CAAI 2-Unit-Plan-2A-ELEMENTS, PRINCIPLES of Architecture and COLOR in Design

Content Area: **CTE**
Course(s): **CA Interior Design**
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Unit Overview

Elements of Architecture

When the elements of architecture are applied using the Principles of Architecture, students can achieve the goals of design. In this unit, students will learn how to use this process to create well-designed rooms. When students understand these guidelines, they can use the elements of architecture successfully. We will explore these different elements and examine:

- Ways in which Elements of Architecture contribute to the creation and functionality of our buildings.

- The importance of understanding and using them effectively.

Key components and fundamental building blocks required to create functional and aesthetically pleasing structures. With these elements, you actually can create any architecture or design.

1. Point
2. Line
3. Plane
4. Volume
5. Space
6. Shape/ Form
7. Light
8. Color
9. Material/ Texture

Principles of Design

Previously, students learned about the elements of design. When the elements of design are applied using the principles of design, students can achieve the goals of design. In this unit, students will learn how to use this process to create well-designed rooms. The principles of design are guidelines for working with the elements of design. When students understand the principles of design, students can use the elements of design successfully. After considering the Elements of Architecture, use these rules to guide the development of your designs:

1. Order

2. Emphasis

3. Axis

4. Balance (Symmetry/ Asymmetry)

5. Datum

6. Rhythm

7. Movement

8. Harmony

9. Unity

10. Contrast

11. Material

12. Scale

13. Proportion

Enduring Understandings

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

- Applying the principles of design:
    - proportion and scale, balance, emphasis and rhythm.
- Using this principles of design process to create well-designed rooms.
- Working with the elements of design.

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- Using this principles of design process to create well-designed rooms.
- Working with the elements of design.

Essential Questions

1. Contrast proportion and scale.
2. How does human scale influence design?
3. Contrast formal balance and informal balance. Sketch an example of each.

4. How can a designer use emphasis to create a focal point? Give an example.
5. What are the five kinds of rhythm?
6. How are the design goals of function and appropriateness related?
7. What are three guidelines to follow to make sure that a design is functional and appropriate?
8. How do unity and variety impact harmony?
9. Identify three steps to use when planning a color scheme for a room.
10. What is the relationship between beauty and the elements and principles of design?
11. What is sensory design?
12. How does each of the following senses impact design: hearing, smell, and touch?
13. Give an example of how sensory design can benefit you.
14. Contrast proportion and scale.
15. How does human scale influence design
16. Contrast formal balance and informal balance. Sketch an example of each.
17. How can a designer use emphasis to create a focal point? Give an example.
18. What are the five kinds of rhythm?
19. How are the design goals of function and appropriateness related?
20. What are three guidelines to follow to make sure that a design is functional and appropriate?
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22. Identify three steps to use when planning a color scheme for a room.
23. What is the relationship between beauty and the elements and principles of design?
24. What is sensory design?
25. How does each of the following senses impact design: hearing, smell, and touch?
26. Give an example of how sensory design can benefit you.

Standards/Indicators/Student Learning Objectives (SLOs)

ARCH.9-12.1	Design/Pre-Construction
ARCH.9-12.2	Construction
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).6	Appreciate the diversity of needs, values, and social patterns in project design to appropriately meet client needs.
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).9	Develop technical drawings drafted by hand and computer-generated plans to design structures.

Lesson Titles

1. Proportion and Scale - The Golden Section

2. Goals of Design
3. Scale
4. Balance
5. Rhythm
6. Harmony with Unity and Variety

Career Readiness, Life Literacy, and 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

- Applied **Mathematics**
- **Arts** Related to Product "Form"
- **Historical** References & Perspectives
- Technical **Literacy**
- Applied **Sciences**

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.
0xLA.9-	Analyze in detail a series of events described in a text; draw connections between the events, to

10.RH.9-10.3	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).

9.3.12.AC.1	Use vocabulary, symbols and formulas common to architecture and construction.
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.
STEM.9-12.9.4.12.O.(1).1	Apply the concepts, processes, guiding principles, and standards of school mathematics to solve science, technology, engineering, and mathematics problems.
STEM.9-12.9.4.12.O.(1).3	Demonstrate the ability to select, apply, and convert systems of measurement to solve problems.
STEM.9-12.9.4.12.O.(1).5	Explain relevant physical properties of materials used in engineering and technology.
STEM.9-12.9.4.12.O.(1).10	Model technical competence by developing processes and concepts for using different technologies.
STEM.9-12.9.4.12.O.7	Evaluate and use information resources to accomplish specific occupational tasks.
STEM.9-12.9.4.12.O.10	Interpret verbal and nonverbal cues/behaviors to enhance communication.
STEM.9-12.9.4.12.O.15	Prepare science, technology, engineering, and mathematics material in oral, written, or visual formats to provide information to an intended audience and to fulfill the specific communication needs of that audience.
STEM.9-12.9.4.12.O.49	Establish and maintain effective relationships in order to accomplish objectives and tasks.
STEM.9-12.9.4.12.O.50	Conduct and participate in meetings to accomplish tasks.
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.
	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.
	Connections to Equations.

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.

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 .

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

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 .

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: **Principles of Design**
- 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 but show little understanding of Clients' needs and style	Design decisions are explained thoroughly and show complete understanding of Clients' needs and style	Design decisions are 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 REVIT- Software
- Google SketchUp Software
- AutoCAD Architecture Software
- Smart boards
- Computers
- Chrome Books
- 3D printer
- Large format Printer (plotter)

ITEC.9-12.	Effective leadership and teamwork strategies foster collaboration and cooperation between business units, business partners, and business associates toward the accomplishment of organizational goals.
ITEC.9-12.9.4.12.C.49	Employ leadership skills to accomplish goals and objectives.
ITEC.9-12.9.4.12.C.50	Employ organizational skills to foster positive working relationships and accomplish organizational goals.
ITEC.9-12.9.4.12.C.51	Employ teamwork skills to achieve collective goals and use team members' talents effectively.
ITEC.9-12.9.4.12.C.52	Establish and maintain effective relationships in order to accomplish objectives and tasks.
ITEC.9-12.9.4.12.C.53	Conduct and participate in meetings to accomplish tasks.

Computer Design and 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
	Successful troubleshooting of complex problems involves multiple approaches including research, analysis, reflection, interaction with peers, and drawing on past experiences.
	A computing system involves interaction among the user, hardware, application software, and system software.