CAAI 2-Unit-Plan-1C- Space Planning, Functionality and Bubble Diagrams

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Unit Overview

Space Planning and Functionality

Space planning is a fundamental element of the interior design process. It starts with an in-depth analysis of how the space is to be used. The designer then draws up a plan that defines the zones of the space and the activities that will take place in those zones. The space plan will also define the circulation patterns that show how people will move through the space. The plan is finished by adding details of all the furniture, equipment and hardware placement.

Enduring Understandings

The following synthesizes the important ideas and core processes that are central to the Interior Design discipline will have lasting value beyond the classroom :

1. Space planning
2. Scaling drawings
3. Applying principles of space utilization, zoning, and traffic patterns in planning and furnishing housing.
4. Organization according to function.
5. Bubble Diagrams- Relational Bubble Diagrams, General Bubble Drawings in Drawings Footprint, Blocking in Building Footprint, Preliminary Furniture Plan

Essential Questions

1. What are the three functional zones that divide the space of a house?
2. How does considering the use of a space and its closeness to related activities improve functionality? Give an example.
3. Name four types of circulation activities.
4. What are Bubble Diagrams? Why are they useful?
5. How many steps should be taking in the design of a structure using bubble diagrams? Explain.
6. Name one advantage of each: built-in storage and storage furniture.
7. Why is using a scale floor plan an effective method for deciding furniture arrangements?
8. Identify three factors to consider when planning a furniture arrangement.
9. Why are traffic patterns and clearance space important to creating effective furniture arrangements?
10. What are you going to be using the space for? Will it be multi-functional? Eg: living/dining or bedroom/study?

11. How many people will be using the space and will they all be using it for the same purpose? *Eg: A family might use the same room; someone may be watching TV, while another reads and another is working.*
12. Do you have any existing furniture that you want to use in the space?
13. Can furniture be moved into or out of this room from other areas of the house?
14. How do you want the room to feel, space-wise – open and airy, cozy, minimal, serene?
15. How much natural light is available and what kinds of lighting will be needed?
16. What are the focal points of the room and how can you take advantage of them?
17. Do you need to create focal points?
18. Do you like balance and symmetry, the unexpected, or a combination?
19. Is there anything else on your wish list for this room?

Standards/Indicators/Student Learning Objectives (SLOs)

ARCH.9-12.1	Design/Pre-Construction
ARCH.9-12.3	Maintenance and Operations
ARCH.9-12.9.4.12.B.(1).1	Demonstrate communication skills and strategies that are used to work effectively with potential clients and others.
ARCH.9-12.9.4.12.B.(1).2	Employ appropriate representational media to communicate concepts and design.
ARCH.9-12.9.4.12.B.(1).3	Integrate structural, environmental, safety, building envelope, and building service systems in the design of buildings and structures.
ARCH.9-12.9.4.12.B.(1).4	Review traditional project phases and various roles within them to plan for and implement phases within a project.
ARCH.9-12.9.4.12.B.(1).5	Evaluate and select suitable environmental impact practices to enhance project acceptance and quality.
ARCH.9-12.9.4.12.B.(1).7	Identify objective construction guidelines for the accommodation of people with different physical abilities to meet accessibility requirements.
ARCH.9-12.9.4.12.B.(1).8	Employ basic methods of data collection and analysis to provide information for projects.
ARCH.9-12.9.4.12.B.(1).10	Demonstrate understanding of principles, conventions, standards, applications, and restrictions pertaining to the manufacture and use of construction materials, components, and assemblies, and incorporate this understanding into project design.
ARCH.9-12.9.4.12.B.(1).11	Apply basic organizational, spatial, structural, and constructional principles to the design of interior and exterior space so that design plans are effective.
ARCH.9-12.9.4.12.B.(2).1	Describe contractual relationships established among all parties involved in the building process to ensure successful build of a project.
ARCH.9-12.9.4.12.B.(2).2	Describe submittal approval procedures that ensure effective flow of information in the construction process.
ARCH.9-12.9.4.12.B.(2).3	Evaluate construction subcontracts and describe their relationship to construction projects.
ARCH.9-12.9.4.12.B.(2).4	Identify project turnover procedures needed to successfully manage construction projects.
ARCH.9-12.9.4.12.B.(2).5	Plan building in accordance with contracts to meet budget and schedule.
ARCH.9-12.9.4.12.B.(2).6	Describe testing and inspection procedures used to ensure successful completion of construction projects.

ARCH.9-12.9.4.12.B.(2).7	Assess the purpose for scheduling as it relates to successful completion of construction projects.
ARCH.9-12.9.4.12.B.(2).8	Identify closeout procedures needed to effectively complete construction projects.
ARCH.9-12.9.4.12.B.(2).9	Demonstrate understanding of risk management principles and other strategies and tactics used to maintain, increase, or decrease risk.
ARCH.9-12.9.4.12.B.(2).10	Create a jobsite safety program to ensure safe practices and procedures.
ARCH.9-12.9.4.12.B.(2).11	Recognize and employ universal construction signs and symbols to function safely.
ARCH.9-12.9.4.12.B.(2).12	Describe procedures for jobsite security to prevent liability.
ARCH.9-12.9.4.12.B.(2).13	Create a classroom and/or jobsite environmental program.
ARCH.9-12.9.4.12.B.(2).14	Manage relationships with teachers and classmates to successfully complete a construction project.
ARCH.9-12.9.4.12.B.(2).15	Demonstrate knowledge of proper changeover procedures for successful completion of a construction project.
ARCH.9-12.9.4.12.B.(2).16	Examine building systems and components to evaluate their usefulness to construction projects.
ARCH.9-12.9.4.12.B.(2).17	Use craft skills to meet or exceed teacher and/or employer expectations.
ARCH.9-12.9.4.12.B.(3).1	Recognize and employ universal construction signs and symbols to function safely.
ARCH.9-12.9.4.12.B.(3).2	Use troubleshooting procedures when solving a maintenance problem to maintain project.
ARCH.9-12.9.4.12.B.(3).3	Apply construction skills when completing classroom projects and/or repairing, restoring, or renovating existing worksite structures to ensure long-term use of buildings and structures.
ARCH.9-12.9.4.12.B.(3).4	Evaluate and assess an existing structure to determine the repairs or renovations required to restore operation of the structure.
ARCH.9-12.9.4.12.B.(3).5	Plan and practice preventive maintenance activities to service existing structures.
ARCH.9-12.9.4.12.B.1	Demonstrate language arts knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
ARCH.9-12.9.4.12.B.2	Demonstrate mathematics knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
ARCH.9-12.9.4.12.B.3	Demonstrate science knowledge and skills required to pursue the full range of postsecondary education and career opportunities.
ARCH.9-12.9.4.12.B.4	Perform math operations, such as estimating and distributing materials and supplies, to complete classroom/workplace tasks.
ARCH.9-12.9.4.12.B.5	Apply principles of physics, as they relate to worksite/jobsite situations, to work with materials and load applications.
ARCH.9-12.9.4.12.B.6	Select and employ appropriate reading and communication strategies to learn and use technical concepts and vocabulary in practice.
ARCH.9-12.9.4.12.B.7	Demonstrate use of the concepts, strategies, and systems for obtaining and conveying ideas and information to enhance communication.
ARCH.9-12.9.4.12.B.8	Locate, organize, and reference written information from various sources to communicate with others.
ARCH.9-12.9.4.12.B.9	Evaluate and use information resources to accomplish specific occupational tasks.
	All clusters rely on effective oral and written communication strategies for creating, expressing, and interpreting information and ideas that incorporate technical terminology and information.
	Academic concepts lay the foundation for the full range of career and post-secondary education opportunities within the career cluster.

Lesson Titles

1. Space Planning and Functionality
2. The Space Within
   Grouping by Functional Zones
3. Separating Areas and Rooms
4. Traffic Patterns
5. Planning for Storage

Career Readiness, Life Literacies, & Key Skills

WRK.K-12.P.1	Act as a responsible and contributing community members and employee.
WRK.K-12.P.3	Consider the environmental, social and economic impacts of decisions.
WRK.K-12.P.4	Demonstrate creativity and innovation.
WRK.K-12.P.5	Utilize critical thinking to make sense of problems and persevere in solving them.
WRK.K-12.P.6	Model integrity, ethical leadership and effective management.
WRK.K-12.P.7	Plan education and career paths aligned to personal goals.
WRK.K-12.P.8	Use technology to enhance productivity increase collaboration and communicate effectively.
WRK.K-12.P.9	Work productively in teams while using cultural/global competence.

Inter-Disciplinary Connections

0x	Connections to Equations.
0x	During high school, students begin to formalize their geometry experiences from elementary and middle school, using more precise definitions and developing careful proofs. Later in college some students develop Euclidean and other geometries carefully from a small set of axioms.
0x	In real world problems, the answers are usually not numbers but quantities: numbers with units, which involves measurement. In their work in measurement up through Grade 8, students primarily measure commonly used attributes such as length, area, and volume. In high school, students encounter a wider variety of units in modeling, e.g., acceleration, currency conversions, derived quantities such as person-hours and heating degree days, social science rates such as per-capita income, and rates in everyday life such as points scored per game or batting averages. They also encounter novel situations in which they themselves must conceive the attributes of interest. For example, to find a good measure of overall highway safety, they might propose measures such as fatalities per year, fatalities per year per driver, or fatalities per vehicle-mile traveled. Such a conceptual process is sometimes called quantification. Quantification is important for science, as when surface area suddenly “stands out” as an important variable in evaporation. Quantification is also important for companies, which must conceptualize relevant attributes and create or choose suitable measures for them.
LA.9-0x10.RH.9-10.3	Analyze in detail a series of events described in a text; draw connections between the events, to determine whether earlier events caused later ones or simply preceded them.

LA.9-0x10.RH.9-10.9	Compare and contrast treatments of the same topic, or of various perspectives, in several primary and secondary sources; analyze how they relate in terms of themes and significant historical concepts.
LA.9-0x10.RST.9-10.5	Analyze the relationships among concepts in a text, including relationships among key terms (e.g., force, friction, reaction force, energy).

SCI.HS	Engineering Design
SCI.HS-ETS1-4	Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
SCI.HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
SCI.HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
TECH.8.2.12.D.CS1	Apply the design process.
TECH.8.2.12.D.CS2	Use and maintain technological products and systems.
TECH.8.2.12.E.2	Analyze the relationships between internal and external computer components.
	Connections to Equations.
	The concepts of congruence, similarity, and symmetry can be understood from the perspective of geometric transformation. Fundamental are the rigid motions: translations, rotations, reflections, and combinations of these, all of which are here assumed to preserve distance and angles (and therefore shapes generally). Reflections and rotations each explain a particular type of symmetry, and the symmetries of an object offer insight into its attributes—as when the reflective symmetry of an isosceles triangle assures that its base angles are congruent.

Anticipatory Set

Possibilities of short activities that will focus the student's attention before the actual lesson begins:

1. **Vocabulary connections-** terms and definitions in a short game of "Trash-ketball"
2. **Challenge**- Offer students sketching task and let them try to solve it as a group then present it to the class.
3. **Challenge**- Offer a volunteer student a CAD task and let him/ her solve it on the board.
4. **Use manipulatives or models**

- **Description:** Teacher will use physical models to prepare students to learn a specific concept or better highlight the critical attributes of new concepts. Teacher will use a variety of models of two or three-dimensional shapes.

1. **Show & Tell**: Use a prop from an article students are about to read related to industry. Examples: Professional drawings - Architectural, Interior Design, Engineering.
2. **Use a visual**- Teacher will use visual aides to encourage students to better connect to new concepts. Examples: Real drawings used in industry- Architectural, Interior Design, Engineering. The teacher will tell students that they have thirty seconds to remember everything they can about the drawing. After the thirty seconds, the teacher will remove the drawings and ask students to recall all they can about them. The teacher will solicit ideas and use this to introduce distinguishing between main idea and supporting details.

Instructional Strategies, Learning Activities, and Levels of Blooms/DOK

Direct Instruction

- **Possibilities include**
  - Structured Overview
  - Lecture
  - Explicit Teaching
  - Drill & Practice
  - Compare & Contrast
  - Didactic Questions
  - Demonstrations
  - Guided & Shared - reading, listening, viewing, thinking

Interactive Instruction

- **Possibilities include**
  - Debates
  - Role Playing
  - Panels
  - Brainstorming
  - Peer Partner Learning
  - Discussion
  - Laboratory Groups
  - Think, Pair, Share
  - Cooperative Learning Groups
  - Jigsaw
  - Problem Solving
  - Structured Controversy
  - Tutorial Groups
  - Interviewing
  - Conferencing

Indirect Instruction

- **Possibilities include**
  - Problem Solving
  - Case Studies
  - Reading for Meaning
  - Inquiry
  - Reflective Discussion
  - Writing to Inform
  - Concept Formation
  - Concept Mapping
  - Concept Attainment

- Cloze Procedure

Independent Study

- **Possibilities include**
  - Essays
  - Computer Assisted Instruction
  - Journals
  - Learning Logs
  - Reports
  - Learning Activity Packages
  - Correspondence Lessons
  - Learning Contracts
  - Homework
  - Research Projects
  - Assigned Questions
  - Learning Centers

Experiential Learning

- **Possibilities include**
  - Field Trips
  - Narratives
  - Conducting Experiments
  - Simulations
  - Games
  - Storytelling
  - Focused Imaging
  - Field Observations
  - Role-playing
  - Model Building
  - Surveys

Instructional Skills

- **Possibilities include**
  - Explaining
  - Demonstrating
  - Questioning
  - Questioning Technique
  - Wait Time
  - Levels of Questions

Modifications

Instructor implements the following teaching strategies with students who need special accommodations. Instructor also implements specific requirements from the students' individual reports.

- Classroom:
    - Seat student near instruction, avoid distracting stimuli
    - Clarify that student understands directions
    - Cuing student to refocus (verbal/nonverbal)
    - Praise for positive behaviors.
    - Study guides provided, when available. Prior knowledge to upcoming quizzes/tests.
- Standardized Testing:
    - Extra Time
    - Repeating, clarifying, or rewording directions.
- Delsea One – Students benefit from increased opportunities for enrichment and tutoring during Delsea One Tutoring.

ELL Modifications

- Choice of test format (multiple-choice, essay, true-false)
- Continue practicing vocabulary
- Provide study guides prior to tests
- Read directions to the student
- Read test passages aloud (for comprehension assessment)
- Vary test formats

At Risk Modifications

The possible list of modifications/accommodations identified for Special Education students can be utilized for At-Risk students. Teachers should utilize ongoing methods to provide instruction, assess student needs, and utilize modifications specific to the needs of individual students. In addition, the following may be considered:

- Additional time for assignments .
- Adjusted assignment timelines .
- Agenda book and checklists .
- Answers to be dictated .
- Assistance in maintaining uncluttered space .
- Books on tape .
- Concrete examples .
- Extra visual and verbal cues and prompts .
- Follow a routine/schedule .

- Graphic organizers .
- Have students restate information .
- No penalty for spelling errors or sloppy handwriting .
- Peer or scribe note-taking .
- Personalized examples .
- Preferential seating .
- Provision of notes or outlines .
- Reduction of distractions .
- Review of directions .
- Review sessions .
- Space for movement or breaks .
- Support auditory presentations with visuals .
- Teach time management skills .
- Use of a study carrel .
- Use of mnemonics .
- Varied reinforcement procedures .
- Work in progress check .

IEP & 504 Modifications

- *All teachers of students with special needs must review each student's IEP. Teachers must then select the appropriate modifications and/or accommodations necessary to enable the student to appropriately progress in the general curriculum.

  Possible Modifications/Accommodations: (See listed items below):

  - Allow for redos/retakes .
  - Assign fewer problems at one time (e.g., assign only odds or evens) .
  - Differentiated center-based small group instruction .
  - Extra time on assessments .
  - Highlight key directions .
  - If a manipulative is used during instruction, allow its use on a test .
  - Opportunities for cooperative partner work .
  - Provide reteach pages if necessary .
  - Provide several ways to solve a problem if possible .
  - Provide visual aids and anchor charts .
  - Test in alternative site .
  - Tiered lessons and assignments .
  - Use of a graphic organizer .
  - Use of concrete materials and objects (manipulatives) .
  - Use of word processor .

G&T Modifications

-
  - Alternate assignments/enrichment assignments
  - Enrichment projects
  - Extension activities
  - Higher-level cooperative learning activities
  - Pairing direct instruction with coaching to promote self-directed learning
  - Provide higher-order questioning and discussion opportunities
  - Provide texts at a higher reading level
  - Tiered assignments
  - Tiered centers

Formative Assessment

- Observations during in-class activities; of students' non-verbal feedback during lecture.
- Homework exercises as review for exams and class discussions.
- Reflections journals that are reviewed periodically during the semester.
- Question and answer sessions, formal—planned and informal—spontaneous.
- Conferences between the instructor and student at various points in the semester.
- In-class activities where students informally present their results.
- Student feedback collected by periodically answering specific question about the instruction and their self-evaluation of performance and progress.

Summative Assessment

- Quiz, Test, MP Assessments about the specified lesson: **Space Planning and Functionality**
- Final examination (a truly summative assessment) about the specified lesson.
- Projects (project phases submitted at various completion points could be formatively assessed) about the specified lesson.
- Portfolio that include all class assignments.
- Student evaluation of the lesson (teaching effectiveness).
- Instructor self-evaluation about the current lesson
- By Rubric shown below.

Interior Design Rubric

Presentation Board and Design

Performance Task	0	2	4	6	
Presentation Board	Board is incomplete	Board is partially complete but is missing key elements; no labels	Board is complete and has all of the required elements and with necessary neatness	Board is exceptional. It is done with impeccable neatness and creativity. Attention is paid to detail and contains all required elements.	
Scaled Room Floor plan	Did not appear to use any scale	scale used, but not ¼"	¼" scale used, but inconsistently	¼" scale consistently used	
Room Dimensions	No room dimensions labeled	Some room dimensions labeled, but sloppy	Some room dimensions labeled	All room dimensions labeled	
Furniture Arrangement	No furniture arrangement shown	Poorly arranged, both form and function	Good form OR function, not both	Well-arranged for form and function	
Samples	No samples provided	Some samples, not all provided	Some well-chosen, but not well coordinated	Well-chosen and coordinated	
Principles/Elements of Design	Principles/elements of design not applied	Principles/elements applied only minimally	Most principles/elements of design applied	Principles/elements of design applied consistently	
Overall Effectiveness	Lacking in visual appeal	Minimal visual appeal	Some visual appeal	Great visual appeal, very effective	
Professionalism	No organization	Somewhat organized, but elements poorly mounted, some grammar mistakes	Organized and some elements mounted properly	Very organized, all elements mounted properly, proper grammar, no misspellings	

ORAL PRESENTATION					
Performance Task	**0**	**1**	**2**	**3**	
Organization/Delivery	Presentation is not done or speaks briefly and does not cover components of project	Presentation covers some topic elements	Presentation covers all topic elements but with minimal information	Presentation covers all relevant information with a seamless and logical delivery	
Knowledge of Subject Matter	Little or no evidence of knowledge	Minimal evidence of knowledge	Knowledge of subject matter is evident but not shared in presentation	Knowledge of subject matter is evident and incorporated throughout the presentation	
Rationale of Design Decisions Explained	No rationale of design decisions explained	Design decisions are somewhat explained	Design decisions are	Design decisions are	

		but show little understanding of Clients' needs and style	explained thoroughly and show complete understanding of Clients' needs and style	explained fully and reflect thorough understanding of Clients' needs and style.	
Use of Display Boards during Presentation	Display boards are not used during presentation	Display boards used to limit amount of speaking time	Display boards used minimally during presentation	Display boards used effectively throughout presentation	
Voice-Pitch, Tempo, Volume	No voice qualities are used effectively	Voice quality is adequate	Voice is good but could be improved	Voice quality is outstanding and pleasing to listen to	
Body Language/Clothing Choice	Body language shows nervousness and unease/inappropriate clothing	Body language shows minimal amount of nervousness/clothing is appropriate	Body language is good and clothing is professional	Body language and clothing choice both enhance the presentation	
Grammar/Word Usage/Pronunciation	Extensive (more than 5) grammatical and pronunciation errors	Some (3-5) grammatical and pronunciation errors	Few (1-2) grammatical and pronunciation errors	Presentation has no grammatical or pronunciation errors	

Resources & Materials

- Residential Housing and Interiors, 4th Edition b**y:** Clois E. Kicklighter, Ed. D. and Joan C. Kicklighter
- Housing and Interior Design By: Evelyn L. Lewis, Ed.D., Carolyn Turner Smith, Ph.D
- Interior Design By : Stephanie Clemons
- Glencoe Mechanical Drawing: Board and CAD Techniques, Student Edition: 1st (First) Edition by Glencoe McGraw-Hill
- Basic Technical Drawing by Spencer, Dygon, Novak Glencoe McGraw-Hill
- Exploring Drafting, Instructor's Manual Instructor's Manual, 10th Edition by John R. Walker (Author), Bernard D. Mathis

Technology Materials and Standards

Specific technology resources include:

- AutoDesk Home Styler- Interiors Software
- Google SketchUp Software
- AutoCAD Architecture Software
- Smart boards
- Computers

- Chrome Books
- 3D printer
- Large format Printer (plotter)

9.3.12.AR-PRT.2	Demonstrate the production of various print, multimedia or digital media products.
9.3.12.AR-PRT.3	Perform finishing and distribution operations related to the printing process.
9.3.12.AR-VIS.2	Analyze how the application of visual arts elements and principles of design communicate and express ideas.
9.3.12.AR-VIS.3	Analyze and create two and three-dimensional visual art forms using various media.

Computer Science and Design Thinking Standards

CS.9-12.8.1.12.CS.2	Model interactions between application software, system software, and hardware.
CS.9-12.8.1.12.CS.3	Compare the functions of application software, system software, and hardware.
CS.9-12.CS	Computing Systems A computing system involves interaction among the user, hardware, application software, and system software.