The architectural design jury system has been and continues to be the subject of debate for more than 25 years. Since the classical study of Kathryn Anthony, published in 1987 in *Private Reactions to Public Criticism and Design Juries on Trial: The Renaissance of the Studio* (1991), the topic has attracted a considerable number of educators to study, investigate, and debate its underlying processes and outcomes.



Analytical descriptions of the jury system can be traced to earlier writings from the late seventies and early eighties.²⁸ These note that the jury system, adopted in 1795 as a model for evaluating architecture students, was first developed as part of the rituals in arts education and training by the *École des Beaux-Arts* in Paris. The jury practice started as a means of evaluating students' projects by experts behind closed doors; students were not allowed to be part of the evaluation process. This secretive practice continued until the beginning of the nineteenth century when the *École des Beaux-Arts* decided to become more inclusive by opening up and allowing students to take an active part in the evaluation process.

²⁸ (Carlhian, 1980) -- (Middleton, 1982)



Juries



Reviews



critiques

Juries, reviews, and critiques are three terms used interchangeably in schools of architecture. The term 'jury' has a somewhat negative connotation as it refers, in linguistic terms, to "a group of persons sworn to render a verdict or true answer on a question or questions officially submitted to them."²⁹ This, in actuality, is contrary to the true purpose of the assessment of student design projects, which is simply learning, reflecting, and discoursing ideas with the ultimate aim of improving students' performance. Remarkably, even today, the jury system, which is basically based on the old Beaux-Arts mechanism, remains, but in a somewhat more modern and updated version, mainly a sophisticated 'show and tell' style. Students present their completed design work individually in front of a group of faculty members, visiting professionals, classmates, and possibly interested passers-by. However, students may not even be aware of the criteria by which they are judged. Many scholars agree that faculty often critique each project spontaneously without making clear criteria for the students who must defend their work.³⁰ Although a more improved and innovative German model emerged in Europe between the 1910s and 1930s to replace the older and more staid French model of teaching, many of the habits, mechanisms, and rituals of the *École des Beaux-Arts* continued to exist and influence architectural education not only in the United States³¹ but elsewhere around the globe.

The jury system has been studiously analyzed and heavily criticized in the literature, specifically within the English-speaking world. This is evident in the number of publications dedicated entirely or partly to discussing and debating jury practices and obtaining feedback from those involved in the jury process; such criticisms aim to improve design education and the mechanism by which students' work is assessed. While the evolution, analysis, and criticism of the jury system are well documented, particularly in English, within the context of Europe and North America, a simple investigation of current publications reveals the severe lack of jury dynamics and how they perform or a critique of them in other parts of the world, namely the Arab world. Therefore, this work has been developed as a response to this lack and need.

²⁹ ("The American Heritage dictionary", n.d.)

³⁰ (Anthony, 1987) -- (Dutton, 1987) -- (Sara and Parnell, 2004)

³¹ (Esherrick, 1977)



In essence, while Saudi architectural education admits to the continuous influence of worldwide trends on the educational process, very little or nothing has been documented on the jury system. The assumption is that the overall educational system of architecture in the Kingdom of Saudi Arabia was borrowed from, or dramatically influenced by, the trends that prevailed or prevailed in Europe and North America; these have witnessed a variety of modifications that have significantly changed its characteristics and underlying practices.³²

In architecture, as in other creative fields, there is no one shared set of objective criteria that allows us to definitively determine if a project or solution is correct or incorrect, good or poor. This is the reason why discussion and criticism of reviews tend to focus on clarity and consistency rather than value or quality judgments. While adhering to strict standards and establishing high expectations for design work, schools of architecture and design should encourage constructive critique and courteous dialogue in all evaluations and discussions. Faculty members must recognize that reviews are difficult for students. This is why promoting meaningful debate and civil discourse is essential. Criticism should be focused on advancing the student's work and be specific in nature. Additionally, students must respect the review procedure. This includes appearing on time, being well-prepared, following the design critic's planned schedule, and attending the full review.

In addition to assessing the development of individual students, evaluations provide a significant venue for public discourse. The discussions that occur during reviews are a crucial part of design instruction. Attending the complete review is not only a sign of respect and support for fellow students, but in many cases, all students will benefit from the comments given during the review of another student.

³² Examining the twenty-six publications revealed three categories of studies on the jury system: a) students and faculty surveys, questionnaires, and observations, b) experience-based case studies, and c) experience-based analysis and positional recommendations. While there are no clear boundaries between the approaches involved in the three categories, they were proposed for the purpose of classification and identification. In this context, it should be noted that such categorization is based on the approaches adopted to investigate and develop arguments on the jury system and is not based on the results or the findings of these approaches. See (Salama and El-Attar, 2010)

In discussing the jury system, it is important to address its purposes, objectives, and educational values. Several studies have attempted to answer these questions,³³ and, by and large, they all agree on certain characteristics that should represent a paradigm of educational values for any jury process. The main educational value of the jury system lies in enabling students to acquire effective knowledge by solving architectural or urban problems while providing them with a sufficient framework of guidance, either to complete their projects, as is the case of interim juries or to consider and apply such knowledge in future projects, as is the case of the final juries. In this sense, the jury system should be seen as a tool that fosters the enrichment of the learning process as well as the acquisition and application of knowledge. The educational value of the jury system occupies a central position in the learning process. Nevertheless, its validity and function have been heavily criticized; for example, many students feel that they do not learn much from any juror comments; furthermore, they claim they cannot remember anything about their colleagues' projects that are presented before or after their own due to exhaustion, nervousness, and worry about their performance and grades.³⁴

The aim of the jury system as an educational vehicle and a catalyst for learning includes the following four purposes:

- Introduce constructive criticism of the students' designs, drawing the student's attention to the pros and cons of his/her design.
- Provide general instruction on critical design issues that pertain to the students' projects under assessment.
- Initiate scholarly dialogue and exchange between faculty members, between faculty members and students, and among the students themselves.
- Measure the degree to which a student can acquire and apply knowledge in the form of a design solution in response to a hypothetical or real-life architectural or urban problem.

³³ (Anthony, 1987) -- (Anthony, 1991) -- (Graham, 2003) -- (Sara, 2004) -- (Llozor, 2006)

³⁴ (Anthony, 1991) -- (Graham, 2003) -- (Salama and El-Attar, 2010)



The jury practices discussed above are relevant, for the most part, to physical, in-person design studio's. However, advances in CAD and visualization, combined with technologies to communicate images, data, and "live" action, now enable virtual dimensions of the studio experience. Students no longer need to gather at the same time and place to tackle the same design problem.



Critics can comment over the network or by e-mail, and distinguished jurors can make virtual visits without being in the same physical space. Studies demonstrate that virtual design studio's (VDS) have the potential to favor collaboration over competition, diversify student experiences, and redistribute the intellectual resources of design education across geographic and socioeconomic divisions. However, it is important to speculate whether VDS will isolate students from a sense of place and materiality or if it will provide future architects and designers with the tools to reconcile communication environments and physical space.



While jury dynamics are different, key aspects of communication, dominance, and the power of critics and reviewers remain the same.

Role of the Design Studio

- Design Studio encourages student to investigate, propose, test, develop and present design propositions.
- A hub for student-faculty collaboration, intellectual exchange & innovation.
- A hands-on-learning environment.
- A space for critical inquiry and creativity embracing the values of invention and discovery.

The Studio Environment

- Studio Culture that promotes an environment of mutual respect.
- A space where architectural concepts are discussed and discourses and where opposing viewpoints can co-exist.
- Offers an intellectually curious environment in which new ideas and diverse perspectives are instigated and debated.
- Encourages cooperative discussion and production.



The Jury System

(Critiques, Reviews and Educational Value)

- To introduce constructive criticism to a student's design; pros and cons of his/her study.
- To provide instructions on critical design issues pertaining to student's project assessment.
- To initiate a scholarly dialogue and exchange between faculty members and students; students among themselves.
- To measure the degree to which student can acquire and apply knowledge in the form of a design solution.

Figure 11: Elements and key characteristics of design studio pedagogical culture.

3.5 Research in Architecture and Allied Design Fields³⁵

Many in architecture and allied fields worldwide, as well as in the Kingdom of Saudi Arabia, are involved in research activities on a regular basis. They have chosen their careers to construct and cultivate diverse forms of knowledge on contemporary thematic issues of interest to the academic and professional communities. Nonetheless, except for a few undertakings,³⁶ there has been a glaring dearth of cognizance of the key characteristics pertinent to methodological research in architecture and associated fields, together with a scarcity of the scholastic endeavors involved in remedying this. Consequently, recent concerns about the recognition of what constitutes methodological research in architecture within higher education present new opportunities for academics and professionals to strengthen their understanding of research, its relationship with architectural education, design pedagogy, professional practice, and its overall role in advancing knowledge that genuinely benefits architecture and built-environment professions.

There have been, and still are, continuous debates within architecture and allied fields about the role, nature, and attributes of research. Discussions among academics and professionals suggest that architects and other design and built environment professionals seem to be at odds with the nature and value of research in architecture and design, how it should be conducted, and whether it should serve the design and built environment professions. Nonetheless, research in architecture can be classified into two categories: technically oriented research (TOR) and conceptually driven research (CDR), which represent two perspectives of inquiry in architecture and allied disciplines.

³⁵ (Salama, 2019a)

³⁶ (Franz, 1994) – (Groat and Wang, 2002) – Preiser, Davis, Salama, Hardy, 2014) – (Lucas, 2016)

3.5.a Technically-Oriented Research (TOR)

Three 'frames-of-reference' appear to characterize technically oriented research (TOR). These are the systematic, the computational, and the managerial. TOR places emphasis on the process and procedures as the primary basis of effective design.

1

Within the **systematic frame-of-reference**, the supremacy of consumerism and industrialization during the 1950s resulted in perceiving design knowledge as essential for improving production, developing processes to suit intended qualities in the end product, and implementing designs to accommodate users' needs. Architecture and allied design and built environment fields considered 'performance' as a goal, leading to a sustained quest by design researchers to make the design process more efficient and effective.³⁷ Consequently, during the following decades and up to the late 1980s, a 'rational' approach to knowledge acquisition, assimilation, and accommodation in a systematic design process has dominated design discourse. The work of many scholars³⁸ represents principal thinking and examples of the systematic application of technique, which instigated a design research culture that advocated a more explicit and transparent design process, though underpinned by a linear conception of design.

³⁷ (Hensel, 2010)

³⁸ (Alexander,1964)–(Markus,1972)–(Broadbent,1973)–(Sanoff,1977)–(Cross,1984)

2

Within the **computational frame-of-reference**, researchers viewed designing as a process amenable to depiction into decomposable components, represented numerically, and interpreted and administered by a computing machine and software. The computational frame-of-reference stems from research and theoretical foundations, which include cognitive science, expert systems, and artificial intelligence.³⁹ The work of William Mitchell and John Gero⁴⁰ demonstrates well-recognized achievements in the utilization of systems thinking and machine learning in design that have drifted in two directions. The first is computer-aided design (CAD), which is aimed at improving the efficiency of processes and products, and the second is knowledge-based design, which entails the understanding of design as a heuristic research process that fosters designers' knowledge of the relationship between potential solutions and performance requirements. These efforts led to the recently developed Building Information Modeling and Management (BIM) approach to design,⁴¹ which is now used as part of research on the application of Information and Communication Technologies (ICT) in design and construction and is adopted as a necessary tool for practice within the built environment profession.⁴²

3

Notably, systematic and computational frames-of-reference have gained significant interest within the design research community for several decades, as evident in the surge of published research. However, in comparison, the **managerial frame-of-reference** does not seem to have attracted the same level of attention given the available body of knowledge in this area. In it, research is centered on the examination of the nature of architectural services, design teams, office management within an architectural practice, and project delivery processes. It also involves investigating various aspects of the profession, its position within other design and built environment professions, and the way in which it is perceived by society. Significant work represents important examples that scrutinize ways in which contemporary practices can be more responsive to the demands placed on the profession by society.⁴³ Likewise, recent research raises questions about the role and types of research utilized within professional practice.⁴⁴

³⁹ (Whitehead and Eldars, 1965) – (Eastman, 1969) – (Maver, 1971) – (Newell and Simon, 1972) -- Mitchell, 1979)

⁴⁰ (Mitchell 1979 & 1990) -- (Gero, 1983 & 1993)

⁴¹ (Sacks et al., 2018)

⁴² (Kumar, 2015 & 2018)

⁴³ The work of Burgess (1983); Akin (1987); Gutman (1975 & 1988); Cuff (1991); Sanoff (1992), and more recently Fisher (2006 & 2010); Awan et al. (2011); Till (2013); Brown et al. (2016).

⁴⁴ (Dye, 2014)

Looking at more recent developments of Technically-Oriented Research (TOR), the systematic frame-of-reference does not seem to have developed as a distinct research area beyond the 1990s. The recent body of knowledge, however, suggests that the **computational frame-of-reference** has advanced dramatically into a clear sphere of inquiry that demonstrates the renewed interest in virtual reality to visualize, understand, and articulate data to enhance planning, design, and construction decisions.⁴⁵ This involves a spectrum of sub-areas ranging from CAD/BIM modeling to virtual and augmented reality and from immersive visualization to the development of virtual platforms for heritage preservation.⁴⁶

The **systematic and computational frames-of-reference** appear to have merged into two growing areas of research. The first pertains to environmental sustainability in buildings and environments, as evident in the annual conferences of the PLEA organization—Passive and Low Energy Architecture and ANZASCA—Architectural Science Association. Both are clearly focusing on making the discipline more scientific. This sphere of inquiry includes empirical, experimental, and simulation-based investigations, utilizing advances in information technologies to develop new insights into passive and climate design, thermal comfort, energy efficiency, low carbon design, daylighting, and indoor environmental quality within design processes and for the development of new knowledge within academic research.⁴⁷ The second is concerned with the Space Syntax approach to forecasting planning and design implications. It incorporates mathematical and configurational techniques utilizing computers for the analysis of spatial configurations while enabling architects and urban designers and planners to simulate the socio-physical impacts of their designs and plans with a focus on spatial integration, centrality, connectivity, and accessibility.⁴⁸

The critical nature of research and writing within the **managerial frame-of-reference** appears to continue to lessen interest in this area, where scholars seem to avoid assessing and criticizing the profession and its organizations. This is despite the significant influence of its advocates in attempting to revolutionize the profession and to develop new modes of architectural practice in various ways, with a clear focus on the social and political contexts within which the profession operates. The managerial frame-of-reference, however, has expanded beyond the profession of architecture to clearly advance new spheres of inquiry in integrated design and construction practices, design management, facility management, project lifecycle management, and sustainable construction.⁴⁹ Yet, within conventional academic and professional circles in architecture and design fields, these areas are valued as completely different spheres of inquiry that are related more to engineering but not to architecture or urbanism.

⁴⁵ (Whyte and Nikolic, 2019)

⁴⁶ (Goulding and Rahimian, 2015)

⁴⁷ (Zuo, 2016) – (Roaf et al., 2017) – (de Dear et al., 2018)

⁴⁸ (Hillier and Hanson, 1984) -- Hillier, 2015)

⁴⁹ (Anumba, 2005) – (Emmitt et. al., 2009)



3.5.b Conceptually Driven Research (CDR)

Vital to the CDR perspective, two primary frames-of-reference are explored. The first is a psychological frame-of-reference, and the second is a person-environment frame-of-reference.

Embracing the psychological frame-of-reference design, researchers tend to espouse the belief that designing is a process that involves three key qualities. As a 'rational' process, it encompasses information processing across various developmental phases; as a 'constructive' process, it builds on knowledge generated from past experiences; and as a 'creative' process, it utilizes conjectural reasoning.⁵⁰ In this respect, research is driven by the goal of matching knowledge with the nature of the design problem, its components, context, and social and environmental requirements. Research focusing on the nature of design problems,⁵¹ problem definition and solution generation,⁵² and design knowledge⁵³ reflect endeavors that accept the linear approach of problem-solving (Akin, 1986), which perceives people and objects as isolated entities within the design/research process. However, the recent work of Goldschmidt (2014)⁵⁴ introduces linkography as a new method for the notation and analysis of the creative process in design, which adopts a 'good-fit' approach, drawing on insights from design practice and cognitive psychology.

⁵⁰ (Lawson, 1980) – (Heath, 1984) – (Rowe, 1987)

⁵¹ (Rittel and Webber, 1973)

⁵² (Simon, 1973) – (Wade, 1977)

⁵³ (Thomas and Carroll, 1979) – (Goldschmidt, 1989)

⁵⁴ (Goldschmidt, 2014)

Within the **person-environment frame-of-reference-a**, design, researchers place emphasis on the socio-cultural and socio-behavioral factors as they relate to the design process itself and to settings, buildings, and urban environments. The increasing awareness of social reality and the growth of community-driven programs during the 1970s generated interest in collaborative and democratic design processes. Sanoff's simulation games, Lawrence's environmental models, and Hamdi's enabling mechanisms⁵⁵ are pioneering examples of how social, cultural, and behavioral issues are investigated within the design process.

Aligning with the notion of collaboration in design, researchers focused on the development of arguments, models, methods, and tools⁵⁶ that could support client/user engagement in the design process. While Sanoff continues to pursue his quest for collaborative design research practices following his previously established approach,⁵⁷ other scholars, in other contexts, attempt to unfold social and political aspects of the built environment and the way that future users may shape it,⁵⁸ interrogating issues that pertain to how architects can best enhance their partnership with users and the wider society to deliver responsive environments.⁵⁹ In essence, underpinned by the belief that reality for an individual is socially and politically constructed and is primarily determined by social and cultural norms, what is unique about the collaborative approach is the sharing of values and acting collectively on knowledge about how requirements can be achieved and how needs can be met.

⁵⁵ (Sanoff, 1978 & 1984) - (Lawrence, 1987) - (Hamdi, 1990)

⁵⁶ (Hester, 1990)

⁵⁷ (Sanoff, 2000 & 2010)

⁵⁸ (Blundell-Jones et al., 2005)

⁵⁹ (Jenkins and Forsyth, 2009)



Another primary form of research within the **person-environment frame-of-reference-b** places emphasis on the meaning of place and the nature of the user in relation to physical, social, and cultural environments. It acknowledges the crucial need for broader interdisciplinary and trans-disciplinary approaches to inquiry. The work of the environment-behavior studies/research community (EBS/EBR) represents this form of research that has expanded significantly as part of two important organizations: the Environmental Design Research Association (EDRA), which operates mainly within the North American context, and the International Association for People-Environment Studies (IAPS), which operates in Europe. Established in 1969 and 1981, respectively, both organizations continue to generate interdisciplinary research that places emphasis on the investigation of user requirements and is conducted by sociologists, environmental psychologists, social psychologists, and design professionals.⁶⁰



Integral to the **person-environment frame-of-reference** research aims at understanding the complexity of human behavior within the built environment from an experiential standpoint. Examples include examining the psychological factors of place, the reciprocal⁶¹ relationship between culture and environment⁶², place identity and how it is influenced by feelings and behaviors within certain physical settings, and the meaning and influence of culture on the built form⁶³, an area of research that has gained continuous interest⁶⁴. Other areas of research involve the examination of social life in urban space, environmental⁶⁵ perception, experiential aesthetics, visual research methods, and wayfinding in complex environments,⁶⁷ to name a few.

⁶⁰ (Shin et al., 2017) -- (IAPS, 2018)

⁶¹ (Canter, 1974 & 1977)

⁶² (Altman & Chemers, 1980)

⁶³ (Rapoport, 1969, 1977, and 1990)

⁶⁴ (Rapoport 2005 & 2008)

⁶⁵ (Whyte, 1980)

⁶⁶ (Nasar 1988) – (Sanoff, 1991)

⁶⁷ (Passini, 1992) – (Cooper, 2010)



The associated practical repercussions of the person-environment research were materialized in two areas of design research that focus exclusively on users and are viewed as fundamental to the design process while offering the opportunity for better-informed decision-making in future built environments: programming and post-occupancy evaluation (POE).⁶⁸ Research within the **person-environment frame-of-reference** applies various tools that stem from the social and psychological sciences, including archival documentation, attitude surveys, focused and semi-focused interviews, participant and nonparticipant systematic observation, and cognitive and behavioral mapping techniques.



Looking at more recent developments of Conceptually Driven Research (CDR), the psychological frame-of-reference has not progressed into a contemporary research trend, given the scarcity of writings in this field. Yet, recent contributions suggest that while not a mainstream sphere, it remains essential given the quality of the leading journal in this area, *Design Studies*, and the birth of the new journal, *Design Science*, though not exclusive to architecture and built environment studies. As a sphere of inquiry, it maintains an interest in cognition, visual and creative thinking in design, and the way in which designers justify, reason, and generate concepts and ideas.⁶⁹

⁶⁸ (Preiser, 1985) – (Hershberger, 1999) – (Cooper Marcus, 1972 & 1985) – (Preiser et al., 1988)

⁶⁹ (Casakin and Kreidler, 2011) – (Goldschmidt, 2014) – (Cross, 2016) – (Oxman, 2017) – (Darbellay et al., 2018).

The **person-environment frame-of-reference-a**, focusing on collaboration and engagement with users and communities as part of an action design/research process, seems to have developed into a distinct sphere of inquiry directly linked to professional practice. This is evident in the recent writings of its pioneers, coupled with the interests of governments and local authorities in engaging with communities in regenerating old city centers or shaping new residential communities. It is also manifested in the rising interest of a considerable number of architectural firms to work closely with client groups, as well as in the annual conferences of the Association for Community Design (ACD), an organization committed to increasing the capacity of the planning and design professions to better serve communities. The surge of interest in action and collaborative research is palpable in recent writings that articulate cases of and offer guidance on how architects, urban designers, and planners can genuinely engage with communities.⁷⁰

With a focus on users and communities in relation to the physical, social, and cultural worlds, the **person-environment frame-of-reference-b** maintains its solid foundation on the initial set of themes in the psychology of place, place identity, and attachment, and the reciprocal relationship between cultural and behavioral factors and built form, as evident in the research work of the EBS/EBR community. New themes have emerged over the past two decades to include resilience, social equity, healing environments, therapeutic landscapes, and the dynamic interactions of environment-behavior and neuroscience. Older and new themes were applied to various environments, ranging from small settings and interior spaces to different types of learning environments, workplaces, and nursing homes, and from small urban spaces to neighborhoods and cities. The accompanying practical ramifications of the person-environment frame-of-reference have also developed into new areas. In particular, evidence-based design,⁷¹ and POE have developed into a recognized sphere of inquiry, namely building performance evaluation (BPE), that extends beyond the exclusive focus on the user to address other relevant aspects, including assessing energy use, usability, productivity, and functional, environmental, perceptual, and social impacts.⁷²

⁷⁰ (Malone, 2018) – (Norton and Hughes, 2018)

⁷¹ (Hamilton and Watkins, 2009)

⁷² (Bordass, 2001 & 2014) – (Duffy, 2014) – (Mallory-Hill et al., 2012) – (Preiser et al., 2008 & 2012).



Both types of person-environment frame-of-reference have supported the growth of the social and cultural sustainability spheres of inquiry. On the one hand, cultural sustainability involves efforts to preserve the tangible and intangible cultural elements of society.⁷³ On the other hand, social sustainability involves various elements already adopted by EBS/EBR academics and professionals, including democracy and governance, equity, socio-economic diversity, social cohesion, and quality of urban life,⁷⁴ which is treated as a growing sphere of inquiry on its own.



3.5.c An Expanded Scope of Research in Architecture and Allied Fields

Research adopting the person-environment frame-of-reference has diverged into several spheres of inquiry that can be epitomized in three categories. The first two are traditional dwellings and settlements research and quality of urban life research. Although these areas involve various social, political, environmental, economic, and historical dimensions, people as individuals, groups, and communities remain at the core of research within these areas. The third is educational and pedagogical research in architecture and built environments, which is unconventional in the sense of its acceptability as a growing sphere of inquiry. Due to the diversity of interests and themes within this category, pedagogical research seems to be generated by various frames of reference, with a focus on learning, knowledge acquisition, assimilation, production, and reproduction.

⁷³ (Wessles, 2013)

⁷⁴ (James, 2015)



Traditional dwellings and settlements research:

Over the past few decades, interest in traditional settlements research has become common among researchers within various disciplines, including architecture, anthropology, art history, geography, urban history, and planning. This is evident in the biennial international cross-disciplinary conferences of the International Association for the Study of Traditional Environments (IASTE), which was established in 1988 to act as an interdisciplinary platform for knowledge sharing on cross-cultural and inter-disciplinary understandings of these environments. This is coupled with the semi-annual, highly valued journal: *Traditional Dwellings and Settlements Review*, which publishes quality research findings. The organization and its pioneers adopt the view that tradition is a dynamic concept for the reinterpretation of the past in light of the present.⁷⁵ Utilizing various tools from the humanities and social sciences, among the areas explored are the ways in which built forms embody cultural norms, informality, socio-spatial practices, especially of minority groups, everyday urban environments, authenticity, and the notions of imagined and manufactured heritages and traditions.

⁷⁵ (AlSayyad, 2014)



Quality of urban life research:

While studies on the quality of life (QOL) emerged in the 1960s and flourished in the 1970s, involving the development of economic and social indicators,⁷⁶ the spatial dimension was introduced later. The urban element was added as a significant physical dimension within which social and economic imperatives take place (QoUL). As a sphere of inquiry, it is concerned with the relationship between a person's quality of life and their urban environment, which is complex and warrants measuring. This has encouraged researchers to develop QoUL models that articulate a wide spectrum of indicators that influence such a relationship; the development of models has become a subject of study on its own.⁷⁷ Research is undertaken at the urban and city scales and involves implementing a range of measurement tools that include trend analysis through census and archival records, satisfaction surveys, interviews, and techniques derived from EBS/EBR. As an area of research, it is embraced by governments and appears to occupy a key position within contemporary urban discourse.

⁷⁶ (Pacione, 2003)

⁷⁷ (Marans and Stimson, 2011) – (Marans 2012)



Educational and pedagogical research:

For many decades, questioning the realities of architectural education and design studio pedagogy has been taboo, un-debatable, and incontrovertible. The roots of this sphere of inquiry started in the 1950s, with many writings epitomizing fragmented and disconnected issues that were often dealt with either by subjective criticism or by undeveloped and even untried solutions. However, as a sphere of inquiry, it has developed distinctively since the early 1990s.⁷⁸ It addresses topical concerns that pertain to the goals, objectives, outcomes, structures, and contents, as well as the instructional characteristics, delivery, and assessment methods and techniques required for responsive and responsible architectural education. Writings from the late 1990s varied, including the dynamics of architectural knowledge,⁷⁹ responding to contemporary professional challenges,⁸⁰ calling for a revisionist approach to pedagogy,⁸¹ delving into contemporary issues on decision-making, cognitive styles, place-making, and digital technologies,⁸² and articulating cases and successful evidence-based strategies for future teaching practices.⁸³ Emerging research is generating vigorous discussions in the literature. Yet, despite this growing interest in this sphere of inquiry, voluminous research and writings continue to be marginalized within mainstream research and, therefore, can be characterized as unconventional.

⁷⁸ (Anthony, 1991) – (Dutton, 1991) – (Teymur, 1992) – (Crimson and Lubbock) – (Salama, 1995)

⁷⁹ (Dunin-Woyseth and Noschis, 1998)

⁸⁰ (Pilling and Nicole, 2000)

⁸¹ (Salama et al, 2002)

⁸² (Salama and Wilkinson, 2007)

⁸³ (Froud and Harriss, 2014) – (Salama 2015)



3.5.d Outlook for Research in Architecture and Allied Fields

The two categories of research in architecture and allied fields and the six frames of reference suggest two distinct yet related types of knowledge in architecture and allied disciplines.

- The first type is knowledge resulting from research that seeks to understand the future through a better understanding of the past, research that tests accepted ideas.
- The second is knowledge resulting from research that probes new ideas and principles that will shape the future—research that develops new visions and verifies new hypotheses.

Within these knowledge types, it is maintained that the primary objective of methodological research in architecture and allied fields is to investigate designs, buildings, and built environments made by human beings—designers or non-designers. Implications can be inferred and articulated with respect to key qualities or concerns. The frames-of-reference could be summarized as follows:

- The systematic frame-of-reference: The systematic application of tools and techniques that have the capacity to improve the qualities of buildings and environments.
- The managerial frame-of-reference: The logical inquiry into various aspects of architecture and architectural management while seeking alternative modes and processes of practice.
- The person-environment frame-of-reference-a: The investigation of socio-cultural and socio-behavioral factors of users as part of the design activity.
- The computational frame-of-reference: The numerical representation and depiction of environments into decomposable components managed and interpreted by computers.
- The psychological frame-of-reference: The examination of cognitive and psychological attributes of designers' thinking in matching programmatic requirements with solution qualities.
- The person-environment frame-of-reference-b: The evidence-based examination of cultural, psychological, and behavioral factors of users in identified settings, spaces, and buildings.

Methodological research in architecture and urbanism is concerned with:

- The systematic search and acquisition, assimilation, and accommodation of knowledge related to design and design activity, how designers think, approach problems and develop solutions.
- The development of expressions, patterns, structures, and their organization into functional wholes.
- The physical representation of buildings and environments, how they perform in relation to who sees them and who uses them.
- What is achieved at the end of a focused planning or design process, how that which is achieved appears, and what it means to its users and the public at large.
- Design and construction processes as human activities, how designers work, how they collaborate with other experts, how they engage with users, how their work speaks to the public, and how they carry out these activities.
- Systematic learning about the experiences of the past and how these experiences enable the construction of new knowledge.

It is acknowledged that research ideas are instigated and developed based on conceptual frameworks, experimental fieldworks, or both, with the aim of uncovering various aspects of built environment reality. It should be noted, however, that the current utilization of the terms 'conceptual framework' or 'experimental fieldworks' requires clarification.

⁸⁴ (Salama, 2019b)

Systematic learning from the past towards shaping a better future

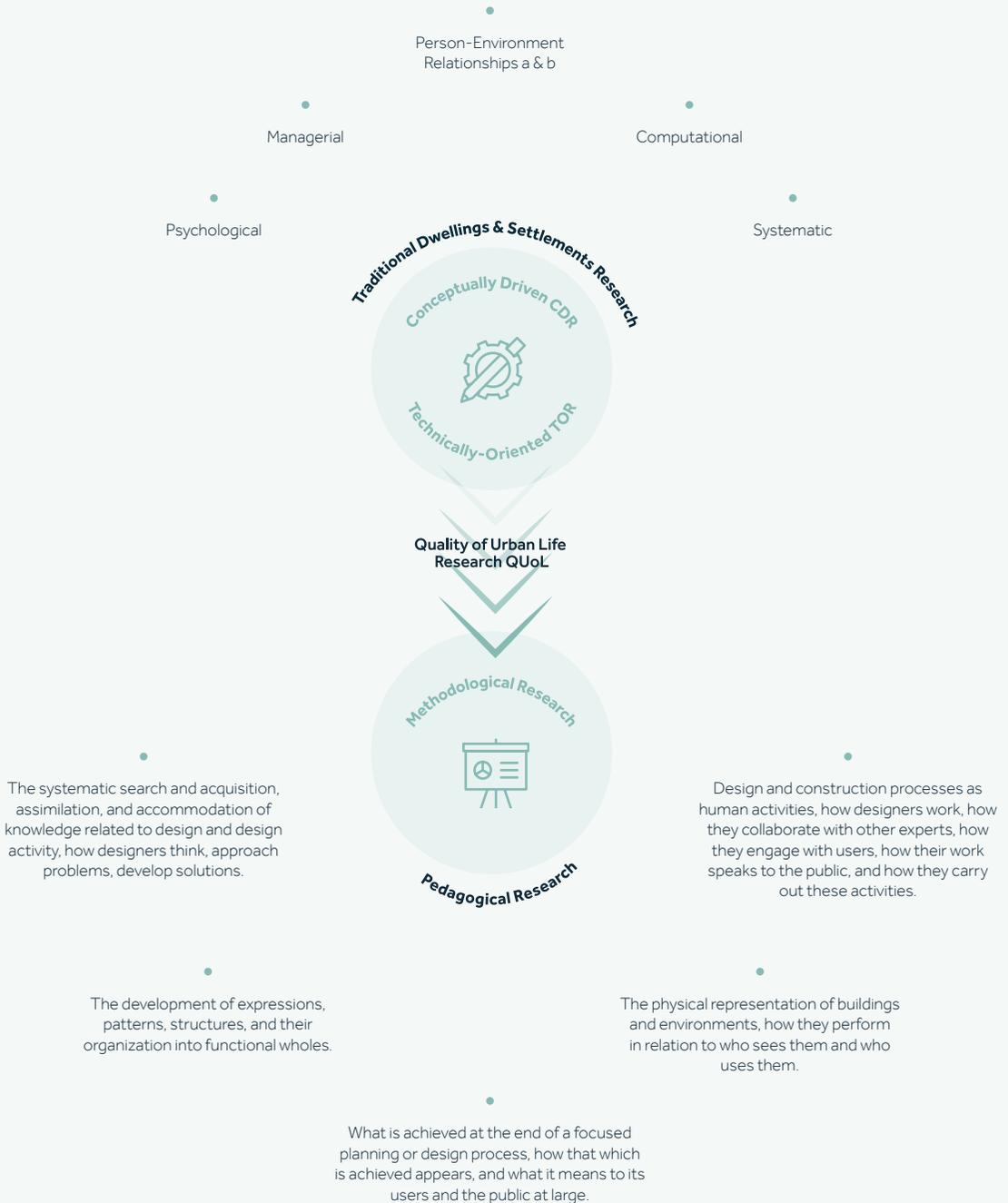


Figure 12: Elements and key characteristics of design studio pedagogical culture.

On the one hand, the term conceptual framework has been defined in from various disciplinary perspectives. Yet, the closest definition to the fields of architecture, urban design, and some areas within city research is that of Jabareen (2009).

He defines it as 'a network, or a plane, of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena',⁸⁵ arguing, and rightly so, that the concepts that constitute a conceptual framework should support one another, should articulate their respective phenomena, and should enable the establishment of a framework-specific philosophy. In this respect, any conceptual framework involves an ontological dimension—the nature of reality and an epistemological dimension—the way in which knowledge about that reality is acquired, recorded, and conveyed or communicated.⁸⁶ While this is not explicitly articulated in the papers, it is tacitly embedded while generating various structured research approaches.

On the other hand, while approaches to 'experimental fieldwork' are gaining momentum in recent research endeavors, they, in their broadest sense, are still not fully exploited by researchers in architecture. In essence, it needs to be expanded and adapted from other disciplines, such as social and cultural geography, to include ideas and methods for field research that are presented as innovative and experimental in terms of their approaches to observation and/or description and their choice of objects and/or themes.⁸⁷

Whether adopting approaches related to conceptual frameworks, experimental fieldworks, or both, research in architecture and allied fields should be instigated by clear questions and issues that are highlighted to reveal the striking qualities of built environment realities in the Saudi context. As an important activity for academics that aims to advance knowledge, it should meet the fundamental requirements of rigor, logic, reason, clarity, depth, and breadth of the questions and issues interrogated.

⁸⁵(Jabareen, 2009)

⁸⁶(Salama, 2019b)

⁸⁷(Phillips, 2018)

3.6

Strategic Initiative for Architecture and Design Research in KSA

Given the emerging state of the Architecture and Design (A&D) research ecosystem in KSA, the current research productivity is not significant due to several reasons including not having a dedicated foundation for research in architecture and design. However, there is a strong potential to increase research productivity by investing in KSA research ecosystem. With orchestration and concerted efforts, this will enable a transition to a mature ecosystem with a clear strategy. By bringing together stakeholders across the entire A&D ecosystem, the Architecture and Design Commission (ADC) aims to provide guidance for A&D research strategy to benefit all entities of the ecosystem. To realize this strategy and to support its Vision and Mission, ADC outlines 4 Strategic Objectives:

- **Develop Research Infrastructure:**
Create a stimulating research environment and develop an infrastructure that facilitates access to research resources.
- **Foster Research Talent & Capabilities:**
Enhance the competencies of researchers and developing research capabilities and talent within design research community.
- **Attract R&D Investment:**
Attract investment opportunities to support research and innovation and to enable and stimulate development in the sector.
- **Participate in Architecture & Design Dialogue:**
Raise awareness for engagement in the research sector to lead the Kingdom in the global research scene.

To tackle key current challenges and achieve these objectives, 8 Strategy Activation Projects are being implemented including:

- To streamline access to research facilities and labs, and to increase research accessibility to create a stimulating research environment:
 - National Facilities Enhancement
- To enable research and development activities across the ecosystem and attract investment contributions to boost research and drive innovation:
 - ADC Grants
- To grow and enhance research capabilities and skillset among A&D practitioners whilst nurturing research culture that cultivate a strong A&D research talent pool:
 - ADC Fellowships & Residencies,
 - Research Skillset Development
 - Research Performance Management & Incentives
- To increase engagement and collaboration through events and publications that raise awareness and promote national A&D research and recognize the Kingdom in the global architecture and design scene:
 - ADC Fellowships & Residencies
 - Research Skillset Development
 - Research Performance Management & Incentives

During the implementation of these projects, strategic partnerships will be key to maximize the value for all beneficiaries. This is especially true for education and research institutions, whose involvement is crucial across all 8 Activation Projects. These projects along with the research efforts of universities, research institutions, and faculty should consider the following six research priorities where project endeavors should:

- Build on the theoretical narrative of history of architecture design and identity through theory, criticism, archiving, and documentation.
- Create impactful solutions that enhance the quality of life for individuals and communities, involving human interaction with the environment and overall life satisfaction.
- Connect practice and theory within the architecture and design sectors, identify and create practical solutions across multiple disciplines.
- Explore the adoption of cutting-edge and emerging technologies affecting and developing the architecture and design sectors.
- Delve into the process of building capabilities by advancing pedagogy, developing competent graduates, and focusing on the role of the academia within the community.
- Consider the social, environmental, and economic impact to optimize resources throughout their life cycle during the design approach of buildings, products, and services.

3.7

Engagement with Practicing Architects and Construction and Creative Industry Professionals



In the context of current societal shifts and the need to offer future architects and designers multiple learning opportunities, engagement and collaboration with the creative industries are indispensable. It is argued that “Designers frequently lack the necessary understanding. [...] the interconnecting intricacies of human and social behavior, behavioral sciences, technology, and business are not taught in design schools. There is minimal or no instruction in science, the scientific method, and experimental design.”⁸⁸ Design education frequently takes place in hypothetical contexts that are indifferent to reality⁸⁹ or the surrounding context, ignoring any articulation between academia and industry and paying no attention to marketing strategies, business models, technological advancements, or the actual needs of target customers.



If higher education in architecture and design-related fields is to reflect the technological, social, cultural, ecological, and economic realities of the growing pace of globalization in the Gulf and Saudi context, then existing paradigms must be replaced with innovative ones. There is a need for approaches where the university and the corporate world will be able to collaborate and share knowledge and dynamics that reflect the reality of contemporary society.

⁸⁸(Norman, 2010) -- (Weinschenck, 2015)

⁸⁹(Salama & Wilkinson, 2007)



In the architecture and related construction industries, two important reports were published in the 1990s⁹⁰ to demonstrate a shift in thinking about the relationship between academia and industry. The reports were “Constructing the Team” and “Rethinking Construction.” Both laid the foundation for the crucial importance of establishing effective links between architectural academia and practices and industries. This was further supported by many academics and professionals. The evolution of the building industry falls under three headings: the public’s perception of architecture and architects, the architectural profession and its education, and the exponential increase of information. In reaction to the Egan report, the Royal Institute of British Architects (RIBA) developed a policy document outlining the problems architects face as they attempt to adapt to the changing market. The focus was placed on issues such as lean thinking, teamwork, partnering, procurement, and quality management.⁹¹



To establish effective links and collaboration in architecture and design-related fields and the construction and creative industries, there are a number of mechanisms that need to be embraced by schools of architecture and design.⁹²

They can take place through integrated work placement courses or internships, where students can receive industry experience prior to employment, and thus, creative industries and higher education design programs would be frequently connected. These opportunities vary across schools and can range from having a summer internship in between the prefinal and final years of studies or over the summer training period, or they can take the shape of one semester or year out of studies to pursue work-integrated learning. It is noted, however, that they also vary in terms of their position within the curriculum. In some schools, these opportunities become mandatory and are required since they are part of the curriculum, and students must pass them successfully. Other schools view this as an extra-curricular learning opportunity.

⁹⁰(Al-Ali and Sharma, 2009)

⁹¹(Nicol and Pilling, 2000)

⁹²(Fleischmann, 2012)



Practices within the United Kingdom show that many schools of architecture and design engage with a network of visiting design professors, mostly practicing architects/designers and design managers, in order to better connect higher education with professional practice, to make universities more responsive to what employers seek, and to instill in their students a sense of professionalism and entrepreneurship. Some schools have a “learning center” in which “professional architects and design practitioners would push universities to build more informal platforms for sharing knowledge and conducting practice-based and industry-based research.



Evidence from various reviews suggests that there is a clear recognition that stronger ties to industry would better prepare students for market demands. However, limited research exists on “how to do it,” what it entails, and the role of industry in architectural and design education. Real-world initiatives are one viable technique for combining industry and community with the learning environment. However, recent educational practices maintain that there are several advantages to industry clients delivering real-world projects for students, allowing them to experience practical design constraints and benefit from sponsors’ formal and informal mentoring of the students.



In essence, it is crucial to expose students to actual clients and briefs where the cooperation between the university and industry would be significantly responsible for the success of projects and where real-world tasks and interaction with practitioners evidently encourage and expand students’ knowledge.



While there are multiple benefits to engaging students in real-world projects, it is important that academics strike a balance between the usefulness of real-world problems and the need to select assignments that are meaningful and acceptable within the progression of the curriculum. Engaging industries and practices in the learning environment is one of the viable techniques for introducing students to industry practice and current work procedures during the course of their studies. The inclusion of this type of industry interaction in a degree program can provide students with several prospects by facilitating their transfer from the classroom to the workplace.⁹³ This enables the integration of real-world requirements with learning objectives through the sensible selection of suitable content, exercises, and projects.



Another alternative or option for engagement with the industry is the teacher-practitioner model, in which design schools or departments hire architects and creative industry practitioners to offer curriculum to students in lectures or tutorials. These “teacher-practitioners are recruited because they bring a ‘difference’ of industrial viewpoint from outside HE; their role benefits the teaching and learning community by adding up-to-date and industry-relevant knowledge. There are a range of roles that creative sector workers can play in design studio’s and classroom settings, including tutoring, lecturing, or being part of studio review panels.

⁹³ (Fleischmann and Hutchison, 2012) – (Foroudastan, & Hardyman, 2003).

Key Qualities/ Characteristics/Outcomes

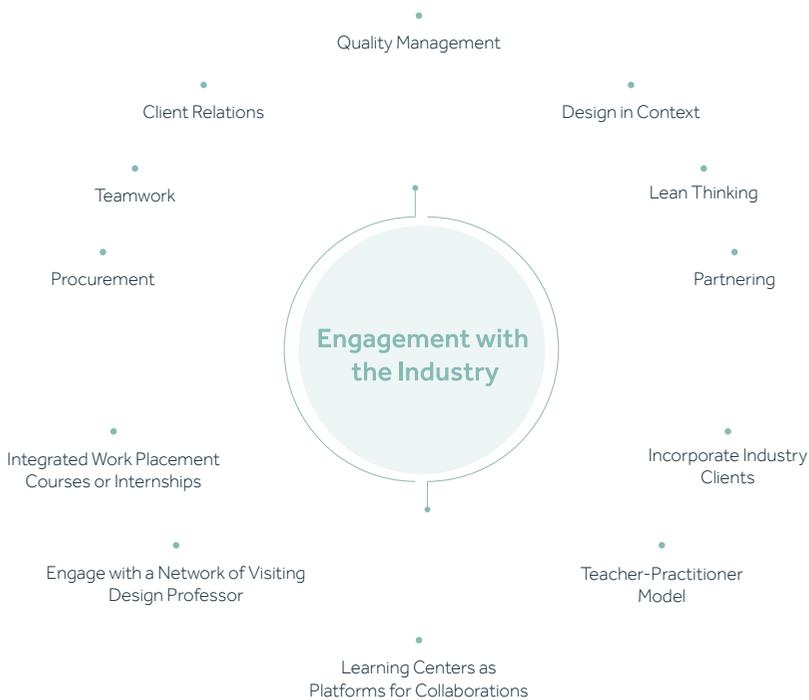


Figure 13: Approaches and benefits of engaging with architects and industry professionals.

Some architecture and design degree programs, in addition to offering internships to students, incorporate industry (community organizations or industries such as automotive, leisure, and transportation, or ministries, city councils, or school districts) as clients, thereby providing students with real-world projects. This simulates the client-service relationships in which architecture and design graduates will likely become involved after graduation. The effectiveness of architects and creative industry professionals in various roles in the learning and teaching environment will enable the closing of the skill gaps and ensure that students are developing current, industry-relevant skills needed to effectively contribute to the profession's and industry's future development.

Collaborative projects involving architectural practices, offices, companies, and architecture and design schools are becoming integral to the curriculum, where more and more universities strengthen their architecture and design programs while the business world benefits from the creative and intuitive process of the young or budding architects and designers. This is not a new phenomenon, and different collaborative principles have been tried out in various countries where collaborative design projects are highly valued by universities around the world. Many universities are currently setting up collaborative projects with external partners for the multiple benefits they bring to the learning environment and student learning outcomes, including developing practical methods and tools, gaining real-life knowledge, developing communication tools and cooperation skills, understanding the profession, understanding the business and the market, understanding the economic aspects, and creating a better learning environment.

3.8

Physical Resources/Laboratories – Important Software Packages

Significant online reviews of schools of architecture and design worldwide have been conducted to identify best practices that involve the effective use of educational and research laboratories together with the associated equipment of studio spaces and key software packages for various design disciplines.⁹⁴ It should be noted in this context that:

- The studio standards outlined in Section 3.7.a in terms of space and resources are essential standards and should not be negotiated.
- No school of architecture and design can afford or accommodate the breadth and diversity of laboratory resources and software packages outlined in sections 3.7.b & 3.7.c. However, a school of architecture should be able to make the right choices with respect to identifying the necessary and relevant resources that match their curricula, areas of specialization, and the profiles of faculty and students.

3.8.a Design Studios as Physical Learning Resource

Historically, unnecessary and inflexible partitioning and subdivision of studio spaces have compromised the quality of teaching, learning, and communication in design studios. Teaching practices in many schools worldwide suggest incorporating open floor plans and adaptable studio spaces to accommodate student demand for larger and more adaptable spaces with reasonable daylight and acoustic conditions.

⁹⁴ Reviews were conducted in February 2023 and include schools of architecture and design in the United States (Massachusetts Institute of Technology -MIT; Princeton University; University of Illinois Urbana Champaign), in the United Kingdom (Kingston University; Northumbria University; Oxford Brookes University; Royal College of Art – RCA; University College London – UCL; University of Kent; University of Northumbria; University of Westminster), in Australia (Curtin University of Technology; Queensland University of Technology; University of Melbourne; University of Sydney) and Switzerland (Ecole Polytechnic Federale de Lausanne – EPFL Swiss Centre for Design and Health; Swiss Federal Institute of Technology – ETH Zurich)



Studio spaces are subdivided into settings and areas by low-height movable partitions and specially built mobile storage and display modules that provide ample pin-up space. They also should be equipped with modern audio-visual equipment, automated blinds, and custom-hung display panels. Studio spaces need to be properly customized to how students and faculty work, thereby producing a world-class learning environment. For effective teaching and learning, these physical resources become indispensable





Best practices are evident in Northumbria's Department of Architecture and Built Environment (shown in the preceding studio images), as one example, which is not necessarily identical to all schools.

In light of these practices, the following parameters for design studios as a physical learning resource are identified: What is unique here is the designated size/area of space allocated to each student, as well as the idea of permanency throughout the semester or year, where students develop a sense of home/personal environment.

Architecture and design students should benefit from at least 4 square meters of studio space per student to provide comfortable personal spaces and enhance the educational experience.

- Each student should have his or her own desk, drawing board, electrical outlet, USB port, and cutting mat. Students should maintain their own studio space during the duration of the academic semester.
- The studios should be purpose-designed for this specific use and be created with light, views, and vegetation in mind. Ideally, the design of the design studio should be environmentally conscious and involve access to outdoor space and courtyards.
- The studios should utilize both digital and conventional ways of design communication. The inclusion of touch displays lets students and faculty doodle right on the screen and send each other content.
- Sustainable design factors should be considered in designing studios that should be carbon-neutral and mechanically efficient. Ideally, they would be naturally ventilated and feature recycled flooring and chairs, green roofs, and green walls with bird and bat boxes to attract biodiversity.
- Environmental conditions should be fully considered, including heating, cooling, and daylighting, involving efficient insulation.
- The design of design studios should be treated as a learning laboratory; it enables architecture and design students to utilize the environment as an open textbook to study construction, ventilation, acoustics, and fitting out.
- The design studios should be equipped with integrated, movable display screens that could be arranged in a variety of configurations throughout the space for use in instruction and exhibitions.



Schools of architecture and design should provide the latest resources, including modern design studios joined by traditional and digital crit spaces that allow for spatial reconfiguration into various layouts and with high-definition multitouch screens concealed behind the walls. For recording seminars and presentations, modular areas would have their own embedded computer, speaker system, microphone, and camera to allow for group discussions, pin-ups, and interim reviews. Students acquire essential experience by having their efforts scrutinized and questioned, much as they would in a real-world workplace. Studios should be accessible for long hours beyond the end of the working day and week, allowing students to work flexibly outside of their class schedule.



Some schools have intensive digital practices in which the digital studio is equipped with workstations that may accommodate requests for advanced computer modeling. All workstations are equipped with a wide variety of software, including industry-standard applications like Autodesk and Adobe Creative Suite, SketchUp Pro, and Rhino, as well as several additional architectural design applications. A strategy for the annual upgrade of software and maintenance of facilities should be in place.



The Digital Design Studio should be conceived as part of state-of-the-art computational design technology, such as haptic modeling devices, 3D scanning devices, and interactive graphic interfaces. All student computers within a school should be outfitted with cutting-edge software, including free-form modeling programs, parametric design apps, and BIM. These innovative tools would add computational design expertise, train designers, architects, and construction managers, and prepare them for the current and future digital era.



In addition to traditional model making in woodshops/workshops or studio spaces, studios should be equipped with color scanners with high resolution, large-format printers, and trimmers/cutting mats. In-house reprographics services should be provided to enhance photographic printing as well as large-format scanning. This service should be administered by studio technicians. However, it should be emphasized that woodshops and workshops must adopt specific safety measures.

3.8.b Educational and Research Laboratories and Centers for Architecture and Design

Educational and research laboratories are critical to the successful delivery of programs at all levels, but especially at higher levels and postgraduate studies. While some schools manage to integrate instruction and training in these labs into teaching and learning and consider them part of teaching delivery, other schools separate between teaching labs and research labs. If they are educational labs, they are typically integrated with programs, and if they are research labs, they are typically run and managed by research groups or research units within the department or school of faculty.

Primarily, whether educational labs are integrated with programs or independent research labs, effective learning is maximized when students are fractionally appointed (part-time) to perform specific research and experimentation tasks. There is no doubt that the presence and focus of these labs are based on the ethos of the school, faculty expertise, and the way in which experimental and simulation research is recognized and valued.

MIT's School of Architecture is one of the most outstanding schools of architecture in the world and has a substantial number of educational and research laboratories.

Architecture (Un)certainty Lab:

This lab offers a substantial expansion of what it means to think about architecture. Simultaneously, environmental demands, political entanglements, computational interfaces, and cultural paradoxes continue to proliferate, leaving studio-focused pedagogies overwhelmed by the task's sheer complexity. There has been a tendency to reduce architecture to problem-solving within the narrow range of professional competencies. Architecture (Un)certainty Lab advances the epistemological and design powers of architecture, bringing the discourse back into a realm of immersive uncertainties. The work promoted by the lab transcends subject-object and theory-practice dualisms and defines the classroom and seminar room, the places of historically situated complex critical thought, as the 21st century's new locus of architectural education.

Design Intelligence Lab:

This lab invents new forms of expression and collaboration between humans and machine intelligence. Work is informed by industrial and interface design, digital fabrication, manufacturing, and artificial intelligence to create new types of objects, interactions, and networks that fundamentally broaden and improve the experiences created based on data and computation.

Digital Structures:

This lab operates at the intersection of architecture, structural engineering, and computer. Digital Structures focuses on the integration of creative and technical objectives in the design and construction of buildings, bridges, and other large-scale structures. The lab employs digital techniques and technologies and the role they play in an unanticipated collaborative process. The lab engages with the disciplines of civil, environmental, and computational engineering.

Future Heritage Lab:

The Future Heritage Lab partners with communities impacted by conflict and crises to gather and conserve histories of transcultural exchange and endangered monuments, artifacts, textiles, and crafts. The work in this lab involves designing and conducting civic-scale participatory initiatives that serve as carriers and disseminators of collective memory.

Future Urban Collectives:

Future Urban Collectives is devoted to an architecture for new forms of sharing and cooperation. It investigates how architecture and urbanism may support and increase cohabitation, coproduction, and coexistence at different dimensions of the community as digital platforms and networks alter the production of space, trust, and value. The lab proposes an urban project that is user-driven and receptive to new programs and activities by combining digital platforms and physical design outputs.

**Infrastructure
Architecture
Lab:**

This lab investigates the interrelationships between broad, macroeconomic issues driving constructed infrastructure and architectural and urban design. Researchers in this lab combine the knowledge frameworks and tools of economic and planning theory with the practices of architectural design to examine the real-world complexities involved in the production of infrastructure and their effects on the built environment.

**Leventhal
Centre for
Advanced
Urbanism:**

This lab seeks to build a new theoretical and applied research platform to improve the quality of urban life. LCAU is dedicated to achieving this objective through collaborative interdisciplinary research projects, intellectual discourse, leadership forums and conferences, publications, the education of a new generation of leaders in the field, and a distinct, highly influential presence at international urbanism-focused gatherings.

**Prototypes of
Prefabrication
Research
Laboratory:**

The Prototypes of Prefabrication Research Laboratory (POPlab) investigates prefabrication in the design and construction of architecture and urban environments, applying a scientific perspective that results in better-conceived, better-engineered, and better-constructed spaces. The lab develops technologies and systems at many scales with the intent of generating positive impacts on the built environment with ideas and concepts tested in the real world.

**Self-Assembly
Lab:**

The Self-Assembly Lab is a multidisciplinary research laboratory that develops self-assembly and programmable material technologies. Its mission is to reimagine building, manufacturing, and infrastructure processes in the built world.

**Structural
Design Lab:**

The Structural Design Lab at MIT is an interdisciplinary research group focusing on structural design concepts. It consists of undergraduate and graduate students seeking degrees in civil engineering and architecture. Form-finding, funicular structures, structural optimization, and interactive design methods are areas of research interest in this lab.

**Sustainable
Design Lab:**

The Sustainable Design Lab conducts theoretical and applied research that promotes the design of resource-efficient and comfortable habitats on a neighborhood size. The objective of the lab is to transform contemporary architectural practice by creating workflows and performance measures that enhance design solutions for occupant comfort and building energy.

Urban Risk Lab:

The Urban Risk Lab is a multidisciplinary organization of researchers and designers addressing the most challenging aspects of contemporary urbanization. Its designers operate at the intersection of disaster management and risk engineering, hurricanes and earthquakes, ecology and infrastructure, rural and urban, research and action. To strengthen the resilience of local communities, the lab focuses on developing strategies for incorporating risk reduction and preparedness into the design of regions, cities, and common urban areas.

Virtual Experience Design Lab:

The virtualXdesign initiative aims to pioneer the incorporation of immersive technologies into education and research. The lab brings together faculty, researchers, and students from the school and the university to undertake cutting-edge research on emerging digital technologies and to create projects at the interface of design, science, and engineering. Lab activities include research publications, lectures at key locations, intensive seminars, and exhibitions, with continuous attempts to reach a large audience.



The University of Illinois Urbana-Champaign has a number of educational laboratories that serve students' learning needs, including:

DigiFab Shop & 3D Print Labs:

The DigiFab Shop includes laser cutting and advanced fabrication. The DigiFab Shop and the 3D Print Labs are operated by student staff. They are equipped with 4 Universal Laser System laser cutters, an Onsrud 8'x5' CNC router, a Fanuc robotic arm with milling attachment, a Formech 4'x4' vacuum former, a Wazer water jet, and metal working tools (welder, plasma cutter, etc.).

Kingston School of Art

The Kingston School of Architecture, Art and Design is equipped with state-of-the-art film and media facilities.

Film and Media Facilities:

A large investment in high-end filmmaking equipment, including a Red One camera and Sony EX3s, has benefited film and media researchers. The department provides specialized labs with I-Mas and software such as Final Cut Studio Pro and Adobe CS5 Master Suite. A specialized research room is outfitted with PCs and a MacPro with premium specifications. In addition, there are audio recording capabilities for voiceover and Foley work using Logic Pro and Pro Tools software, as well as a film studio with backgrounds and a green wall. In addition, the newsroom and journalism lab provide comprehensive media-related facilities and resources.



The Bartlett School of Architecture and Built Environment at University College London is widely known for its distinctive spatial analysis research and teaching at both undergraduate and postgraduate levels. This is reflected in the two key laboratories outlined in the following table.

The Urban Dynamics Lab:

The Urban Dynamics Lab at UCL aspires to change the way regional policy is formulated to allow for far better sensitivity to the context at the local level while simultaneously learning from empirical evidence what works and what does not in different regions. It began in 2015 as a five-year, £5 million research project funded by the Engineering and Physical Sciences Research Council (EPSRC) that brought together expertise from across UCL (Space Syntax, Centre for Advanced Spatial Analysis, Geography, and Computer Science) to investigate and address questions at the intersection of city and regional economic development and urban modeling, data analytics, and computing. These are crucial to addressing the vexing issue of regional competitiveness and the inequalities in the British economy.

Policy measures and incentives can be viewed as perturbing the trajectory of economic development on a “fitness landscape”—the structural background that defines a place. To properly foresee and intervene, it is necessary to comprehend the form of the fitness landscape, how this may be modified by planned infrastructure, and the probable implications of policy nudges.

Without new analytics, academics struggle with the enormity and complexity of the task, and decisions are made based on historical trend forecasts, ideology, and gut instinct. To achieve this goal, the lab produced sets of analytical tools for ‘deep’ data mining and the building and use of computer simulation models, as well as addressing the issues of access to and handling sensitive and costly ‘real-world’ data.

In order to build a community of practice across the cities and regions of the United Kingdom, the lab increased interaction between research communities, policymakers, and the general public, developed support networks, workshops, and annual awards, and created support networks, workshops, and annual awards. The open-source technology platform facilitates this by providing the tools required to produce policies tailored to the distinct local contexts of many locations while preserving the comparability of methodologies and evidence.

Space Syntax Lab:

The Space Syntax Laboratory is the creator of space syntax as a field of architectural research. Research on space syntax has led to a fundamental understanding of the relationship between spatial design, the use of space, and long-term social implications.

The UCL Space Syntax Laboratory is the international center for 'space syntax' theory and technique. It examines how spatial design influences the social, organizational, and economic performance of buildings and metropolitan regions.

The Laboratory houses the VR Center for the Built Environment, whose mission is to integrate the whole spectrum of computer graphics, interactivity, and digital data into the virtual building that is now driving the design-development-operation cycle. The group is also affiliated with Space Syntax Limited, a UCL spinout engaged in applied research and technology transfer, which is currently engaged in a variety of active projects for end-user organizations in business and local government. This research aims to:

- Develop and test theories by examining the effects of spatial design on the social, organizational, and economic performance of buildings and urban areas.
- Integrate computational approaches at the heart of the design process, including structural, societal, and environmental analysis.
- Generate design solutions that combine machine learning, optimization, and technological innovation.
- Develop and disseminate research outcomes and urban design and planning solutions.



Royal College of Art

Laboratory for Design & Machine Learning:

The laboratory for design and machine learning is a unique provision at the Royal College of Art in London that enables effective teaching, learning, and research.

The Laboratory for Design and Machine Learning is comprised of a multidisciplinary group conducting experimental and fundamental research into new methodologies and knowledge required for emerging design processes at the intersection of machine learning, data processing and visualization, and legal and developmental frameworks.

The Laboratory's research is devoted to exploring new interdisciplinary forms of design and evaluation, thereby investigating the influence of machine learning and government policies on spatial design.

The lab is currently conducting pilot research to produce new insights into home design and standards by analyzing housing interiors and their spatial organization using machine learning. The objective is to construct alternative definitions of quality based not just on qualitative assessment criteria but also on statistical and quantitative data.

This study examines how basing policy, standards, and design conversations on a solid, dependable body of empirical knowledge might alter our understanding of our domestic settings and the design and policy decisions that result from them. A fundamental research topic is whether a new type of evidence will yield a new type of judgment, i.e., whether housing can be built and legislated beyond typological and activity-based planning utilizing spatial models and data sets that work across multiple forms of organization and scales.



Varying in focus, a collection of best practices from schools of architecture and design in Australian universities were identified as part of the review.

Affective Interactions Lab:

Designing emotional interactions attempts to enhance our experiences with increasingly pervasive everyday technologies. Access to personal gadgets is on the rise, with the assumption that it enables individuals to progress in several personal (e.g., wellbeing) and professional parts of their lives (e.g., work, education, volunteering). This requires investigation into how these technologies can deliver the intended benefits.

Affective Interactions Lab relies upon a body of study in experience design and psychology of well-being to investigate challenges pertaining to user motivation, chances for reflection and skill acquisition, and access equity. Its key objectives are to provide an understanding of methodologies, tools, and design opportunities that facilitate user engagement with technologies via affect, which is fundamental to human experiences, emotions, and behaviors. Emerging technologies (such as virtual reality), data (such as data visualization), and materials (such as biodesign) are fundamental to our research. Through the incorporation of emotive experiences into human-technology interactions, it aspires to expand knowledge of novel ways to support daily life.

Design Lab:

Transforming the future through design-led research, this lab investigates the role of design in speculating the future and imagining, defining, and informing the interactions and experiences between humans and digital and emerging technology. By creating and conceiving new forms of existence, it enables rethinking critically the things, systems, and processes that influence the human experience and the existence of all life on Earth. It adopts a mix of methodologies and perspectives from the social sciences, humanities, science, engineering, and the arts to investigate and evaluate concepts, prototypes, new materials, and experiences from a design perspective.

The lab cooperates with external partners, including corporate, nonprofit, government, and community groups and organizations. Research areas include interaction design, design innovation, co-design, computational creativity, designing for health and well-being, digital place-making, human-computer interaction, human-robot interaction, smart cities, and urban data science.

Designing with AI Lab:

AI has already transformed the design industry, from fashion to architecture to digital products. AI as a design material, AI in design processes, and AI as a design partner are investigated at the Designing with AI Lab (DWAIL). AI-as-material design research investigates how AI might be embedded into things and services to create new types of experiences. Designing with AI as processes research investigates new design tools and workflows. AI-as-collaborator research is the most far-reaching, questioning what the future of design would look like if machines were capable, creative problem-solving partners.

Indoor Environmental Quality Lab:

The Indoor Environmental Quality (IEQ) Lab is a key international center for the building research community and the larger construction industry to study the effects of many indoor environmental elements on human comfort, performance, and health.

It places particular emphasis on thermal, acoustic, and lighting comforts, as well as indoor air quality. It aims to develop occupant-focused, evidence-based design guidance that is applicable to both the design and operational phases of a building's lifecycle. Research undertaken in the IEQ laboratory encompasses indoor and semi-outdoor situations in residential, office, retail, and educational building types. Using a stimulus-response research approach, it employs both objective (instrumental) and subjective (questionnaires, interviews) measurements in both field study and laboratory experimental research.

Using laboratory techniques permits precise control of experimental subject exposures to indoor environmental qualities such as temperature, humidity, airflow, ventilation rates, pollution concentrations, daylight, artificial lighting, sound pressure level, audible speech, and other acoustic qualities. In contrast, field approaches utilize actual structures with "genuine" residents (experimental subjects). Field methods offer better external validity and generalizability than laboratory approaches, which is their primary advantage. Frequently, the IEQ Lab uses both methods to optimize internal and external validity.

Urban Housing Lab:

This lab examines the intricate facets of urban living and planning. It investigates the design, characteristics, and processes of urbanism (urban living) as well as the recommended policy and planning solutions for creating better cities. Urban systems are being reshaped by global demographic and economic developments, particularly transnational flows of people and capital. These changes place new demands on the aging urban infrastructure of 20th-century cities, such as Sydney, that have struggled to absorb population expansion and development. Economically successful global cities that attract high-income earners due to their unique amenities and accessibility face specific issues as housing costs increase, displacing younger knowledge and key worker groups.

While many global cities, such as New York and London, view affordability as a vital component of urban infrastructure, affordable housing has struggled to acquire policy traction in Sydney. Unanswered are broader problems regarding the current housing stock's capacity to support population expansion and change, particularly for larger homes in outer suburban locales.

Urban Interfaces Lab:

The Urban Interfaces Laboratory examines the implementation of emerging technologies in urban environments. Utilizing the knowledge, methodology, and theories of interface design, it investigates speculative futures via design. By demonstrating the use of urban interfaces and their influence in domains such as smart cities, experience design, urban health, digital placemaking, and community engagement, the lab's work overlaps with various academic and professional fields. The lab's research is grounded on human-centered design but also challenges the notion of human-centeredness by researching new techniques that take ecological systems into account when designing urban interfaces.

3.8.c Key Software Packages for Architecture and Design Education and Research

While an attempt is made here to classify the software packages based on disciplines, it is acknowledged that many software packages serve more than one discipline and are needed for both architecture and other design disciplines.

Digital Design Software Packages to Teach to Architecture and Design Students:

Digital design is an integral component of contemporary architecture, design, and the creative and construction industries. If students do not comprehend at least one digital design application, they will have difficulty finding employment. Teaching the fundamental design principles is no longer sufficient. To adequately prepare for the industry that awaits them, students require substantially more. Universities are responsible for teaching students these abilities. However, the vast amount of available digital design software poses a difficulty. Universities and higher education institutions that offer degrees in architecture and design have a significant task. There are many digital design software products in the present marketplace. The following is an important selection of software packages that should be utilized in teaching architecture and design.

The lists provided in the following tables are not exhaustive.

ArchiCAD

ArchiCAD, an additional specialized software package, is a CAD application for architects. It has a BIM focus, similar to Revit, which may make it a good starting tool. In addition, the emphasis on architecture provides constraints that result in more accurate models. GRAPHISOFT's Predictive Design technology is included in the newest edition of the product. This allows the software to anticipate a user's design decisions. This contributes to a more effective design process. When taught with Revit, ArchiCAD can be used to provide students with a good foundation in BIM.

AutoCAD

This is one of the earliest software suites available. AutoCAD is as essential now as it's always been. 2D architectural drawings still have a place in today's creative and construction world. AutoCAD is one of the few software tools that can effectively manage them. A grounding in AutoCAD also offers a great base from which students can learn about other software packages. In addition, the software emphasizes accuracy in these drawings. This can be used to educate young children about the significance of accuracy.

Dynamo

Dynamo is an intriguing software suite because it is available in multiple flavors. It is available for download as a standalone package. This provides a playground for designers to experiment. However, it truly shines when deployed as a plugin. Dynamo is compatible with a variety of Autodesk software applications. Among these are Maya and Revit. The software is a visual programming environment. This means that it assists non-programming designers with their models. However, it also enables programmers to make minor modifications to the code. This emphasis on programming makes it so adaptable. Dynamo may be used for everything from model creation to data processing. This feature is what makes it so helpful when used as a plugin.

Fusion 360

Fusion 360 is a software package that could be considered, especially if there is an interest in developing skills in using BIM. A key feature is its integration of multiple digital design disciplines, including the following:

- CAD stands for computer-aided design (CAD)
- Computer-aided production (CAM)
- Engineering supported by computers (CAE)

Additionally, it utilizes the cloud, and this enables collaboration on projects between many users and enhanced access outside the office. Fusion 360 is an additional all-in-one tool with an engineering focus. Using the software, users may design, modify, and create objects. Additionally, the most recent iterations link directly to 3D printers. This expedites the fabrication process. However, this also means that Fusion 360 can teach an additional industry-relevant idea.

Grasshopper

Grasshopper provides Rhino users with an alternative algorithm-based shape-creation method. The key to Grasshopper is its straightforwardness. Rhino 3D offers a multitude of useful design tools and a complicated programming language. Those who do not learn this language may have difficulty maximizing Rhino's capabilities. Grasshopper is an alternative that integrates well with the Rhino toolset. In addition, it does not require an extensive understanding of scripting and programming to operate. Instead, it allows users to build forms to change their creations. It facilitates the acceleration of Rhino work processes for students. However, it is still worthwhile to teach pupils RhinoScript.

Infraworks

Infraworks is one of the few software programs that does not emphasize architectural or freeform design. Instead, the focus is on assisting engineers in comprehending how their designs will function in the real world. It is an especially excellent resource for aspiring city planners. They can design models that include bridges, roadways, and drainage systems with Infraworks. In addition, the software can collect data from a variety of sources to inform model construction. This may be beneficial when teaching students the fundamental concepts of BIM. Because Infraworks is specialized software, it is not appropriate for many types of courses. However, those who are interested in urban planning and infrastructure can benefit from it.

Maya

Maya is not an architectural design software application. In this regard, it has some similarities with Unreal Engine 4. However, it is one of the most adaptable design software packages available. Maya imposes a few limitations on the user. Yet, design using Maya does not generate accurate drawings. However, Maya is the ideal software for demonstrating to students the extent of their creative potential. It practically promotes organic design. This can motivate students to think creatively while designing structures. Maya is equipped with modeling, rendering, and animation technologies. This essentially makes it an all-inclusive solution for prospective designers.

Python

Python is unlike the other items on this list because it is not a software product. Instead, it is a programming language compatible with multiple design software applications. Python can be used as an introduction to the idea of algorithmic design. It is also advanced enough to be used in software. With Python, the user can manipulate the models they are constructing using data. Additionally, they can gain great programming skills. This facilitates their comprehension of the languages used by other software applications. This is an additional package compatible with Rhino, which demonstrates the adaptability of Rhino.

Revit

Revit may be the most important design program currently. It is closely related to Building Information Methodology (BIM). BIM requires extensive collaboration through the application of technology. Revit is one of the few software systems created with BIM's guiding principles in mind. Consequently, it is an essential piece of software to train students. However, it is also one of the most adaptable programs available. Revit utilizes data and the user's design skills to create models. This leads to exceptionally accurate and informative models in the BIM scenario.

Rhino 3D

Rhino acquired a stellar reputation due to its cost-effectiveness. It offers freeform design options at far lower prices than the majority of other software products. However, affordability is not the only factor that sets this product apart. Rhino is a potent design tool that can connect to multiple plug-ins. Like Maya, Rhino enables designers to be more inventive with their models. However, it is rather simple to learn. In fact, its fast learning curve makes it an attractive starting place for students of digital design. The fact that it includes tools that facilitate the generation of more accurate models is the key characteristic.

SketchUp

SketchUp is the design software that provides the ideal starting point for architects and designers. It is possibly the most accessible program in terms of its ease. Using the software, experienced users can create complicated designs. SketchUp offers one of the most intuitive interfaces of all the software. It enables the user to manipulate three-dimensional objects and achieve real results within minutes. Therefore, it is an excellent tool for teaching students the fundamentals of 3D design. It is also a handy tool for documentation. The Pro edition of the software has layout capability. This allows the user to add relevant information to their models. This again makes it an effective learning tool. Professionals can also utilize this to provide as much information as is feasible in a single model.

Unreal Engine 4

A videogame engine would be useful for architecture. Unreal Engine 4 is among the most powerful digital software packages currently available. Students can make thorough tours of their concepts using this software. Additionally, the software offers enormous possibilities. Whether creating a modest model or an entire city model, it relies entirely on the user's requirements. It is one of the few software packages that implements virtual reality, utilizing a VR headset to view an Unreal Engine 4-created design.

V-Ray

This program is more focused on rendering than digital design. V-Ray is a 3D renderer that can be integrated with a variety of software applications. Maya, Rhino, and SketchUp all allow for V-Ray installation, as well as Revit. It enables the creation of realistic renders that surpass those produced by the majority of design software tools. A number of animation studios utilize V-Ray to render their animated films. Therefore, it's useful for any subject that includes a digital design component. It allows architects to create more realistic renderings of their models. Moreover, the lighting options it provides contribute to the realism of models.



Interior design software packages

Utilized in universities vary across the world depending on the nature of the projects introduced to the students. Some of these applications provide extremely rapid execution, an extensive array of customization possibilities, and intuitive user interfaces. Typically, the design process in interior design software begins with well-considered floor plans. Many applications offer 360-degree visualizations of the 3D design, altering the appearance of any area with virtual furniture and accessories, and modifying the room's colors, textures, and lighting schemes. These are some of the essential assets for a contemporary interior designer. In addition to utilizing some of the applications listed above, such as AutoCAD, Maya, Revit, and SketchUp, there are several applications used specifically in interior design/interior architecture programs.

3Dx Max

Autodesk created a lot of expensive interior design software to assist aspiring interior designers.

Most of their design software is more expensive than that of their competitors, making them a hard choice for aspirants and beginners of interior design and very unlikely for homeowners and real estate investors. However, these design software programs are popular choices for professional interior designers with extensive experience. 3DMax has exceptional 3D visualization capability, combined with the ability to create simulations, 3D renderings, and space planning.

Blender

Blender is convenient to use and features 3D rendering, photorealistic animation, and creating simulations for a real-time effect. It offers a high-quality 3D view of design ideas, views of room layout, space planning, and design concepts with some effects.

HomeByMe

This is a home design software for beginning students. HomeByMe allows the user to implement design ideas and create an accurate 3D rendering of a designed space.

The design software is easy to use and helps first-timers get a photorealistic 3D view of their space planning. This software works on a project basis.

Homestyler

This is a simple and efficient interior design software. Not only does it provide creative design tools, but it also features furniture that the user can install to get a more realistic home design.

Designing something to create a flow between modernism and classic can be challenging if the designer needs to imagine all of it; it offers the platform to design 3D floor plans and 3D visualization of space layouts.

Neo

This is likely the simplest interior design program currently available. Its features have been designed with the needs of interior designers in mind. Due to the platform's intuitive user interface, there is no need for any prior training; it allows students to begin developing immediately.

Neo is also entirely cloud-based; thus, all projects are stored in the cloud and are accessible from anywhere. The user is not required to install or download any software. Its rapid 3D rendering is one of its most alluring characteristics. In less than two hours, it can take ideas from a floor plan to a final 4K render. Users also have access to a library of over 60,000 3D models that can be dragged and dropped into projects. The intuitive user interface and customization features enable designers to fine-tune textures, colors, lighting, etc. All these features make it suited for designers of all skill levels, from professionals to amateur designers.

Planner 5D

Planner 5D has the ability to create floor plans, get a 3D rendering of the design, and use various design tools while constructing various views. The application has an item catalog of 5000+ pieces that are customizable, allowing changes in colors, textures, and patterns to create exceptional, simple designs.

While the previous software packages are used in landscape an Urban design, specific applications for Landscape Design are utilized in some schools of architecture.

DreamPlan Home Design

DreamPlan is a design software where the user can create a plan with a realistic 3D model.

The software is typically utilized for home and floor plans, landscape and garden design, interior design, and room design; it is also useful for remodeling, additions, and redesigning.

DynaSCAPE Design Suite

DynaSCAPE Design, Color, and Sketch3D suite offers a sophisticated feature set.

The DynaSCAPE suite includes over 1,200 drag-and-drop landscape element symbols, over 9,000 cataloged plant photos from Hortycopia, stone catalogs, nightscape symbols, a voltage drop calculator for lighting, and an integrated product catalog from AquaScape Designs.

GardenCAD

An affordable landscape design software for garden designers. It features a comprehensive library of symbols, great entity snapping tools, the ability to open several drawings at once, precision control over layers, line types, colors, line widths, layouts (pages), automated plant scheduling, dimensioning, changing text styles, and more.

gCADPlus

Landscape CAD software for landscape architects and designers. Hundreds of expertly drawn symbols, such as irrigation symbols and Australian native species, are included. It places emphasis on the ability of the designers to produce sustainable designs by incorporating tools to pick site-appropriate species and evaluate the design's sustainability. gCADPlus includes an integrated database and is compatible with a free "roll your own" plant database.

Lands Design

Lands Design is a fully dynamic plugin for Rhino software. The software can produce realistic 3D photos and virtual tours. Its capacity to develop project-specific technical plans is one of the characteristics it highlights.

SppDb

A personal plant database application that is compatible with landscape design applications such as gCADPlus and GardenCAD. It stores information about the plants the designers actually know and use in their local landscape design context.

Use SppDb's easy interface and search features as a "memory jogger" to locate species that address a specific landscape design challenge. It exports and imports data to and from companion landscape design products such as gCADPlus and GardenCAD.

Vectorworks Landmark

Vectorworks Landmark is one of the most expensive landscape design software programs. With Landmark, the designer can get GIS integration features for hardscape and irrigation, the ability to integrate plant catalogs from multiple sources, BIM features, and has features for tracking water budgets for LEED projects, some of the best collaborative features in its class, VR walkthroughs, and much, much more.

Four software packages are used exclusively by schools that offer Industrial or Product Design programs. However, many schools utilize many of the applications delivered by architectural programs.

SelfCAD

SelfCAD is one of the best tools for industrial designers in 2022 due to its user-friendly interface. It has been created with a streamlined interface that makes it easy to manage for beginning designers.

The tools are also organized into clusters based on their intended usage, making it easier to find any device. SelfCAD is a handy piece of software that allows the designer to build objects, scenarios, and 3D designs in a very short time. It takes time to use typical CAD software. There is no need for any prior knowledge of 3D design to use SelfCAD to produce models. It also provides rendering capabilities, allowing the designer to create strong and eye-catching renders for marketing and advertising purposes.

SolidWorks

SolidWorks features an intuitive rendering capability; it is possibly the most popular CAD system. SolidWorks is frequently utilized as an instructional tool for 3D design in numerous academic institutions.

The application is typically described as a tool for intermediate users in comparison to more advanced industrial design software packages. The sole goal of the classification is to facilitate the familiarization and navigation of numerous customers with the features and layout. It is one of the most user-friendly CAD applications accessible without being overly simplistic; hence, there are numerous freelance SolidWorks designers. SolidWorks allows the designer to create intricately detailed 2D and 3D models.

CATIA

CATIA (Computer-Aided Three-Dimensional Interactive Application) requires familiarity with the C++ programming language; it has more sophisticated rendering capabilities than SolidWorks. CATIA is much more than a CAD program. The application includes capabilities for engineering, production, and product lifecycle management. Aerospace, engine components, electrical components, and power generation systems are examples of fields using CATIA's tools. It is a sophisticated software developed for advanced users who can have complete control over the models they create.

Onshape

Onshape is an application for product design that can be downloaded and installed in seconds on a computer or mobile device, allowing teams to interact internationally and rapidly.

Inventor

Autodesk Inventor is a well-known software package. The most appealing feature of Inventor is its versatility. Graphic design, engineering, architecture, mechanical, automotive, and manufacturing are just a few fields where the program is extensively used. It's equally valuable to combine 2D and 3D data in a single environment. Designers may check every element of a product in its digital version, resulting in higher efficiency. You might think of it as an all-in-one 3D CAD software solution that helps you materialize ideas while reducing errors.

Graphic Design Software Packages are wide in scope, and the best graphic design software is very diverse, providing professional designers and enthusiasts with a vast range of options to create in the way that best suits their needs and workflow.

Several key developers offer broad, fully featured graphic design software that provides the flexibility to work across different mediums, but there's also a wide range of specialist tools that can cover more specific needs. Which graphic design software is best for graphic design students will depend on what they need to do within their programs. Those who need the flexibility to develop and create visions for a wide range of clients or study projects will want fully developed desktop software.

That will often mean industry-standard tools like Adobe's Illustrator, InDesign, and Photoshop. In addition to Adobe products, key applications for graphic designers include Sketch, Lunacy, Mega Creator, Affinity Designer, CorelDRAW Graphics, Eagle, Designer, and Gravit Designer.

3.9

Reflections

Fostering a culture of excellence and effective leadership in architectural and design education requires a comprehensive understanding of key components that are crucial for teaching, learning, and the production of knowledge. These components can vary depending on the specific areas of focus within the school, its university requirements, and the overall context.

One important aspect is the profile of the curriculum itself, including its structure and content. A well-designed curriculum should encompass a wide range of relevant subjects and provide a balanced combination of theoretical knowledge and practical skills. It should also be adaptable to the evolving needs and trends within the architectural and design professions and is in a continuous process of updating and upgrading to match these needs and trends.

Admission policies also play a significant role in shaping the culture of excellence. The selection process should identify and attract talented students who possess the necessary aptitude and passion for architecture or design. By ensuring a rigorous and fair admission process, schools or colleges of architecture and design can create a diverse student body with a strong potential for excellence.

The support administrative structure is another important component. Efficient administrative support helps streamline the educational and learning processes by optimizing resources and facilitating smooth coordination between students, faculty, and staff. It enables effective communication, timely resource allocation, and the implementation of various educational initiatives or updating existing programs.

The physical resources available to students, such as design studios, laboratories, and software, are vital in shaping the culture of excellence. Design studios serve as creative spaces where students can engage in design exploration and critical inquiry. Equipped with state-of-the-art tools and technologies, laboratories facilitate hands-on learning experiences and experimentation. Access to relevant software packages enables students to develop technical proficiency and stay updated with professional standards.



The production of knowledge and engagement with the construction and creative industries are critical aspects of excellence in architectural and design education. A robust integration of research activities within the curriculum helps students develop a deeper understanding of the field and encourages innovation. Research also contributes to the advancement of architectural and design knowledge and promotes a culture of intellectual curiosity.

Engagement with practicing architects, as well as professionals from the construction and creative industries, is another valuable aspect of the teaching-learning process. By inviting guest speakers, organizing workshops, and facilitating internships, students can gain practical insights and develop a broader perspective on their respective design professions. This interaction helps bridge the gap between academia and practice, ensuring that students are well-prepared for the challenges of real-world practice.

In summary, fostering a culture of excellence and effective leadership in architectural and design education requires careful attention to various components. These include the curriculum, admission policies, administrative support, physical resources, research integration, and engagement with industry professionals. By nurturing these key aspects, schools of architecture and design can create a productive learning community that transcends the boundaries of the physical campus and prepares students for successful careers in architecture and design.

3.10

Enabling Actions / Catalyzing Measures



Develop Comprehensive Curriculum Profiles in Architecture and Design Disciplines

Through collaborative efforts, academic leaders, faculty members, and industry/design professionals can work together to shape curriculum profiles that align with the evolving needs and trends within the architecture and design industries. By incorporating interdisciplinary perspectives, innovative pedagogies, and practical experiences, institutions can cultivate a curriculum that is comprehensive, relevant, and future-oriented.

Mechanisms:

- Organize workshops to conduct a comprehensive needs assessment to identify the current and future requirements of the architecture and design disciplines; involve input from faculty, industry/design professionals, students, and other relevant stakeholders.
- Organize workshops and conduct quarterly meetings to continuously review and define clear learning outcomes and competencies for each architecture and design discipline, aligned with industry/practice standards, professional requirements, and the overall goals of the educational institution.

- Establish and enhance the effectiveness of curriculum development committees consisting of faculty members; conduct workshops and meetings with industry/design experts and relevant stakeholders.
- Incorporate experiential learning opportunities into the curriculum to provide students with hands-on, real-world experiences, including internships, industry collaborations, design studios, community engagement projects, and other practical learning activities.
- Review the mapping of the curriculum content and sequencing continuously based on the defined learning outcomes and competencies.
- Monitor and evaluate the implementation of the curriculum profiles; collect data on student performance, satisfaction, and employability to assess the effectiveness of the curriculum.



Develop a Design Studio Pedagogical Culture in Architecture and Design Disciplines

Creating a design studio pedagogical culture is essential for fostering creativity, critical thinking, and innovation in architecture and design disciplines. By establishing an environment that nurtures and supports the design studio experience, schools can cultivate a culture of excellence, collaboration, and exploration.

Mechanisms:

- Prioritize hands-on, experiential learning; provide opportunities for students to engage in real-world projects, simulations, and design challenges that mirror professional practice; encourage critical thinking, problem-solving, and iterative design processes; and incorporate field trips, site visits, and guest lectures to expose students to diverse design contexts and perspectives.
- Emphasize collaboration among students, faculty, and practitioners; encourage peer-to-peer learning, teamwork, and the sharing of ideas and expertise; and provide physical spaces that facilitate interaction and collaboration, such as open design studios or dedicated project areas.
- Cultivate a culture of design critique; promote regular design reviews, pin-ups, and presentations where students can receive feedback from peers, faculty, and design professionals.



Establish Collaborative Research Platforms for Technically-Oriented Research (TOR)

Foster strategic collaborations between academia and industry/design experts, architectural engineering firms, and technology providers to leverage specialized knowledge and resources for conducting technically oriented research.

Mechanisms:

- Set up experimental testing facilities, including dedicated laboratories with advanced testing equipment to conduct experiments, simulations, and prototyping.
- Facilitate data analysis and modeling; utilize computational tools, data analysis techniques, and modeling software to analyze technical data and optimize design solutions.
- Provide access to tools for research (CAD, BIM software, simulation software, material testing equipment).
- Integrate TOR into the relevant courses and the development of design studio projects.



Establish Collaborative Research Platforms for Conceptually Driven Research (CDR)

Promote interdisciplinary collaboration by fostering partnerships between researchers from various fields, such as architecture, design, social sciences, humanities, anthropology, ethnography, and technology.

Mechanisms:

- Develop theoretical frameworks (develop conceptual frameworks that inform design thinking, critique existing design paradigms, and propose innovative design approaches).
- Organize design thinking workshops (workshops and design charrettes that promote critical thinking and creativity).
- Facilitate cross-disciplinary collaborations (encourage collaborations with scholars, researchers, and professionals from diverse fields, such as anthropology, sociology, philosophy, and art, to explore interdisciplinary perspectives and enrich conceptual research).
- Facilitate visual and spatial analysis (use visual analysis techniques, such as image analysis, mapping, and visualization tools, to study and interpret the spatial, cultural, and symbolic aspects of architectural and design concepts).
- Consider the diversity of research methods (design research methods, visual representation tools, concept mapping software, and critical discourse analysis).
- Integrate CDR into the relevant courses and the development of design studio projects.



Implement Transparent and Fair Student Admission Policies for First Professional Degrees

- Establish transparent admission criteria and processes (develop clear and comprehensive admission criteria that are communicated to prospective students; provide easily accessible information on the admission process, including timelines, requirements, and contact details, on the institution's website and other relevant platforms).
- Enhance outreach and information sharing (conduct targeted outreach programs to reach a diverse range of prospective students, including those from underrepresented backgrounds; offer informational sessions, open houses, and webinars to provide prospective students with detailed information about the first professional degree programs, faculty profiles, facilities, and career prospects; establish a dedicated admissions office or committee to respond to inquiries, provide guidance, and support prospective students throughout the application process).
- Implement holistic evaluation (train the faculty to adopt a holistic approach to evaluating student applications, considering not only academic achievements but also non-academic factors such as extracurricular activities, personal statements, recommendation letters, and interviews).
- Conduct regular reviews of the admission policies and procedures to identify potential biases, ensure alignment with institutional goals, and make necessary updates to enhance fairness, equity, and inclusivity; seek feedback from current students, alumni, and stakeholders to gather insights and perspectives on the admission process and make informed improvements based on their input.

Self Reflection:

- ☑☐☐☐ Read the content of the chapter: **Components of Excellence in Schools and Colleges of Architecture and Design** with a focused reading on the enabling actions and the associated mechanism / catalyzing measures.

You can also use the initial questions raised in the chapter as a trigger for your responses:

- What are the key characteristics of curricula across architecture and allied design fields?
- What is the current state and role of admission policies?
- How can the design studio's pedagogical culture be conceptualized?
- What is the role of research in the architecture and allied design fields?
- How can engagement with practicing architects and construction and creative industry professionals take place as part of the teaching-learning process?
- What are the necessary physical resources and IT solutions, including software packages, that enable effective learning and research?

Self Reflection:

<p>Enabling Actions</p>	<p>Self-Reflections</p> <p>To what extent do the college or program implement the actions? What mechanisms are used in the implementation?</p>	<p>Prioritized Actions</p> <p>Arrange actions in order of priority, then select the relevant mechanisms appropriate to the conditions of your college or program.</p>
<p>1. Develop Comprehensive Curriculum Profiles in Architecture and Design Disciplines</p>	<p>_____</p>	<p>_____</p>
<p>2. Develop a Design Studio Pedagogical Culture in Architecture and Design Disciplines</p>	<p>_____</p>	<p>_____</p>
<p>3. Establish Collaborative Research Platforms for Technically-Oriented Research (TOR)</p>	<p>_____</p>	<p>_____</p>
<p>4. Establish Collaborative Research Platforms for Conceptually Driven Research (CDR)</p>	<p>_____</p>	<p>_____</p>
<p>5. Implement Transparent and Fair Student Admission Policies for First Professional Degrees</p>	<p>_____</p>	<p>_____</p>

04

Enhancing teaching and learning in Architectural and Design Education



4

Best Practices and Learning Approaches for Knowledge Delivery and Production

Identifying best practices adopted by colleges and schools of architecture and design worldwide generates a lively and focused discussion on how excellence in teaching and learning can be enhanced. While there is a wealth of knowledge on best pedagogical practices in knowledge delivery, assimilation, consumption, and production, key learning approaches are important to identify, debate, adopt, and adapt.

Essential best practices demonstrate relevant differentiation between knowledge production and consumption, a unique distinction inherited in architecture and design teaching and learning. Inquiry-based, experiential, and active learning are important practices that put students as future architects and designers at the heart of the teaching and learning processes. Trans-disciplinarity, authentic learning, and collaborative pedagogy ensure excellence in tackling the fragmented nature of knowledge in architecture and design. Notably, relating and reacting positively to international guidance on key developmental aspects, including sustainable development goals and heritage conservation, would be priorities for consolidating enhanced excellence in architectural and design education.

This section responds to the following key questions:

1

How can we move from the teaching paradigm that places emphasis on the consumption of architectural and design knowledge previously developed by others to a paradigm that engages with real-life issues to enable the production of new knowledge?

2

What are the learning typologies that enable this shift in thinking from knowledge consumption to knowledge production and reproduction?

3

What are the benefits and mechanisms of active, experiential, and inquiry-based learning for the effective education of future architects and designers in Saudi Arabia?

4

How can transdisciplinary or cross-disciplinary learning be enabled in architecture and design schools?

5

What are the benefits of collaborative pedagogy, and what are its key characteristics?

6

How can the mandates and requirements of United Nations Organizations (Sustainable Development Goals and Heritage Conservation) be integrated into the curriculum and teaching and learning processes for further architects and designers?

4.1

From Knowledge Consumption to Knowledge Production

Architecture and designed environments or products are formed in a field of tension between reason, emotion, and intuition.⁹⁵ Education in architecture and design should be understood as preparation for the manifestation of the ability to conceptualize, coordinate, and execute the concept of building. Nonetheless, this necessitates a thorough comprehension of the role of knowledge in architecture and design and the ability to integrate various types of knowledge.

Recent years have witnessed several phenomenal and continuous changes in the structure of contemporary societies, including the emergence of housing problems and squatter settlements, the deterioration of the built heritage, the increasing complexity of large structures and new building types, and the recent interest in environmental protection and conservation. While these phenomena continue to exist, it is evident that demands for multiple kinds of knowledge are on the rise; examples include:

- Knowledge of how to create better environments for poor societies.
- Knowledge of how to involve people affected by design and planning decisions in the process of making those decisions.
- Knowledge of how to protect the built heritage.
- Knowledge of how to design environments that do not compete with but complement nature.
- Knowledge and strategies for addressing problems associated with urbanization.

⁹⁵(Salama, 2008)

The relationship between knowledge consumption and production can be explained by recognizing the significance of knowledge acquisition and knowledge creation.⁹⁶ Typically, a high level of knowledge consumption is a prerequisite for a high level of knowledge creation.

The international architectural education and theory debate has centered on architectural practice and the role of research and knowledge over the past few years. Many contemporary architects and designers employ methodical analyses of modern communities and cities in their design processes. However, architectural knowledge is difficult to define. It's about more than just the current physical reality; it's also about how buildings⁹⁷ and urban structures are constructed and the people who occupy them. On the other hand, design is not primarily concerned with solving well-defined problems but rather with "problematic situations characterized by disorder and uncertainty." Thus, a crucial design quality is creating cohesion from a collection of opposing criteria, features, or elements as forms of knowledge.

Design unifies competing requirements and transforms them into a coherent whole; it may freeze, give form to diagrammatic – and previously formless – conditions, and employ forces in particular circumstances. Finding novel ways of thinking necessitates reevaluating one's position about reality. To achieve this, several learning paradigms are outlined to capture some of these novel ways, including knowledge of and knowledge about, knowing that and knowing how, and the associated approaches of inquiry-based, experiential, and active learning, the nature of disciplinary knowledge, and the emerging challenges manifested in United Nations guidance documents, which form critically pertinent fields of knowledge.

⁹⁶(Kaba and Ramaiah, 2020)

⁹⁷(Nilsson, 2007) -- (Kraut, 1985) -- (Laurson et al., 1996) -- (Evers et al., 2011) -- (Rich, 1991)
-- (Moravec, 2008)

4.2

Inquiry-Based, Experiential, and Active Learning

Within the field of architecture, influential reports have been presented to the international community, such as the “UNESCO-UIA Charter of Architectural Education” (1996), “A New Future for Architectural Education and Practice” (1996) by the Carnegie Foundation, and “The Redesign of Studio Culture” (2002) by the AIAS. These reports show that architectural education needs to capitalize on the unique potential of design learning to its fullest extent.

On the one hand, the connections between education, professional practice, and academic research need to be more concise, and possibilities to expand and strengthen professional education through exposure to research processes are forgotten. In contrast, recent research on pedagogy reveals that the typical adult’s attention span during a lecture is between eight and ten minutes. Since most lectures are at least 50 minutes long and some are scheduled for up to two hours, there is a significant gap between our ability as educators to speak continuously and our students’ capacity to learn.⁹⁸

⁹⁸(Salama, 2010) – (Demirkan, 2010)



Inquiry-based learning is a 1960s-era educational strategy that continues to represent contemporary interests within higher education. It was introduced in response to the perceived failure of more traditional types of instruction, in which students were obliged to memorize and reproduce instructional materials merely. Active and experiential learning are subtypes of inquiry-based learning (IBL), in which students' success is evaluated based on their ability to develop experiential, critical thinking, and analytic skills rather than their knowledge acquisition. In the past decade, several studies have emerged to urge university professors to adopt transformative pedagogies, shifting from viewing students as passive listeners to active learners. This, though, appears "easier said than done."



Active and experiential learning are subcategories of inquiry-based learning and are two sides of the same coin underlying the inquiry-based learning approach. They reflect interactive learning systems with similar objectives and attributes despite terminology differences. Both emphasize the investigation of attitudes and values as a means of enhancing student motivation. In both, less focus is placed on imparting knowledge, and more emphasis is placed on developing students' critical thinking skills.

4.2.a Inquiry-Based Learning (IBL)

Inquiry-based learning is a technique of instruction that encourages students to ask questions and research real-world issues. Students are actively involved in the learning process and can explore their interests. This type of learning is typically experiential and allows students to connect between teaching material and the natural world; IBL improves critical thinking, problem-solving, and creativity.⁹⁹ There are four types of IBL, which can be briefly outlined as follows:

- **The Structured Inquiry Approach:**

Structured inquiry is a systematic procedure that teaches students how to pose and analyze real-world problems. Students are given a problem to examine and are instructed on how to apply the scientific/systematic method to find a solution.

- **The Open-Ended Inquiry Approach:**

Open-ended inquiry is a more flexible approach where students are allowed to pursue their individual interests and ask questions about the studied material. This form of IBL is frequently employed in humanities/ history/ theory courses in which students are required to investigate a topic in-depth and discuss various contrasting perspectives.

- **The Problem-Based Inquiry Approach:**

A problem-based inquiry approach is a problem-solving inquiry-based learning methodology. In this approach, students are given a problem from the real world to tackle and are required to apply their knowledge to solve it. This type of inquiry-based learning is frequently implemented in design studios.

- **The Guided Inquiry Approach:** The guided inquiry method is a teacher-led inquiry-based learning method. In this method, the instructor guides students through the inquiry process and assists them in posing questions and locating solutions to real-world issues.¹⁰⁰

⁹⁹(SplashLearn, 2023)

¹⁰⁰(Bauld, 2022)

It is noted that the approaches are not prescriptive but performance- and evidence-based; leaders and faculty should be able to decide what approach to adopt, when in the curriculum, and how. Depending on the ethos of the school/college, faculty expertise, curriculum specifications, learning outcomes, and, in some cases, accreditation requirements, the previous four types offer architecture and design students multiple opportunities and multiple benefits that can be captured as follows:

- **Encourages Critical Thinking:**

Students are encouraged to think critically about the material offered to them through inquiry-based learning. They are required to critically evaluate the information and generate their solutions. This form of education assists students in developing problem-solving and critical-thinking skills.

- **Improves Problem-Solving Skills:**

Students gain problem-solving abilities through IBL. When allowed to investigate real-world challenges, they must think creatively and develop visual and verbal responses. This is a crucial ability that will benefit their future design practices.

- **Encourages Creativity:**

When students can investigate a problem independently, they frequently generate inventive solutions. This is because no certain way of thinking or a specific school of thought limits them.

- **Enhances Communication Skills:**

IBL also improves students' communication abilities. They must frequently express their ideas and thoughts to others when working on an issue or a design problem. This aids in the development of their interpersonal and communication skills.

- **Encourages Engaged Learning:**

When students have the freedom to study various real-world issues in a hands-on setting, they can gain a deeper understanding of them. This promotes active learning, where students are more likely to retain information when actively engaged in the learning process. It is because they have an interest in what they are doing.

4.2.b Experiential Learning

In traditional learning, the learner simply reads, hears, discusses, and writes about the realities but never encounters them as part of the learning process. Some educators incorrectly associate experiential learning with “off-campus” or “non-classroom” learning. In Design pedagogy, however, the reality can be brought to the classroom; a course in the history or theory of architecture may include periods of student practice on theory exercises and critical thinking problems instead of lectures on architectural theories and the work of famous architects.¹⁰¹

Similarly, ‘principles of architectural design’ or ‘human-environment interactions’ classes may include exercises in critical study of how individuals perceive and comprehend the built environment. Both sessions may consist of field trips to buildings and areas where students can explore culture, diversity, and human behavior in the surrounding environment.

Learning through experience entails not just observing the phenomenon being studied but also doing something with it, such as testing its dynamics to learn more about it or implementing a theory acquired about it to accomplish desired effects. Assessment of settings as a valuable research tool must be incorporated into lecture courses, providing a knowledge base about the built environment that can empower students with greater control over their learning.

¹⁰¹(Salama, 2015) -- (Kolb and Goldman, 1973) -- (Scholl, n.d.) -- (Pappas, 2014) -- (Institute for Experiential Learning, n.d.)



Experiential learning immerses students in an event and an experience and then encourages reflection on that experience to build new abilities, attitudes, or ways of thinking.¹⁰² It is argued that experiential learning strategies should incorporate essential characteristics, which can be outlined below:

- Blending of content and procedure (theory and practice).
- A setting conducive to the process of self-discovery.
- Participation in significant events for the student (student academic events, student competitions, critical field trips, or site visits).
- Activities that enable students to create connections between their studies and the real world.
- Possibilities for introspection or self-reflection
- Opportunities for emotional investment, in which students are immersed in the experience instead of merely performing what they perceive to be expected.
- The presence of meaningful links between the learner, the instructor, and the environment.

¹⁰²(Kolb, 1983) – (Salama, 2006) – (Salama & MacLean, 2017) -- (Rodriguez, 2018) - (Sharag-eldin et al., 2018)



Experiential learning is closely related to learner-centered instruction since it emphasizes developing skills and practices that encourage lifelong learning and independence. It shifts the focus from learning (what and how the student is learning) to the learner's needs, and this has several advantages that include:

- It engages students in the difficult, disorganized process of learning.
- It incorporates instruction in specific skills.
- It aids students in reflecting on what and how they are learning.
- It motivates students by allowing them to manage the learning process.
- It promotes collaboration.

Experiential learning and learner-centered instruction advocate for meaningful experiences that can lead to development, reflection, and the learner's empowerment; these experiences must be self-discovered and achieved by "doing."

4.2.c Active Learning

The concept of active learning stretches back centuries, but it was not articulated until the early 1970s by English academic R.W. Revans (1971);¹⁰³ simply defined as a pedagogical method to engage students.

Currently, many universities have integrated active methods into their pedagogy, presenting students with activities and assignments that are common across fields and educational levels, stressing the significance of simulations and hands-on training, as well as the positive impacts of active approaches on learner autonomy.

In schools of architecture and design, the design studio is where most of the teaching occurs. In these courses, which are based on an active learning style, students attempt to apply the theories they have learned to the solution of real-world situations or simulated ones. The instructor works as a guide, assisting the student in generating a high-quality product by providing periodic comments on the work completed. This instructional paradigm is already, to some extent, geared towards fostering student creativity.

¹⁰³(Sgambi, et al., 2019)

The prevalent teaching paradigm in schools that relies on a deductive or passive learning style, in which the teacher controls the transmission of knowledge. This strategy must be revised to acquire subject-specific expertise and develop critical thinking. In contrast, active learning represents an innovative pedagogy that introduces techniques that inspire students' creativity, which, when nurtured during their academic years, can lead to higher employment chances after graduation.

In 2010, the International Journal of Architectural Research issued a significant special issue focusing on pedagogies adopted in architecture schools.¹⁰⁴ It demonstrated that active learning stimulates the brain and enables students to comprehend and retain information efficiently while making it simple to utilize. Active learning offers a solid foundation for implementing and incorporating new concepts into students' professional skills. There are five active learning tactics that can be adopted in studio and lecture-based settings, including taking notes, teaching someone else, writing about the issues or concepts encountered or presented, moving around while receiving information, and taking sufficient breaks.¹⁰⁵

¹⁰⁴(Salama & Crosbie, 2010)

¹⁰⁵(Center for Educational Innovation, n.d.) -- (Indeed Editorial Team, 2022)

4.3

Transdisciplinarity

Despite substantial debate and study, there needs to be a clear definition of transdisciplinarity, which presents an immediate challenge.¹⁰⁶ Different interpretations of the idea have been developed, frequently based on how inter- and multi-disciplinarity are differentiated from transdisciplinarity. There appears to be a clear understanding of the type of knowledge generation within transdisciplinarity. Specifically, one that centers on the integration of discipline and profession (theory and practice) in knowledge generation, the ethical dimension, and the significance of experimental, design-oriented approaches to research.

When information about a societally relevant problem field is unknown, when the nature of problems is contested, and when there is a great deal at stake for individuals affected by problems and participating in their resolution, transdisciplinary thinking, education, and action become essential. Yet, by and large, transdisciplinarity is about blurring the boundaries of disciplines and integrating various types of knowledge.

¹⁰⁶(Doucet and Janssens, 2011)



Two major concepts derived from the discussion on transdisciplinarity are:

Knowledge-making professions & Transdisciplinary practice and research

The first concept pertains to producing knowledge based on practice; in this sense, 'making professions' relates to architecture, urban design, planning, and other allied design fields. The concept of 'making knowledge' is primarily based on the distinction between 'knowing how' and 'knowing that.' 'Knowing how' is a discipline with its specific knowledge base. The 'knowing how' concept was introduced through the science of design paradigm¹⁰⁷ and acts as a prelude for a disciplinary construction of knowledge that pertains to the 'making professions.'¹⁰⁸ One could also add 'knowing why' as an integral part of 'making knowledge.'

These insights underpin the fact that four types of knowledge exist to form the backbone of 'making knowledge:' These include scientific expert knowledge, folk knowledge, practical knowledge, and tacit knowledge, all of which constitute a type of knowledge resulting from transdisciplinary practice. Programming, post-occupancy evaluation, and community participation in design aim to capture and integrate these types of knowledge into design, wherein programming represents 'knowing that,' evaluation exemplifies 'knowing why,' and participation characterizes 'knowing how.'

¹⁰⁷(Simon, 1976) – (Dunnin-Woyseth, 2002) – (Dunnin-Woyseth, and Nielsen, 2004)

¹⁰⁸(Rowe, 2002)



Transdisciplinarity is the second concept, a notion that can be described as a new form of learning and problem-solving involving cooperation among different parts of society, professionals, and academia to meet complex challenges. Transdisciplinary research and practice start with tangible and real-world problems. Solutions are devised in collaboration with multiple stakeholders, including professionals from different disciplinary backgrounds. Thus, transdisciplinarity is about transcending the boundaries of the various disciplines.¹⁰⁹

Transdisciplinary Learning enables students to create connections between various subjects while exploring a relevant concept, issue, or problem. It integrates the perspectives of the common disciplines to develop a deeper understanding of the concept's versatility. The aim is to learn for life sustainably, not just memorize specialized knowledge for a quick exam. This should be made possible by transdisciplinary, cooperative, competence-oriented, and creative instruction in connection with digital media as an important emerging tool.

¹⁰⁹(Darbellay et al., 2017) - (Mokiy, 2019) -- (Gürkan, 2021)



Transdisciplinary learning offers many advantages compared to the traditional approach to learning in architecture and design:

- **Students develop divergent thinking and creativity:**

Modern education, in general, promotes convergent thinking, which is the application of a predetermined set of rules to arrive at a unique solution to a problem. On the other hand, divergent thinking is a more fluid process that generates multiple innovative answers to a single problem, which is so relevant to architecture and design. Divergent and convergent thinking are both crucial, but fostering just convergent thinking might lead to a loss of creativity and critical thinking, essential qualities in the twenty-first-century education of architects and designers.

- **Students see more meaning in what they learn:**

Many students learn because their lecturers instruct them. The transdisciplinary approach links one topic to many academic courses, allowing students to understand the issue better, recognize its connections, and comprehend why they are learning it. This technique also assists students in remembering what they have learned.

■ **Students are more motivated:**

Lecturers/faculty should also be creative in relating a topic to a variety of educational courses, which has implications for the curriculum design. It makes the classes more engaging, as best practices have shown, and motivates students to explore a topic from diverse, and often even unexpected, perspectives.

■ **Students learn a language of a problem:**

Transdisciplinary learning helps students examine a problem from multiple perspectives. They discover the adaptability of real-world situations, develop critical thinking, and comprehend that there are typically multiple appropriate solutions to a single problem.

■ **Students build up confidence:**

The transdisciplinary method encourages students to voice their opinions in class or studio, even if they are incorrect. It helps them gain confidence and speak more freely without fear of negative grades or peer criticism.

Transdisciplinary learning is thus the investigation of a pertinent subject, issue, or problem that blends the viewpoints of many disciplines in order to connect new information and deeper comprehension with real-world experiences. In a transdisciplinary learning setting, the best practices do not compartmentalize learning but rather investigate content within the context of inquiry.

Transdisciplinary learning demands the participation and collaboration of all educators.¹¹⁰

¹¹⁰(Transdisciplinary (inspiringinquiry.com))

It is essential to recognize that one of the primary goals of transdisciplinary learning is to comprehend the world around us and that learning should be contextualized and applied in the actual world, well beyond the traditional concept of "university campus." Transdisciplinary learning has relevance across the subjects and transcends the confines of the subjects to connect to the real world, and "transdisciplinarity is distinct from multidisciplinary and interdisciplinary because its goal is to comprehend the present world. Differentiating the approaches to learning the three aspects of a discipline can be outlined as follows:

- **Multidisciplinary Approaches**, in which the disciplines stay intact while concurrently concentrating on a common issue.
- **Interdisciplinary Approaches**, in which disciplines are combined to generate a shared understanding of a topic or a solution to a problem.
- **Transdisciplinary Approaches**, in which disciplinary distinctions are obscured and in which disciplinary knowledge boundaries are blurred.

Examples of transdisciplinary learning are evident in several schools of architecture and design. At the studio project level, community-based design learning, live project pedagogy, and learning by making in context are three approaches utilized to integrate different types of knowledge in design projects. Yet, this can also take place at the level of curriculum design and delivery, where each course is delivered by two or more faculty from different disciplinary backgrounds. At the level of students, it may involve students from various design fields working on an assigned project and generating solutions based on a collaborative effort where every knowledge input is valued and recognized.

4.4

Authentic Learning

Authentic learning is about learning from life experiences, solving real-life challenges, and developing a sense of practicality and usefulness. Authentic learning requires students to engage in meaningful activities (problem definition, problem articulation, and problem-solving) and actively think about what it is they are learning. According to educational psychologist Howard Gardner, many students do not comprehend what they are taught. For many students, education has devolved into mere drill and response; the things they are required to master lack any meaning. Academics are therefore used to students asking, "Why do I need to know this?" and "When am I going to use this?"¹¹¹

Other education psychologists feel that the learner must be active and genuinely involved in the learning process. When students can relate new knowledge to their prior understanding, learning becomes active. They emphasize that learning is the process of engaging with the real world and continually reanalyzing and reinterpreting new information with reference to the real world. Traditional learning circumstances, in which students are passive absorbers of knowledge, are not reflective of real-world learning situations. Authentic learning settings are necessary for making student education relevant to real-world situations.

¹¹¹(Mims, 2003) -- (Nilsson, 2007) -- (Salama, 2008)

Authentic learning is a pedagogical strategy that enables students to investigate, discuss, and meaningfully develop concepts and relationships in situations, including real-world problems and projects that are relevant to the learner. If learning is real, then students should be presented with authentic learning situations that encourage them to establish direct connections between the new content and their past knowledge. These types of encounters between new knowledge and experience improve the motivation of students. They must understand that their accomplishments extend beyond the classroom walls and the campus setting. They need to be given the opportunity to bring experiences, knowledge, beliefs, and curiosity to the classrooms or studios.

Authentic instruction differs significantly from conventional techniques of teaching. Best practices indicate that authentic learning possesses several essential criteria:

- The focus of learning is on authentic projects that are of interest to the students.
- Students engage in exploration and investigation (research and design).
- Usually, learning is transdisciplinary.
- Learning is intrinsically linked to the world outside the university campus.
- Students participate in challenging activities and develop higher-order thinking abilities, including information analysis, synthesis, design, manipulation, and evaluation.
- Students create a product that can be disseminated beyond the classroom to the broader public.
- Students drive the learning process, with academics and other specialists providing assistance, facilitation, and guidance.
- There are possibilities for social discourse among students, and ample resources are accessible.



Authentic learning aims to connect what students are taught in studios and lecture-based classes to issues, challenges, and applications in the real world; learning experiences should reflect the complexities and ambiguities of the actual world. This is a learning-by-doing paradigm in which students work toward the production of discourse, products, and performances that have value or significance beyond academic success.¹¹²

There is a need to place 'each learner's quest for meaning at the center of curricular and pedagogical decisions to prepare students for life beyond the university. This approach has produced the resilient communities needed to face an uncertain future. Since real-world issues are not classified and divided into subjects, there is a need to mirror the actual world. Authentic learning requires a cross-curricular approach in both its design and implementation in studios and lecture-based classes. Authentic learning and transdisciplinary learning share the characteristic of being associated clearly with tangible problems and tangible solutions; authentic learning could be limited to one discipline experience or experiment, while transdisciplinary learning maintains the focus on how different disciplines can work together or how knowledge stemming from different disciplines can enable the development of a solution for a specific design project.

¹¹²(Mims, 2003)



Best practices suggest key elements and tasks underlying authentic learning, including¹¹³ a genuine setting that reflects how the knowledge will be applied in the real world. More is needed to explain the idea or issue taught with real-world examples in building technology-based learning environments with natural contexts. The context must be all-encompassing to provide the goal and incentive for learning, as well as a prolonged and complex learning environment that may be examined at length.

- **Authentic tasks:**

The learning environment must provide ill-defined tasks with real-world relevance and a single complex task to be completed over a sustained period instead of a series of shorter, disconnected activities. Even though there is a standard approach for resolving the problem, the objective of such activities is to produce original products that manifest accomplishment.

- **Access to expert performances and the modeling of processes:**

To faithfully replicate the forms of support available to problem-solving in real-world contexts, authentic learning environments must provide access to expert thinking and the modeling of processes, access to learners with varying levels of expertise, and access to the social periphery or the observation of real-life episodes as they occur. The capability of the Internet to generate worldwide communities of learners who can engage easily through social networking affords limitless chances for the exchange of narratives and stories from experts and practitioners.

¹¹³(Spector et al., 2004) -- (Pearce, 2016) -- (Herrington, 2006) -- (France et al., 2019)



- **Multiple roles and perspectives:**

For students to investigate the learning environment from more than one perspective, it is important to enable and encourage them to explore the task from different perspectives, consider various points of view, and repeatedly “crisscross” the learning environment.

- **Collaborative construction of knowledge:**

Few complex problems in the real world are handled by individuals working alone. Collaboration is an essential component of an authentic problem-solving procedure. Therefore, tasks must be addressed to a group rather than an individual, and suitable communication channels must be established. Collaboration can be encouraged using appropriate tasks and communication technologies, which is particularly important for students learning at a distance.

- **Reflection:**

Reflection is essential to resolving genuine tasks, allowing students to reflect on their learning. As outlined above, the learning environment must provide an authentic context and task to facilitate meaningful reflection. It must also offer nonlinear organization so that students can easily return to any element of the learning environment if desired, as well as the opportunity for learners to compare themselves with experts and other learners in different stages.

■ **Articulation:**

When students are pushed to communicate their thoughts, the process increases their comprehension and reasoning and identifies gaps in their reasoning. To produce a capable learning environment that provides opportunities for articulation, the tasks must include inherent—rather than constructed—opportunities to articulate, collaborative groups to facilitate articulation, and the public presentation of arguments to facilitate the defense of the position.

■ **Coaching and scaffolding:**

Students should not be left entirely to their own devices in real learning. Including conscious coaching and scaffolding supports offered primarily by the teacher and other means (e.g., a client for whom an actual task is being performed) best facilitates learning. Authentic learning environments must allow collaborative learning; for instance, more able partners can aid with scaffolding and coaching, and faculty/lecturers can provide appropriate learning assistance.

■ **Authentic assessment:**

In realistic learning environments, the valuation must be intimately related to successfully completing the task. As a result, the learning environment must allow students to exhibit their successful performance with acquired knowledge and to create polished, collaborative performances or products. In addition, the evaluation must be seamlessly linked with the activity and give appropriate scoring criteria for diverse outputs (projects, essays, and designed artifacts).

The preceding elements should be viewed as design guides instead of attributes. In this respect, every learning environment or activity can be deemed authentic. Hence, elements are best examined along a continuum for assessing the effectiveness of the dimensions of learning. Such a holistic method would permit a determination of the overall trend of the environment's authenticity.

4.5

Collaborative Pedagogy

4.5.a Team Learning

Architectural and design education has always represented a unique pedagogy. From the early years of the master-apprentice model to modern project-based learning in the form of the design studio.¹¹⁴ Educators assert that studios deal almost solely with the individual, while the complexities of contemporary practice require collaborative teamwork. It has always focused on individuality and personal-biased practice, with the importance of communication and criticism. However, in recent years, the architectural profession has become more complex, which critically requires a paradigm shift towards a more collaborative approach.

The design studio involves several students who focus on a single, open-ended, project-based problem, and where each student resolves that problem in their own way. Students are then judged and reviewed collectively by a design jury. Yet, collaborative learning is a teaching strategy applied with small teams of students of different ability levels and where all team members participate in delivering the assigned task. This occurs using various learning strategies and activities to improve their skills and understanding.

¹¹⁴(Emam et al., 2019)

Collaborative learning is better than individualistic and competitive styles of learning. Students enmeshed in a network of informal social relationships learn more effectively than those who are isolated. When implementing collaborative learning, it is crucial to transform the learner from a passive recipient into an active participant. Therefore, each team member should be responsible for assisting their teammates not just in learning what is taught but also in fostering an atmosphere of success.

What students learn is significantly affected by how they learn, and many students learn best through active, collaborative, small-group work inside and outside the classroom or studios. Communication and collaboration between participants contribute to the formation of their personalities. In addition, the process of collaborative design is influenced by the types of activities necessary and how participants choose to complete them. Consequently, learning tools and tactics should be utilized to achieve an effective collaboration experience. However, some argue that the "free rider" is one of the most prevalent issues in group/teamwork; it arises when one or more group members fail to participate alongside the others. They avoid participation, causing other team members to feel exploited because they are responsible for most of the activities required. Consequently, people either limit their efforts or work independently. Hence, minimizing the "free rider" challenge and boosting the effectiveness of collaborative design is important.

4.5.b Collaboration with the Professional Designers

Collaboration with practices and creative industries means that designers in a professional context are collaborating with learners in a pedagogical context.¹¹⁵ Architecture and design disciplines are frequently characterized by procedures for designing new buildings or products, combining the perspectives of numerous actors and stakeholders, and modifying and contrasting distinct materials. Consequently, students in these creative areas must understand how to design and handle challenges inherent to design. Although some scholars have suggested that engineering and design curricula should include collaborative design projects of varying lengths and complexities, more is needed to know about students' learning processes, their interactional work, and the resources they use to complete collaborative design projects in natural educational settings.

Previous practices have focused on the design processes of individual students in superficial/hypothetical contexts. In addition, design projects position students in the ambiguous role of designers in a professional setting while simultaneously placing them as students in a pedagogical context. Therefore, it is necessary to "understand and comprehend how novices develop and conduct collaborative creative design." This speaks to a broader interest in how design students learn to become professionals, i.e., how they transition from amateurs to professional designers and how they interact and learn to establish a professional dialogical practice in this setting.

¹¹⁵(Davidsen et al., 2020)



Combining conventional studio, digital design, and live projects represents possibilities and forms of collaboration with professional designers; it is motivated by an awareness of the rapid rate of development in information and communication technologies (ICT).¹¹⁶ Recent practices show the prospects for collaborative architectural design afforded by ICT in practice and identify two distinct types of applications. The first pertains to the enhanced performance of existing tools in commercial applications where collaboration is centered on the sharing of building information models stored in the cloud. The second focuses on developing new communication technologies that provide instantaneous model updates or employ virtual reality.

There is a widespread opinion that new ICT tools should be the emphasis for better cooperation throughout the design process, from the early conceptualization to the construction and project management phases. However, some research suggests that fostering stronger interpersonal relationships may be more crucial for productive collaborations than obtaining specialized ICT tools. Practices, however, point out that designers frequently co-operate rather than collaborate. Working together, even effectively, is not necessarily collaboration; rather, it may be more accurately characterized as cooperation or coordination to accomplish success. This can be accomplished in many instances by simply slicing information using ICT techniques. Conversely, collaboration is a deeper, more intimate, time-consuming, and relationship-building-intensive synergistic process.

It is typically designed for particular challenges that demand a close relationship between design participants. Collaboration necessitates direct engagement between persons and necessitates negotiations, conversations, and a willingness to consider others' points of view; cooperation is possible if all participants are assigned different tasks and bring their outcomes together. Better collaboration can be obtained if present ICT technologies are connected less tightly. Utilizing publicly available and well-developed tools enables user-generated material to play a prominent role from this standpoint.

¹¹⁶(Rodriguez et al., 2018) (Rodriguez et al., 2018) -- (Davidsen et al., 2020) -- (Ruschel et al., 2008) -- (Le et al., 2018) -- (Victoria State Government -Department of Education, 2021) -- (Brown, 2019) -- (Abegglen et al., 2021)



Collaboration has multiple benefits¹¹⁷ and denotes working with others in a performance. From a systemic perspective, all professional work is collaborative, and solo practice does not exist. All practices are acquired, and each has a history and foundation. It both shapes and is shaped by others. In this sense, professional practice is continuous rather than a succession of discrete events that need to be brought to educational settings.

Collaboration in the learning setting can:

- develop agreed norms, rules, and values.
- optimize the usage of expertise and other resources within the cooperating group in its work.
- Improve legitimacy.
- operate as a containment mechanism where emotions can be surfaced, commented upon, and worked with.
- If it is inclusive, it can aid in avoiding division and projection within the group and their potentially hazardous effects.

¹¹⁷(James and Jule, 2005)



Reflective Practice

Reflective practice in the learning setting is a mode of practice that permits optimal performance in a variety of circumstances through continuous practice improvement via reflection on action. It develops an epistemology of practice that is dynamic. It is a mode of operation where practice contexts are unpredictable and complicated and where there is an imperative to continuously improve and adapt to shifting micro- and macro-contexts.

Reflective practice in the learning setting can:

- Ensure optimal and improved practice in a specific activity.
- Build a practical understanding of collaborative work directly relevant to the primary task.
- Requires the reflective student/practitioner to have the desire to improve effectiveness and efficiency in a particular practice or project; the desire to improve the nature and quality of work; the desire to comprehend the full nature and significance of work – its social, economic, and political significance as well as its influences; the ability to actively consider a facet of professional knowledge; the ability to support and promote the reflections of others; and the ability to modify practice in connection to knowledge. Students should be able to work in groups from the early stages of their studies in architecture or design programs. Experience suggests that students develop a negative attitude toward collaboration if their early experiences were based solely on individualistic effort since they develop the habit of working individually, which becomes difficult as they progress in their studies toward graduation.

4.6

UN SDG in Architectural and Design Education

Sustainability requires incorporating environmental and social obligations into the professional activities of architects and designers, who must be trained in their respective fields of thought on how to incorporate environmental and sustainable criteria and values so that they can approach their professional activities from a sustainability perspective in the future. This is the essence of Education for Sustainability, a progression of environmental education that emerged in the 1960s. It is a method that goes beyond education that is “in” or “about” the environment. Instead, it focuses on preparing students with the tools to take positive action that addresses the entire spectrum of sustainability aspects. Education for sustainability in architecture and design motivates, empowers, and engages both individuals and institutions to consider how they now live and work and how this will take place in the future. This enables the academic community of architects and designers to make educated decisions and devise methods for creating a more sustainable world.¹¹⁸

¹¹⁸(Browne, G.R. (2023) 'The sustainable development goals in a Bachelor of Design course; current integration and benefits, constraints and opportunities for deeper integration', International Journal of Sustainability in Higher Education [Preprint]. Available at: <https://doi.org/10.1108/IJSHE-02-2022-0043>.)

Recent research demonstrates that various sustainability frameworks can be utilized to integrate sustainability into teaching and learning in architecture and design. Agenda 2030 consists of seventeen global goals supported by five pillars:



People



Planet



Prosperity



Peace



Partnerships

and includes more than 180 indicators. They were accepted by 193 countries in the United Nations General Assembly in 2015.

The Sustainable Development Goals (SDGs) are a “blueprint for achieving a better and more sustainable future for all,” one that is just, inclusive, equal, and provides wealth, all within environmental boundaries (UN, 2016). Universities, and especially colleges of architecture and design, have a crucial role in achieving the SDGs, given their expansive mandate for the development and transmission of knowledge and their unique place in society.



The strengths of the SDGs as a framework for education for sustainability are that they include a robust social equality component and are operationalized with indicators and targets. They are the global expression of a shared knowledge, an "emerging literacy" of what sustainable development is, with the targets and indicators offering guidance on how to accomplish it. Even though the SDGs are not legally binding, they significantly impact the policies and actions of governments, enterprises, and organizations.

The value of incorporating the SDGs into the curriculum for students includes

creating a sense of global citizenship based on a social justice framework and fostering an awareness of the global interdependence of people and the environment. Additionally, recent educational practices demonstrate that incorporating the SDGs in the classroom or studio can enhance institution-wide sustainability participation and contribution.



SDGs in Architecture Design Studios- Example:¹¹⁹ Sustainability is an umbrella term that has been a fundamental trace not only in architectural practice but also in architectural education and curricula with varied pedagogical approaches and in all cycles. Sustainability has been implemented in several contexts, such as social and ecological historical situations, although energy-awareness has been at the forefront of practice and education for a considerable time. Throughout the last few decades, architecture education has sought to adapt its methodologies to this new goal. In 1996, the UNESCO/UIA Charter for Architectural Education first acknowledged and emphasized the need for social responsibility in architectural education. Similar assertions were made in the UNESCO/UIA Validation System for Architectural Education in 2002 and 2011 regarding the social responsibility of architecture and its place in architectural education.

Parallel to global studies and efforts to integrate sustainability into architectural education, there have also been efforts in various contexts where architecture schools have been legally obligated to adhere to the SDGs. Although these efforts have had some positive effects, the current standing of the global architectural practice and education system about the SDGs remains inadequate.¹²⁰ Yet, schools of architecture and design must react positively to the SDGs and integrate their objectives and indicators into lecture-based classes and studios, where addressing these indicators is a benchmark for assessing projects and assignments and the overall students' performance.¹²¹

¹¹⁹(Erkarslan and Akgün, 2022) -- (Browne, 2023) -- (Ferrer-Estévez and Chalmeta, 2021) -- (Maruna, 2019)

¹²⁰ new special issue on architectural pedagogy and sustainable development goals will be published in June/July 2023; this will be a significant contribution to the discourse related to SDG for sustainable development. See Archnet-IJAR: International Journal of Architectural Research)

¹²¹(See UIA Award for Innovation in Architectural Education: 2020-2021 >> and 2022-2023 >>

4.7

UNESCO – Heritage Conservation

Architecture has always been centered on durability, permanence, and impermanence. Defined by material conditions, how we build is closely tied to what we preserve and how we intellectualize and conceptualize the future of our past. Furthering the conservation and protection of architectural and urban heritage, UNESCO continues to examine the relationship between history and growth, preservation, and change. Cultural context becomes vital as architecture, landscapes, and cities are threatened by the climate crisis and unrest.

There is a strong connection between heritage conservation and architectural education. Such a relationship entails a discourse on learning how to deal with heritage, conservation processes, and how to design with an understanding of history, culture, and values, and graduating architects who are responsible for the design to preserve, reuse, reconstruct, and implement conservation projects.¹²² A decade ago, Prince Sultan Bin Salman, the president of the General Authority for Tourism and Antiquities in Saudi Arabia, evaluated this link based on confirmation of inherited moral and physical characteristics that shape the personality and identity of communities.

¹²²(Embaby, 2014)

Interpreting creative variations achieves the idea of renewal promoted by all, and this can be accomplished through a system of architectural and design education that deepens and reflects society's values. Often, the legacy of experience and abilities is handed from one generation to the next through participation in direct learning and socialization, representing the concept of "teaching heritage" and the various approaches to preserving it for future generations. Furthermore, the international community promotes the significance of learning conservation principles and procedures through architectural education in numerous ways.



Over the past several decades, the various approaches to conservation have tended to converge, and the principles of teaching conservation of the built heritage have received international support through the recommendations of UNESCO and ICOMOS, as well as some regional and international organizations, including the European Association of Architectural Education (EAAE). All efforts endorse the significance of developing new methodologies for teaching heritage conservation.



The factors examined while preparing to teach conservation courses have been debated, with the primary concern being how to teach heritage conservation in architectural education. The identification and evaluation of the relevance of architectural heritage should be the focus of a conservation course or a class on urban heritage or traditional/vernacular settlements. The primary determinants of the significance of a cultural heritage site vary based on many factors, including its physical location, its associated landscape and setting, design, construction systems and technical equipment, fabric, aesthetic quality, and use, and/or its historical, social, scientific, or spiritual associations or creative genius. Yet, valuable interiors, including fittings, furnishings, and artwork, must be included as some of these determinants.



The question of how to teach conservation is directly related to the “pedagogy” of conservation, not only in terms of the effective transfer of the knowledge involved but also in terms of synergies with other subjects included in the curriculum of a college or a school of architecture and design, with a focus on theoretical and operational aspects. According to Musso, “We ask ourselves, in reality,” and “how” heritage care can be taught in a project laboratory and with what limitations and prerequisites. Clearly, architectural and design education for heritage conservation must be targeted at the students being instructed.

Consequently, the practical application of the modalities of instruction may vary from one design-related field to another. This should be specifically of concern to schools of architecture and design located within a heritage context or in proximity to vernacular and traditional settlements. The primary concern is that the preservation of the constructed heritage demands recognition and approval as a starting point from the architectural and design education community. This needs to be translated in the context of history and theory courses as well as in design studio projects.

4.8

Reflections and Enabling Actions / Catalyzing Measures

This section demonstrated ways of enhancing architectural and design education excellence through best practices and learning approaches for knowledge delivery and production. It highlighted the importance of identifying and discussing these practices to enhance teaching and learning in architecture and design.

One crucial aspect is the differentiation between knowledge production and consumption, which is inherent in architectural and design education. While a wealth of knowledge is available on pedagogical practices for delivering, assimilating, consuming, and producing knowledge, it is important to identify and debate key learning approaches that can be adopted and adapted.

Inquiry-based learning, experiential learning, and active learning are identified as important practices that prioritize students (student-centered) and their experience as future architects and designers. These approaches engage students in the teaching and learning processes, allowing them to participate and contribute actively to the production of new knowledge. Students are empowered to address real-life issues and generate innovative design ideas and solutions in response to real design needs or requirements.



Transdisciplinary learning, authentic learning, and collaborative pedagogy are also crucial for architectural and design education excellence. The fragmented nature of knowledge in these fields necessitates a cross-disciplinary approach beyond traditional disciplinary boundaries. Transdisciplinary learning encourages students to explore connections between various disciplines, fostering a holistic understanding of the built environment.

Authentic learning experiences provide students with real-world contexts, enabling them to apply their knowledge and skills in practical settings. Collaborative pedagogy promotes teamwork, communication, and cooperation among students, reflecting the collaborative nature of the architectural and design professions.

Furthermore, integrating the mandates and requirements of United Nations organizations, such as the Sustainable Development Goals and Heritage Conservation, into the curriculum and teaching and learning processes is essential for future architects and designers. By prioritizing these global goals, students gain a deeper understanding of the social, environmental, and cultural impacts of their work. Integrating sustainability and heritage conservation principles into the curriculum ensures that students are equipped with the knowledge and skills needed to address these critical issues in their professional practice.

In summary, enhancing architectural and design education excellence requires identifying and implementing best practices and learning approaches. This involves shifting from a focus on knowledge consumption to knowledge production, adopting active and experiential learning typologies, enabling transdisciplinary and collaborative learning, and integrating global mandates such as the Sustainable Development Goals and Heritage Conservation. By embracing these approaches, schools of architecture and design can ensure that future architects and designers are well-prepared to address real-world challenges and contribute to advancing their fields.



Best practices in architectural and design education involve:

- Incorporating interdisciplinary coursework that explores the intersections of architecture and related fields, such as urban planning, engineering, and environmental design.
- Implementing a design studio culture that encourages experimentation, critical thinking, and risk-taking fosters creativity and innovation.
- Emphasizing the importance of sustainability in design education and integrating sustainable design principles and strategies into the curriculum.



Learning approaches for knowledge delivery and production include:

- Utilizing flipped classroom models, where students engage with course materials outside of class and use class time for interactive discussions, critiques, and hands-on activities.
- Promoting self-directed learning through online resources, tutorials, and independent research projects allows students to explore topics of interest and develop specialized knowledge.
- Encouraging teamwork and collaborative projects, creating opportunities for students to learn from each other and engage in collective knowledge production.



Transdisciplinary learning in architecture and design:

- Integrating coursework and projects that require students to collaborate with professionals from other disciplines, such as landscape architecture, interior design, and construction management, fosters a holistic understanding of the built environment.
- Organizing cross-disciplinary workshops and seminars that bring together students and faculty from different fields to explore common challenges and develop interdisciplinary solutions.
- Establishing partnerships and exchange programs with other educational institutions, both nationally and internationally, to facilitate knowledge sharing and cross-disciplinary collaboration.



Collaborative pedagogy can be embraced by:

- Implementing group projects and team-based assignments that encourage students to work collaboratively, developing communication, negotiation, and teamwork skills.
- Facilitating interdisciplinary design charrettes and design competitions, where students from different disciplines come together to solve complex design problems, fosters collaboration and a culture of excellence and inclusive design thinking.
- Engaging practicing architects, designers, and industry professionals as mentors and guest critics, providing students with valuable real-world perspectives and feedback.



Integrating United Nations mandates (Sustainable Development Goals and Heritage Conservation) into the curriculum:

- Developing specific courses that focus on sustainable design principles, environmental stewardship, and social responsibility ensures that students understand and engage with the Sustainable Development Goals. However, while these can be part of selected areas or courses of the curriculum, sustainable design thinking should be embedded at every level and in every course.
- Incorporating case studies and projects highlighting the importance of heritage conservation, preservation, and adaptive reuse promotes an appreciation for cultural heritage and its integration into contemporary design practices.
- Encouraging students to critically examine the ethical implications of their design decisions, considering the long-term impacts on the environment, society, and cultural heritage.

Self Reflection:

- ☑️ Read the content of the chapter: **Enhancing Excellence in Architectural and Design Education** with a focused reading on the enabling actions and the associated mechanism / catalyzing measures.

You can also use the initial questions raised in the chapter as a trigger for your responses:

- How can we move from the teaching paradigm that places emphasis on the consumption of architectural and design knowledge previously developed by others to a paradigm that engages with real-life issues to enable the production of new knowledge?
- What are the learning typologies that enable this shift in thinking from knowledge consumption to knowledge production and reproduction?
- What are the benefits and mechanisms of active, experiential, and inquiry-based learning for the effective education of future architects and designers in Saudi Arabia?
- How can transdisciplinary or cross-disciplinary learning be enabled in architecture and design schools?
- What are the benefits of collaborative pedagogy, and what are its key characteristics?
- How can the mandates and requirements of United Nations Organizations (Sustainable Development Goals and Heritage Conservation) be integrated into the curriculum and teaching and learning processes for further architects and designers?

Self Reflection:

<p>Enabling Actions</p>	<p>Self-Reflections</p> <p>To what extent do the college or program implement the seactions? What mechanisms are used in the implementation?</p>	<p>Prioritized Actions</p> <p>Arrange actions in order of priority, then select the relevant mechanisms appropriate to the conditions of your college or program.</p>
<p>1. Learn from and implement bast practices in architectural and design education.</p>	<p>_____</p>	<p>_____</p>
<p>2. Adopt diverse learning approaches for knowledge delivery and production.</p>	<p>_____</p>	<p>_____</p>
<p>3. Adopt and implement transdisciplinary learning in architecture and design.</p>	<p>_____</p>	<p>_____</p>
<p>4. Build and mindset and support collaborative pedagogy.</p>	<p>_____</p>	<p>_____</p>
<p>5. Integrate United Nations mandates into the curriculum.</p>	<p>_____</p>	<p>_____</p>

05

Overview of Selected International Standards and Best Practices in Architectural and Design Education



5

Overview of Selected International Standards for Achieving Excellence in Architectural and Design Education

Academic accreditation is a quality assurance process under which programs of educational institutions are assessed and verified by an external body to determine whether applicable and recognized standards are satisfied. If standards are met, accredited status is granted by the appropriate agency. Likewise, in the architecture and design fields, accreditation is a quality assurance scheme for programs in various areas. Some of the accreditation agencies are linked to or associated with professional organizations.

The overview of accreditation in this section is not to provide an exhaustive list of all possible accreditation agencies and the programs that validate or accredit but to demonstrate the key values and aspects of a selection of important organizations that have the authority to perform quality assurance in colleges and schools of architecture and design.

As part of this guide, an overview of subject-focused accreditation principles, parameters, and approaches is necessary. This is different from the National Commission for Academic Accreditation and Assessment (NCAAA) as the overview can help schools and programs update or develop new curricula.

This section responds to the following key question:

1

What are the key principles of the subject-specific international and national accreditation agencies that operate internationally in the architecture and design fields?

The response to the question includes coverage of accreditation agencies in:

Architecture

- NAAB – National Architectural Accrediting Board.
- RIBA – Royal Institute of British Architects.
- UNESCO-UIA Charter and Validation System.

Interior Design

- The Council for Interior Design Accreditation (CIDA).
- British Accreditation Council (BAC).

Landscape Architecture

- The Landscape Architectural Accreditation Board (LAAB).
- The Landscape Institute in the UK.
- The Australian Institute of Landscape Architects.

Industrial / Product Design

- The Institution of Engineering Designers IED.
- The British Industrial Design Association (BIDA).

Art and Design

- NASAD- National Association of Schools of Art and Design (for all design-related disciplines).
- Urban design and planning
- Planning Accreditation Board (PAB)
- Royal Town of Planning Institute (RTPI)

5.1 Architecture



5.1.a NAAB – National Architectural Accrediting Board¹²³

As mandated by the Collateral Organizations (ACSA-Association of Collegiate Schools of Architecture, AIA-American Institute of Architects, AIAS-American Institute of Architecture Students, and NCARB-National Council of Architects Registration Boards) that have financed NAAB since 1940, NAAB provides accreditation services and monitoring to guarantee that architectural programs meet important quality assurance duties.

With the assistance of the Collateral Organizations, NAAB adopts a comprehensive approach to accreditation, using outcome-based criteria to evaluate not only whether a program efficiently teaches but also if students are learning and demonstrating competency in their field of study (performance- and evidence-based). This is the purpose of accreditation and the foundation of the commitment shared by NAAB and the Collateral Organizations.

¹²³NAAB (2020) 'NAAB Conditions for Accreditation:2020 Edition', National Architectural Accrediting Board, (January), p. 112. Available at: https://ncdc.gov.ng/themes/common/docs/protocols/111_1579986179.pdf. (Details of accreditation criteria, process and procedures are included in NAAB website <https://www.naab.org/>)

Visiting teams visit schools to support the NAAB process and examine curriculum, resources, and students' work. Typically, specific conditions must be satisfied, and these include:



The institutional environment and geographic setting (public or private, urban or rural, size, etc.), as well as how the program's mission and culture shape its architecture pedagogy and influence its growth. Programs within a larger educational institution must also clarify how the institution's mission influences or shapes the program.



The program's role and relationship to its academic context and university community, including how it benefits and is benefited by its institutional setting and how the program's unit and/or individual faculty members contribute to university-wide initiatives and the university's academic plan. Schools should offer a description of how the program creates interdisciplinary linkages and capitalizes on unique institutional and community opportunities.



The methods by which the program encourages students and instructors to learn in and out of the classroom through individual and group opportunities (e.g., field trips, participation in professional societies and organizations, honor societies, and other program-specific or campuswide and community-wide activities).

To build a better-built environment, NAAB promotes educational quality assurance conditions and practices that anticipate the demands of academic programs, the profession, and society. In essence, NAAB creates and maintains an accrediting system for professional degree education that increases the value, relevance, and efficacy of the architecture profession. NAAB is guided by several principles or core values that act as inspiration, including Commitment to Excellence, Diversity and Inclusion, Effective Communication, and Spirit of Collaboration.

NAAB operates within a set of core values for both education and practice. Thus, the program must report on how it addresses the following values, which all influence the education and development of architects. The response to each value must also indicate how the program will continue to address them in its long-term planning. These values are fundamental rather than exhaustive.

Design: Architects construct better, safer, more equitable, resilient, and sustainable built environments. Architecture education, the subject, and the profession emphasize design thinking and integrated design solutions.

Environmental Stewardship and Professional Responsibility: Architects are accountable for the effects of their work on the natural environment and the public's health, safety, and well-being. As professionals and designers of the built environment, we accept these duties and adhere to the highest standards of conduct to fulfill them.

Equity, Diversity, and Inclusion: Architects are committed to equity and inclusion in the environments we build, the policies we adopt, the words we use, the deeds we perform, and the respectful learning, teaching, and working environments we create. Architects pursue equity, diversity, and social justice in the profession and society, and they support a variety of access routes to architectural education for students.

Knowledge and Innovation: Architects generate and share design and built environment-focused knowledge in response to ever-changing situations. New information improves architecture as a cultural force, fosters innovation, and motivates the discipline's constant improvement.

Leadership, Collaboration, and Community Engagement: Architects practice design as a collaborative, inclusive, innovative, and sympathetic endeavor with other disciplines, our communities, and our customers.

Lifelong Learning: Architects value educational breadth and depth, including a comprehensive understanding of the discipline's body of knowledge, histories, and theories, and architecture's place in cultural, social, environmental, economic, and constructed settings. Architecture practice requires lifelong learning, which is a responsibility shared by academia and practice environments.¹²⁴

Several architecture programs in universities in the Kingdom of Saudi Arabia have already been accredited by NAAB. Likewise, three universities in the Gulf region have also been accredited by NAAB.

¹²⁴NAAB (2020) 'NAAB Conditions for Accreditation:2020 Edition', National Architectural Accrediting Board, (January), p. 112. Available at: https://ncdc.gov.ng/themes/common/docs/protocols/111_1579986179.pdf.



5.1.b RIBA – Royal Institute of British Architects ¹²⁵

Education has always been at the heart of the Royal Institute of British Architects (RIBA) and is parallel to overseeing the practice of architecture (not licensing since the government agency Architects Registration Board undertakes it). However, there are proposed changes to how architectural education is validated and accredited, and a process of consultations with schools are being undertaken.

RIBA validation is a fully evidence-based quality assurance peer review system that functions nationally and internationally as a key companion to architectural schools, monitoring courses to enhance median accomplishment, encourage excellence, and ensure an effective and enjoyable learning experience. Within the RIBA accreditation system, schools must consider key points that include:

- Declare clear academic objectives, separating their offer from competitors and highlighting specific areas of excellence.
- Avoid prescriptive conformity with the standards in favor of an interpretation.
- Provide part 2 courses that are substantively distinct from those offered at the undergraduate level and represent the standards anticipated of graduates pursuing sustained, specialized postgraduate study. It is recognized that RIBA's current practice looks at Part 1 and 2 together.
- Encourage students to develop all aspects of their professional skills creatively, contributing to the employability of graduates by ensuring that their skills in digital and analog media, structured written work, and the exploration of design ideas through making are thoroughly represented in all academic portfolios.
- At least fifty percent of all assessed work in part 1 and part 2 must be completed as design studio projects.

¹²⁵ RIBA procedures for validation and validation criteria for UK and international courses and examinations in architecture', (July 2011), pp. 1–72. (Details of accreditation criteria, process and procedures are included in RIBA-Education Accreditation website <https://www.architecture.com/education-cpd-and-careers/riba-validation/international-validated-schools>)



The visiting panel typically performs the following:

- **Firstly**, a school's written report should emphasize experimentation, innovation, and professional relevance in course delivery, teaching methods, and academic outcomes, highlighting its special traits.
- **Secondly**, stress the importance of schools having the means for students to satisfy the graduate qualities specified for each award level.
- **Thirdly**, use the criteria as diagnostic tools to determine where deficiencies in meeting graduation qualities are evident.



5.1.c UNESCO-UIA Charter and Validation System ¹²⁶

The UNESCO-UIA Charter and Validation System for Architectural Education is a global system managed by the UIA Architectural Education Commission and Validation Council. The UIA Education Commission acts as a think-tank for architectural education policy, proposing guidelines, documents, proposals, and opinions on education. The aim is to facilitate access to high-quality education globally, focusing on increasing the international mobility of architectural education.

The UNESCO-UIA Study Program Validation aims to set an international standard for excellence in architectural education, ensuring the prestige and integrity of validated schools. The UNESCO-UIA Charter on Architectural Education, published in 1996, lays out a series of guidelines to ensure that young architects receive an education that fully prepares them to meet the professional, social, and cultural challenges of the globalized profession. The Charter acts as the basis for the UNESCO-UIA Study Program Validation.



The recognition of architecture study programs by the UNESCO-UIA Validation represents an internationally benchmarked assessment of quality in architectural education. Assessment is carried out through robust, unbiased, evidenced-based peer review. The UNESCO-UIA Validation advances the creation of a global network of recognized architecture programs, putting certified institutions and their students at a great advantage.



As a keeper and advocate of the UNESCO-UIA Charter for Architectural Education, UNESCO-UIA maintains a significant overview of the Canberra Accord, a global system for recognizing the substantial equivalence of validation systems. The Charter is reviewed every six years by the UIA Education Commission. The Royal Institute of British Architects [RIBA] acts as the system operator of the UNESCO-UIA Validation System.

¹²⁶UIA Architectural Education Commission, co-directed by Marilyns Nepomichie and Ashraf Salama <https://www.uia-architectes.org/en/commission/architecture-education/>
UNESCO-UIA Charter for Architectural Education (revised English edition 2017) <https://www.uia-architectes.org/en/resource/unesco-uia-charter-for-architectural-education-revised-english-edition-2017/>
UNESCO-UIA Validation System Procedures Manual for Study Programmes and Systems

There are multiple benefits to receiving UNESCO-UIA validation, which can be summarized as follows:

- Validation of architecture study programs by UNESCO-UIA is defined according to benchmarks for quality in architecture education and lies at the heart of the UIA's ethos; the longevity and international reach of the organization (and a variety of schools/countries recognized by the UIA) are proof that those benchmarks are respected and credible.
- UNESCO-UIA validation provides evidence of robust peer group review of programs in architecture by distinguished and highly experienced practitioners, academics, and students/graduates of architecture; report groups are formed from individuals with a broad constituency of interests, expertise, and backgrounds working to defined procedures and acting in an entirely unpartisan manner.
- The 16 criteria used for validation include the 11 points of the European Directive for Architects; these form the basis for other well-established validation systems working internationally, including those of the Royal Institute of British Architects and the Commonwealth Association of Architects.
- The additional five validation criteria used by UNESCO-UIA form a further level of interrogation of academic standards and learning outcomes, including consideration of heritage, conservation, and attitudes toward the development of resource-efficient and sustainable architecture.

- UNESCO-UIA validation is an evidence-based process, i.e. the work produced by students of architecture provides the key items from which a report group develops its recommendations; this evidence-based approach places students and their work at the center of UNESCO-UIA validation.
- UNESCO-UIA validation contributes to creating a global network of architecture schools and their staff and students.
- UNESCO-UIA has a significant overview of the Canberra Accord, the global system for recognizing the substantial equivalence of validation systems.

The following list illustrates the 16 points: Architectural education includes the following fundamental objectives:

1. Ability to create architectural designs that satisfy both aesthetic and technical requirements.
2. Adequate knowledge of the history and theories of architecture and the related arts, technologies, and human sciences.
3. Knowledge of the fine arts influences the quality of architectural design.
4. Adequate knowledge of urban design, planning, and the skills involved in the planning process.
5. Understanding the relationship between people and buildings, between buildings and their environment, and the need to relate buildings and the spaces between them to human needs and scale.
6. Understanding of the profession of architecture and the role of the architect in society in preparing briefs that take account of social factors.
7. Understanding of the methods of investigation and preparation of the brief for a design project.

8. Understanding the structural design, construction, and engineering problems associated with building design.
9. Adequate knowledge of physical problems and technologies and of the function of buildings is needed to provide them with internal conditions of comfort and protection against the climate.
10. Design skills are necessary to meet building users' requirements within the constraints imposed by cost factors and building regulations.
11. Adequate knowledge of the industries, organizations, regulations, and procedures involved in translating design concepts into buildings and integrating plans into overall planning.
12. Understanding of professional and disciplinary responsibilities toward human, social, cultural, urban, architectural, and environmental values as well as architectural heritage—including the health, safety, and welfare of the public—and the physiological and psychological aspects of public health and well-being. These responsibilities also include a commitment to equity, diversity, and inclusivity in the content and context of architectural instruction.
13. Knowledge of achieving ecologically responsible design and environmental conservation and rehabilitation, focusing on relevant aspects of the 17 United Nations Sustainable Development Goals (Reference: <https://sdgs.un.org/goals>).
14. Ability to demonstrate creative competence in building techniques founded on a comprehensive understanding of the disciplines and construction methods related to architecture.
15. Knowledge of project financing, project management, cost control, and methods of project delivery.
16. Understanding of research and pedagogical methodologies, including transdisciplinary knowledge action and knowledge transferability, as inherent parts of architectural learning for both students and teachers.

The Charter is the underpinning document of the validation system and involves several declarations that include¹²⁷ :



Quality education in architecture must prepare architects to formulate new solutions for the present and the future, as new eras will bring grave and complex challenges concerning the social and functional degradation of many human settlements. These challenges may include many elements incorporated in the United Nations Sustainable Development Goals, including global urbanization and the consequent depletion of existing environments, a severe shortage of housing, urban services, and social infrastructure. The effects of all of these on public health and well-being and the increasing exclusion of architects from built environment projects. (Reference: <https://sdgs.un.org/goals>)



Architecture: the character and quality of buildings and the way they relate to their cultural contexts and natural surroundings; respect for the natural and built environment; as well as the collective and individual cultural heritage are matters of public concern.



It is in the public interest and central to public health—including physical and psychological well-being—to ensure that architects can understand regional characteristics and to give practical expression to the needs, expectations, and improvements to the quality of life of individuals, social groups, communities, and human settlements, advocating, through their work, for equitable and inclusive environments, clean water, accessible and renewable energy, resilient and innovative infrastructures, sustainable cities and communities, region-specific climate action, and responsible stewardship of our natural and built environment.

¹²⁷ (Details of accreditation criteria, process and procedures are included in UIA Architectural Education Commission <https://www.uia-architectes.org/en/commission/architecture-education/>)



Methods of education and training for architects are to develop a cross-cultural understanding and cultural richness and to allow for flexibility and encourage innovation in the development of curricula that respond to the changing demands and requirements (including methods of project delivery) of the client, the users, the construction industry, the architectural profession, and the greater public good, whilst being aware of the political and financial motivations behind such changes.



Subject to recognition of the importance of regional, environmental, and cultural customs and practices and the need for differences in curricula to accommodate these variations, a common ground exists within the pedagogical methods used around the world. Nurturing and establishing corresponding transdisciplinary capabilities will enable countries, architecture schools, and professional organizations to evaluate and improve the education given to future architects.



The increasing mobility of architects between different countries calls for mutual recognition or validation of individual degrees, diplomas, certificates, and other evidence of formal professional qualification.



The mutual recognition of degrees, diplomas, certificates, or other evidence of formal qualification to practice in architecture must be based on objective criteria, guaranteeing that holders of such qualifications have received and continue to maintain the kind of education and training called for.

The vision of the future world, cultivated in architecture schools, should include the following goals, which draw upon the ethos of the 17 United Nations Sustainable Development Goals (Reference: <https://sdgs.un.org/goals>):

- A decent, healthy, just, safe, equitable, accessible, sustainable, and resilient quality of life for all the inhabitants of human settlements.
- A technological application for development that respects the social, cultural, and aesthetic needs of people and is aware of the appropriate use of materials in architecture and infrastructure and their initial and future maintenance costs.
- An ecologically balanced and sustainable development of the built and natural environment includes the rational utilization of available and, where possible, renewable resources.
- A diverse, equitable, and inclusive built environment is valued as the common heritage, property, and responsibility of everyone.



Issues related to architecture, the environment, and public health and well-being should be introduced as part of general education at primary and secondary schools because an early awareness of the built environment is important to future architects, clients, and users of buildings, as well as to the public at large.



Systems for continuing professional development should be set up for architects, as architectural education should never be considered a closed process but one in which life-long learning occurs.

Architectural heritage education is essential to:

- Understanding sustainability, resilience, the social context, and sense of place in building design.
- Transforming the professional architectural mentality so that its creative methods are part of a continuous and harmonious cultural process (Refer to Appendix X, UIA paper on Heritage Education, of UIA Education Commission Reflection Group 7, on Heritage Education, Torino 2008).



Cultural diversity, which is as necessary for humankind as biodiversity is for nature, is the common heritage of all humanity and should be recognized and understood for the benefit of present and future generations. (Refer to the UNESCO Universal Declaration on Cultural Diversity of November 2001, (<http://unesdoc.unesco.org/images/0012/001271/127160m.pdf>))

As a new system, the UNESCO-UIA Validation system has received international attention, especially in Europe, where many schools are applying to seek validation of their programs, including France, Spain, Germany, Hungary, and Russia. In the Arab World, since 2017, four programs in Egypt (two programs at Cairo University, one at the American University at Cairo -AUC, and one at the United Arab Emirates (Ajman University)). Recently, schools in several countries have made applications, including Tunisia and within the broader Middle East; Turkey has one validation program, and several others have applied. Notably, the German Accreditation Agency (ASAP) has adopted the UNESCO-UIA Charter and Validation System, which has come under complete recognition and implementation in 2018.¹²⁸

¹²⁸ ASAP (2018) 'Criteria for the accreditation of courses of study Architecture', Validation Organisation for Study Programmes in Architecture and Planning, Sixth edition 2018.

5.2

Interior Design

Several organizations validate and accredit interior design programs in various countries. An overview of these organizations is outlined below.



The Council for Interior Design Accreditation (CIDA)¹²⁹ accredits interior design education programs at colleges and universities in the United States and internationally. This knowledge-driven organization has been passionately committed to the ongoing enrichment of the interior design profession for several decades by identifying, developing, and promoting quality standards for the education of entry-level interior designers and then encouraging, accrediting, and supporting educational programs that strive to attain those standards.

The Council for Interior Design Accreditation (CIDA) in the United States promotes the interior design profession as the authoritative authority on quality standards and accreditation in higher education. This is based on the belief that interior designers are in high demand due to their education and ability to enhance the human experience inside the built environment. CIDA operates based on a set of core values and principles that culminate in raising the standards of the education and practice of interior designers.

The Standards Committee, which is part of the Council for Interior Design Accreditation, oversees establishing standards, evaluating, and accrediting interior design programs at colleges and universities. CIDA offers a comprehensive three-step procedure to analyze and evaluate programs seeking accreditation, employing internationally recognized educational criteria.

- **Self-Evaluations:** Programs undertake a self-study evaluation and provide CIDA with a report of the outcomes.
- **Site Inspections:** These three-day visits, undertaken by a team of expert CIDA site visitors, permit an in-depth review of the institution's program to confirm compliance with accreditation standards. The visiting team subsequently develops a written report containing general observations and analysis, which is forwarded to the CIDA Accreditation Commission.

¹²⁹CIDA Accreditation – USA: Council for Interior Design Accreditation <https://www.accredit-id.org/>

- The seven-person Accreditation Commission, comprised of five experienced site visitors from a cross-section of the profession, one program representative, and one public member, all of whom have direct knowledge of the complexity of accreditation, evaluates the written reports. The Commission then decides whether to grant or deny accreditation based on the level of compliance with requirements demonstrated by the program.
- Facilitate outreach and collaboration with all stakeholders in the interior design community.



While there is not a clear accreditation agency for interior design education in the UK, programs go through the general quality assurance of the **British Accreditation Council (BAC)**. However, there are several other organizations that oversee the practice of interior design and certify designers based on their qualifications but do not necessarily accredit programs. This includes the Society of British & International Interior Design¹³⁰ SBID which has pioneered the British standard of certification for interior designers by establishing measurements of competence and skill in education, experience, and training, as well as a yearly requirement for continuing professional development (CPD) as the basis for maintaining certified status. SBID accreditation identifies interior design enterprises and exemplifies the highest level of professional quality and best practices as the industry body recognized throughout the United Kingdom and the world as a hallmark of design standards and excellence.

There is also the Interior Educators Society, the Commercial Interior Design Association, and the British Academy of Interior Design. They represent charities or civic organizations that promote the education and practice of interior design and have strong ties with schools that offer interior design programs, but not necessarily through accreditation.

¹³⁰The Society of British & International Interior Design SBID <https://www.sbid.org/>

5.3

Landscape Architecture



The Landscape Architectural Accreditation Board (LAAB) is a voluntary, non-governmental system of self-regulation. The principle of self-evaluation is at its heart. The Landscape Architectural Accreditation Board (LAAB) accreditation procedure analyzes each school based on its stated goals and adherence to externally enforced minimum requirements. The program evaluates how well it is accomplishing its instructional objectives. The LAAB then conducts an independent evaluation to determine whether a program meets accreditation requirements. Bachelor's or Master's degree programs leading to first professional degrees in the United States can apply for LAAB certification.

The Board of Trustees of the American Society of Landscape Architects recognizes the quality of educational programs leading to bachelor's and master's degrees in landscape architecture accredited by the Landscape Architecture Accreditation Council of the Canadian Society of Landscape Architects (LAAC). It considers the accreditation criteria and many individual program guidelines to be comparable to those of LAAB.¹³¹

The Landscape Institute in the UK accredits the available landscape architecture programs, which are more than 30 undergraduate and postgraduate higher education programs.¹³² Accreditation by the Learning Initiative necessitates that education providers satisfy significant criteria that guarantee the maintenance of high standards. All certified programs must demonstrate that they offer students a foundation of knowledge and a variety of transferable skills for future jobs in the industry. Normally, the Landscape Institute certifies programs that reflect all parts of the profession, including landscape and urban design, historic landscapes, environmental conservation, landscape management, planning, and ecology, among others.¹³³

The Australian Institute of Landscape Architects (AILA) Awards Program is an important mechanism for promoting the accomplishments and work of Australian landscape architects. The Awards process provides an opportunity for public and peer recognition of landscape architects' work. It demonstrates to industry, business, government, and the broader community the positive impact the profession has on the lives of Australians through the planning and design of the built and natural environments. However, AILA does not accredit programs.

¹³¹Accreditation and Landscape Architectural Accreditation Board (LAAB) | asla.org

¹³²The Landscape Institute: <https://www.landscapeinstitute.org/>

¹³³Landscape Institute - Criteria for Accreditation of Higher Education Programmes

<https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2022/05/Landscape-Institute-Criteria-for-Accreditation-of-Higher-Education-Programmes-2022-23.pdf>

5.4

Industrial / Product Design



The Institution of Engineering Designers IED - Accreditation of Product Design Educational Programs (APDEP) in the UK¹³⁴

The IED is a registered charity controlled by its Royal Charter. The Royal Charter is a document of incorporation awarded by the monarch of the United Kingdom. By its bylaws, the Institution of Engineering Designers self-regulates the Registration Standard for Product Design and Computer-Aided Design (CAD): Chartered Technological Product Designer (CTPD), Registered Product Designer (RProdDes), Registered Computer-Aided Design Manager (RCADMan), and Registered Computer-Aided Design Practitioner (RCADP) (RCP). The key objectives of the accreditation process are to:

- Ensure that product design education in the United Kingdom teaches these industry-relevant skills.
- Ensure that degree programs are of the highest quality.
- Attract students towards a career in product design.
- Demonstrate a consistently high standard of product design education in the United Kingdom. Provide educational institutions with a framework for evaluating their programs and achieving excellence in delivery and content.



The British Industrial Design Association (BIDA)¹³⁵ accredits companies rather than educational programs. It champions design's strategic and economic benefits to businesses and government through the collective voice of industrial design consultancies and design-driven businesses.

BIDA has the authority to recognize companies with a consistent track record of providing excellent work. Accreditation is seen as a standard for superior design. This high standard creates chances for members and instills client confidence in their hiring decisions.

¹³⁴iED - Accreditation of Product Design Educational Programmes (APDEP) in the UK <https://www.ied.org.uk/>

¹³⁵The British Industrial Design Association BIDA (britishindustrialdesign.org.uk)

5.5 Design Programs

NASAD | NATIONAL
ASSOCIATION
OF SCHOOLS OF
ART & DESIGN

NASAD- National Association of Schools of Art¹³⁶

Founded in 1944, the National Association of Schools of Art and Design (NASAD) is an association of around 337 accredited schools, conservatories, colleges, and universities. It offers support to organizations. NASAD membership requires more than a periodic accreditation review, including self-study, on-site visits, commission action, and public notification of accredited institutional membership. It offers more than the instant benefits and enhancements often resulting from this approach. Participation in NASAD also entails assuming significant institutional responsibility for art and design, particularly about its position and function in higher education.

NASAD's institutional membership is a strategic decision. It indicates a comprehensive awareness of the connection between the work of institutions and the activity of the entire community of institutions that teach artists and designers at the college level. It indicates a desire to connect with others to both give and receive.

It denotes that individuals with high levels of art/design competence, expertise, and experience must assume leadership roles in accreditation and related fields lest a leadership void be formed for non-artists/designers to fill. It is a commitment to continue doing what NASAD has always done: seeking optimal learning circumstances for art and design students and enhancing the strength and quality of art and design in higher education by enabling institutional members and their faculties to perform their best work.

¹³⁶National Association of Schools of Art and Design (arts-accredit.org) -

In collaboration with other organizations, **NASAD member institutions establish national accreditation criteria and guidelines**, and NASAD offers advice to their institutional membership. NASAD website provides a searchable database that contains the names and addresses of all accredited institutional members, including degree-granting institutions, community/junior colleges, non-degree-granting schools, and community and pre-collegiate programs.¹³⁷ It should be noted that only member institutions have a vote when establishing standards. This level of professional consensus—among the faculties and administrators of around 337 institutions—generates authority. It enables the standards to both inform and protect. The standards are frequently cited daily at all educational levels. They encourage excellent judgment since they emphasize aesthetic and pedagogical fundamentals.



The effectiveness of the standards is that they establish a framework of fundamental competencies and operational circumstances rather than a plan for standardizing programs.

The process is built on assisting each institution in achieving its mission, goals, and objectives. Respecting the rights of individual institutions and faculty members to create, develop, and evaluate local programs, NASAD provides its member institutions with a means to centralize critical responsibility for standards and assessment in art and design while preserving the autonomy of individual institutions and faculty members.

NASAD represents higher education institutions that teach art and design under the most widely approved evaluation method in all higher education. Its work in accreditation and beyond serves as a benchmark for others in the sector and is especially beneficial for decision-makers without a background in art and/or design.

¹³⁷See: <https://nasad.arts-accredit.org/directory-lists/accredited-institutions/>

5.6

Reflections

Academic accreditation is a crucial quality assurance process that ensures educational programs meet recognized standards. In architecture and design, accreditation plays a significant role in validating the quality of programs. While numerous accreditation agencies are linked to professional organizations, this offered an overview of key organizations that perform quality assurance in colleges and schools of architecture and design.

In architecture, **the National Architectural Accrediting Board (NAAB)** is a prominent accreditation agency. NAAB establishes and maintains standards for professional degree programs in architecture in the United States. Their accreditation ensures that architectural programs meet the educational requirements for licensure and professional practice.

The Royal Institute of British Architects (RIBA) is another influential organization in architecture. RIBA sets standards for architectural education in the United Kingdom and promotes excellence in architectural practice. Their validation process evaluates the quality and content of architectural programs to ensure they meet the established standards.

The UNESCO-UIA Charter and Validation System is an international accreditation framework providing global architectural education guidelines. It emphasizes the importance of cultural diversity, environmental sustainability, and social responsibility in architectural programs. The Charter sets forth principles and standards to ensure the quality and relevance of architectural education worldwide.

In interior design, **the Council for Interior Design Accreditation (CIDA)** is a recognized accreditation agency. CIDA evaluates interior design programs to ensure they meet educational standards and prepare students for professional practice. Their accreditation signifies that a program has met the requirements to produce competent interior designers.

The British Accreditation Council (BAC) is another organization that accredits interior design programs in the UK. Their accreditation process evaluates the quality and standards of educational institutions offering interior design programs, assuring students and employers.

For landscape architecture, the **Landscape Architectural Accreditation Board (LAAB)** is a key accreditation agency. LAAB evaluates and accredits landscape architecture programs to ensure they meet educational standards and prepare students for professional practice. Their accreditation provides recognition of program quality and relevance.

The Landscape Institute in the UK and the **Australian Institute of Landscape Architects** also play significant roles in accrediting landscape architecture programs in their respective regions. They establish standards and evaluate programs to ensure they meet the necessary educational requirements for landscape architects.

In industrial and product design, the **Institution of Engineering Designers (IED)** and the **British Industrial Design Association (BIDA)** are important organizations. They provide accreditation and recognition to educational programs that meet the standards of excellence in industrial and product design education.

For art and design disciplines, the **National Association of Schools of Art and Design (NASAD)** is a prominent accreditation agency. NASAD evaluates and accredits programs in various design-related disciplines, including graphic design, fashion design, and media arts. Their accreditation ensures that programs meet established standards of quality and rigor.



In summary, accreditation in architecture and design fields is conducted by various subject-specific international and national agencies, sometimes linked to professional organizations and others acting as independent agencies. These agencies play a vital role in ensuring educational programs meet recognized standards and prepare students for professional practice. By accrediting programs, they provide quality assurance and contribute to the overall excellence of architectural and design education. However, beyond quality assurance, schools and colleges of architecture and design need to extract the principles and imperatives of the accreditation requirements, irrespective of whether they are undergoing the accreditation process.

5.7

Enabling Actions / Catalyzing Measures



Establish a Culture of Quality Assurance

Develop and implement a culture of quality assurance within the architecture and design school, ensuring that all processes and practices align with accreditation standards and requirements.

Mechanisms:

- Develop and implement quality assurance policies and procedures.
- Establish a quality assurance committee or task force.
- Conduct regular internal audits and evaluations.



Create Accreditation Task Forces

Formulate task forces or committees dedicated to accreditation processes, composed of faculty, administrators, and staff. These task forces coordinate accreditation efforts, gather and organize necessary documentation, and ensure adherence to accreditation standards.

Mechanisms:

- Enhance the effectiveness and autonomy of task forces or committees dedicated to accreditation.
- Define clear remits, roles, and responsibilities within the task force.
- Develop a clear timeline and action plans for self-assessment, internal audits, and accreditation processes.
- Consider the balance of the workload of faculty members involved in quality assurance and accreditation.



Conduct Self-Assessment and Continuous Improvement

Regularly conduct self-assessment and continuous improvement activities to identify areas of strength and areas that need improvement in meeting accreditation standards.

Mechanisms:

- Establish mechanisms for collecting and analyzing data on educational outcomes.
- Implement regular self-assessment processes and benchmark against accreditation standards.
- Develop action plans to address areas for improvement.
- Identify the accreditation agency to which the program will be subjected by examining its focus on adopted models and curriculum content.



Engage in External Review and Feedback

Seek external review and feedback from accrediting bodies, peer institutions, and industry and design professionals to gain insights and recommendations for improvement.

Mechanisms:

- Coordinate external accreditation visits or peer reviews.
- Actively seek and incorporate recommendations for improvement.
- Establish channels for feedback and input from external evaluators.



Professional Development for Accreditation

Provide faculty and staff with professional development opportunities related to accreditation standards and processes.

Mechanisms:

- Offer workshops and training sessions on accreditation standards and processes.
- Offer resources and materials for self-study and professional growth.
- Facilitate opportunities for faculty and staff to attend relevant conferences or seminars.



Foster a Culture of Collaboration and Documentation

Encourage collaboration among faculty, staff, and administrators in documenting and maintaining evidence of compliance with accreditation standards.

Mechanisms:

- Establish guidelines and templates for documenting curriculum, outcomes, and faculty qualifications.
- Create platforms for collaboration and the sharing of best practices.
- Implement a centralized system for storing and organizing accreditation-related documentation.



Regular Communication with Accrediting Bodies

Maintain open and regular communication with accrediting bodies to stay informed about updates, changes, and requirements. This ensures that the architecture and design school remains in compliance with accreditation standards and can address any concerns or inquiries promptly.

Mechanisms:

- Maintain open lines of communication with accrediting bodies.
- Attend accreditation meetings and conferences.
- Respond promptly to inquiries and requests for information.



Stay Current with Accreditation Standards

Stay updated with evolving accreditation standards and requirements, ensuring ongoing compliance and alignment with the changing landscape of architecture and design education.

Mechanisms:

- Monitor updates and changes in accreditation standards.
- Participate in professional networks and associations related to accreditation.
- Allocate resources to stay informed about the evolving landscape of accreditation requirements.

Self Reflection:

-  Read the content of the chapter: Overview of International Standards for Achieving
-  Excellence in Architectural and Design Education with a focused reading on the
-  enabling actions and the associated mechanism / catalyzing measures.

<p style="text-align: center;">Enabling Actions</p>	<p style="text-align: center;">Self-Reflections</p> <p style="font-size: small;">To what extent do the college or program implement the sections? What mechanisms are used in the implementation?</p>	<p style="text-align: center;">Prioritized Actions</p> <p style="font-size: small;">Arrange actions in order of priority, then select the relevant mechanisms appropriate to the conditions of your college or program.</p>
1. Establish a Culture of Quality Assurance	_____	_____
2. Create Accreditation Task Forces	_____	_____
3. Conduct Self-Assessment and Continuous Improvement	_____	_____
4. Engage in External Review and Feedback	_____	_____
5. Establish Professional Development Programs for Accreditation	_____	_____
6. Foster a Culture of Collaboration and Documentation	_____	_____
7. Maintain Regular Communication with Accrediting Bodies	_____	_____

06

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Documents and Links to Accreditation Organizations /Documents

NAAB

- <https://www.naab.org/>
- NAAB (2020) 'NAAB Conditions for Accreditation:2020 Edition', National Architectural Accrediting Board, (January), p. 112.
Available at: https://ncdc.gov.ng/themes/common/docs/protocols/111_1579986179.pdf.

UNESCO-UIA

- UIA Architectural Education Commission, co-directed by Marilyns Nepomichie and Ashraf Salama <https://www.uia-architectes.org/en/commission/architecture-education/>
- UNESCO-UIA Charter for Architectural Education (revised English edition 2017) <https://www.uia-architectes.org/en/resource/unesco-uia-charter-for-architectural-education-revised-english-edition-2017/>
- UNESCO-UIA Validation System Procedures Manual for Study Programs and Systems

CIDA

- CIDA Accreditation – USA: Council for Interior Design Accreditation <https://cida.org/>

LAAB

- Accreditation and Landscape Architectural Accreditation Board (LAAB) | asla.org <https://www.asla.org/accreditationlaab.aspx>

NASAD

- NASAD National Association of Schools of Art and Design (arts-accredit.org)
- [NASAD Handbook - Accreditation Materials](#)

IED

- IED - Accreditation of Product Design Educational Programs (APDEP) in the UK <https://www.ied.org.uk/>

RIBA

- Accreditation criteria, process and procedures are included in RIBA-Education Accreditation website <https://www.architecture.com/education-cpd-and-careers/riba-validation/international-validated-schools>
- RIBA procedures for validation and validation criteria for UK and international courses and examinations in architecture', (July 2011), pp. 1–72.

The Landscape Institute

- The Landscape Institute: <https://www.landscapeinstitute.org/>
- Landscape Institute - Criteria for Accreditation of Higher Education Programs <https://landscapewpstorage01.blob.core.windows.net/www-landscapeinstitute-org/2022/05/Landscape-Institute-Criteria-for-Accreditation-of-Higher-Education-Programmes-2022-23.pdf>

SBID

- The Society of British & International Interior Design SBID <https://www.sbid.org/>

ASAP

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BIDA

- The British Industrial Design Association BIDA (britishindustrialdesign.org.uk)

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