

## **Exploring International Style Architecture in Houston**

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### **INTRODUCTION**

Architecture has served as the handmaiden to both commercial and residential development in Houston. It has witnessed the maturation of a formerly small outpost perched on ambling Buffalo Bayou into a “seaport” fifty miles inland from the sea. Internationally acclaimed and local architects have been principal characters in this city’s revolutionary cycles of growth. This unit will explore in depth just one architectural school, the International Style, and its role in Houston’s metamorphosis. It will look at several commercial and residential structures and social trends that led to their development. Further, there will be an examination of changing public attitudes about what constitutes beauty and how city facelifts demonstrate civic pride. This unit will focus on the creative prowess exhibited by International Style movers and shakers and a handful of talented local architects whose output was influenced by these masters.

### **BACKGROUND**

As a Homebound teacher in HISD’s Community Services section all of my classes are one-on-one. Community Services is literally an example of the education cliché, a “school without walls.” We call roll and muster students at hospital bedsides, around kitchen tables, or inside social service agencies. This is frequently necessary because our students, due to illnesses and other impairments, are unable to attend regular classes for extended periods. As with Mohammed, I must at times bring the mountain to them. To avoid the monotony of repetition, I must continually search for innovative means of stimulating interest. Holding the attention of my sixth through twelfth graders who sorely miss the daily camaraderie kindled by a room full of their schoolmates is seldom an easy undertaking.

During these one- to two-hour sessions, I must rework the fabric of the curriculum courses ranging from mathematics and language arts to science and social studies. In my heart, I know all of these courses are closely linked to each other and to life itself, but I must prove, through classroom magic, the relevance of that connection.

To accomplish this challenging task, Homebound teachers must utilize a variety of instructional tools. Inside my tool chest, I pack the Internet, computer applications, digital camera, well-illustrated books and magazines, Key maps, and other resources to guide them on imaginary tours of Houston. In social studies, activities are fashioned to heighten social awareness by closely looking at how structural modifications alter the self-concept of people displaced from their historical roots. In the process they somehow become shiftless.

Historical changes in architectural styles are frequently more revolutionary than evolutionary. During the postwar years, the effects of the International Style on architectural attitudes spread like wildfire across the surface of the planet. The technological aspects of architecture demand substantial knowledge of the geometry associated with it: rectangles, circle, squares, triangles, parallel lines, vortices, and the like. In science there are scores of complex mathematical concepts to master.

My background, prior to entering the teaching profession, was in military and industrial news writing. In this unit I plan to unveil a story in a style that normally characterizes journalists. But at the same time I must do this in a way that is interesting and informative to tomorrow's sophisticated social or physical scientists. Art, the bone marrow of architecture, is the life fluid of history, science, mathematics and economics.

Hampered by various illnesses or restrictions, many of my students are unable to go on planned tours. But, using the Internet, the telephone and several innovative computer applications, these same students will be able to take "finger" treks through unfamiliar parts of downtown and sojourn to urban and suburban spots in Houston as well. Course participants will be asked to search for apparent social and political clusters of similarity inherent in diverse socio-economic groups. They will explain how various ethnic minorities and socially displaced groups adjust to newly adopted community settlement brought on by new land use projects. What ultimately happens to these displaced? Is the public concerned? Should the city even care? These are some of the questions they will ask themselves.

## **THE INTERNATIONAL STYLE OF ARCHITECTURE**

International Modern or International Style were terms used in the United States by Henry-Russell Hitchcock and Philip Johnson for Modernism in architecture as created before the First World War by Walter Gropius and others in central Europe and accepted elsewhere from the late 1920s onward. In 1932, they opened the Modern Architecture-International Exhibition at the Museum of Modern Art (MOMA) in New York City. It featured examples of the work of Americans Frank Lloyd Wright, Richard Neutra, and others, in addition to a host of prominent European architects.

Wright was considered to be the greatest architect that America has ever produced. His work ranges over sixty years and is rarely repetitive, routine or derivative. It is somehow ironic that in spite of his creative genius, American recognition of his work came late in life to Wright. One apprentice of Wright's put the irony this way:

Frank Lloyd Wright was born from the soil of Middle America. Mies van der Rohe, Walter Gropius, Marcel Breuer, and others we think of as modern master architects were all of European birth.

Wright's style was what he preferred to call "organic architecture." The principles of organic architecture are that a building, or group of buildings, should be suitable to, and in the nature of the site of the environment, the use, the building materials, and the construction process. For Wright, "The land is the beginning of Architecture." In his eyes Japanese and Mayan work were "organic" while Greek and Renaissance architecture were inorganic, opposed to nature.

Philip Johnson had this to say about the American architecture master:

In my opinion, Frank Lloyd Wright is the greatest living architect, and for many reasons. He is the founder of modern architecture, as we know it in the West, the originator of so many styles that his emulators are invariably a decade or so behind. All younger moderns—except Le Corbusier—acknowledge Wright's influence, although some may forget the debt in their later years.

Walter Gropius of Bauhaus fame spoke of Wright this way:

Frank Lloyd Wright was very well known and respected in Europe long before he gained a reputation in the United States... In 1911 ... I first became attracted to his strong, imaginative approach. When I came to the United States for the first time on a visit in 1928, almost nobody appreciated Wright's work except a few personal admirers. [And] when I became chair of the...Harvard Graduate School of Design, I still found such a vast ignorance about Wright's works among my students and the public that I undertook to open their eyes to his brilliant work and his historic importance.

Wright had a strong dislike for Gropius's Internationalists and their style of architecture. He often attacked the slick boxlike "negativities" of International work, the painted stucco, the boredom of repeated columns. It was, in part, Wright's public attacks on the sameness of the International Style that may have contributed to gradual movements away from the "boxes" on stilts.

There were other things that Wright did not like about the Internationalists. He did not like their politics, their lack of imagination, and their "team" approach to architecture. Wright's approach to architecture was highly individualistic.

Europeans who showed their works at the MOMA exhibition were the Swiss Le Corbusier, the Dutch J.J.P. Oud, and the Germans Mies and Gropius. All of these architects were high on Frank Lloyd Wright's list of "specialists." According to him they were fascists-inspired cliché *artistes*, many of whom designed two-dimensional, flat-façade buildings because they were more interested in painting than architecture. Furthermore, they did not understand nature; in fact, they were anti-nature.

This exhibition was the American public's first exposure to the works of these highly acclaimed Europeans. Unfortunately, the display was only mildly successful, drawing only about 30,000 during its six-week run.

This group's style of architecture was a manifestation of Functionalism, a term derived from a phrase used by the American architect Louis H. Sullivan in an 1896 essay: "Form Follows Function." This renowned often-quoted dictum became the credo of scores of modern architects, encapsulating the theory that architectural form should be determined by function alone. It represented a rejection of historicism, as well as the ornamentation of styles as Art Nouveau. The Bauhaus would later raise the level of Functionalism to the first principal of architecture. The 1925-26 Bauhaus Building in Dessau, Germany, by Gropius and the 1929-33 Salvation Army Hostel, Paris, by Le Corbusier epitomized the style. The Californian houses by the partnership of Richard J. Neutra and Rudolph M. Schindler were early examples of the style in the U.S.A.

The Bauhaus, established in Weimar, Germany, in 1919 was a school of design where architects, painters, sculptors and artisans were brought together to produce what its founder, the architect Walter Gropius, called "the new construction of the future." It aimed to unify art and technology. "It is not our aim to propagate any style, system, dogma, formula or fashion," said Gropius. "But solely and exclusively to exert a vitalizing influence on planning." The Bauhaus became the most famous design school of the twentieth century. Many distinguished teachers and a number of great architects were trained there. Gropius moved his school into the new building he had designed at Dessau. Its white, cubic volumes and rigorous layout reflected the Bauhaus ideals and made the building renowned worldwide as a shining example of modern architecture. It set the first standards for the emergent International Style. The Nazis closed down the school in 1933.

As reinterpreted by Hitchcock and Johnson in 1932, International Modernism tended to divorce architecture from its social purpose and ideals, which had been essential components of European Modernism. The style peaked in the U.S. in the immediate post-Second World War years with Mies van der Rohe and others, before declining in the 1960s with the rise of Corporate Modernism.

Cubic building volumes, flat roofs, horizontal window bands and parapets, white stucco façades, and lack of ornamentation characterize the International Style of modern architecture. Proponents of this style insist that modern buildings' forms should naturally grow out of and express the potentialities of their materials and structural engineering between artistic expression, function, and technology should be established in an austere artistic architecture.

At least three key factors lead to establishment and development of International Style. First, there was increased dissatisfaction with the buildings incorporating a mixture of decorative elements from different periods and styles that bore no relations to their

function. Next, there existed the need for an economical creation of large numbers of office buildings and commercial structures to serve a rapidly industrializing society. And finally there was the desire to search for an honest, economical and utilitarian architecture that would satisfy new building needs, while appealing to aesthetic tastes.

In the 1930s and '40s, the International style spread from Germany and France to America, Scandinavia, Britain, and Japan. The clean, efficient, geometric qualities became the basis of the architectural vocabulary in the U.S. in the 1950s and 1960s. Two of the most influential architects in the spread of the International Style were Mies van der Rohe and Le Corbusier. Mies was director of the Bauhaus from 1930 to 1933. He immigrated to the U.S.A. in 1938, where he became professor of Architecture at what is now Illinois Institute of Technology in Chicago. Philip Johnson and Alfred Barr were instrumental in getting Mies out of Germany and into the United States. Mies was a candidate for chairman of design at Harvard, which he personally squashed because his former boss Walter Gropius wanted the job. Even though Gropius got the Harvard job Mies became one of the most influential exponents of the International Style. Major buildings designed by Mies include the Barcelona Pavilion, the Seagram Building, New York and the Neue Nationalgalerie, Berlin. Mies was recognized for his great prototype type clean-span building. They are characterized by cubic simplicity—envelopes which easily adapt to the various requirements and perfect precision of details, where every member makes its own statements. These qualities pervade all Mies van der Rohe's work. "I don't want to be interesting, I want to be good," he said in an interview. The volume of his work was remarkably small until after the Second World War, but then grew considerably.

"Less is more." That phrase is inseparable from the architect himself. The phrase is misleading. The glass and steel architecture of Mies van der Rohe may be "minimalist," but, as a distillation of ideas ranging from Thomas Aquinas to Pablo Picasso, there is nothing sparse about it. One critic's parody of Mies's statement is "Less is a bore."

Mies is frequently misunderstood. One misunderstanding that has become instructive, however, crossed the friendship between Mies and Frank Lloyd Wright and shed light on the personalities of both men. Mies settled in Chicago in 1937 but was aware of Wright's work as far back as 1911, when the prestigious Wasmuth Press of Berlin published it.

The two met in 1937 when Mies was planning his permanent move to America. Although Wright cut other European architects off at the knees—he was horrifyingly rude when Walter Gropius attempted to pay his respect—he genuinely admired Mies and invited him to Wisconsin. A few hours was extended to days. They motored to Racine to witness construction of Wright's Johnson Wax Building, then to Chicago and its suburbs to see Robie House, Coonley House, and Unity Temple.

Mies was clearly impressed. It is believed that his conception of space and his reverence for materials was influenced at least partly by Wright's Prairie architecture.

However, architectural egos being what they are, sparks can fly unexpectedly. After a 1946 retrospective of Mies's work at Museum of Modern Arts (MOMA), Wright is said to have pointed to Mies's work giving everyone the impression that he was behind everything Mies had ever done. Wright wrote a letter of explanation to Mies in which he invited the German to take a trip with him so they could discuss architecture. Mies, who said the remarks didn't matter, agreed to the trip but never took it. Wright took this as a snub and later took other shots at Mies's "internationalism," equating it with communism. "Both movements must destroy in order to create—do their very leveling in the name of civilization," as Wright put it. Mies typically remained unruffled, but he never saw or communicated with Wright again.

### **SHIFTS FROM THE INTERNATIONAL STYLE: PHILIP JOHNSON**

By the mid 1960s and early 1970s, architects had begun to chisel away at the constraints and limitations of the International Style. The bare and denuded quality of the steel-and-glass "boxes" appeared stultifying and formulaic. The result was a reaction to modern architecture and the exploration of possibilities of innovative design and decoration. Architects began creating imaginative structures that used elements to create artistic effects that employed modern building materials and decorative schemes to beautify the nation's cities. It seemed strange indeed that the International Style was coming under fire for many of the same faults it found in neo-classical architecture. Young and old architects alike were trying to think out of the box.

Ironically, it was Philip Johnson who was one the first American architects to break the chain of ties to the International style and the influences of his mentor, Mies van der Rohe. Johnson's fame east of the Hudson River was first spread by the multitude of people who visited the house he built for himself in New Canaan, Connecticut (1949)—very much in the style of Mies van der Rohe—a cube with completely glassed walls all around. The setting is romantic, and perhaps in the years around 1950 one should have already been able to guess that Johnson would not remain faithful to Mies's principles. By the early 1950s, Johnson made it clear that he preferred variety, the unexpected, and elegance to the single-mindedness of Mies. Johnson has been criticized for his frequent philosophical shifts of sensibility regarding architecture.

One architect felt that Johnson's heroes are "heroes at the time." Though Johnson saw Mies as a genius he became bored and declared, "my direction is clear, eclectic traditionalism." In 1967 he began to work with John Burgee, his partner until the team split up in 1991. Their ability to take simple geometry and mold it into something new and exciting was a marvelous asset.

Johnson is an expert in stylish high-rise buildings and a corporate king in that his designs are widespread in that realm. He has designed sometimes abstract and aesthetically powerful buildings. His uncanny ability to change from one commission to the next is also a strong reason why his work is sought after by so many in the business

world. He has an ever changing look and has said, “we never copy ourselves, we like going against the grain.” Paying close attention to the context, the surroundings and the immediate site; his designs are, at times, very eclectic. This appears to be a lesson learned from Frank Lloyd Wright. He has said that the only cardinal sin in building is boredom.

Johnson is very much into both natural and artificial lighting. He appreciates the effect water can have on the site and the way light can help the effect. He has designed several fountains that invite patrons to interact with them He is into volumes of space created by sculptural forms. “One thing that I really think runs as a thread is my passionate interest in processional space, space as apprehended by walking through it.”

### **JOHNSON’S ARCHITECTURAL IMPACT ON HOUSTON**

Houston made Philip Johnson a name worthy of mention—architecturally speaking—and his work put the city in the limelight internationally. He was subsequently dubbed the master of the skyscraper, but it was a small residential design job for Dominique and John de Menil that lured Philip Johnson to Houston. Prior to the design of the de Menil house Philip Johnson was just an unproven New York architect. But when he first set foot on Houston soil in 1949, he was far from impressed with the city. He felt there was nothing to see. During his half century of association with the city he has had many highs and lows. His feelings about the city have changed immeasurably. Because of the appreciation brought on by his house design, the de Menils saw to it that he was commissioned to plan the campus of the University of St. Thomas. He was literally following in the footprints of his mentor Mies van der Rohe, who designed the campus of Illinois Institute of Technology in Chicago. This was Johnson’s first multiple-building project. And quite expectedly, his plan was very Miesian in nature. But, as Stephen Fox pointed out in *Houston Architectural Guide*, the St. Thomas job was the last occasion where he worked in the style of Mies. The chain was broken.

If the de Menils were major contributors to Johnson’s career, his commercial marketability owes its success largely to developer Gerald Hines. Chief among their joint efforts in Houston were Post Oak Central 1, 2, and 3, Pennzoil Place, the façade of the Marshall Field store in the Galleria, Transco Tower, Republic Bank Building, Gerald Hines College of Architecture Building at the University of Houston, and the Chapel of St. Basil’s at the University of St. Thomas; Pennzoil Place was by far Johnson’s most celebrated work in Houston. Originally drawn up as a flat top structure, Johnson was repeatedly sent back to the drawing board by Pennzoil chairman Hugh Liedtke and developer Gerald Hines. What they wanted was a structure with “wow” power. They did not want the tallest building, which would in time become the second, third tallest, ad infinitum. What they came up with rocked the architectural world. Houston moved to center stage, architecturally speaking.

## **ANOTHER PLAYER: THE SOM CONNECTION**

Philip Johnson was not the only player in changing the Houston landscape. There was, of course Skidmore, Owings, and Merrill, known to its friends as SOM. In the 1960s and 1970s, the firm pushed the limits of skyscraper construction with engineering marvels such as John Hancock Center and Sears Tower in Chicago. The story of SOM's enormous influence on Chicago architecture began with the Inland Steel Building completed in 1958. It was only the second major new building in downtown Chicago since the depression. The construction of this handsome nineteen-story, stainless steel tower with its stainless steel interior, decked out with office furniture designed by Mies van der Rohe, prompted other major corporations, like Chase Manhattan Bank in New York, to commission SOM to design equally distinctive urban monuments for them.

The success of the firm was unprecedented in the two decades that followed, as many corporate headquarters, apartment buildings, college campuses, and other major works were commissioned. This success, due largely to luck in SOM's case, was that it entered its heyday during one of the largest economic expansions in history. As the firm reached maturity, its commissions grew fantastically, both in number and in size.

If there is a single piece that frequently reappears throughout the patchwork of American architecture, it is Frank Lloyd Wright. One interesting sidebar to early SOM history was the flak that the firm drew from Frank Lloyd Wright over the government's commission of its plans to the design of the U.S. Air Force Academy in Colorado Springs, Colorado. In 1955 Wright testified at hearings of the 84<sup>th</sup> Congress on the government's method of selecting an architect for the project. Wright spoke of Skidmore, Owings, and Merrill's design in this way:

It is an imitation thing. It is not genuine modern architecture. It is a glassified box on stilts, which is practiced abroad, and has become fanatic with certain of our commercial architects. They are the ones that unfortunately succeed in government work. A man like myself would never be thought of in connection with a government job.

In the end, Wright's testimony fell upon deaf ears. His condemnation of the "architecture factory's" design swayed no one. The contract was awarded to SOM, which designed and built the U.S. Air Force Academy between 1956 and 1962.

SOM broke the ice on the Bayou City architectural scene with First City National Bank Building, the Tenneco Building, One Shell Plaza, First International Tower, and Allied Bank Tower. I.M. Pei and Cesar Pelli came along near the end of the economic boom. Pei's most notable contribution was the 75-story Chase Tower, originally slated to be 80 stories, but cut back when the F.A.A. felt its height would interfere with the aviation flight path into Hobby Airport. And Pelli's work is present in the Post Oak area, alongside more work by SOM, Pei, and Johnson.



Many of Houston's best-known local architects owed their styles to the influence of the European architectural masters like Mies van der Rohe. In the Miesian/Johnson group were Howard Barnstone and Eugene Aubry (Rothko Chapel), Preston Bolton (5000 Longmont Drive), Burdette Keeland (8224 Long Point Road), Anderson Todd (9 Shadowlawn Circle), Kenneth Bentsen (Philip Guthrie Hoffman Hall), William Jenkins (10920 Willowisp Street), Hugo V. Neuhaus, Jr., a classmate of Johnson's at Harvard, and Harwood Taylor (HISD Administration Building). The local architecture partnership of Fred J. MacKie and Karl Kamrath, who were influenced by Frank Lloyd Wright's organic style, designed M.D. Anderson Hospital and Tumor Center and Houston's Alley Theatre. African American architect John Chase, also influenced by Wright, designed Texas Southern University's Thurgood Marshall School of Law Building. This is just a small sample of their creative output. As a result of their contributions, Houston's architectural mixture, like the city's ethnic makeup, is not a melting pot, but a hearty stew that satisfies a variety of tastes.

## **SUMMARY**

Today's Houston is a restless, diversified, robust port of entry for seamen and merchants from exotic spots around the globe. Yet it continues to woo new partners in commerce from urban centers throughout the world. This and numerous other economic factors have prompted unprecedented growth during the second half of the twentieth century. Since the end of World War II this metropolis has seemed to double its size, decade after decade. The crafty Allen brothers could hardly have imagined the extent to which their dream would materialize.

Architecture has chronicled the development of Houston. During the mid 1970s, amidst the oil boom, our city burst onto the national scene with several attractive additions to its skyline. Then came the oil bust as the building boom came to a screeching halt in 1986. The princess ate the apple and dropped into a deep sleep for the better part of a decade and a half. No new Gerald Hines's or Kenneth Schnitzers's came to kiss the sleeping lady and rouse her from her slumber. As a matter of fact, in a recent article appearing in the *Houston Chronicle's* Zest magazine on April 7, 2002, reporter Clifford Pugh questioned whether Houston architecture in general had lost its "wow" factor. Has the Bayou City yielded center stage to Los Angeles, St. Louis, Milwaukee or (heaven forbid!) Dallas and Ft. Worth? Architects, educators, design critics, and architecture historian Stephen Fox attempted to analyze the phenomenon. History and new economic stir will determine in what direction the city is really moving.

I hope to guide my students through the realization of what roles renowned stalwarts of architecture, as well as homegrown talents, played significant parts in Houston's maturation. In response to assignments students will construct research-based units explaining how this city, in spite of mosquitoes, bayous, and boggy clay soil, grew into a sprawling metropolis because early and modern-day pioneers had dreams, which were

shaped by innovative contemporary craftsmen, into tall buildings that huddled together and cemented themselves into a community of cultural and ethnic diversity.

## **LESSON PLANS**

### **Plan Number 1: How Does Pennzoil Place Measure Up?**

A quarter of a century after it opened to rave reviews, Pennzoil Place is back in the news almost daily because it is the home of the Arthur Andersen, the accounting firm for bankrupt Enron Corporation.

“How Does the Place Measure Up?” is a basic geometry activity for sixth, seventh and eighth graders. In addition to examining the design elements of this architectural engineering marvel students will compute the space available in the structure and delve into the history of the building itself. Among the things they will uncover are how the design came about and its impact on corporate headquarter design.

As sources of information, the student will use the Internet, the public library information desk, and contacts with other students who did investigations into the history of the building. Is Pennzoil still the primary tenant? How many square feet of floor space does the structure occupy? Why two towers instead of just one tall building? Since Shell recently purchased Pennzoil, what can that company’s corporate information offices tell us about the building?

**Subject(s):** mathematics, social studies, and language arts

**Grade Level:** 6-8

#### **Objectives:**

The students will be able to:

1. Make and justify conjectures about angles, trapezoids, triangles, and other geometric figures;
2. Compute areas and volumes of geometric figures; and
3. Examine the influence of individuals and organizations on twentieth century architecture.

#### **Materials needed:**

Access to a computer with modem and CD\_ROM, access to the Internet, notebook, graphing paper, pencil

***Related resources:***

Larson's Middle School Math, Courses 1, 2, and 3

***Handouts:***

Glossary of terms for this lesson  
Pictures of Pennzoil Place

**Plan Number 2: What's My Skyline?**

The skyline of Houston has changed dramatically over the decades. But no period of change has been greater than during the late 1960s to the early 1980s. This was the period of the so-called "oil boom." Then the bubble burst.

***Subject(s):*** Language arts and social studies

***Grade Level:*** 6-12

***Objectives:***

The students will be able to:

1. Explain the influence of individuals of the twentieth century;
2. Examine the relationship between the arts and the times during when they were created; and
3. Trace the development of ideas that have influenced institutions and societies.

***Game details:***

"What's My Skyline?" is a research-oriented game for language arts and social studies students. To begin with the students are asked to select a number between one and fifteen. Numbers will vary depending upon the number of pictures available. Having done this, the student is given a picture of downtown Houston where several of the high rises are numbered. The building with the number he selects is the building he is to research. The only information he is given is the building's primary tenant, important because this is frequently the name by which the building is referred, i.e., "Bank of America Tower" or "One Shell Plaza." The primary tenant's name is important because its corporate public information or public affairs office may be one of the key sources of the information he is seeking. Other important sources of research data may be the Internet or the public library's Information Help desk.

Most of this information can be obtained over the phone, by email, or via the Internet. The student then will be required to write a two- to three-page essay on the structure. No

student will be required to research more than two buildings. He will, however, be asked to share his information with other students who are doing their own investigations.

***Evaluation:***

Here's what the student will be asked to uncover. What is the building's architectural style? Who designed the structure? Did this architectural firm design other buildings in the city? When was it constructed? What kind of material is used on the building exterior? Does the building have any unique features? Is this the only tenant the building has ever had? How tall is the building?

***Materials needed:***

Computer with a modem and CD\_ROM  
Internet Service Provider  
Digital camera  
TV Set

***Handouts:***

Pictures of selected Houston buildings

**Plan Number 3: Finger Tours via the Internet**

Today more and more school districts and universities are encouraging their students to use computers and Internet service providers (ISPs) as a means of obtaining research information. While the Internet is becoming a valuable research tool, it should in no way be used exclusively while seeking information. The Internet should be used in conjunction with timely material obtained from textbooks, library resource materials, TV, and newspapers. It can frequently prove to be an extremely important data-seeking source when seeking information not yet appearing in printed textbook form.

***Subject(s):*** Language Arts, Science, Social Studies, and Mathematics

***Grade Level:*** 6-12

***Objectives:***

The student will be able to:

1. Use email to contact institutions, businesses, and individuals;
2. Discuss and debate subjects with knowledgeable people on the internet during electronic forums; and
3. Use a web browser and search engines to research topics.

***Evaluation:***

Students will respond to questions such as, How have employees love for skyscrapers changed since 9/11? Is the construction of high-rise buildings the best use of land in the downtown area? Does the city of Houston need to enact effective zoning laws? Write a well documented, five-page paper based on the result of your research.

***Materials needed:***

Computer with modem and CD-ROM  
Internet Service Provider

***Handouts:***

A glossary of Internet terms  
Photographs of Houston buildings

## GLOSSARY

**Abutment:** A masonry mass (or the like), which receives the thrust of an arch, vault or strut.

**Alcove:** A small recessed space opening directly into a larger room.

**Arcade:** A line of counter thrusting arches raised on columns or piers.

**Architecture:** The art and science of designing structures and their surroundings in keeping with aesthetic, functional or other criteria.

**Art Deco:** The fashionable Jazz Age style concurrent with International Modern in the 1920s and 1930s.

**Art Nouveau:** The movement away from imitation of the past.

**Atrium:** In classical architecture, an interior courtyard that is open to the weather. In contemporary architecture, significant interior space, often sky lighted, used for circulation.

**Baroque architecture:** The architecture of the seventeenth and eighteenth century. It is characterized by exuberant decoration, expansive curvaceous form, a sense of mass, large-scale and sweeping vista, and spatially complex compositions.

**Beaux Arts style:** A rich classical style favored by the Ecole des Beaux Arts, Paris in late nineteenth century France, and much-imitated elsewhere.

**Breezeway:** A covered passageway, open to the outdoors, connects two parts of adjoining buildings.

**Brutalism or the New Brutalism:** A term coined in England in 1954 to characterize the style of Le Corbusier. Brutalism nearly always uses concrete exposed at its roughest and handled with overemphasis on big chunky members, which collide ruthlessly.

**Cantilever:** A structural member, which projects beyond the supporting wall, or column.

**Chicago school:** A term referring to a group of architects working in Chicago between 1880 and 1910 and their development of multi-storied buildings (skyscrapers) characterized by their external expression of the skeleton frame.

**CIAM:** Founded in 1928, it became the chief instrument for disseminating Modernist ideas of architecture and planning. Dominated in the 1930s by Le Corbusier, it emphasized functionalism and planning.

**Classicism:** A revival of or return to the principles of Greek or Roman art and architecture.

**Corporate Modernism:** A development of International Modernism in the U.S. in the 1950s epitomized by glass-and-metal curtain-walled *skyscraper* offices. They were seen as symbols of corporate status and reflections of the proprietor's progressive outlook.

**Eclecticism:** Use of stylistic elements from past periods in building design.

**Eurhythmy:** Harmony, orderliness, and elegance of proportions.

**Façade:** The front or face of a building usually emphasized architecturally.

**Fascia:** Any flat horizontal member or molding with little projection.

**Functionalism:** The theory best known from Louis Sullivan's dictum that 'form follows function,' i.e., that the form of a building can be derived from full knowledge of the purpose it is to serve.

**Modernism:** Radical movement in twentieth-century architecture aimed at breaking with past architectural styles, emphasizing the importance of producing rational solutions to contemporary needs using modern materials. The International Style was its most important manifestation.

**Piazza:** A public open space or square surrounded by buildings.

**Postmodernism:** Term used since the late 1970s to describe new tendencies in architecture that rejected the strict functionalism of the International Style in favor of eclecticism and pluralism.

**Pritzker Architecture Prize:** The "Nobel Prize for Architecture," donated by Jay A. and Cindy Pritzker and endowed with \$100,000, awarded annually since 1979 in recognition of an individual architect's achievement.

**Stucco:** An exterior finish usually textured composed of portland cement, lime and sand, which are mixed with water.

**Travertine:** A variety of limestone deposited by springs, usually banded.

**Zoning:** The control by a municipality of the use of land and buildings.

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Here is an interesting book that creates an imaginary dialogue between Frank Lloyd Wright and Le Corbusier on their points of disagreement on aspects of architecture.

Fleming, John, Hugh Honour, and Nikolaus Pevsner. *The Penguin Dictionary of Architecture and Landscape Architecture*. USA: Penguin, 1999.

This dictionary of architectural particulars catalogs numerous architects and architectural terms.

Fox, Stephen. *Houston Architectural Guide*. Houston: American Institute of Architects, Houston Chapter and Herring Press, 1999.

Fox sets up a number of delightful tours through various sections of Houston; his photos show types of architect in selected parts of the city.

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This article discusses the ins and outs of New Brutalism architecture designed by Houston practitioners and how prominent international architects influenced their styles.

LeBlanc, Sydney. *The Architecture Traveler: A Guide to 250 Key 20<sup>th</sup>-Century American Buildings*. New York: W.W. Norton and Company, 2000.

This is an informative atlas of the locales of important buildings in cities throughout the U.S.

Lambert, Phyllis. *Mies in America*. Montreal, Canada: Canadian Center for Architecture, 2001.

This very detailed book explores works by Mies and shows the impact of the Bauhaus movement on his work in America.

Larson, George A., and Jay Pridmore. *Chicago Architecture and Design*. New York: Harry N. Abrams, Inc., 1993.

Larson’s book examines the roots of modern architecture and the influence of the Chicago School of Architecture, including Frank Lloyd Wright and Mies van der Rohe, on Modern and Postmodern Chicago.

Meehan, Patrick J. *Frank Lloyd Wright Remembered*. Washington, D.C.: The Preservation Press, 1991.

This volume contains a series of critical essays exploring the impact of works by Frank Lloyd Wright as seen through the eyes of architects, clients, apprentices, friends and family.



Pugh, Clifford. "Has Houston Architecture Lost Its Edge?" *Houston Chronicle Zest* (April 2002): 8-14.

This recent news feature story questions whether Houston is shifting in its attitude toward "wow" powered architecture since the economic downturn in 1986.

Richter, Klaus. *Architecture: From Art Nouveau to Deconstructivism*. New York: Prestel, 2001.

Richter has pulled together a primer of twentieth century architecture which looks at important names and concepts, styles, tendencies, schools and groups in architecture.

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This is a voluminous chronicle of the development of Mies van der Rohe in painting and architecture from obscurity to maturity, spotlighting his place in architectural Modernism.

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### **Web Resources**

<http://www.archpedia.com/Glossary>

<http://www.archpedia.com/Architects>

<http://glassteelandstone.home.att.net?USA-TX-Houston>