

## Urban Design Quality Assessment-UDQA, in Gursu neighborhood, Antalya, Turkey

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### Abstract

**Purpose:** This research outlines an exercise for the use of Urban Design Quality Assessment, UDQA for the study of urban design qualities in Gursu neighborhood in Konyaalti, Antalya. The aim is too fold. One is to examine the applicability of UDQA for the study of urban areas in large cities like Antalya. Many criteria, indicators, and measures have been developed and are used for the assessment of urban design qualities. Yet still there is a need to have deeper insights on their concepts and applications.

The second fold is to explore the Urban Design Qualities, UDQs of this important resort and beach neighborhood using criteria of UDQA.

**Study design/methodology/approach:** The quality of the built environment in urban areas is an important indicator of the quality of life in these areas. Urban quality is one of the main aspects of the built environment. UDQs have been developed as important tools for the study of urban quality with several criteria and measures. This research used 5 qualities for the assessment which include imageability, enclosure, human scale, transparency, and complexity with a set of measures for each one of them. The assessment depended on an exercise given to urban design students at the Department of Architecture, Antalya Bilim University.

**Findings:** the research shows that there are important shortcomings in the concepts of UDQA and its applications. Also, the applicability of the measures of UDQs needs rethinking.

**Originality/value:** This study is an attempt to highlight the subjectivity and inaccuracy of the way criteria and measures of UDQA are developed and used. It is the first study of its kind to study the urban design qualities in Gursu area of Antalya.

**Keywords:** urban, design, quality, assessment, Antalya

### 1. Introduction

Urban Design Quality, UDQ, is considered among the important factors that enable the built environment to fulfill its functions and to achieve better levels of satisfaction and comfort for people. UDQ leads to the formation of the urban structure with its buildings and spaces and to make them serve the functions expected from them. The livability and vibrancy of this urban structure depends on this quality of urban design (Hamidi et al., 2020).

UDQ in this regard means to achieve excellence in the objective tangible physical built environment according to the accepted standards. This is in addition to the subjective intangible aspects related to the people's evaluation of the physical environment (Ronn, 2010). Urban design can employ the different types of such standards for the creation the anticipated urban structure. This research examines the available qualities of urban design to arrive at a more formidable stands of the suitable among them. Studying UDQ generally at the total urban structure of the city would be a difficult and complex task. Dividing the urban structure into smaller spatial scales would make it easier for the study of urban qualities (Neckerman et al.

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2013). These spatial levels could follow the elements of the urban structure set out in the literature like those of Kevin Lynch which include streets and districts (Lynch, 1977). Or they can follow other classifications like neighborhoods and areas of special interest. The urban street is considered one of the influential elements in the urban structure of the city forming its overall spatial character. Urban streets are the most livable form of the public realm. They enclose and represent the social, cultural, economic, and environmental aspects of the city (Wan Ismail et al., 2018). This research examines the UDQ in the streets of Gursu neighborhood, Antalya to explore the level of its urban design. Different methodologies have been used for the study of urban design qualities like Ernawati (2021), Johansson et al (2016), Neckerman et al (2013), Ewing and Clemente (2013), Ewing and Handy (2009), Ewing et al. (2006), and Ewing et al. (2005). This work follows the general framework of the methodology of (Ewing et al, 2005) which is widely used in the works on UDQ. This article summarizes an exercise given to architecture students in a course of Urban Design Studio at Antalya Bilim University. The exercise showed the exciting participation of the students in the study of UDQ of the Gursu and their enthusiasm for the understanding of the role of UDQ in the shaping of the urban structure of the neighborhoods.

### 1.1 Urban Design Quality

Quality is a debated concept and has many interpretations especially when it comes to its applications in the built environment (Ronn, 2010). There is mixing in the literature between urban design quality and urban design character (Wan Ismail, 2013) causing confusion and misunderstanding of both terms. This shortcoming negatively affects the perception of what is good urban design and how it can contribute to the creation of good urban environments. There is a need thence to explore what is urban design quality. Extending the argument of Ronn (2010) on the characteristics of quality to include UDQ, it is possible to arrive at broader understanding of the concept.

Quality could be interpreted in different ways. It refers generally to those properties that make an object satisfying by its own nature and by the perception people using it (Diaz, 2014). These satisfying properties need some reference to refer to and to be measured according to it. This reference represents the standards that are agreed upon and are accepted to be used in this regard (Karaçor, 2021).

UDQ is about the existence of good variables in the physical urban environment that include building materials, construction technology and design details. A more holistic approach to UDQ will be considering the design, tendering, contracting, and construction of the built environment. These processes are also subject to strict quality controls that cover UDQ.

The intention here is to search for levels of distinction in the physical built environment. And here arises the need for the application of special assessment indicators, methodologies, and procedures. Such indicators are not only used to evaluate the built environment. There are also indicators dealing with the subjective evaluation of the users. This highlights the fact that quality of urban design has subjective user-based aspects. This gives importance to the social, cultural, and psychological setting of the users and their relationships with QUD. The differences in the perception of UDQ within such settings will not hinder its importance but highlight the overall interconnections and interrelationships between all these attributes. UDQ is an important aspect of the built urban environment not only because of its effect on its urban design, but also because it affects the many different functions and activities within this urban structure. For example, it affects one of the most vital activities in the public realm which is walkability (Johansson et al., 2016).

Diaz (2014) argues that quality has 4 important characteristics. It relates to product features, it has no faults, it observes standards, and it is all about value for the users. Quality in the built environment strives for the creation of sustainable green neighborhoods that are livable and vibrant. They respect the history and identity of people and the general settings of their culture.

UDQ is not only needed to create and keep good urban environments but also to keep the good life of the people inside these environments. Public buildings, houses, streets, squares, and urban parks all crucially need to have the good level of functionality and satisfaction of the residents. UDQ also plays a crucial role in the maintenance of historical areas and areas of special interest. Without UDQ life in the city will lose its quality.

## 1.2 Urban Design Quality Assessment, UDQA and its methodologies

There is a great debate in the literature on urban design qualities and there is at the same time confusion and ambiguity on the derivations and classifications of them. Some studies introduced qualities as scales for the goodness of certain physical components of the urban structure while other studies considered different parts of the urban structure. A third type of studies introduced visual qualities as scales for the aesthetics of the urban structure based on visual design principles in urban design. A fourth group of students explored the perceived qualities as they experienced by the users in the urban structure. Just to give an example of this dilemma, it is interesting to mention that Ewing (2006) listed 43 perceptual urban design qualities that have been used in the literature. This large number includes a mixture of qualities, characters, indicators, and measures that need to be classified according to several factors. The spatial level, function, size, volume, size, location. And time are examples of these factors. The built environment is complex with so many interconnected and interrelated elements, variables, qualities, and characters. It is difficult, confusing, and misleading to adventure through all these components mixed and complicated. A random survey was conducted for the purpose of this research to develop a clear understanding of urban design qualities and the different ways they have been considered. The Commission for Architecture and the Built Environment of the Department of the Environment, Transport and the Regions, UK Government in their guidelines for urban design in the planning system (Commission for Architecture and the Built Environment, 2000) developed 7 urban design qualities and the indicators and measures for their assessment in the different components of the built environment (Table 1). The seven qualities, the measures and indicators completely dealt with the physical components of the built environment except one indicator in the character quality which dealt with the local traditions and cultural diversity. They also provided ideas on the methodologies for data collection and analysis. The proposed methods included observations, surveys, and interviews. The guidelines did not differentiate between urban quality and urban character. They did not differentiate between what is subjective and perceptual and what is objective and physical. Additionally, the guidelines provided these qualities to be applied generally in almost every part and element of the urban structure. They did not link them to certain parts or activities like walkability for example.

Carmona et al. (2010) introduced another set of UDQs (Table 2) but with some similarity with the UDQs of the Commission for Architecture and the Built Environment. They included 3 pairs of qualities except sociability came separate. The pairing of comfort-image and use-activities is not well justified. The list also did not differentiate between tangible (access and linkage) and intangible (comfort and image) qualities.

Since 2005, Reid Ewing and his colleagues started their work on urban design qualities. They had several attempts to develop a general model for the assessment and measurement of perceived UDQs and their relationship with walkability. The studies concentrated mainly on the study of UDQs and walkability in urban streets (Ewing and Clemente, 2013, Ewing and Handy, 2009, Ewing et al., 2006, and Ewing et al., 2005). The final version of their model is presented in table 3 which has 9 UDQs. From now on the model will be termed 9QM. What distinguished these studies is that from the departure point they concentrated on perceived UDQs and their relationship with walkability This means that they are qualities that are experienced and appreciated subjectively by people who represent the source for evaluating these UDQs. Even when quantification is used for one of the qualities it depends on the subjective sense for counting or deriving the proportion. The application space for the assessment is the urban street as the major influential component of the urban structure. The methodologies used included street surveys, observations, photography, video recording, and expert evaluation. The model developed a system of numerical evaluation of the UDQs to provide quantitative analysis and comparison. Although the quantitative analysis gives some idea on the level of certain qualities or the total score of a group of qualities, two

**Table 1.** Urban Design Quality Assessment of The Commission for Architecture and the Built Environment, UK (2000) [Author]

Author/s	Description	Quality	Indicators and measures	Application	Methodology
Commission for Architecture and the Built Environment (2000)	Objectives of urban design	Character	<ul style="list-style-type: none"> <li>- local traditions and cultural diversity</li> <li>- historic street patterns, plot subdivisions, buildings, and spaces</li> <li>- archaeological significance</li> <li>- architecture, character, and coherence of buildings</li> <li>- hierarchy of spaces</li> <li>- historic building materials</li> <li>- green spaces</li> <li>- uses, plan forms and building types.</li> <li>- open countryside, including significant landmarks, vistas, and panoramas.</li> <li>- lost features of character</li> </ul>	General aspects of physical urban form	observation and site surveys, reviewing historic records, interviews with local amenity groups, and wider public consultation
		Continuity and enclosure	<ul style="list-style-type: none"> <li>- abnormal setbacks</li> <li>- conflicts between the backs and fronts of buildings</li> <li>- active and dead frontages at ground floor level</li> <li>- active and dead frontages at upper floors:</li> <li>- places where buildings meet the public realm:</li> <li>- spatial enclosure</li> <li>- planting which defines and enclose blocks and spaces.</li> </ul>		
		Quality of the public realm	<ul style="list-style-type: none"> <li>- hard and soft landscaping</li> <li>- street furniture</li> <li>- structures</li> <li>- banners and signs</li> <li>- lighting</li> <li>- public art and features</li> <li>- shopfronts</li> <li>- advertisements</li> <li>- special treatments</li> <li>- safety and security</li> <li>- traffic and highways installations</li> <li>- public space use and management</li> </ul>		

Table 1. Continued

Ease of movement	<ul style="list-style-type: none"> <li>- catchment areas</li> <li>- public transport</li> <li>- cycle use and car use</li> <li>- parking (on- and off-street)</li> <li>- accessibility for disabled people,</li> <li>- pedestrian movements including</li> <li>- connections through the area</li> </ul>
Legibility	<ul style="list-style-type: none"> <li>- gateways and points of transition</li> <li>- nodes</li> <li>- landmarks</li> <li>- views and vistas</li> <li>- edges</li> </ul>
Adaptability	<ul style="list-style-type: none"> <li>- Buildings:</li> <li>- occupancy and tenure</li> <li>- building type</li> <li>- access and circulation</li> <li>- structural condition</li> <li>- service areas and access cores</li> <li>- suitability for modification</li> <li>- spaces:</li> <li>- ownership and tenure</li> <li>- access and circulation</li> <li>- overshadowing and micro-climate</li> <li>- surrounding buildings and their uses</li> <li>- layout</li> <li>- shape, scale, and slope.</li> </ul>
Diversity	<ul style="list-style-type: none"> <li>- broad patterns of land use</li> <li>- patterns of sub-divisions of blocks</li> <li>- distribution and amounts of land uses.</li> <li>- private and social housing</li> <li>- ownership and tenure</li> </ul>

Table 2. Urban Design Quality Assessment of Carmona et al. (2010) [Author]

Urban Design Quality Assessment, UDQA, Criteria						
Author/s	Description	Quality	Indicators and measures		Application	Methodology
Carmona et al 2010		Comfort and image	<ul style="list-style-type: none"> <li>- Safety</li> <li>- Charm</li> <li>- History</li> <li>- Attractiveness</li> <li>- Spirituality</li> </ul>	<ul style="list-style-type: none"> <li>- Suitability</li> <li>- Walkability</li> <li>- Greenness</li> <li>- Cleanliness</li> </ul>	Urban environment	observation and site surveys, reviewing historic records, interviews with local amenity groups, and wider public consultation
		Access and linkage	<ul style="list-style-type: none"> <li>- Readability</li> <li>- Walkability</li> <li>- Reliability</li> <li>- Continuity</li> </ul>	<ul style="list-style-type: none"> <li>- Proximity</li> <li>- Connectedness</li> <li>- Convenience</li> <li>- Accessibility</li> </ul>		

Table 2. Continued

Uses and activity	<ul style="list-style-type: none"> <li>- Realness</li> <li>- Sustainability</li> <li>- Specialness</li> <li>- Uniqueness</li> <li>- Affordability</li> <li>- Fun</li> </ul>	<ul style="list-style-type: none"> <li>- Activity</li> <li>- Usefulness</li> <li>- Celebration</li> <li>- Vitality</li> <li>- Indigenouness</li> <li>- Homegrown quality</li> </ul>
Sociability	<ul style="list-style-type: none"> <li>- Cooperation</li> <li>- Neighbourliness</li> <li>- Stewardship</li> <li>- Pride</li> <li>- Welcoming</li> </ul>	<ul style="list-style-type: none"> <li>- Gossip</li> <li>- Diversity</li> <li>- Story telling</li> <li>- Friendliness</li> <li>- Interactivity</li> </ul>

Comments can be made here. First, the references or benchmarks for values used are not provided. Second, the quantification of subjective data is only useful for analytical comparison. It cannot be used as a trusted source of data.

Despite these comments it was interesting to discover that many studies used 9QM completely or in part without serious changes and this continued until recent time. Some of these studies will be discussed down here.

Table 4 presents an international collection of eight studies that followed the same model 9QM. These studies take the model for granted and do not discuss any possibility for inserting any change on it. The most used UDQs in these studies are Imageability, complexity, human scale, transparency, enclosure. Hamidi S and Moazzeni S. (2019) supplemented these UDQs with additional measures to be used in the study of streets in the City of Dallas, USA. Similarly, all these studies used 9QM for the study of UDQs in urban streets of cites except Karaçor et al. (2020) used Imageability, Legibility, Vitality, and diversity for the comparison between 2 urban parks in USA and 2 urban parks in France.

Additionally, Hamidi and Moazzeni (2019) added the 6D Variables which include Density, Diversity, Design, Destination accessibility, Distance to transit, and Demography which have been discussed in Ewing and Clemente (2013). They also added site specific measures that are not directly mentioned in 9QM model. These measures include the number of active patios, width of the sidewalk, the number of homeless people, proportion of covered sidewalk (street canopy), employment concentration, and number of parks.

Table 5 presents 3 studies that did not follow directly or completely the 9QM. Johansson et al (2016) studied the Perceived urban design qualities in 3 streets in the city of Malmö. The aim was to explore the Perceived urban design qualities and affective experiences of walking. For this purpose, they used accessibility, safety, comfort, interest, and pleasureability. Then they studied in more detail the quality of pleasureability of walking routes by using the indicators attractiveness, friendliness Imageability, naturalness, complexity and aesthetics, greenery, Upkeep and Order, Coherence. Imageability, complexity, and coherence are part of 9QM, but they were used here in a different approach serving the interesting new concept of pleasureability.

Table 3. Urban Design Quality Assessment of Ewing and Clemente (2013) [Author]

Author/s	Description	Quality	Indicators and measures	Application	Methodology
Ewing and Clemente (2013)	Distinction, recognition, and memorizing	Imageability	<ul style="list-style-type: none"> <li>- Number of courtyards, plazas, and parks on the block face</li> <li>- Number of major landscape features visible from the block face</li> <li>- Proportion of historic building frontage (both sides)</li> <li>- Number of buildings with identifiers (both sides)</li> <li>- Number of buildings with nonrectangular shapes</li> <li>- Presence of outdoor dining (observer side)</li> <li>- Number of people (observer side)</li> <li>- Noise level</li> </ul>	Urban streets	observation and site surveys, photography and video shooting, consultation with experts, quantifying and quantitative analysis
		Enclosure	<ul style="list-style-type: none"> <li>- Number of long sight lines visible in three directions</li> <li>- Proportion of street segment with street wall (observer side)</li> <li>- Proportion of street segment with street wall (opposite side of street)</li> <li>- Proportion of the sky visible straight ahead</li> <li>- Proportion of the sky visible looking across the street</li> </ul>		
		Human Scale	<ul style="list-style-type: none"> <li>- Number of long sight lines visible in three directions</li> <li>- Proportion of street segment with windows (observer side first floor)</li> <li>- Average height of buildings weighted by building frontage (observer side)</li> <li>- Number of small planters (observer side)</li> <li>- Number of pieces of street furniture (observer side)</li> </ul>		
		Transparency	<ul style="list-style-type: none"> <li>- Proportion of street segment with windows (observer side first floor)</li> <li>- Proportion of street segment with street wall (observer side)</li> <li>- Proportion of street segment with active uses (observer side)</li> </ul>		
Richness of urban content	Complexity	<ul style="list-style-type: none"> <li>- Number of buildings (both sides)</li> <li>- Number of basic building colors (both sides)</li> <li>- Number of accent building colors (both sides)</li> <li>- Presence of outdoor dining (observer side)</li> <li>- Number of pieces of public art (both sides)</li> <li>- Number of people (observer side)</li> </ul>			

Table 3. Continued

Ease of understanding of the urban structure	Legibility	<ul style="list-style-type: none"> <li>- Memorable architecture</li> <li>- Terminated vista.</li> <li>- Buildings with identifiers</li> <li>- Common tree spacing and type.</li> <li>- Number of Public arts</li> <li>- Number of Place/building/business signs</li> </ul>
physical and visual elements within the urban structure	Linkage	<ul style="list-style-type: none"> <li>- Number of Street connections to elsewhere</li> <li>- Number of Visible doors</li> <li>- Proportion recessed doors</li> <li>- Common building heights</li> <li>- Outdoor dining</li> </ul>
visual order	Coherence	<ul style="list-style-type: none"> <li>- Common window proportions</li> <li>- Common tree spacing and type.</li> <li>- Number of Pedestrians</li> <li>- Number of Pedestrian-scale streetlights</li> </ul>
Quality of urban furniture and greenery	Tidiness	<ul style="list-style-type: none"> <li>- Pavement condition</li> <li>- Debris condition</li> <li>- Overhead utilities</li> <li>- Landscape condition</li> </ul>

Table 4. Urban Design Quality Assessment of different authors from 2013 to 2021 [Author]

Author/s	Description	Quality, Indicators and Measures	Application	Methodology
Neckerma n et al (2013)	-	- Imageability, complexity, human scale, transparency, enclosure from Ewing, R.; Clemente, O (2013) model	- 588 blocks in New York City - In 2006	-
Hansen (2014)	- Form-Based Codes to Create Walkable Urban Streets	- Imageability, complexity, human scale, transparency, enclosure from Ewing, R.; Clemente, O (2013) model	- Assessment of Street Space in Florida, USA	- street survey and an analysis of Form-Based codes
Ernawati et al. (2018)	- Urban Design Qualities for Walking on a Commercial Street	- Imageability, enclosure, human scale, transparency, complexity Coherence, Legibility, and linkage from Ewing, R.; Clemente, O (2013) model	- Kawi Street in Malang, Indonesia	- Likert questionnaire for users
Hamidi and Moazzeni (2019)	- Urban Design Qualities and Walking Behavior	- Imageability, enclosure, human scale, transparency, complexity Coherence, Legibility, and linkage from Ewing, R.; Clemente, O (2013) model. - 6D Variables: Density, Diversity, Design, Destination accessibility, Distance to transit, and Demography. - Local specific measures: number of active patios, width of the sidewalk, the number of homeless people, proportion of covered sidewalk (street canopy), employment concentration, and number of parks.	- Urban design qualities in the streets of the City of Dallas	- Quantitative field and statistical survey

Table 4. Continued

Karaçor et al. (2020)	- Design quality of urban parks	- Imageability, Legibility, Vitality, and diversity from Ewing, R.; Clemente, O (2013) model	- Prospect Park and Millennium Park, USA, Parc des Buttes-Chaumont and Parc de la Villette, France	- Analytic Hierarchy Process (AHP)
Hamidi et al. (2020)	- Urban Design qualities and property values	- Imageability, enclosure, human scale, transparency, complexity Coherence, Legibility, and linkage from Ewing, R.; Clemente, O (2013) model.	- urban design qualities in New York City	- Filed survey and statistical analysis
Ho (2021)	- Urban design qualities	- Imageability, enclosure, human scale, transparency, complexity Coherence, Legibility, and linkage from Ewing, R.; Clemente, O (2013) model	- urban design qualities of streets - in Hanoi	- Observational data collection. Analysis using Ewing, R.; Clemente, O (2013) model
Ernawati (2021)	- Visual Preference of Urban Street Scenes	- complexity, coherence, imageability, and visual preferences from Ewing, R.; Clemente, O (2013) model	- three different street characteristics in the town of Malang-Indonesia	- Field visual survey and questionnaire

Işıklar and Kırıcı, (2017) introduced vitality as the main quality for the study of the characteristics of street space in Ankara, Turkey. They used 7 indicators for the assessment of vitality: Multi Functionality, Crowds, Vitality, Continuous Use, Comfort, Adaptability, and Aesthetics. The study did not follow 9QM and used a different approach for the assessment of street space. It mixed between tangible and intangible qualities and between objective and subjective perceived qualities highlighting the difficulty of dealing with the complexity of the urban structure.

Finally, Wan Ismail et al. (2022) made a considerable effort to differentiate between the physical objective of the urban environment and the subjective perceived urban environment. They argued that 9QM concentrates only on subjective perceived UDQs, while it is crucial not to neglect the importance of the objective qualities of the built environment. For the assessment of quality of objective physical environment of the street space they used a mixture of indicators like road network accessibility, and measures like building density in the surrounding area.

Table 5. Urban Design Quality Assessment of different authors from 2016 to 2022

Author/s	Description	Quality	Indicators and measures	Application	Methodology
Johansson et al (2016)	Perceived urban design qualities and affective experiences of walking. pleasurability of walking routes.	<ul style="list-style-type: none"> <li>- accessibility</li> <li>- safety</li> <li>- comfort</li> <li>- interest</li> <li>- Pleasurability</li> </ul>	<ul style="list-style-type: none"> <li>- attractiveness</li> <li>- friendliness</li> <li>- imageability</li> <li>- naturalness</li> <li>- complexity and aesthetics</li> <li>- greenery</li> <li>- Upkeep and Order</li> <li>- Coherence</li> </ul>	Perceived urban design qualities in 3 streets in the city of Malmö	questionnaires completed on-site along the routes
Işıklar, and Kırıcı (2017)	Characteristic s of Lively Urban Spaces	Vitality	<ul style="list-style-type: none"> <li>- Multi Functionality</li> <li>- Crowds-Vitality</li> <li>- Continuous Use-Comfort</li> <li>- Adaptability</li> <li>- Aesthetics</li> </ul>	Assessment of Street Space in Ankara, Turkey	Visual observation and analysis
Wan Ismail et al (2022)	Quality of objective physical environment of the street space (expert evaluation)		<ul style="list-style-type: none"> <li>- Street greening and sky view</li> <li>- Accessibility of transportation facilities</li> <li>- Road network accessibility</li> <li>- Diversity and convenience of public service facilities</li> <li>- Activity population density</li> <li>- Building density in the surrounding area.</li> </ul>	Quality Measurement Model of Street Space	Visual observation and analysis, expert evaluation
	Pedestrian perception of quality of street space (expert evaluation)		<ul style="list-style-type: none"> <li>- Concentration degree of walking and riding people.</li> <li>- Completeness of physical warning and monitoring facilities.</li> <li>- Degree of motor vehicle interference.</li> <li>- Availability of historical and cultural facilities within a 15-minute walk.</li> <li>- Visibility of mountains, water bodies, and historical and cultural buildings.</li> </ul>		

## 2. Study area

The study area covered 2 small parts of Gursu and Liman neighborhoods in Konyalalti district of Antalya, the famous tourist destination at the Mediterranean coast southern Türkiye, Fig. 1 and 2. Both parts of the study area are bordered at the northwest by Atatürk Blvd. and by seashore at the southeast. They both have simple gridiron structure with low density and several green areas and brown fields. Their facades opposite

the seashore are mainly occupied by hotels, restaurants, and coffee shops. Gursu cluster has a large vacant land at its northeast and the Creek at its northwest. Liman cluster is bordered by Bogacay road from northwest and by the Creek from northeast. The general physical quality of the built environment in both clusters is quite good with contemporary international style with large balconies especially in the sea direction. Detailed urban and architectural aspects of the two clusters will be discussed with the analysis of UDQs.



Fig. 1. Gursu and Liman neighborhoods in relation to Antalya central district  
[<https://mapcarta.com/12958818/Map>]



Fig. 2. Study areas in Gursu and Liman neighborhoods  
[<https://www.artstation.com/marketplace/p/PWmeY/antalya-city-turkey-3d-model-30km>]

The importance of the 2 study areas not only depends on their touristic value an Konyaalti beach, but also because they both border Konyaalti Creek, Konyaalti Creek which was the subject of a huge urban development project proposed by Perkins and Will in 2015 and was backed by The Turkish President Recep Tayyip Erdogan and the Mayor of Metropolitan Antalya Menderes Torel (Oh, 2015). The project was part of the Sustainable Master Plan of Antalya and intended introduce great urban redevelopment for the Creek and the adjacent areas at its banks. A marina at the Creek. A marina at the seashore, landscaping for the Creek banks with commercial and entertainment facilities, and new residential and touristic clusters were proposed, Fig. 3 - 5.



Fig. 3. Proposed marinas of the Creek  
[<https://www.realestateallturkey.com/bogacay-project-in-antalya-marina>]



Fig. 4. New bridge, marinas and urban regeneration for the banks of Creek  
 [https://www.propertyturkey.com/blog-turkey/the-konyaalti-coastline-and-bogacay-marina-projects]



Fig. 5. New commercial and entertainment developments for the creek  
 [https://www.propertyturkey.com/blog-turkey/the-konyaalti-coastline-and-bogacay-marina-projects]

Additionally, the project proposed total regeneration for large areas of Gursu and Liman neighborhoods changing their urban pattern, character, and urban quality, Fig. 6. The preparation for the first phase of the project which included the landscape design for the banks of the creek started in 2017 and the construction work started in 2019, Fig. 7.



Fig. 6. New urban structure for Gursu and Liman areas adjacent to the Creek  
 [https://www.propertyturkey.com/blog-turkey/the-konyaalti-coastline-and-bogacay-marina-projects]



Fig. 7. First phase of the Creek project  
 [https://www.antalyatransfer.co/TR/bogacayi-antalya]

The project did not provide the basics, standards, and concepts for such great changes in the urban structure of these areas. This article is an attempt to highlight the serious consequences of this project and draw the attention to the great efforts around the world that have been studying urban design quality and urban design character as it has been shown above.

### 3. Methodology

After several discussions with the groups in the light of the review of previous articles, it was decided to study only 5 qualities of 9QM, Table 3. They are imageability, enclosure, human scale, transparency, and complexity which have been used in most of the discussed articles. There was a general feel of confusion in

the mixing between urban quality and urban character. Not to mention the confusion on what is objective and what is subjective and the difficulty in the practical application of the measures also added to the difficulty of developing a more appropriate approach of UDQA. It is hoped that further future research will shed more light on this issue.

Students’ perception of the general concept of UDQ and assessment and their understanding of the individual qualities and their measures helped to decide on the chosen UDQs. To help the students with the exercise they were advised to follow the general framework of the Illustrated Field Manual of Ewing et al (2005).

The area of study covered parts in Gursu and Liman larger than the 2 clusters defined above. The complete study area was divided into several parts and given to groups of students to study UDQs. 52 students were divided into 10 groups of 5 students on average. For this research, only the work of 4 groups who worked in Gursu neighborhood are considered.

Table 6 presents the work of group 1. The photos in the table clearly express the level of urban qualities of the physical environment in the cluster. The students did not use any quantitative measures to assess UDQs in the cluster. Like all other groups in the exercise, having the immersive visual experience in the cluster and the real onsite inspection of the physical environment, the students subjectively could assess UDQs visually in the cluster. Of the 8 measures of imageability only 5 could be assessed and the conclusion was that cluster clearly has distinction, recognition, and strongly memorable. 3 of the 5 measures of enclosure were used and they show that visual definition of streets by buildings is not strong enough. Human scale in the urban design of the cluster got quite a good assessment where the size and proportions of physical elements corresponding to human size and proportions often exist and make the cluster scale friendly. All the measures of human scale were used. Transparency was too controversial on both its definition, and it is measures. Only 2 measures were used in the assessment that showed the low level of transparency in the cluster. Active uses are not common the many of the streets except the beach street and there are many gaps in the street walls enclosing the street space. Finally, 4 of the 6 measures of complexity were used. The cluster is bordered with large open areas from all sides. Sea from southeast, Bogacay from southwest, vacant land from northeast, and wide boulevard from northwest. Combined with perforated boundary street walls, this affects the spatial definition of the cluster. Buildings have a rich color variety and some public art elements exist. Low pedestrian density in the street with all the above make the complexity of the cluster below average.

**Table 6.** UDQA by student group 1 for Urban Design Quality in Gursu cluster according to 9QM [Author]



















Measures		
Imageability	1. courtyards, plazas, and parks on the block face	
	2. major landscape features	
	3. buildings with identifiers	
	4. buildings with nonrectangular shapes	
	5. Presence of outdoor dining	

Table 6. Continued

Enclosure	6. long sight lines visible in three directions	
	7. street segment with street wall	
	8. sky visible straight ahead	
Human Scale	9. long sight lines	
	10. street segment with windows at the ground floor	
	11. Average height of buildings weighted by building frontage	
	12. small planters	
	13. pieces of street furniture	
	Transparency	14. street segment with street wall
15. street segment with active uses		
Complexity	16. buildings at the side of the study area and opposite	
	17. basic building colors	
	18. pieces of public art	
	19. Pedestrians in the streets	

#### 4. Analysis

The manual of Ewing et al (2005) was used by the students to examine 5 UDQs: Imageability, Enclosure, Human Scale, Transparency, and Complexity. The tool kit of Ewing and Clemente (2013), Table 3, introduced 27 measures for the 5 UDQs.

The student did not fully comply with these measures. A numerical scale was used to analyze the use of the measures. According to students' application, the measure they used without any change was given 2, the measure they used with change was given 1, and unused measure was given 0, Table 7 and Fig. 8.

Among the groups of the students, the highest number of measures used was 19 and the lowest was 13. All the students could not deal with the number of people in the streets because it is changing all the time. The students also could not deal with noise level since they did not have suitable instruments. The subjective judgement on noise level using the human ears was not accepted. At the same time, students find it difficult to consider counting the number of certain elements of the urban structure as a valid indicator for its quality due to the great differences between the counted elements of the same type. For example, public art works might have the small and the large, and the good and the bad. The same can be said about the number of buildings, number of street furniture elements, number of buildings with identifiers, and number of buildings with non-rectangular shapes. It was confusing and misleading for the students to deal with the issue of proportion of certain parts of the physical urban structure compared to other parts like the proportion of sky or the proportion of buildings with windows at the ground floor. The other problem students faced was the restrictions on taking photographs for one side of the street or for the two sides, for the sky view through the street or across its facades. Students went more flexible and shot their photos according to their perception of their relevance to the UDQs. Fig. 7 illustrates the measure scores and their cumulative and average for UDQs according to the scale explained above. Human scale got the highest score meaning that students clearly perceived it and easily applied it. In the second place came imageability. Measures of zero values were not used. The measure of the highest score was the average building height in the Human Scale UDQ. Complexity came in the last place with the least score and the least average score.

**Table 7.** UDQs, their measures, and the level of their applications by student groups [Author]

Evaluation of the use of the measures by each group (G)									
UDQ	Measures	No. of measures	Ideal Score of measures	G1	G2	G3	G4	Av. of UDQ	Total of UDQ
Imageability	courtyards, plazas, and parks on the block	8	2	1	0	1	1		3
	major landscape features		2	1	1	1	1		4
	historic building frontage		2	0	0	0	0		0
	buildings with identifiers		2	1	1	1	1		4
	buildings with nonrectangular shapes		2	1	1	1	1		4
	Presence of outdoor dining		2	1	1	1	1		4
	Number of people		2	0	0	0	0		0
	Noise level		2	0	0	0	0		0
	Score of Imageability		16	5	4	5	5	5	19
Enclosure	long sight lines visible in three directions	5	2	1	1	1	1		4
	street segment with street wall		2	1	1	1	1		4
	street segment with street wall		2	0	0	0	0		0
	sky visible straight ahead		2	1	1	1	1		4

Table 7. Continued

	sky visible looking across the street	2	0	0	0	0	0
	Score of Enclosure	10	3	3	3	3	3
Human Scale	long sight lines	5	2	1	0	1	1
	street segment with windows at the ground floor	2	1	1	1	1	4
	Average height of buildings weighted by building frontage	2	2	2	2	2	8
	small planters	2	1	0	1	1	3
	pieces of street furniture	2	1	1	1	1	4
	Score of Human Scale	10	6	4	6	6	5.5
	22						
Transparency	street segment with windows at the ground floor	3	2	0	1	1	1
	street segment with street wall	2	2	1	0	1	1
	street segment with active uses	2	2	1	1	1	1
	Score of Transparency	6	2	2	3	3	2.5
	10						
Complexity	buildings	6	2	1	1	1	1
	basic building colors	2	2	1	1	1	1
	accent building colors	2	2	0	0	0	0
	Presence of outdoor dining	2	2	0	0	0	0
	pieces of public art	2	2	1	0	0	0
	Number of people (observer side)	2	2	0	0	0	0
	Score of Complexity	12	3	2	2	2	2
	9						
	Number of measures used by each group	27	19	13	19	19	

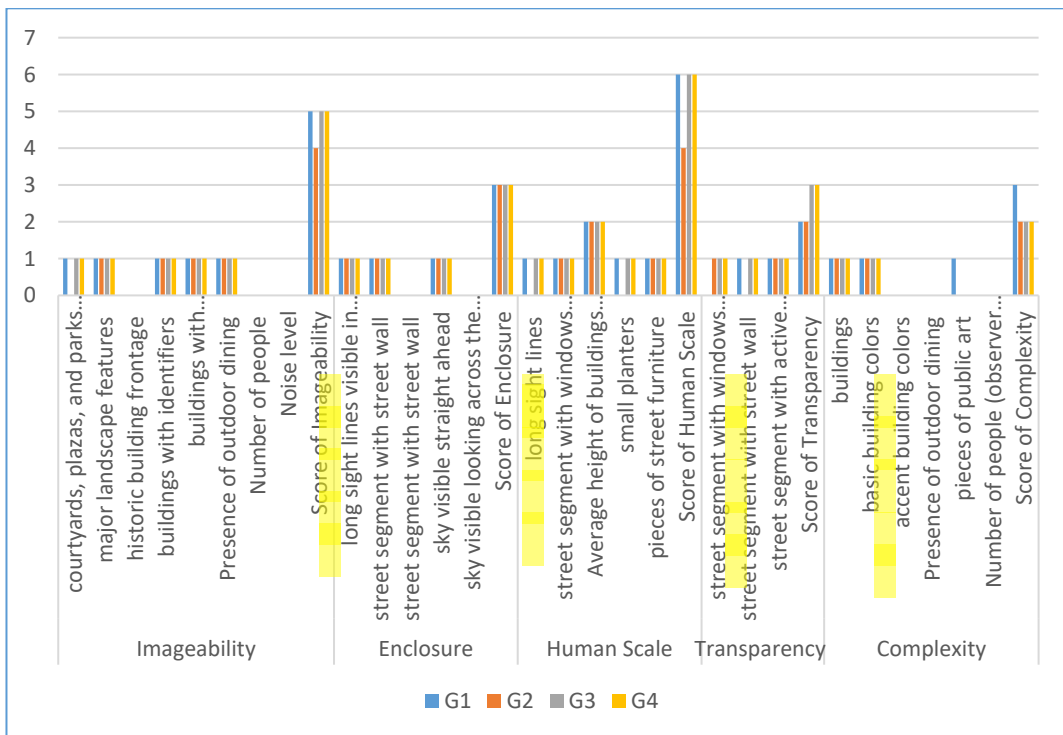


Fig. 8. Measure scores and their cumulative for Imageability [Author]

QUDs of the physical environment relate first to the objective qualities of tangible physical urban design features. These include buildings with all their exterior architectural design elements including shape, form, size, volume, height, materials, colors, textures, and façade details. They also include urban spaces and streets with their shape, form, size, volume, and urban furniture like pavements, seating, lighting posts, public art, greenery, and their form aspects. The qualities of these components have 2 parts. The first part relates to two elements, the quality of material production like the quality of tiles, stones, bricks and the like, and the quality of construction, assembling, and craftsmanship. All these features can be assessed objectively by qualitative and quantitative means according to local or international standards and codes. The second part relates to the objective visual design qualities of these elements according to the visual design principles well known worldwide and have been used throughout history like balance order and rhythm (Table 6).

Second, UDQs relate to the objective qualities of intangible urban design features like land use, function, environmental aspects, economy, culture, and sustainability. These features can be assessed qualitatively and quantitatively according to the local and international standards and codes like zoning codes and green urban design standards. Unfortunately, none of the surveyed studies discussed above managed to provide such a clear and well-defined framework for the consideration of the UDQs and their assessment in the urban built environment.

Third, UDQs relate to the subjective perceived qualities of both tangible and intangible urban design features. This includes the Subjective perception of Tangible urban environment which depends on the Subjective perception of Buildings, urban spaces, and streets. Subjective qualities include grandeur, loftiness, magnificence, taste, dignity, expression, taste.

The research highlighted the disadvantage of using quantitative measures in the assessment of the urban design qualities in the built environment in the same way that was proposed by the references discussed. Also, the research showed the practical difficulties of the methodologies used. Taking photos or video shots from different points and different sides of the street is confusing and misleading. The 9QM model was developed for the assessment of the quality of urban design in urban streets, can the assessment of individual streets provide a clear idea on the UDQs in an urban cluster or a neighborhood? Other important points that need to be considered when applying the proposed methodologies and measures:

- Some measures are counts of urban elements like buildings but some of them are not definite like proportion of sky view.
- These qualities are said to be perceived qualities. How can people whether experts or not give a reliable assessment of urban environment only by looking at its images or watching its videos without being immersed within it? The number of these experts is considered too small compared to the large number of people using the built environment itself.
- The 9QM mode linked these perceived qualities only to walkability and the studied articles did the same. What about the many other activities in the urban environment?
- The only role of people in the assessed area is to be counted by the model to give an idea on density in the streets. Do people really represent no more than numbers to count for density? These people are the spirit of life in urban areas, and they are the real source for the assessment of UDQs. It is unfair to assess their urban environment without joining them in the experience of it.
- The qualities and their measures mainly concentrate on aspects of the objective physical environment but ignore many other aspects.
- It is difficult to apply the model in streets with low building densities or with streets having open areas and parks at one side. If it is argued that the model is for those streets that are well enclosed by continuous buildings from both sides, then how to study other types of streets and other parts of the built environment.

## Conclusion

The research provided an excellent chance to examine the theoretical and practical backgrounds of the assessment of urban design qualities in the built environment. The research highlighted the need for reconsidering the approaches and procedures available for this assessment to make it simpler, easier, and more comprehensive with clear distinction between the different components of the urban environment. The research was an excellent chance for the students of urban design to explore the approaches and methodologies of Urban Design Quality Assessment and the practical application of them in the Gursu neighborhood. Still, there is a need for more future research to develop the approaches and methodologies of Urban Design Quality Assessment.

## Declaration of conflicting interests

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## Acknowledgments

The author would like to thank the students of the course ARC303 Urban Design Studio for their efforts in the surveys and their discussions and comments on UDQA and its measures.

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