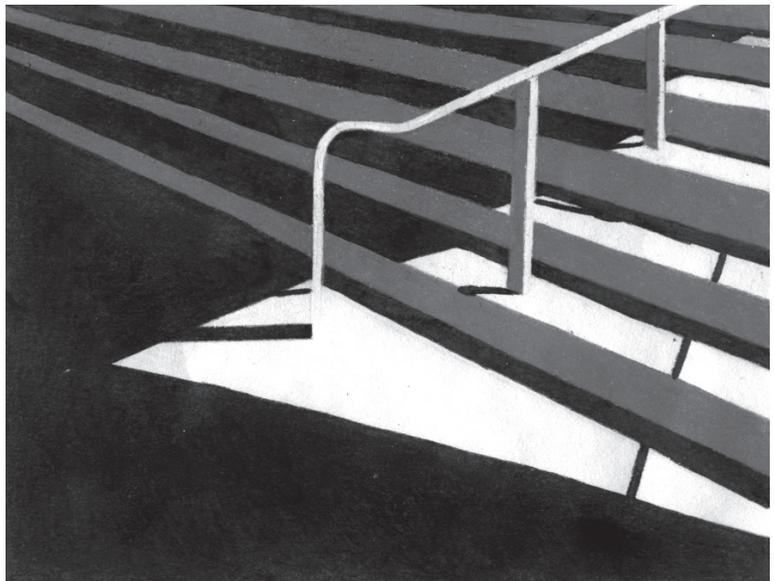


BASE SYLLABUS



A general syllabus used for all first year design and visual communication studios.



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CREATING INCLUSIVE BEGINNINGS



The intent of any beginning design studio and program is to develop students' fundamental knowledge in the areas of design and visual communication. The studio and program simultaneously address the issues, concepts and skills associated with representing existing and imagined ideas and things and the fundamental issues and concepts of two- and three-dimensional visual design. The goal is for each student to construct a base for their future learning—to learn how to learn about design and visual communication.

Design & Visual Communication

Design is the process that translates ideas into things with respect to some set of goals and with the intention of affording some meaning to others. The design process includes all the cognitive and behavioral activities we do to aid in the generation, development, communication and testing of ideas and the production of things.

Visual Communication includes any media or technique that supports the representation of ideas and/or things. It is a visual component of reason that supports seeing, thinking, visualizing and communicating. Visual Communication's value is in its ability to help us see, think and communicate ideas with efficiency and clarity and can include any combination of drawings, written descriptions, digital images, physical models, photographs, etc.

The successful integration of design and visual communication supports the creation of works that engage us emotionally and intellectually, involve intuition and rationality and communicate functionally and aesthetically. The goal is to help students build a foundation in design and visual communication that will support their ability to learn and develop as creative individuals.

Pedagogical Positions and The Beginning Design Studio

To teach design is to take a position concerning teaching and the value and relative importance of design's known concepts and facts—it is to have a theory about teaching design. The following presents pedagogical positions that I believe are fundamental to creating a rich and effective beginning design learning environment.

1. Studios should be conference rooms not drafting rooms.
2. Visual communication should be taught in the context of design.
3. Studios should be focused through a few telling questions.
4. Key issues, concepts and skills should be taught and learned again and again.
5. Studios should be places of integration.
6. Studios should teach visual, verbal and written communication skills.
7. Studios should teach a diverse set of hand and digital media.
8. Studios should explore the relationships between marks on two-dimensional surfaces and physical reality.
9. Studios should address the conceptual and concrete—the abstract and figural.
10. To design is to address constraints.
11. Studio should acknowledge that representations are a student's only products.
12. A studio's program is political and artificial.
13. Studios are colored by the teacher's agenda.

1. Studios should be conference rooms not drafting rooms.

The studio as a drafting room focuses on individuals working independently with input from a master. The studio as a conference room focuses on student interaction with the goals of sharing ideas and providing and receiving criticism. The essential difference is that one is an environment of work while the other is an environment of communication. Studios should put greater emphasis on creating environments of communication.

Cooperative learning, the essence of which is working together to share knowledge and construct meaning, is essential to transforming the studio into a communication environment. There is a firm base of both experience and theory which indicates that cooperative learning can increase student retention and success (Cooper 1995). This is particularly important for beginning programs because it is between the freshmen and sophomore years that the greatest number of students leave. The most powerful predictor of student retention is their involvement with the institution as exemplified by positive peer and faculty relationships. Those who develop strong friendships are far more likely to do well and graduate than those who do not. The small group discussions and activities that are fundamental to cooperative learning help students to get to know each other and develop friendships and support networks. Given that beginning design studios are among the first architecture classes that students take, the time invested in improving their chances for success is time well spent.

Learning to work with others is a valuable part of a student's educational experience not only because it improves their likelihood of success in school, but also because it prepares them for the profession. Part of working with others is learning to respect and value each other's opinions, viewpoints and knowledge. The sharing of ideas and insights in small groups develops an appreciation for the unique point of view and set of experiences that each person can contribute, and teaches students that working together can always produce a greater range of insights than working alone.

Working in small groups also supports more meaningful learning, because to teach something is to learn it more completely. Helping someone else to understand a concept or skill requires that you clarify your own understanding in order to communicate it clearly.

Finally, the process of presenting ideas and receiving and offering feedback in the supportive atmosphere of small and large groups develops experience and skills in constructive criticism and concise communication.

2. Visual communication should be taught in the context of design.

Visual communication is not something that is done after a design is completed. It is integral to discovering, developing and communicating ideas. It is a critical component of the design process and should not be taught in isolation. Teaching design and visual communication as discrete behaviors or techniques to be individually

mastered diminishes their meaningfulness to the student (Hyde & Bizar 1989). "A number of psychologists and educators have concluded that thinking is intimately related to the specific area of knowledge in which a person is operating. How he thinks and what he thinks are inseparable..." (Hyde & Bizar 1989, 2). Thinking about visual communication in the context of art or drafting is different than thinking about visual communication in the context of design. Therefore, the studio should link visual communication (the area of knowledge) and design (the context for thinking). We are concerned with thinking—"the intellectual processes and the particular ideas, conceptions, and meaning of the material addressed" (Hyde & Bizar 1989, 9). A primary goal of design education should be the understanding of visual communication as a means to discover, develop and communicate ideas.

Thinking in rich contexts enhances the motivation and attitudes of students (Hyde & Bizar 1989). Meaningful learning occurs when understanding combines with a feeling of value or importance (Gowin 1981). A way to make visual communication more meaningful and enrich the thinking is to teach it in the context of designing. We learn visual communication more meaningfully when it is experienced as a means for visualizing and communicating our own ideas. Learned in this context we feel that it is important because we personally perceive its value. Students care more when they are challenged to think—to wrestle with problems in rich and meaningful contexts. If the focus of the studio is to learn to use visual communication as a thinking and communication tool, then design can create the context for more meaningful learning.

Finally, we are fooling ourselves if we think that we can teach visual communication without design or design without visual communication. In teaching visual communication, what we ask students to communicate and the design of the communications reflect design values and employ design principles. In teaching design, the media we use shape our communication to ourselves and others and affect our designs. Design and communication are intimately interrelated such that every studio is explicitly or implicitly teaching design and visual communication.

Implementation

Making design the context for visual communication means designing as you draw and drawing what you design. It means structuring assignments so that students must make design decisions while drawing. It means that design problems are used to simultaneously teach design and visual communication.

A key educational problem in integrating visual communication and design is keeping an appropriate balance given a studio's place in the overall curriculum. An evaluation system that differentiates between visual communication and design and between craft and concept is essential to maintaining the balance. This must be supported by evaluation criteria and feedback to the students that individually address visual communication, design, craft and concept.

Teaching design and visual communication has important implications for the content of the studio. Attention must be paid to creat-

ing problems that address both agendas and time must be allotted for design and visual communication. This interaction of agendas will affect how teachers think about each one. For example, perspective drawing techniques that require the existence of a plan before a drawing can be created may not be as valuable as those that support the visualization and development of an idea through direct perspective. Another example is that time intensive drawing techniques and processes become less appropriate than those that efficiently produce appropriate visual communications. It also means that visual representations must range from the diagrammatic and conceptual sketch to the more photographic.

Benefits

The first and perhaps greatest impact of teaching design and visual communication together is that students have an opportunity to exercise their creativity. The things they design are a source of personal motivation, pride and enjoyment. They engage the students emotionally and intellectually in the process of creation and communication.

Each student comes to the class with a different set of experiences and range of knowledge. Design based assignments allow students to control the complexity of their designs and thereby the complexity of the representational problem. The goal is for students to be able to adjust the representational difficulty to match their knowledge and motivation, while demonstrating appropriate conceptual understanding and skill development. The design context allows each student to create a challenge that stretches their personal abilities while providing an opportunity for success. In practice, students create designs that are relatively complex and difficult to represent but successfully construct the representations because they understand what they are communicating and are motivated to make their ideas visible.

Teaching design and visual communication means that there will be diverse solutions and responses to the key issues and concepts in both areas. This diversity will challenge each student's skills and understanding as they review each others' work and see the basic principles applied in a variety of ways. The result is an expanded understanding of key issues and concepts and an appreciation for the creativity and unique point of view each person possesses.

3. Studios should be focused through a few telling questions.

Telling questions focus inquiry and identify significant issues within an area of study (Gowin 1981). Telling questions keep teachers and students from thinking that specific facts, techniques, media, procedures, etcetera are the issue.

"Pressure to cover the material is the single greatest hindrance to thinking in education" (Hyde & Bizar 1989, 12). Telling questions take the pressure off communicating specific numbers of facts, techniques, media, procedures, etcetera and places the priority on understanding key issues and their associated concepts. In this way they are supportive of learning how to learn.

Telling questions continually refocus attention on the larger issues. They develop our ability to establish priorities and make decisions in a larger context. They provide the context for facts, techniques, media, procedures, etcetera to be presented or acquired as appropriate.

Telling questions support the development of conceptual frameworks, the identification and organization of related concepts, the linking of new ideas to existing knowledge, and the creation of a basis for future learning and exploration (Novak & Gowin 1984). Meaningful learning occurs when we perceive the value of the question, understand the meaning and interrelationships of its associated concepts, and choose to integrate that understanding into our knowledge.

An example of a telling question is:

How can/do we create and control the illusion of three-dimensional form and space on two-dimensional surfaces?

This question identifies an issue that must be addressed when using either digital or traditional media and freehand or constructed approaches to representing architecture. It is a question that must be asked every time we create an image and one that provides a point of view through which all drawing decisions can be evaluated and drawing facts can be related.

Telling questions are not answered in any single course or curricula. They are questions that structure life-long learning. Telling questions must be asked again and again and continually referenced as a basis for learning and evaluating new concepts, facts and skills.

The goal of any good educational experience is not to permanently implant any specific concept, skill or fact in a student but to have them understand the power of identifying key issues and using them as templates for questioning, learning and organizing their knowledge.

4. Key issues, concepts and skills should be taught and learned again and again.

There is an assumption or belief held by many design faculty that issues, concepts and skills taught once need not be addressed again. It is not their responsibility to teach what was covered in a previous design studio and especially what was taught in beginning design and visual communication. Students are also reluctant to do a project or assignment that is like something that they have done before. However, concepts and skills become clear and meaningful only when applied in multiple contexts and manifest through a rich set of specific applications. Any sequence of learning experiences within a course or curriculum should re-teach, reinforce and deepen past learning.

There is seldom sufficient repetition in any one design studio and more importantly the context in which the material was previously learned will be different from the context in which the next design studio is asking it to be applied. The change in context makes it difficult for many students to immediately apply the past learning and if the learning has not been reinforced in intervening studios it

may have been lost. Repetition and reinforcement is required to move something from awareness through application to mastery.

Designing exercises and studios to re-teach, reinforce and deepen past learning as well as add new information recognizes that a skill or concept is truly learned only if it is learned many times and in many contexts. The process of learning in many contexts places a skill or idea at a more conceptual level within our knowledge structure that supports our ability to see its relevance and apply it in new contexts.

5. Studios should be places of integration.

The curriculum identifies a set of architectural issues through dedicated courses (e.g., structures, environmental controls, theory, history, and materials of construction). These can be grouped under the categories of Technology (how a thing achieves structural stability, provides environmental control and is constructed), Context (how a thing responds to its natural, man-made and cultural environment), Function (how a thing supports the humans, plants, animals and machines that it must accommodate) and Aesthetics (how a thing affords the perception of beauty or creates a pleasurable experience). It is the responsibility of the studio to address problems that encompass the range of issues.

A beginning design and visual communication studio and program should have a strategy for gradually increasing the number of issues reinforced and addressed. The goal is to introduce the fundamental issues of technology, context, function and aesthetics within the beginning design and visual communication series to create a framework for future learning.

6. Studios should teach visual, verbal and written communication skills.

Michael J. Crosbie states that "it is time for us to recognize the central role of good communication in the profession. We can start by attracting those whose verbal skills may be as sharp as their drawing ability. . . Studios should encourage the verbal and written communication of design ideas" (Crosbie 1995, 11). In an environment of communication, reading, writing and speaking are as important to the architect as drawing. As professionals, we need written, verbal and interpersonal skills in order to work and communicate with others. As designers, we translate a written and spoken world of abstract ideas and feelings into a physical world of things. As teachers, we develop our students' conceptual vocabularies in order that they can perceive, understand and communicate about architecture. The studio should be alive with communication between students. They should interact through reading, writing, talking and drawing to explore relationships between ideas and things, articulate what they see and want to communicate, and exercise their developing visual and verbal vocabularies.

Combining reading, writing, speaking and visual communication makes the studio a more inclusive experience that values all modes of expression. When used together to test, clarify and reinforce each other, they aid in the development of shared meaning.

Reading, writing, talking and drawing with peers in a supportive environment provides students an opportunity to use new terms and techniques and build their understanding of key issues and concepts. The result is that the studio becomes a richer and more effective learning environment.

A written problem statement can support communication diversity by reinforcing reading and comprehension skills, providing a focus for student discussion and interpretation and requiring the translation of abstract ideas into visual form. Finally, it can support learning to prioritize information and extract appropriate elements at appropriate times to support the design process.

7. Studios should teach a diverse set of hand and digital media.

If visual communication is taught in the context of design, the media used should be diverse enough to support decision making relative to the desired communication and place in the design process. The educational challenge is to help students develop a strong conceptual base, a spirit of exploration, and the ability to respond to, learn and incorporate appropriate media. Incorporating a diverse set of media allows students to learn their relative strengths and weaknesses and explore the impact of different media on their thinking, design and communication processes. The goal is an understanding of the issues and concepts that support media decisions and facilitate clarity, effectiveness and efficiency in our design thinking and communication.

Different media support or emphasize different design issues. For example, physical models can support a more sculptural exploration of form while digital models can support an exploration of being within and moving through environments. The issue is that the media used and the representations made support different agendas and affect final designs. A more diverse set of media supports the development of designs that incorporate more diverse agendas and issues.

The use of diverse media has a positive impact on students because different students excel with different media because of their individual experiences, talents and personalities. The group of students that succeed in freehand sketching will vary from those that succeed at the computer and therefore the overall number of students that experience success is expanded.

Digital Media

It is important that digital media be part of the media set that is introduced to beginning design students because it places digital media in the context of other media and the design process. Students soon understand that digital media will not solve their problems with traditional media and that they need both. In addition digital media provides some unique assets.

The inclusion of digital media requires discipline and effort to gain mastery of a software program that provides a good model for gaining mastery in any area. Digital media also establish high quality standards for final products. The positive feelings of success gained from the process and products support students'

feelings of self worth and set expectations of quality that affects all their work.

Feedback to the student can also be dramatically affected by the use of digital media. The teacher can alter a digital file to demonstrate ways to improve a solution. Suggestions do not have to be limited to words or appear as rough sketches over a finished image but can represent the alternatives with equal quality. This has a powerful impact on students because they can see the suggestion's impact and compare it with the original.

The inclusion of digital media make the design and visual communication studio more dynamic because of increased choices and alternative exploration. Consider the following: the computer brings with it decisions concerning color, typography, and presentation layout, that far exceed the capabilities of analog media in their possibilities and fluidity; students are much more willing and motivated to make changes in their designs and visual communications because the computer supports the exploration of alternatives.

8. Studios should explore the relationships between marks on two-dimensional surfaces and physical reality.

The process of designing and constructing a piece of architecture requires that two-dimensional abstract representations be created. These representations may vary from quick sketches to very detailed and carefully constructed drawings. They may be created by hand or digitally or some combination of the two. They may include perspectives, plans, sections, axonometrics, etc. In all cases, some combination of lines and colors on two-dimensional surfaces are used to represent a proposed physical reality. The essential questions include: What is the relationship between the two-dimensional representations and three-dimensional things? What are the meanings and implications of the two-dimensional marks for the proposed physical reality that they describe? and How do we bridge the gap between ideas and things?

To gain an understanding of the relationship between the abstractions that are used to think about design solutions and the final physical realities that they propose to represent requires a continual testing of one against the other. It requires drawing what we build and building what we draw. It requires looking closely at physical stuff and representing what we see on two-dimensional surfaces. It requires interpreting two-dimensional representations as alternative three-dimensional forms.

Exploration of the relationships between two-dimensional representations and the physical world should be a fundamental agenda in every studio. It builds essential understanding that is required for success in any profession related to the built environment. The exploration supports the development of visualization skills and a deeper understanding of design communications. It requires a curiosity about the physical world and an understanding of the meaning and implications of each mark in a design communication.

9. Studios should address the conceptual and concrete—the abstract and figural.

The historic pattern in beginning design education is to start with the abstract and conceptual, or theoretical, and move towards the figural and concrete, or pragmatic. Furthermore, this pattern usually spans a series of studios resulting in the first being only abstract and the later being only discipline specific. This tends to communicate to the students that the abstract and conceptual are something that we move beyond. It also withholds a more complete understanding of design which encourages those who favor the abstract and discourages those who favor the practical.

Another problem is the difficulty many students have with grasping the abstract and making connections between the concept and the concrete—between theory and their specific solutions. This problem is better addressed if both the conceptual and concrete are part of every studio—if students are continually challenged to develop greater understanding of and connections between the conceptual and the concrete.

A combination of abstract, architectural and graphic design projects should occur in every studio. Abstract projects focus on a limited set of issues and force students to think in unfamiliar contexts. Architectural projects provide rich sets of issues, ground abstract ideas in reality, and allow students to develop discipline specific knowledge and experience. Graphic design projects address issues of communication and provide a third environment for applying basic design concepts. The mix of abstract, architectural, and graphic design projects engages students and strengthens their grasp of concepts through application in multiple contexts.

Graphic Design

The design of visual communications—graphic design—provides an opportunity to teach and employ the fundamental design principles and concepts in real time and space. The products are 'the real thing' and can be evaluated based on what they are and how they are perceived. The design of graphic communications is important because it requires students to organize their thoughts and make supporting design decisions. It also builds directly marketable skills that will assist students in finding summer or part time jobs.

10. To design is to address constraints.

Q: Does the creation of Design admit constraint?

A: "Design depends largely on constraints."

Q: What constraints?

A: "The sum of all constraints. Here is one of the few effective keys to the design problem—the ability of the designer to recognize as many of the constraints as possible—his willingness and enthusiasm for working with these constraints."

The preceding dialogue excerpted from an interview of Charles Eames (Demetrios 2001, 168) illustrates his position that constraints are the key to the design process. Charles Eames believed that constraints are the shaping forces and need is the guiding



force of design where need is the heart or essential dimensions of the problem at hand (Demetrios 2001).

To design is to propose a solution to a problem that has some externally imposed or agreed to requirements. These requirements or “constraints” are the forces—the strain—that are placed on the process. These strains push and pull during the design process and their resolution is manifest in the final solution.

Constraints are often a primary source of creative ideas. The inspiration that resolves their forces can be the foundation of unique and appropriate solutions. It is important to question, analyze and redefine a problem but, at some point the problem must be accepted and its constraints made sources of creativity that could not have occurred without them.

Students entering design school often view constraints as limiting their personal expression or ability to do something “creative.” They see constraints as establishing walls that block possible solutions. One role of beginning design is to help students see constraints as framing views. To help them recognize that constraints define only a few things which cannot be done or must be accomplished. They do not define the infinite number of things that can be done or accomplished.

A major role of the problem statement is to establish exploration constraints and goals—to require that certain issues be addressed in solving the problem. The issues constitute the content of the problem and are developed to meet the learning objectives for the studio. One of the most important things we do as teachers is define learning objectives and the constraints and goals that focus the learning experience.

11. Studios should acknowledge that representations are a student’s only products.

Most studio teachers support a balance between product and process. Product requires making and developing very specific decisions. Process supports exploring and learning the physical and cognitive activities required to accomplish a goal.

Teaching visual communication in the context of design facilitates an emphasis on product because it is through the product that specific communication skills can be developed. The studio as conference room promotes process through the sharing of ideas and experiences. These can both be reinforced by verbal and written reflections that identify, clarify and integrate what has been learned as part of our understanding.

The realization that is lost in this balance between product and process is that in most studios the only real product is a representation. The thing that the representation describes does not and will not exist in the world. The only thing the student is making is the drawing, digital model, physical model, presentation board, animation, etc. This should have a fundamental impact on a studio’s content, dialog and evaluation.

Any pretense that the product of the studio is the thing itself makes it difficult to admit, discuss, and analyze the status of the representation as the only physical embodiment of the project.

Directly addressing the representation is avoided because the representation is seen as a form of eyewash and deception. The result is that discussion of the representation is cut off and we miss the point that the representations are the only things that the students are really making.

It is through the negation of the making of the representation that talk-a-lecture can flourish. The idea that the representation is a deceptive inconvenience and that it is only the thing itself that we truly wish to discuss and evaluate, can lead students to the use of words and gestures as a substitute for spending the time and effort required to craft a compelling representation.

In the material sense, the manner in which students treat the paper, the ink, the plaster, the wood, the plexi, the digital output, indicates the respect that will be shown for the buildings they will design in the future. It exhibits the care and reflects the quality and effort that will eventually be lavished on real things. It is through the representation of the solution that students physically demonstrate their ability to create something that exists in the world.

Studio culture, discussions and evaluations should recognize what it takes and means to create the reality of a compelling representation. We should discuss the form and meaning of the representation itself. We should discuss the degree to which the representation reflects the student’s position in the world relative to the program. For example, does the existence of a rendering of the lobby and not one of a work space fit with the student’s position that the employee is a valuable individual in the institution?

12. A studio’s program is political and artificial.

A studio’s program includes the problem statement and the associated means or devices planned by the teacher. The value and roles of the problem statement have been previously identified as supporting reading and comprehension, providing a shared reference for the teacher and student, and defining problem constraints. In all of this the problem statement constitutes a political position as to what the faculty, curriculum and teacher believe is most important to learn. It communicates what is and is not valued. It does this both explicitly by what is included and implicitly by what is left out. For example, you must learn abstraction: organizational concepts: response to the natural environment: how a building goes together: how to establish a philosophical position: how to meet client or occupant needs: etcetera.

The problem statement and/or teacher also identifies the means that will be used to explore and communicate the design. These means or devices may include doing a painting, writing a scenario or story, abstracting a site’s geometry, generating 20 tiny conceptual models, interpreting a digital collage as a facade, doing proportional studies based on the golden section, examining a brick, etcetera. The issue is not that any of these means or devices are uniquely important or inherently more valuable but that they expand the students’ range of experience and put a unique spin on possible solutions. They have the potential of

allowing the students to let go of their preconceptions and existing work patterns and discover their unique abilities to creatively work within a new context. “They teach the student to not just solve a problem but to attack that problem with a certain set of devices that foregrounds not the solution, but the personal spin applied to the solution. These devices are the essential ingredient for not just communicating a logical solution but for telling a story persuasively.” (Deamer 2002)

A studio's program can help students address some of their most fundamental questions. For example:

Where do ideas come from?

How do I get started?

In what order should I do things?

What do I do to develop a design idea?

How should I manage my time?

What is important?

When is something important?

A studio's program is an artificial educational device that employs certain means and focuses on certain aspects of the world while ignoring others. As such it is not proposing that its focus, constraints or devices are a priori, universal or constant. It is important that the student and teacher acknowledge the artificiality of the problem statement and devices. In doing so the student can reap the benefits of learning new concepts, reinforcing and deepening past learning and expanding their repertoire of means.

13. Studios are colored by the teacher's agenda.

The stated agenda of every teacher is to facilitate the acquisition by students of a defined portion of the curriculum's concepts, facts and skills. In addition to this general agenda, there are unstated expectations concerning the teacher's role in the studio that include the following, according to Peggy Deamer (Deamer 2002).

The work is the student's but, the teacher can't let anything go wrong.

The student's concept is sacred and untouchable—critics are merely teaching the student how to express his or her concept—but, teachers are supposed to ensure that the concept yields a brilliant solution.

Teachers are supposed to make sure that the solution isn't merely formal but, they need to make sure the forms are seductive.

Teachers are supposed to teach that the object produced is more than a direct expression of an idea—it is poetry, not journalism—but, they need to ensure that every decision made is a direct result of that idea.

The preceding unstated expectations produce tensions in the relationship between the teacher and the student. Tensions that can feel like a no-win situation for the teacher: if a project is successful, it is credited to the student; if it fails, the fault is the teacher's.

Within this context of unstated expectations there are unstated agendas that the teacher might bring to the studio. They are

agendas that arise from the teacher's struggle to establish a position in the architectural community, be it professional or academic. Peggy Deamer (2002) identifies the following possible unstated agendas.

The teacher wants to link investigations in their practice, research and/or area of interest with those in the studio.

The teacher wants to impress colleagues and students that come to final reviews and/or see the studio's work.

The teacher wants to prove to the administration and those involved in tenure review that they can produce a certain type or quality of work.

The teacher wants to communicate an ideological agenda or set of values.

These are some of the important forces at work within the studio and that contradict the myth that the studio is a 'pure' laboratory for education. The reality is that education does not happen in a vacuum. It is a myth that creativity springs freely from our intuitive and creative process without context, background or ideological assumptions. Design always happens in some context and it would be better to discuss the context—to state unstated agendas.

If the teacher would communicate these multiple agendas, there exists the potential of having students understand that their stake in the studio was not only their 'project' but an opportunity to explore and transform—for themselves—the teacher's stake in the discipline. There is also an opportunity to extend the teacher's understanding. It has been said that the best grades go to those that teach the teacher or stimulate the teacher's thinking the most.



Additional Positions & Goals

In addition to those already discussed the following identifies some general positions and goals that I hold about design and visual communication education.

Positions

That there are fundamental processes, means, concepts and issues shared by all design disciplines.

That sequentially focusing on selected fundamental issues is a meaningful approach to design education.

That beginning with simpler problems and progressively increasing their complexity is a meaningful approach to design education.

That things afford personal, social and cultural meaning—that design is an expressive social art.

That the quality of design solutions and the meaningfulness of learning improves when solutions are achieved through a conscious process, intentions are clearly articulated and the process and products are thoughtfully reflected upon.

Goals

To introduce and develop an understanding of the vocabulary of design—the language and concepts that comprise the community of knowledge that is called design.

To introduce students to a variety of ways that design ideas can be identified, developed and evaluated.

To introduce and develop an understanding of the role of goals in the design process, their impact on design decisions and their affect on the meanings communicated.

Conclusion

The educational positions that have been identified impact on the nature and form of the beginning design and visual communication studio. They include essential educational issues that every studio must address and on which every design teacher must take a position. The positions reflect my 20 year struggle to develop richer and more effective educational environments for beginning architecture students. I find the craft and profession of teaching endlessly interesting and challenging and would welcome your comments and suggestions.

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Telling Questions

Pedagogical position number three was that studios should be focused through a few telling questions to identify significant issues within an area of study and keep teachers and students from thinking that learning specific facts, techniques, media, procedures, etcetera are what a course is about. Any course should be about creating a framework for understanding and future learning. Defining the telling questions for a course provides a way of defining its framework. The following telling questions are ones that can create a powerful framework for beginning design and visual communication.

How can/do design decisions create and control complexity?

How can/do design decisions create and control relationships of pattern, hierarchy, contrast and balance?

How can/do design decisions create and control implied or explicit form and space?

How can/do design decisions create and control sequential spatial experience?

How can/do structural stability requirements affect design decisions?

How can/does human perception affect design decisions?

How can/do contextual conditions affect design decisions?

How can/do human activities affect design decisions?

How can/do representational decisions create and control the illusion of three-dimensional form and space on two-dimensional surfaces?

How can/do representational means affect the design process and products?

What is the relationship between two-dimensional representations and three-dimensional things?

How do I get started or Where do ideas come from?

What are the cognitive and behavioral activities that support the design process?

What does the choice of representational means communicate about what is valued in design?



TEACHING, LEARNING & THE STUDIO

The studio is a unique teaching and learning environment. This section of the syllabus presents some thoughts on teaching and learning related to the studio's structure, participants and processes and teaching and learning in general. The thoughts respond to my experiences in teaching beginning design and visual communication and questions and comments made by students.



The Studio

The studio is a learning environment that uses a hands-on problem solving approach to sharing knowledge, learning and more importantly learning how to learn. The quality of this studio as a learning environment is directly affected by your participation—the ideas you share verbally and visually. Interaction between you, your peers and the teacher is fundamental to the quality and richness of the studio as a learning environment. We will learn from and help each other generate, develop and evaluate ideas. The interaction will expand the range of ideas available to all of us and thereby enrich each person's unique solutions and learning experience.

The quality of the interaction will depend on the studio being a safe environment. There must be a level of trust for us to feel free to speak and expose our personal values, beliefs, ideas and questions. Trust will develop as we get to know each other and will be supported if we treat each other with care and respect and are attentive when ideas are being expressed. A part of showing respect is being prepared, present and punctual so that you can contribute to the life of the class. The studio will start on time and use the full four hours.

Your presentations and the ideas they contain are the focus of a studio course. Our discussions and my comments will be largely generated from your work. Therefore, the thought and effort you put into each exercise will enrich the class and enhance the quality of your learning experience. Furthermore, the quality of the comments and suggestions that you receive are directly related to the quality of what you present.

Each of us brings to this class some unique experiences, skills, knowledge and learning style. The class will be richer if we can take advantage of these differences. Share what you know and help each other to develop and present ideas. You may be able

to explain something to a classmate in a way that they can more clearly understand and you get the benefit of learning it more deeply by having verbalized it to someone else.

Discussing & Doing

The studio will contain a mix of lectures, discussions and assignments—talking and doing. Lectures present fundamental concepts, demonstrate skills, define issues and clarify ideas. Ask questions when something is not clear and contribute your ideas and knowledge. Discussions provide opportunities to exchange ideas and occur in both small and large groups. Any topic related to environmental design, drawing and the studio environment and process may be addressed. Assignments provide the vehicles for doing. Each assignment defines a problem whose solution requires the understanding and application of principles, concepts and skills. They also provide an opportunity for you to exercise your creativity.

Feedback

One of the most valuable things that I can do for you is to carefully examine your work and clearly communicate my observations. It provides an indication of how your work is progressing and how it can be improved. Observations and feedback will be provided both individually and to the class as a whole.

General class feedback is intended to illustrate points that are applicable to all solutions. Its value depends on your understanding of how the comments apply to your specific solution. Additional individual feedback and assistance is up to you. If you do not understand something, need help or want to discuss your work in more detail, please ask for a time that we can talk. This can occur during class or office hours.



The goals of the feedback are to improve your understanding of the concepts and their application and to provide a good model for the evaluation of design and visual communication work. This second goal is particularly important because the ability to evaluate yourself is critical to your ability to achieve excellence. This is true because inherent to the process of self-evaluation is getting deeply involved in what you are doing. Without this involvement there is no quality, which is the ultimate goal.

Comparing & Contrasting

I believe that one of the most powerful ways to learn and understand something is to compare and contrast like and unlike examples. The process of comparing and contrasting and drawing observations and conclusions will be a part of the studio. I will use it as a means for providing feedback and clarifying ideas and ask you to use it to clarify your understanding.

The problems that can occur with the process of comparing and contrasting is that it becomes a competition—whose work is judged more or less successful. This is not the intention. The value comes when the solutions are seen as teaching something—as being sources of learning. As teachers, the more and less successful solutions are of equal value because they are both needed to build understanding.

The Studio Environment

It has only been within the last twenty years that schools of architecture have changed from being populated by white males to the diverse population that they experience today. The change is nothing but good for education and the profession. However, the diversity requires that we pay attention to the interpersonal atmosphere and processes of the studio environment. The fundamental position of this studio is that we should behave and interact based on the belief that everyone deserves our respect and can teach us something.

Competition and Collaboration

Historically the studio has been a competitive environment with an orientation towards power and control rather than principles and sharing. It reflected the competition, individualism, and external control that were highly embedded values in the corporate workplace. But today the workplace is changing: isolated work activities are increasingly replaced by teamwork. A different type of workplace is developing: one that depends upon cooperation and collaboration to enhance human connection and potential. The studio should be such a workplace—a cooperative and democratic world.

This does not mean that competition disappears. It does mean that the model of competition as “warfare without anger” (open, impersonal, and according to a set of rules and a code of ethics) changes to one that affirms instead of destroys connections with each other. It is competition in which winning and community do not have to be separated. Indeed, the Latin root of the word competition is “to strive together.”

Peer Harassment

When sexist behavior and harassment towards students come from other students, it is referred to as peer harassment. Such harassment rarely appears in an overt, sledgehammer manner, but rather in subtle and accumulating actions. Men and women students have substantially different views about acceptable sexual behaviors and therefore, may do things without realizing their impact on others.

Harassment in the studio takes many forms. Architectural students report a variety of incidents: having to listen to sexual adventures of their studio-mates; working in studios with graffiti and posters of subtle and not-so-subtle sexual innuendoes; listening to “X-rated” music blaring lyrics of denigration and violence against men or women; male students flashing women; etc. While peer harassment occurs in all disciplines, the studio can exacerbate destructive patterns because it provides a setting for students to not only mingle and work, but to do so over extended periods of time.

Harassment of any kind is not acceptable in this or any studio at Cal Poly. If you feel that you are being harassed in any way, please communicate your concerns with your fellow students, the teacher, administration and/or with someone that you feel comfortable. It is only by identifying and discussing the situation that understanding can be achieved and behavior changed. I would welcome the opportunity to listen and discuss any issue or situation with you at any time.

Studio Safety

This is your space to create a safe and trusting environment for the quarter. Unfortunately in this world, although it is illegal to steal, some souls feel compelled to do so. Please watch out for your belongings and those of others. In order to make this studio a safe place to work, please follow the following recommendations.

- 1: Make sure that the door is locked at all times and when you leave. Do not leave the room unlocked and unattended at any time. This includes even a short trip such as to the bathroom. Do not block the door open at any time.
- 2: Be protective of each other and each other's things. This means keeping an eye on strangers or students from other classes that may come into the room for whatever reason. If you see anyone that you do not recognize in the studio, please address them.

Studio Care

This is your home base for this quarter and will serve the same function for those that come in the future. Leave the physical facility in as good or better shape that when you started. Do not use spray paint or glue in the room—use the spray booths. Always mask off the area or provide protection for tables etc. anytime that you are doing something that could destroy or deface them.

Consideration of Others

Be considerate of others. This is a work environment for a diverse group of people. Some may prefer a quiet setting while others may like a background of music. Take this into consideration and talk with others to make the environment supportive for all. This is a case where majority rule is not appropriate.

Listen

The most fundamental activity of any studio is the sharing of ideas. The degree to which this happens is directly related to the quality of the studio's educational experience. The goal is for everyone to contribute their ideas and listen to those of others. This may mean consciously drawing out those of us who are quiet. It also means giving our attention to each other in a real effort to understand what is being said. By listening we are giving value to what is being said. If we all contribute and listen, the studio will be a much richer learning experience.

Design Education

Design education has frequently been touted as an exemplary mode of education in which students can learn from face-to-face interactions with their instructors as well as their peers, and from active, hands-on manipulation of materials and ideas. To the extent that we create a positive and supportive interpersonal atmosphere the studio can fulfill its potential. Finally, if anything is diminishing the potential of the studio environment for you, please share your concerns with me.

Studio Culture

In 2002, the American Institute of Architecture Students (AIAS) (www.aiasnatl.org) produced a report entitled *The Redesign of Studio Culture*. The report raised very important issues and the following section is composed of quotes from that report.

American Institute of Architecture Students. 2002. *The Redesign of Studio Culture: A Report of the AIAS Studio Culture Task Force*. Washington, DC American Institute of Architecture Students, Inc

Studio Culture Myths

"We believe that [the following] myths... should be ideas of the past. Embracing the ideas encompassed within these myths is sure to lead to emotional, physical, and cultural deprivation.

Architectural education should require personal and physical sacrifice.

The creation of architecture should be a solo, artistic struggle.

The best students are those who spend the most hours in studio.

Design studio courses are more important than other architecture or liberal arts courses.

Success in architecture school is only attained by investing all your energy in studio.

It is impossible to be a successful architect unless you excel in the design studio.

Students should not have a life outside of architecture school.

The best design ideas only come in the middle of the night.

Creative energy only comes from the pressure of deadlines.

Students must devote themselves to studio in order to belong to the architecture community.

Collaboration with other students means giving up the best ideas.

It is more important to finish a few extra drawings than sleep or mentally prepare for the design review.

It is possible to learn about the complex social and cultural issues while spending the majority of time sitting at a studio desk.

Students do not have the power to make changes within architecture programs or the design studio." (p. 6)

Optimism, Respect, Sharing, Engagement and Innovation

"The idea that good design has a tremendous power to impact human life positively is an incredibly optimistic view. ... Students must witness and even experience for themselves the power that architecture has on society through scholarship and by providing time and opportunities for student extracurricular activities." (p. 20)

"Educators must be mindful of the conditions and values they create in addition to taking efforts to prevent unhealthy conditions. ... We believe there must be a balance in architectural education among studio courses, other architecture courses, and liberal arts courses. ... We envision a studio culture in which students are respected for their ideas and engaged as partners in design studio decision making. ... It is important that the focus of attention is on the relationships among students, not on the power that a studio instructor holds over students individually or as a group." (p. 21)

"The creation of architecture is a collaborative act that involves a wealth of knowledge and individuals. ... It is essential that architecture programs build relationships with other disciplines in order to give students opportunities to work on interdisciplinary projects. ... To encourage students to work collaboratively, education must place a priority on communication." (p. 22) A priority must be placed on written and oral as well as graphic and visual communication. Emphasis should be on communication that can be understood by the larger society.

"Students must gain experience working with communities and learning first-hand about issues that are important to society. ... We propose that architecture studio projects fully consider the social and cultural implications of designing for clients, users, and society. (p. 23)

"The design studio is a place where creativity and spontaneity should guide exploration and serve as a base of learning. To promote creativity and innovation, the studio environment must provide freedom for students to take risks. We also believe schools must focus on providing support for critical and analytic thinking. ... Innovation is healthy not only for student projects, but also when applied to the academic context in a larger sense. In a culture of innovation, architecture schools and educators would imagine more effective teaching methods and learning objectives." (p. 24)

Toward A New Studio Culture

"Our challenge, now, is to design a studio culture that promotes:

Design-thinking skills

Design process as much as design product

Leadership development



Collaboration over competition
 Meaningful community engagement and service
 The importance of people, clients, users, communities, and society in design decisions
 Interdisciplinary and cross-disciplinary learning
 Confidence without arrogance
 Oral and written communication to complement visual and graphic communication
 Healthy and constructive critiques
 Healthy and safe lifestyles for students
 Balance between studio and non-studio courses
 Emphasis on the value of time
 Understanding of the ethical, social, political, and economic forces that impact design
 Clear expectations and objectives for learning
 An environment that respects and promotes diversity
 Successful and clear methods of student assessment
 Innovation in creating alternative teaching and learning methodologies." (p. 26)

Teaching Process

Teaching must identify structures (concepts and their relationships) from within the swirl of life in order to transfer information from one mind to another. (White 1996) The structures segment the simultaneous and holistic nature of knowing and doing into learnable recipes that learning must translate back into instincts and intuition.

"The teacher searches for ways to effectively convert wisdom, sensibility and passion into language and form that are approachable, discussable and absorbable with the hope that, once taken in by the student, the recipes will convert back into full intensity, passion, sensibility and wisdom. This conversion of recipe to instinct should be tempered and modified by the internal intellectual, emotional and spiritual life of each individual student so that these ways of being become highly personalized and intimately owned. The paradox here is that the desired currency of exchange in the teaching—learning transaction is instinct but the medium of transfer is language."

White 1996, 1

Teaching & Learning

"Education is the process through which we discover that learning adds quality to our lives.

... Teaching is the process of imparting knowledge through a variety of techniques, like explaining and modeling, to people who want to acquire this knowledge because they believe that, either now or later, it will add quality to their lives."

Glasser 1992, 174

These two quotes identify some important issues relative to teaching, learning and education including that they are all concerned with quality and that we are the only ones who can control what we do. I will do the best I can to be a good teacher. The learning is up to you. I will provide information to help you see the value in what we are doing. It is ultimately up to you to value the work and choose to learn from it.

Teaching and learning are independent aspects of a single process. To teach something is to arrive at a shared meaning with another person. It is communication whose goal is for all parties to arrive at as similar an understanding of an idea as possible. My responsibility as a teacher is to work to ensure that the meanings you grasp are the ones I intend for you to understand. Your responsibility is to try to grasp the meanings that I intend.

After communication has resulted in shared meaning it is up to you to decide to learn it or not because learning is the responsibility of the learner and cannot be shared.

So why do you choose to learn something? You choose to learn something because there is a confluence of meaning and feeling—you experience felt significance. To understand something does not automatically mean that it is of value. Value is assigned when feeling and understanding come together. To really learn something we must value it—we must feel its significance and perceive its quality.

Each of us comes to a new experience with an existing body of knowledge. This class is no different. The wealth of experience that you bring to this studio is important and valuable. It is important because it is a resource and provides the frame of reference for any new information. However, learning may require reordering what you know.

In learning something new, we somehow have to set aside our comfortable and habitual meaning patterns and try on a new set of meanings to see how they feel to us, and what they would mean to us if we learn them.

Gowin 1981, 135

Sometimes the process is easy and sometimes it is hard. However, if the ideas being struggled with are personally meaningful, then the process is involving and the insights exhilarating.

Learning Practice & Performance

The following is drawn from *The Heart of Learning Organizations* by Fred Kofman and Peter M. Senge.

Learning occurs best through a mixture of practice and performance. Practice allows one to gain experience and reflect on those experiences in a safe environment. Performance allows one to take action based on what has been learned.

There are several principles that must be considered in creating an effective practice environment.

The learner learns what the learner wants to learn.

The learner learns because they see that they have the power to take action with what they have learned.

Learning occurs best through “play”—when it is safe to experiment and reflect.

Learning requires altering the flow of time and space. Slow down for reflection and observation. Speed up to see the implications of actions/decisions.

The learning environment should look like the performance or action environment. We learn best in context.

The learning environment must be integrated into the performance environment for an ongoing cycle of reflection, experimentation and action. Where does performance end and learning begin?

Teaching & Generalization

The spirit of generalization should dominate a university. Whatever be the detail with which you cram your student, the chances of his meeting in life exactly the detail is almost infinitesimal; and if he does meet it, he will probably have forgotten what you taught him about it. Knowledge does not keep any better than fish. The really useful training yields comprehension of a few general principles with a through grounding in the way they apply to a variety of concrete details.

Alfred North Whitehead

This quote by Alfred North Whitehead articulates a fundamental belief concerning the role of teaching. The principles and concepts that underlay the specifics are the most enduring and useful things that can be taught and learned. Add to this “learning how to learn” and you have the essence of higher education. These basic educational positions translate into the following goals for this studio:

To develop an understanding of some basic principles and concepts,

To develop the ability to apply the principles and concepts in a variety of situations,

To begin to make the principles and concepts an instinctual part of our knowing and doing, and

To develop and strengthen learning and thinking skills.



Student Responsibilities

The value of this course to you, and its quality for all of us, will be affected to the degree that you take on some fundamental responsibilities.

You are responsible for what you learn in the studio.

You are responsible for being a positive contributor to the studio.

You are responsible for attending all classes.

You are responsible for reading course handouts and assignments and responding to their requirements.

You are responsible for completing any assigned readings and working to understand the concepts they present.

You are responsible for taking notes on the lectures, discussions and comments made in class.

You are responsible for keeping track of any changes to exercise or project requirements announced in class.

You are responsible for learning what you missed in the event of an absence by talking with the teacher and/or other students.

The Syllabus

Why is the syllabus so fat and detailed? One of the reasons is that it is a product of my learning process. As I work to understand the concepts that I want to communicate to you, I find it helpful to write about them. The process of restating an idea in my own words clarifies it in my thinking and helps me learn it. Another reason is that I want to keep as much of our class time as possible for discussing and doing and therefore try to keep my lectures and presentations to a minimum. To balance this I provide the lectures in written form in the syllabus. Finally, you will not learn everything that we address during the quarter. The syllabus is meant to be a resource that you can use to refresh your memory.

The syllabus will not be read all at once. It is a resource that will be gradually explored during the course of the studio series. As you should do with all your texts, page through the syllabus to give yourself a visual sense of its contents. Stop if something catches your attention and read as much as is needed to satisfy your curiosity at that moment.

Projects

I spend a great deal of time writing detailed project statements. I write the problems carefully to make sure that goals, requirements and evaluation criteria are clearly communicated. It frees me from having to remember every point during class and allows me to concentrate on what is happening at the moment. When a project is assigned you will be asked to read the project statement and ask questions to clarify your understanding. The problem statement provides a common context within which each of you will develop a unique solution because you are unique individuals.

The aspects of the problem that are discussed in class are in response to the direction I see you going and the kinds of solutions you present. This does not mean that aspects of the problem that are not discussed are not applicable or important. It remains your responsibility to solve the problem as it is described in the written statement. However, there are always exceptions. The flow of the class, the questions you bring up and the design approaches you take can all affect the shape of the problem. As this happens it may result in changes being made in the problem statement. It is your responsibility to keep track of any announced changes and insure that you understand them.

Constraints

A major role of the problem statement is to establish the constraints. They require that certain issues be addressed in order to solve the problem. The issues constitute the content of the problem—they meet the learning objectives for the studio. The constraints also make it a design problem. To design is to propose a solution to a problem that has some externally imposed or agreed to requirements. These requirements or “constraints” are the forces—the strain—that are placed on the final form. These strains push and pull during the design process and their resolution is manifest in the final object or environment.

Constraints are often a primary source of creative ideas. The inspiration that resolves their forces can be the foundation of unique and appropriate solutions. It is important to question, analyze and redefine a problem but, at some point the problem must be accepted and its constraints made sources of creative solutions that could not have occurred without them.

Design: Problem Solving & Creating

Design includes both problem solving and creating where problem solving tries to make something go away and creating tries to bring something new into being.

Creativity

Studios are environments for creativity. So what stops us from being as creative we would like to be? It is not the constraints because design creativity by definition requires constraints. It seems to me that the most powerful reason is fear. Fear of appearing “silly” to our friends. Fear of appearing “strange.” Fear of being wrong. Fear that your ideas will be criticized or made fun of. Fear that it will not be the answer that the teacher or client wants. As an aside, what every teacher and client wants is to have the problem solved—the constraints met—and then be surprised by your unique solution and the possibilities it brings into being.

Each activity will have two components in varying proportions: the requirements that must be met and the area or issue that is to be explored. Exactly how you explore the issue is your opportunity to make the project interesting and meaningful to you. It is the component of the assignment within which you can address your own personal agenda. Take control of this opportunity and approach it with enthusiasm and creativity. It will involve taking some risks—confronting your fears.

It is not possible to stop being afraid. It is only possible to start being brave. You are what you think. If you think positive thoughts you will move in a positive direction. The issue is focus. If you focus on exploring, creating and following your interests you will produce imaginative and interesting things.

The basic strengths needed for creative problem solving (Koberg & Bagnall 1991) are Awareness, Passion and Self-Control. Awareness is a curiosity and appreciation of life in both sensing (body centered) and knowing (mind centered) modes. Passion is an enthusiasm and sense of purpose that focuses your energies on solving a problem or reaching a goal. “Self-Control is the ability to manage one’s habits.” (Koberg & Bagnall 1991, 16) This is not the

ability to stop something but the ability to do something. You can’t stop worrying about writing a paper, but you can start writing an outline. Therefore, the best advice is be curious, get involved and do it now.

The Pragmatic & Poetic

Another way of thinking about constraints and creativity is to see each design problem as having both a pragmatic (quantitative) and a poetic (qualitative) side. The pragmatic side consists of all the things that must be accomplished or met. The poetic side is the opportunity to communicate something of meaning to the users—to create something that is qualitatively better. The pragmatic provides the soil from which a unique poetic expression can grow. The two sides are not in opposition. They are necessary for the other to exist. Your goal is to develop whole solutions to problems—solutions that are quantitatively and qualitatively meaningful.



Time Demands

Being a full time student is a full time job that will require an average of 50 hours per week for class and study. This means that you must use your time efficiently.

Assignments are designed and scheduled with the goal of requiring from one to three hours of outside work between classes. In addition to this regular quantity of outside work there will be from six to sixteen additional hours of work required preceding major preliminaries and project due dates.

The specific quantity of time required to complete a project will depend partly on the effort and thought that you have put into the preliminaries leading up to the final presentation.

Each of you must decide when and how much time to put into a project. Consistent and steady daily work will improve your ability to develop presentations that satisfy you and can be completed without other components of your life suffering. If you experience this course regularly demanding more time than previously described please let me know. If the majority of the class is experiencing a similar situation adjustments will be discussed.

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Ten Commandments for Effective Study Skills

The following piece by Larry M. Ludewig is taken from the December 1992 edition of *The Teaching Professor*.

To maximize student potential, I have developed the "Ten Commandments for Effective Study Skills." These Commandments have developed over a long period of time and reflect the recurring themes that pop up repeatedly in my study skills lectures and presentations.

The messages of the Commandments are not new; I have, however, attempted to restate them in a manner that will accord them the reverence which they so justly deserve.

I. Thou Shalt Be Responsible, and Thou Shalt Be Active—For There Be No Other Passage to Academic Success!

Responsibility means control. Your grade in a class is relatively free of any variables other than your own effort. Sure, you may have a lousy professor. It happens. But remember: you are the one who has to live with your grade. It goes on your grade report, not your instructor's.

If you are seeking a way of increasing learning and improving grades without increasing your study time, active classroom participation is your answer. Look at it this way: classroom time is something to which you are already committed. So, you can sit there, assume the "bored student position" arms crossed, slumped in the chair, eyes at half-mast and allow yourself an "out-of-body" experience. Or, you can maximize your classroom time by actively listening, thinking, questioning, taking notes, and participating totally in the learning experience.

II. Thou Shalt know Where Thy "Hot Buttons" Are, and Thou Shalt Push Them Regularly!

The next time you seat yourself in class, ask yourself these questions:

What am I doing here?

Why have I chosen to be sitting here now?

Is there some better place I could be?

What does my presence here mean to me?

Your responses to these questions represent your educational goals. They are the "hot buttons," and they are, without a doubt, the most important factors in your success as a college student.

College is not easy. Believe it or not, there will be times when you tire of being a student. And that's when a press or two on the hot buttons can pull you through!

III. If Thou Hath Questions, Asketh Them. If Thou Hath No Questions, Maketh Some!

Just as a straight line usually indicates the shortest distance between two points, questions generally provide the quickest route between ignorance and knowledge.

In addition to securing knowledge that you seek, asking questions has at least two other extremely important benefits. The process helps you pay attention to your professor and helps your professor pay attention to you.

IV. Thou Shalt Learn That Thou and Thy Professor Maketh a Team—and Thou Shalt Be a Team Player!

Most instructors want exactly what you want: they would like for you to learn the material in their respective classes and earn a good grade. After all, successful students reflect well on the efforts of any teacher; if you learned your stuff, the instructor takes some justifiable pride in teaching.

V. Thou Shalt Not Parketh Thy Butt in the Back!

Suppose you pay \$50 to buy concert tickets for your favorite musical artist. Do you choose front row seats or the cheap seats at the rear of the auditorium? Why do some students who spend far more money on a college education than on concerts willingly place themselves in the last row of the classroom? In class, the back row gives invisibility and anonymity, both of which are antithetical to efficient and effective learning.

VI. Thou Shalt Not Write in Thy Notes What Thou Faileth to Understand!

Avoid the “whatinthehellisthat” phenomenon experienced by most college students. This unique reaction occurs when students first review their notes for a major examination. Being unable to read, decipher, or comprehend the mess that passes for notes, students are likely to utter the expression that grants this particular phenomenon its name.

VII. If Thine Interest in Class Be Gone, Faketh It!

If you are a good actor, you may even fool yourself into liking the lecture.

How do you fake interest? You simply assume the “interested student position”: lean forward, place your feet flat on the floor in front of you, maintain eye contact with your professor, smile or nod occasionally as though you understand and care about what your instructor is saying, take notes, and ask questions.

VIII. Thou Shalt Know That if Silence Be Golden—Recitation Shalt Be Platinum!

Recitation is not only good for checking whether or not you know something; it's perhaps the best method for learning it in the first place. Reciting unquestionably provides the most direct route between short-term and long-term memory.

IX. Thou Shalt Knoweth That Cram Is a Four-Letter Word!

If there is one thing that study skills specialists agree on, it is that divided periods of study are more efficient and effective than a single period of condensed study. In other words, you will learn more, remember more, and earn a higher grade if you prepare for Friday's examination by studying one hour a night, Monday through Thursday, rather than studying for four hours straight on Thursday evening.

X. Thou Shalt Not Procrastinate—and Thou Shalt Beginneth Not Doing It Right Now!

An elemental truth: you will either control time or be controlled by it! There is no middle ground. It's your choice: you can lead or be led, establish control or relinquish control, steer your own course or have it dictated to you.

When I ask students which they prefer, choosing their own path or having it chosen for them, they almost uniformly select the first option. In spite of this response, however, failure to take control of their own time is probably the no. 1 study skills problem of college students.

So, these are the Ten Commandments for Effective Study Skills. They work, but don't take my word for it. Try them! Use them! Make them your own. What have you got to lose except poor grades and sleepless study nights?



ETHICAL GUIDELINES



The following guidelines set the standards for students' ethical behavior in architecture design studios. They are developed by Joylynn H. Reed and Daniel E. Hallock (The Teaching Professor, January 1996). As your teacher, I pledge that my conduct will exhibit the highest level of ethical faculty behavior.

Please read the guidelines. You will be expected to abide by these standards of ethical behavior.

As a student in this studio, my ethical obligations are to:

1. Engage in the free pursuit of learning by:

Seeking help and clarification when needed.

Respecting fellow students', professor's, and guests' opinions without disparaging or dismissing them.

Seeing beyond "personality issues" with others to appreciate their contributions to the learning environment.

2. Model ethical scholarly standards by:

Avoiding plagiarizing and all other breaches of academic honesty.

Avoiding any seeming approval, acceptance, or encouragement of fellow students' academic dishonesty and bringing any such instances to the attention of the professor and/or university officials.

Engaging in discussions with other students and professors about ethical issues in academics.

3. Acknowledge, accept, and expect just assessment of your learning by:

Understanding the professor's methods and rationale for your assessment and asking for clarification if you don't understand.

Engaging in accurate, just, objective self-assessments of your own work.

Engaging in constructive, value-neutral discussion with the professor about discrepancies between your self-assessment and the professor's assessment of your work.

Refraining from comparing assessments and grades with classmates' so as not to diminish classmates' self-esteem.



4. Avoid harassment, discrimination, and exploitation by:

Getting to know classmates and the professor as individuals rather than applying prejudices and stereotypes.

Contributing your full effort in team and collaborative projects and activities.

Respectfully voicing your expectations of full participation in team and collaborative projects and activities to fellow students.

Not discouraging, in any way, a member's full participation in a collaborative project or activity.

Being careful not to make racist, sexist, and other types of discriminatory remarks during class.

Being careful not to monopolize class discussion time so that others do not have a chance to participate or are intimidated about participating.

EVALUATING QUALITY



The studio is a hands on learning environment. The exercises and projects undertaken provide the context for presenting ideas and information, developing understanding and skills, and testing design and communication concepts. Your solutions to the assignments form the basis for class discussions and affect the quality of the studio. This section identifies and describes the types of assignments, evaluation criteria and procedures that will be used in this studio.

Quality Work & Evaluation

The evaluation of work involves making a judgement as to its level of quality. This chapter will begin the process of defining quality and how it will be assessed. A basic assumption is that quality can be recognized and that we can usually agree that it is present. A significant part of our discussions will directly or indirectly be addressing the issue of quality in design and visual communication. However, even as our understanding of quality grows it will never be completely defined—it can be recognized and felt but never fully defined. Finally, a basic position is that as good as the quality of our work will become, it can always be improved.

The goal of this studio is for everyone to produce quality work. This is a goal that can be achieved. The evaluation of quality in design and visual communication is not as clear cut as math or science. There are specific rules for constructing a perspective or orthographic drawing but there is also considerable room for judgement in their use. There is no absolutely right or wrong answer to a design problem—there are only more or less appropriate answers given a particular design context, process and goals. Therefore, the program (requirements and goals) for each assignment will be described as clearly as possible so that you can judge the quality of your drawing and design response.

Furthermore, to help you understand the evaluation and know how to improve you will receive feedback on your work that will address both craft and design so that you can more clearly understand your strengths and weaknesses. In addition, examples of quality projects will be posted and discussed in class. I will always be glad to talk with you individually about your project and its evaluation to clarify my observations and respond to any questions that you may have.

The evaluation of your work will reflect its relationship to the quality of work that is expected from beginning students in architecture. You are not competing against each other but working together to acquire the knowledge necessary for success. The role of this course is not to weed out students but to provide fundamental concepts and skills. There is no limit to the number of “A”s, “B”s, etc. that can be earned.

Your goals should always be to learn something meaningful from each assignment and challenge yourself. Everything that you do should represent your best effort toward producing quality work. A professional may not always do inspired work but he or she always does competent thoughtful quality work. Finally, one of the great rewards of doing quality work is that quality always feels good, and the greater the quality, the longer the good feeling lasts.



Project Quality

The quality level of your response to the assigned projects will determine your basic grade for the quarter. Projects address a number of issues and provide an opportunity for you to demonstrate your understanding of the course content, mastery of skills, problem solving/thinking capability and creativity. The projects will be a week or more in length and have preliminary assignments associated with them.

Project quality will be evaluated in terms of Completion, Craft and Design. The following identifies some of the things that quality work exhibits.

Preliminary Completion

There will be **some** preliminaries that will be evaluated based on completion. These preliminaries will be noted in the problem statement or announced in class.

High quality preliminaries are completed on time with all specified elements. Preliminaries are due at the beginning of class unless otherwise specified.

Preliminaries completed within 48 hours (one class meeting) will have their project grade reduced by one 1 point (e.g. an "A" will become a "A/B").

Preliminaries later than 48 hours (more than one class meeting) will have their grade reduced by two points (e.g. an "A" will become a "B"). This is the maximum reduction for late work.

Project Completion

Project Completion recognizes that time is an important element in the design process and reflects your skill at managing it to meet deadlines.

High quality work is on time and complete. Projects are due at the beginning of class unless otherwise specified.

Projects completed within 48 hours (one class meeting) will have their project grade reduced by one 1 point (e.g. an "A" will become a "A/B").

Projects later than 48 hours (more than one class meeting) will have their grade reduced by two points (e.g. an "A" will become a "B"). This is the maximum reduction for late work.

Late projects will be accepted until 5:00 PM on the first day of finals.

Note: Preliminary and project on time grades will be averaged to determine the points to be deducted from the project grade.

Craft

Craft evaluates both the skill and understanding that are required to communicate ideas and is concerned with the quality of the visual communication in both its details and overall impression.

Craft (Skill)

Quality craft meets presentation requirements—constraints.

Quality craft adds value to the presentation—it supports perceived quality.

Quality Construction

Shows no unintended dirt, glue, marks
Exhibits no ragged edges—cuts are smooth
Will not deform, discolor or come apart

Quality Drafting

Lines are consistent in style, width and density throughout their length
Lines consistently exhibit intended orientation
Lines meet precisely and consistently
Dimensions are precise and consistent

Quality Drawing

Drawing techniques and scale appropriate and exhibit control of the media
Subject proportions and perspective look correct.
Values range from very light to very dark
Strong value changes communicate sun, shade and shadow conditions
Clear value changes communicate surface change and orientation
Colors composed of a rich mixture of many colors

Quality drawings create a clear and strong illusion of three-dimensional form, space and/or depth on two-dimensional surfaces.

Quality Hand Lettering

Letters have good and consistent form
Verticals are vertical and horizontals are horizontal or consistent
Letters are the same height
Letters are aligned horizontally
Letters are consistently spaced visually
Letter strokes are consistent in weight and have strong ends

Craft (Understanding)

Quality understanding employs previously learned skills and concepts.

Quality understanding correctly and consistently uses drawing systems (orthographic, axonometric and lineal perspective) and their associated conventions and graphic languages.

Digital Craft

Quality digital craft efficiently and correctly employs the capabilities of the programs being used and exhibits an understanding of their implications.

File Preparation & Output

- Files and folders provided as specified
- Files and folders logically and systematically named and organized to support recognition by others
- Files saved in appropriate format, resolution and dimensions
- Files use appropriate fonts
- Extraneous files removed
- Output is of high quality and construction

Layers

- Layers created as specified
- Layers logically and systematically named and organized to support recognition by others
- Layers contain corresponding content
- Layer qualities appropriately set
- Unused layers removed

Styles

- Styles created as specified
- Styles created for all unique elements
- Styles logically and systematically named to support recognition by others
- Styles assigned to corresponding elements
- Style and element attributes match
- Unused styles removed

Digital Precision

- Elements constructed as specified
- Faces, edges and points align as intended
- Faces, edges and points coincide as intended
- Spacing and dimensions are consistent
- Guides employed to support precision
- Elements kept within page and/or margins
- Extraneous elements removed

Design

The demonstration of your understanding and creativity, is part of the evaluation of every problem. Design recognizes the effort required to generate and develop ideas and is concerned with conceptual understanding and the generation of appropriate, inclusive, thoughtful, aesthetic and creative responses to the project. It is concerned with both the overall ideas and their development and extension into the details.

Design (Thoughtfulness & Creativity)

Quality designs exhibit an understanding and employment of previously learned concepts.

Quality designs address all problem issues and requirements (constraints).

Quality designs address all problem goals.

Quality designs exhibit an understanding and synthesis of problem issues, goals, facts and requirements.

A creative synthesis is one that creates new and meaningful relationships between problem elements.

Quality designs create clear and appropriate patterns, hierarchies and contrasts that support intentions.

Quality designs exhibit a clear organizational concept that affects the relationships between and development of all elements.

Quality designs exhibit a strong expressive mood or feeling.

Quality designs exhibit a clear experientially pleasing quality that communicates on a poetic level.

Something is poetic when it communicates on a qualitative and expressive level. When it affords new meanings or insight. When it makes us smile.

Something is pleasing if we perceive some pattern (relationship between parts), hierarchy (relative importance of parts) and contrast (the variation within and/or disruption of the perceived pattern and/or hierarchy). Something is pleasing if it is both understandable and new.



Evaluation Scale

A letter grade will be assigned to each project based on its quality. The grade represents my judgement as to the quality of your work in terms of both craft and concept which usually share about equal importance. A grade will reflect both the elements of a solution and the solution as a whole. By this I mean, a grade is arrived at by both evaluating your response to individual requirements and issues and your solution as a whole. A design is both the sum of its parts and greater than the sum of its parts.

Projects will be weighted according to their relative size, duration and difficulty. The weight given to each project is identified in the project statement and/or will be announced in class.

A	Excellent Quality
A/B	Emerging Excellence
B	Good Quality (Professional)
B/C	Developing Quality
C	Low Quality
D	Poor Quality
F	Unacceptable Quality and/or Incomplete

What Evaluations Mean

The goal of evaluations is to give you feedback on your work and provide a letter grade that summarizes the quality of your response to projects. The following defines the meaning of the letter grades within the context of this studio.

Excellent Quality: “A”

A grade of “A” is earned by work that provides insight into the project’s issues and concepts. It is a project response that is creative and imaginative. It adds to our understanding of the possibilities framed by the project’s issues and constraints. It is work that exhibits a clear and appropriate concept that synthesizes all project issues and requirements. It is a concept that has been developed at all levels. An “A” project is one that exhibits exemplary craft and care—craft that adds perceived value to the ideas being presented. Finally, it is a solution and its communication that evokes a smile—a positive intuitive response to the whole.

A grade of “A” is earned by truly exemplary work. It means that, using your ingenuity and creativity and the problem’s requirements, you have seen and developed an imaginative and pleasing solution that is recognized as going beyond the expected. Usually only a few “A”s are earned within any one class. However, there are no inherent limits to the number of “A”s.

Good Quality: “B”

A grade of “B” is earned by work that demonstrates a clear understanding of the issues and concepts being addressed, exhibits a well-defined concept that addresses important project issues and constraints and manifests a high level of craft and care. It is a project response that exhibits a creative direction. A grade of “B” recognizes quality work that can and should be attained by everyone. It indicates that you have acquired appropriate skills and understanding upon which to base future success in school and the profession.

A grade of “B” exemplifies truly good work that is at a professional level for students at this point in their education.

Fair Quality: “C”

A grade of “C” is earned by work that meets most project requirements, demonstrates some understanding of the issues and concepts being addressed and exhibits an adequate level of craft and care. It recognizes appropriate effort that has resulted in a solution that exhibits a level of quality and understanding below that required to support future success in school and the profession.

Those receiving any grade less than a “B” should work to improve their understanding and skills by talking with the teacher and other students and resubmitting their work.

Students in the first years of architecture are still deciding if architecture is what they want to do. Therefore, a grade of “C” is designed to function as a safety net—with appropriate effort everyone can earn a “C”. This allows students to discover if they have the capabilities and motivation to continue in architecture without seriously affecting their academic standing.

Poor Quality: “D”

A grade of “D” reflects work that exhibits a poor level of effort, quality, completeness and/or understanding.

Unacceptable Quality and/or Incomplete: “F”

A grade of “F” reflects an unacceptable level of quality and understanding and/or an incomplete response to the assignment.

Project Feedback

Project submittals include all physical elements (e.g., prints, drawings, models) and digital media containing electronic elements (e.g., files, folders) as identified in the project statement .

Grade Sheet

The first step in the feedback process is for the teacher to review your project and fill out the evaluation sheet. In filling out the sheet, the teacher may include notes that identify specific problems found in the submitted materials and suggestions for improvement.

Class Comments

The teacher will make a general presentation of their observations on the class’s work. It is an opportunity for the teacher to highlight significant issues and compare and contrast ideas presented by the class.

Additional Feedback

After you have had time to listen to and/or read the comments and reviewed your work, you are encouraged to talk with the teacher to discuss the evaluation, get clarification and/or receive further feedback on your project. It is your responsibility to let the teacher know if you do not understand or disagree with any elements of the evaluation.

Self-Evaluation

As the quarter and year progresses and you have gained knowledge of the issues related to and experience with the evaluation of design and visual communication work, you may be asked to evaluate the quality of your projects. When this occurs, if your evaluation differs significantly from the teacher’s, it is especially important that you talk with the teacher to understand the differences.

Project Resubmittals

Projects or portions of projects can be resubmitted in an effort to improve their quality. The ability to resubmit work is important because it provides each student the opportunity to demonstrate what they have learned by improving their work.

Note: Some projects or project phases can not be resubmitted because of their nature and/or timing. Projects or project phases that cannot be resubmitted will be noted on the evaluation sheets.

If you choose to resubmit a project, you should discuss your original solution with the teacher in order to clearly understand its strengths and weaknesses. You may also review and discuss resubmittals with the teacher as they are being developed.

Resubmittals must include:

- 1 the original project,
- 2 the original evaluation sheet,
- 3 the revised project and
- 4 a written list of all project improvements.

Resubmittals that do not contain all required elements as listed above will not be accepted. Talk with the teacher if you cannot provide all the required elements.

Resubmittals will be accepted until 5:00 PM on the first day of finals.

Resubmittals must exhibit **significant** improvement in skills, understanding and/or creativity to receive a higher grade.

The completion (on time) portion of the project evaluation earned by the original submittal will apply to resubmittals.

Participation

Your participation in class has its own reward. Students who put time and energy into class activities do better on projects and contribute to and gain more from the class. Design is very much about communication and the heart of the studio is the exchange of ideas that is facilitated by your participation in class.

Your presence in class is important to the quality of the studio. Your contribution to class discussions is essential and when you are missing from class everyone is denied part of that day's experience. If something happens to make you late please come as soon as possible—being late is far better than being absent. If you know that you are going to miss class or if you get sick please let me know as soon as possible.

Activities

What you bring to and do in class are major resources for the studio. When your work on activities is missing or minimal it both diminishes the richness of the studio for others and puts you behind. There are five types of participation activities: Exercises, Preliminaries, Readings, Reflections, Lectures and Cooperative Activities. They introduce and/or reinforce fundamental concepts, principles and skills, show progress toward concept formulation and contribute to a theoretical and practical understanding of design and communication.

Exercises include any classroom assignments generated in response to the life and content of the studio. They are things that are developed based on what seems appropriate given where we are and what might help at any given point in time. Their major role is to introduce new ideas and/or develop understanding and skills.

Preliminaries are presentations of work in process—they are intermediate tasks associated with developing the solution to a project. The major benefits of putting quality thought and energy into preliminaries are making consistent progress on a project, receiving more valuable feedback and enhancing your understanding of the problem. Preliminaries help with time management and improve design quality. One of the reasons that preliminaries improve design quality is that the quality and completeness of what you show yourself and others is directly related to the quality of the feedback that you receive. A design concept does not become real until it exists in some very specific form—until it can be visually communicated to someone else. Preliminaries ask that you communicate your ideas to others in order that they can give you feedback.

Readings support and contribute to the theoretical base of the course and provide ideas for discussions.

Reflections support the active and meaningful incorporation of what you have experienced into your understanding.

School lectures provide a wider view of the profession and expose you to current ideas and work. They can be both visually and intellectually stimulating and may spark an interest that might shape your goals and involvement in the environmental design professions. You will be asked to attend as many College and/or Departmental lectures as possible during the quarter. Lectures

are posted around schools and will be announced in class as far in advance as possible.

Cooperative activities consist of small groups of students working together to review each others work, offer suggestions and help each other with problems. This type of activity will occur every day and provide you an opportunity to present your ideas and develop your ability to listen, understand and evaluate the work of others.

My Expectation

My expectation is that you will be present in class and thoughtfully participate in class activities.

Meeting this basic expectation is the most beneficial thing that you can do to aid me in getting to know you and how you are progressing. When you do not meet this expectation, the best thing you can do is to keep me informed—talk with me.

Final Grade

Your final grade for the quarter will be based on the weighted average of your project grades as indicated in the chart below.

The horizontal bands that relate to the four levels of excellence

Grade Equivalency Scale

Project Grade	Quality Level	Value	Project Avg.	Quarter Grade
A	Excellent	10	10	A
			9.5	A
A/B	Good	9	9	A-
B			8.5	B+
			8	B
B/C	Fair	7	7.5	B-
			7	C+
C			6.5	C
			6	C-
D	Poor	5	5	D
F			<5	F

are different in depth. Their depth relates to the relative difficulty of achieving each level. The “Fair” band is the widest because it represents the safety net that was described earlier.

Grade Adjustment

Your final project average will be adjusted based on your participation in class and growth over the quarter as defined below.

Participation

Contribution to positive class atmosphere.

Contributions to class discussions.

Helped classmates.

Growth

Improvement in the quality of your craft.

Improvement in the quality of your understanding.

Improvement in the quality of your designs.

Consistently challenged your capabilities.



Sickness Or Problems

You may encounter health or personal problems during the quarter that make it impossible for you to complete assignments and/or be present in class.

If this happens, it is important that you let me know what is going on with you. If you are not in class, I assume it is by choice unless you tell me otherwise.

If you talk with me in advance or as soon as possible concerning problems you are having, adjustments and considerations can be made as appropriate .

Exit Interview

I will often schedule a time during finals week to meet with each student. The goal is to discuss the final project and the Quarter's work as a whole. It is an opportunity for you to voice your observations about your work and the course. Grades will be finalized and submitted to the University after the interviews have been completed.

Retention of Work

Selected student activities and projects will be retained as examples for future classes and school displays. The majority of the work will be kept for one year to provide examples for the next time the class is taught. It is your responsibility to contact me at the end of the following year and make arrangements to pick up your work. Work not retrieved within one quarter of the year's end may be discarded.

Some presentations will require that both an original and a copy be submitted. In these cases the originals will be returned after a year but the prints will be kept.

Exemplary original work may be kept for longer or even permanently retained. In this case you will have an opportunity to make reproductions of the work if you desire.

Finally, if during the time I have the work you need it for a job interview or would like to photograph it for your portfolio, you should contact me. Arrangements will be made for you to borrow the work for a specified period of time.

COOPERATIVE LEARNING



Cooperative learning occurs when students work together in small groups on a specific learning task. Research has demonstrated that cooperative learning has the potential of developing higher-level thinking skills, creating the context for more meaningful learning, aiding in the development of oral and social skills and promoting positive interpersonal relationships. The realizing of these possibilities is up to you. If you contribute your best to each cooperative learning activity the benefits can be yours.

Introduction

The general idea of groups of people working together to solve a problem or improve the quality of their work is directly related to the experience of working in any professional office. Members of any design office form teams, critique each other's work, share knowledge and help each other meet deadlines. The office does better when everyone helps everyone else to perform at their highest level.

I would like to develop a similar attitude within this studio. We are all here to help each other perform at the highest possible level—to help each other do quality work. As the overall level of quality increases so does what each person can learn from the shared ideas.

In an office the rewards are more jobs, higher quality work, raises and the personal satisfaction of being part of a quality organization. In the studio the rewards are more meaningful learning, higher quality work, better grades and the building of relationships that will sustain you through school and into the future. In terms of the reward of grades, I would remind you that I do not grade on a curve. If everyone does excellent quality work everyone earns an "A." If you help someone else earn an "A" there is still one available for you.

There is one final reality. With 24 students in the studio it is impossible for me to talk with each one of you each day. However, it is possible for you to talk with and get help from one or more of your classmates. I will be available as a resource but the full resources of the studio will not be realized until everyone becomes a teacher for everyone else.

In this studio there will be two types of cooperative learning experiences: Cooperative Activities and Cooperative Projects. The first are participated in by randomly selected teams assembled to work

together on a specific task during a class and then disbanded. The second are participated in by teams that I assign to work together for the duration of a project. In each case the quality of the learning experience will be directly related to your willingness to participate and contribute.

The following describes my plans for integrating these two types of cooperative learning into the studio. They are subject to change as we learn what works best for us. If at any time you have suggestions or observations that may help us improve the cooperative learning experiences please share them with me and/or the class.



Cooperative Activities

At some time during most class meetings you will be asked to form teams for Cooperative Activities. This is typically done by drawing cards and having those with matching cards form teams.

Each cooperative activity will have two aspects. First there will be a specific task assigned or issues identified for the team to address. Second there will be a time limit specified for the activity. It is important that each of these aspects be followed. The task keeps you focused and the time limit forces you to be efficient. If these two things are respected we can get a great deal accomplished efficiently while preserving time for other important tasks.

There are three possible roles that may be needed for a cooperative activity: recorder, presenter and facilitator. The recorder keeps a written record of the group's responses to the assigned activity if requested by the teacher. The recorder requests input from all members, reviews the written responses for team member approval and hands in the written responses to the teacher upon completion of the activity or as instructed.

The presenter reports to the class on the team's response to the activity using the recorder's notes after having discussed what is to be reported with the team. The recorder and presenter are roles that are not needed for all activities and they should be shared by everyone during the course of the quarter.

The facilitator makes sure everyone understands the task, gets the team going, keeps them on task as needed, makes sure that all members participate and keeps the team apprised of the time remaining. The role of facilitator is one that is needed for every activity and can be taken on by an individual or by every member of the team simultaneously. The team will function much better if everyone takes it upon themselves to see that the group functions at its best.

The following identifies some typical cooperative activities. There will be others defined during the quarter.

Presentation & Feedback

There will be many times during the quarter where we will be reviewing work in progress (preliminaries) or completed assignments or projects. At these times the following will be typical.

1. Each member in turn presents their response to the assignment, identifies problems that were encountered and asks any questions they would like addressed.
2. After each presentation the other members respond with observations and suggestions that they feel will help the presenter clarify and strengthen his or her ideas.
3. Finally, the team will identify and record the issues they want addressed by the class and/or teacher.

Comparing & Contrasting

One approach is for a team to rank order an assigned group of solutions from most to least successful based on a particular point of view. The team then presents their ranking to the class and describes the reasons underlying their choices by comparing and contrasting the solutions to illustrate their observations and conclusions.

Another approach is for the team to select a specified number of solutions from the class to compare and contrast. The point of view may be assigned or developed by the group and the projects are chosen to teach something concerning the point of view. After the team has selected and analyzed the solutions they present their observations to the class by comparing and contrasting the solutions to illustrate their observations and conclusions.

There are five aspects to comparing and contrasting examples.

1. Identify the issue, concept, approach, technique, etc. being compared.
2. Identify how the solutions are alike or different in terms of the issue, concept, approach, technique, etc.
3. Identify the relative success of decisions concerning the issue, concept, approach, technique, etc.
4. Identify the factors that contribute to more successful decisions.
5. Communicate what can be learned about the issue, concept, approach, technique, etc. to the class by comparing and contrasting the examples.

The process of comparing and contrasting by pointing at the specific attributes of two or more solutions is important. It clarifies and gives greater meaning to our communication with each other.

Cooperative Projects

All cooperative projects will have three components. First, there will be a team component such as gathering information, conducting some exploration and/or creating a response to a problem. Second, there will be an individual component that each team member does separately. Third, there is a component that addresses each person's participation in and contribution to the group.

Forming Teams

Cooperative project teams will consist of no less than two or more than four people. They will be formed to create as diverse a mix of people and experience as possible. Your work and participation in class will be used to assist me in forming the teams. I reserve the right to adjust the membership of the teams at any time to improve the diversity.

Rules of Cooperative Learning Teams

1. Everyone must contribute—no sandbaggers or dominators allowed.
2. You are responsible for one another—help each other out.
3. You can criticize an idea, but not the person. Disagreements with specific solutions or opinions are fine, but disparaging the person or his/her ancestry is not.
4. Attendance and participation are important. Be there and do your part to make the experience as valuable as possible.
5. The primary purpose of team exercises is not to finish first, but to allow everyone to acquire mastery of the concepts. The quality of the experience for each member is important. It is the responsibility of every member to make the experience as valuable as possible for every other member.

Team Member Roles

The following roles may be assigned and/or left up to the team. They may remain constant for the life of the team or change periodically. They may be assigned to individuals or kept in mind and fulfilled by all members.

All the members of each team are responsible for making the team a productive and meaningful experience. Carry out your role and make it easier for the others to carry out theirs. Be both a good follower and a good leader as the situation warrants.

Member A—Facilitator:

1. Makes sure all understand the task.
2. Gets the team quickly involved in the task.
3. Gets the team back on task as needed.
4. Makes sure that all members participate.
5. Resolves conflicts or problems with input from the other members.

Member B—Recorder:

1. Assumes the functions of Member A if A is absent.
2. Records in writing the group's responses to team learning exercises if required.
3. Requests input from all members.
4. Reviews the written responses for team member approval.
5. Hands in the written responses to the teacher.

Member C—Time Keeper:

1. Keeps track of the time while the team is completing the task.
2. Keeps the team apprised of the time remaining.
3. Advises the team about using time wisely.



Member D—Knowledge Builder:

1. Assumes the roles of Member C if C is absent.
2. Checks that each team member understands the solutions, concepts and procedures associated with each task.
3. Checks that each team member can verbalize the reasoning behind each solution or team response.
4. Contacts absent team members and informs them of the studio's content, activities and assignments.

Note: It is more important that each person understand the concepts behind a solution and why a given solution is correct than it is to solve any specific problem perfectly. This is critical because understanding the concepts allows their use in new situations.

Presenter

Taken on by different members at different times.

1. Makes team report using the recorder's work.
2. Discusses with the team what to report.

Other Roles

The following roles may assist the quality of the team's interaction and products. They might be assigned to a particular member or assumed by different members as seems appropriate.

Harmonizer: One who works to improve the relationships between members.

Devils Advocate: One who takes the other side to strengthen and clarify ideas.

Quality Control: One who checks the overall and detail quality of the team's products.

Team Management

You are responsible for managing your team. This means you must resolve conflicts and address attendance or participation issues as they arise. Do this together with a spirit of mutual support and the goal helping each other to be better group participants.

A problem that occasionally occurs is that of a lack of attendance and/or participation. If this occurs it is the groups decision as to whether the individual will be allowed to continue as a team member. If you choose to exclude the member from the team you must make sure that it is a group decision, provide documentation demonstrating the student's negligence of duties, and inform the student of your decision.

Peer & Self Evaluation

Part of your responsibility as a team member is to reflect on your own contributions and provide feedback to the other members as to their group participation strengths and weaknesses. The forms shown on the following page will be used to provide this evaluation.

Teacher's Role

My role during team activities is to observe team interaction and progress and make any adjustments to the assignment or provide any information that seems to appropriate or needed. I will minimize my participation in the groups so as not to interfere with your interaction with each other.

PEER EVALUATION

The evaluation you are providing to your peers addresses their relative success in meeting the team participation criteria. First, rank order the criteria from the one they met most effectively (1) to the one they met least effectively (13). Second, write brief observations concerning their participation as described below.

The evaluation is not a judgement as to the intellectual or creative capabilities of the members. It is a judgement as to their relative success in meeting the team participation criteria.

The Peer Evaluations will be seen by the teacher and the Written Observations will be provided to the student.

Peer's Name:

Criteria	Ranking (1 to 13)
Contributed ideas	
Listened to the ideas of others	
Encouraged others to contribute	
Asked for help when it was needed	
Offered help when asked	
Carried out roles/responsibilities	
Came prepared	
Understood the ideas and solutions	
Encouraged and supported others	
Helped the group stay on task	
Helped the group work cooperatively	
Participated in group tasks	
Was present at agreed to group meetings	

Written Observations

Provide observations concerning the member's participation in the group for the three items ranked highest and lowest. Word process your observations and print them on a separate sheet of paper. The student's name should be at the top of the sheet. Staple the sheet to the student's Peer Evaluation form.



SELF EVALUATION

You are to evaluate your performance for each of the team participation criteria based on a scale of one to five with five being the highest.

The Self Evaluations will be seen only by the teacher and returned to you.

Your Name:

Criteria	1	2	3	4	5
Contributed ideas					
Listened to the ideas of others					
Encouraged others to contribute					
Asked for help when it was needed					
Offered help when asked					
Carried out roles/responsibilities					
Came prepared					
Understood the ideas and solutions					
Encouraged and supported others					
Helped the group stay on task					
Helped the group work cooperatively					
Participated in group tasks					
Was present at agreed to group meetings					

Written Observations

Provide observations concerning your participation in the group for the three items that you feel you did most and least successful. Word process your observations and print them on a separate sheet of paper. Your name should be at the top of the sheet. Staple the sheet to this form.

Teamwork

Reference: *The Teaching Professor*, Volume 12, Number 3, March 1998. Drawn from: Panitz, Beth (December 1997). *Team Players*. ASEE Prism, p. 9.

The following is a description of eight behaviors associated with effective teamwork.

Collective Decision Making

In effective teams, decisions are discussed and agreed to by all. In less effective teams, one person strongly asserts a position and others do not object verbally, even though their opinions differ.

Collaboration/Interchangeability

On effective teams, members do what ever is needed to get the job done. They are not afraid to tackle unfamiliar tasks in areas outside their expertise. On less effective teams, members work independently and do not do work outside their area.

Appreciation of Conflicts/Differences

Productive teams expect conflict and disagreement. They openly discuss their differences and see them as means to improved decision making. Less productive teams work to avoid conflict, preferring instead a superficial kind of agreement that results when issues haven't been tackled substantively.

Balance of Participation

Effective teams do recognize that people do have other demand on their time, and as a group they are willing to help a member who may for a time need to decrease the amount of effort devoted to the team. This is different than what happens on ineffective teams, in which one or two members do more than their fare share of the work, resent it, but never confront members who do not contribute what they should to the group.

Focus

Good teams keep their ultimate objectives and goals in mind. If they fall behind, everyone pitches in to help the group get back on schedule. Teams run into trouble when they do not partition their time well and, having spent way too much time on early tasks, have no time left for the final push. In those teams, everyone notices the group's error, but no one is willing to raise the issue or offer helpful solutions.

Open Communication

Members on effective teams keep each other informed. They discuss individual work in progress. They let others know when they may be late or missing. Lack of communication hampers the effectiveness of teams. They work too much on their own and do not share progress or collaborate on how their individual work relates to and fits with what others are doing.

Mutual Support

On good teams, members support each other and verbally let that support be known. They compliment one another an work well done and publicly thank others who have contributed to the group's success. On poor teams, the focus is on individual work, with little awareness, interest, or appreciation of what others in the group are doing.

Team Spirit

Effective teams develop pride and loyalty in their group. They stand up for the group and speak positively about it. When teams aren't working well, members feel no commitment to the team and may even see the group as an impediment to accomplishment of individual goals.



Working As A Team

Daniel Levi, 1997

Team Stages

When students are given a team project, they often struggle through the start-up activities. Research on professional teams shows that the start-up activities take longer than anticipated. For many professional design projects, 80% of the design work occurs in the last 20% of the allotted time.

The main reasons for this slow start is that it takes time to (1) decide on the definition and goals of the project, and (2) develop the social relationships and procedures for effective team work. Teams need time to develop social cohesion and functioning group norms, and defining the project is the hardest part of the task.

How can you improve this process? Partially, you need to understand the dynamics of team development so that you do not get frustrated with a slow start. Team work is not a smooth activity; teams go through stages and have their ups and downs. What is important is to be building your team as the project progresses.

Team Leader

Team activities are composed of both task and social behaviors. A common error teams make is focusing on the task and ignoring the social aspects of teams. The team leader is responsible for both task and relationship activities.

The team leader is not the boss who controls the team. Instead, the team leader's role is to manage the group process. The team leader helps to set up the agenda and manages the decision making process to make sure it is fair. They manage the team's interactions to create a supportive environment and insure everyone has the opportunity to participate.

Value of Teams

Teams encourage cooperation rather than competition. The value of teams occurs when members work collaboratively instead of individually. Team work improves communications within a project and makes for better problem solving and decision making than individual efforts. In addition, team decisions are more likely to be supported and implemented by the team members.

Managing Responsibility

Working on a team project requires an organizational structure to operate within. Early on in a team project, the team needs to outline or diagram the major tasks it has to perform. Under each of these major tasks, the team should try to identify as many sub tasks as possible. The team may want to use some techniques such as Brainstorming to help identify all of the tasks. Outlining these tasks helps to make them easier to visualize. For example, the following diagram outlines the steps in a simple student project.

Project Planning

Step 1: Plan for the Project

1. Clarify purpose, objectives, and parameters.
2. Identify the needed elements of the project.
3. Determine task roles.

Step 2: Data Collection

1. Collect all necessary information.
2. Organize the information.

Step 3: Write the Report

1. Write report.
2. Edit for flow and completeness.
3. Refine text.
4. Copy edit (typos).

Step 4: Produce the Report

1. Design layout.
2. Proofread and correct.
3. Photocopy.

After all of the tasks have been identified, the next step is to assign tasks to team members. List the activities or tasks, then have the team members go through one item at a time and determine who is responsible. You may have to go back through one item at a time and determine who is responsible. You may have to go back through the list to decide whether the distribution is equitable after a group discussion. Some tasks may not be the sole responsibility of one team member, and some tasks may be rotated among members during the project. When doing these assignments, consider the following issues:

Can the project be broken up into various tasks?

- a. If so, members should list and agree on the breakdown;
- b. Assess the difficulty of each task relative to one another; and
- c. Establish deadlines for the completion of the tasks.

Remember: every member should be given an equal amount and/or difficulty of work to be completed. If there are fewer tasks than members, assign members with nonconflicting schedules to work together on the most complicated or lengthy task. If there are more tasks than members, combine two or more simpler/less lengthy tasks so that it will equal one difficult task.

Are the tasks sequential or overlapping?

- a. If the tasks are sequential, each member is responsible for handing off the information to the other member.
- b. If the tasks overlap, members responsible for the overlapping tasks can meet together on their own time—full team meetings are not necessary.

In order to better manage your project, you may want to develop an Action Plan. The action plan divides the major tasks in a project into specific actions or tasks. These actions are assigned to team members along with expected results and completion dates.

Decision Making

The style of leadership affects how teams operate. Teams work best when the leader serves primarily the role of facilitator. When the leader tries to control the team's operation, then the resources of all of the team members is often under utilized.

There are three main approaches to team decision making.

1. Consultative:

One person has authority to make the decision, but may elicit advice and comments from team members. This style of decision making is often used when a project is divided into parts and one person has responsibility to do a part. They may ask for advice and need to coordinate with others, but if it is an internal issue, then they should get to decide.

2. Democratic:

This is the most popular decision making style in the U.S., but it is not really a good team approach. The problem with a democratic decision is that almost half of the people could disagree, and they may be unwilling to support and implement the decision after it has been made. Voting may be quicker than consensus, but it should be avoided unless the team is stuck and time pressures mean there is no alternative.

3. Consensus:

This approach should be used for most major team decisions. It requires discussion of an issue until all agree to accept it. By acceptance, it does not mean that the decision is your favorite alternative. It means that you are willing to accept and support the decision.

Consensus decision making may be time consuming, but it is the best way to fully utilize the resources of the team. In addition, consensus decision have a greater likelihood of being implemented by the team.

Guidelines To Use for Reaching Consensus:

1. Avoid arguing blindly for your own opinion.
2. Avoid changing your mind just to reach agreement and avoid conflict.
3. Avoid conflict reducing procedures such as voting or tossing a coin.
4. Seek out differences of opinion.
5. Do not assume that someone must win and someone must lose when the decision reaches a roadblock.
6. Discuss the underlying assumptions, listen carefully to one another, and encourage the participation of all members.



Creativity

Steps to Creativity

- 1: Build an Open Climate,
- 2: Conduct Research,
- 3: Brainstorm Ideas,
- 4: Sort Ideas and Select,
- 5: Do Some Refining, and
- 6: Repeat Process if Needed.

Coming up with creative ideas is an important part of student team work. In addition, the tools used by teams to promote creativity can also be used for other team issues. Brainstorming is one of the most common team creativity techniques. It is also a team process which can be used frequently for other issues.

The biggest problem limiting team creativity is premature evaluation. Often team members want to try out new ideas, but critical comments from other team members prevent trying out ideas. The weak point that team members have is in supporting each others ideas. Teams need to designate times when they are not being critical. They need rules for openness and safety in presenting ideas. People need to practice the technique of supporting or building on an idea rather than criticizing it. If you do not like an idea, try going with it by trying to suggest other related ideas which do not have your objection. Learning this skill is very helpful.

A team member often does not have to decide on an outcome right now. Sometimes is better to run a brainstorming session, eliminate some of the options, and then wait until the next meeting before selecting an alternative. Waiting can allow members to come up with fresh ideas on their own. Team creativity needs to capture both individual creativity (often done alone) and the synergistic creativity which comes from group interaction.

Brainstorming Alternatives

To start a brainstorming session, the team facilitator needs to clearly state the purpose or issue and review the guidelines for brainstorming. A distinct period of time should be set aside for the brainstorming session. During the actual brainstorming, the facilitator acts primarily as the recorder. After the ideas have been generated, the facilitator helps the group to reduce the list into a manageable size.

Guidelines for Brainstorming:

Question: Announce the question or issue to be addressed.

Toss Out: All team members toss out as many ideas as they can.

Accept: All ideas are accepted, regardless of how practical they are.

Record: All of the ideas are listed for everyone to see.

Prompt: The facilitator re-asks the main question to help keep people on track.

No Editing: The facilitator reminds the team that no one is allowed to criticize or evaluate until the process is done.

Build: Everyone should build on each others' ideas, using the ideas to go off in new directions.

Selecting a Solution

One of the problems with activities such as brainstorming is that you are left with a lot of possible options, and no clear or easy way to select which one to go with. One approach to this is multi voting.

Rules for multi voting:

1. Review the alternatives generated by the Brainstorming session.
 - Combine items which seem similar;
 - Number each item.
2. Have each team member select 2-5 alternatives they would like to support by writing down these alternatives on a sheet of paper.
3. After all team members have completed their selections, tally the votes. Remove items which received no votes (or only one vote).
4. Discuss the alternatives which have been selected. Look for ways to combine or synthesize alternatives.
5. Repeat steps 2-4 until the team has narrowed the list down to a limited set of alternatives (around 5), then select the team's preferred alternative.

Team Building

Team building refers to activities designed to develop social relations in the team and improve team process skills. Team building is an ongoing activity designed to improve the long term performance of the team. There are two main team building activities: team warm-ups and group process evaluations. Team warm-ups are social activities designed to help team members get to know each other. Group process evaluations are used to evaluate the team's activities and discuss how to improve them.

Team Warm-ups

A team warm-up should take about 5 minutes and be performed at the beginning of a team meeting for the first 3 or 4 meetings. It consists of any social activity which gets team members to talk about themselves with each other. The following are some sample warm-up activities.

Meeting 1

Team members should tell where they are from, why they are here (How did you select your major?), and something entertaining about themselves (What is your favorite joke?).

Meeting 2

Team members should say what they like and dislike about team projects, the kinds of activities they like and do not like to do, and something entertaining about themselves (What is your favorite movie? Why?).

Meeting 3

The team should select a name for itself. The name should reflect both their project and the way they interact as a team. You might want to practice your brainstorming skills.

Group process Evaluations

Group process evaluations take five to ten minutes and are typically performed at the end of team meetings. The simplest approach is for the team members to answer the following two questions individually, and then discuss their answers with each other.

What things did we do well as a team?

What areas do we need improvement as a team?

When discussing the answers to these questions, the team should focus on how to improve the way it operates, not on who is causing problems within the team.

An alternative approach is to use the Peer Evaluation form provided earlier in this section to rate the performance of the team as a whole along a number of dimensions. This may help the team better identify the sources of its problems.



FACULTY & COURSE EVALUATION

Learning to teach well is a lifelong process. Student evaluation of a course and its faculty is an important element in assisting faculty in improving the educational environment both in terms of content and process. Your input is important and valuable. I appreciate your time and thoughtfulness in responding to these faculty and course evaluations.



Overview

There are designed into this course three formal ways for you to communicate your comments, suggestions and evaluation of its content, processes and teacher. Each provides a different approach and hopefully will gather different types of information. In all cases the information will be used as a guide for improvement.

The reflections papers are the first way that you can provide information on the course. Although, their primary goal is to help you reflect on what you have learned from an exercise, they also give me insight into the kinds of learning experiences that a given project produces. I can then judge if they match up with the learning objectives for the project. In addition, one reflection question asks for suggestions to improve the project as a teaching tool. It is an opportunity for you to make observations and suggestions while the project is fresh in your mind. In this way the reflections papers give me immediate information on the impact of projects as the course proceeds.

The second way that your evaluation will be sought will use the "Midterm Evaluation" form found in this section. You will be asked to fill out this form at about midway through the quarter. Its information will be used to make adjustments and improve the course for the remainder of the quarter.

Third, the "Student Evaluation of Faculty" and "Supplemental Faculty Evaluation" forms will be used at the end of the quarter to solicit additional information. They are handled through the Architecture Department and the "Student Evaluation of Faculty" responses become part of my permanent record at the university.

On an informal basis I welcome any feedback about the course or my teaching at any time during the quarter. I would be glad to talk with you personally or have you write me a note. Remember, if I do not know about a problem, I can not work to correct it.

Finally, read over the enclosed forms. They will make you aware of the kinds of things that are of concern to me. If you have suggestions for more meaningful questions please let me know.

In Addition

The preceding identifies ways of providing feedback within this course. In addition, the following options that are open to all students at all times.

1. Meet with the Director or the Architecture Dept. to discuss your concerns.
2. Write a signed letter to the Director of the Architecture Dept. regarding a teacher's performance.
3. Write a signed letter to the Dean of the College of Architecture and Environmental Design (Martin Harms) regarding a teacher's performance. Copies of the letter will be given to the teacher and placed in their Personnel File.

Remember that as a knowledgeable participant in the teaching and learning process your input is valuable.



MIDTERM EVALUATION

This evaluation is intended to produce information about the instruction that will make it possible to determine what, if any, changes need to be made to make this course more effective for the remainder of the term. Your thoughtful response will be appreciated. Responses that include specific examples and illustrations are the most useful. Do not sign the sheet.

Questions

What are two things that the teacher does that are helpful to your learning in this course?

What are two things that the teacher does that hinder your learning in this course?

What are two ways that the course is structured/operates that help your learning?

What are two ways that the course is structured/operates that hinder your learning?

What assignments have you enjoyed most or were most meaningful to you and why?

Please make any comments or suggestions that you think would help improve the effectiveness of this course for you.

STUDENT EVALUATION OF FACULTY AND COURSES

This evaluation form is designed to provide feedback in order that future teaching performance can be improved and assist the Architecture Department in assessing current faculty performance. Tabulated results of this survey, together with the written comments will be provided to the teacher only AFTER the final grades have been submitted. Tabulated results of the survey will be placed in the teacher's Personnel Action File.

Instructions

DO NOT write your name or student number on the Scantron forms.

USE a number two pencil to fill out the form. Please answer each question by darkening the one circle that best represents your view.
Make solid marks that fill the circle completely.

GIVE the Scantron forms to the student designated to collect and deliver them to the Department office.

DO NOT return the forms to the teacher.

Student Information

- 1 My class level in my major is:
(A) 1st Year (B) 2nd Year (C) 3rd Year (D) 4th Year (E) 5th Year
- 2 The course is a Requirement or Elective in my major:
(A) Requirement (B) Elective
- 3 Before taking this course my interest in the subject was:
(A) Very High (B) High (C) Average (D) Low (E) Very Low
- 4 The grade that I expect in this course is:
(A) A (B) B (C) C (D) D (E) F
- 5 I regularly attended classes.
(A) Strongly Agree (B) Agree (C) Neutral (D) Disagree (E) Strongly Disagree
- 6 I actively contributed in a positive way to class discussions and other activities.
(A) Strongly Agree (B) Agree (C) Neutral (D) Disagree (E) Strongly Disagree
- 7 I devoted the necessary time outside of class to prepare for each class.
(A) Strongly Agree (B) Agree (C) Neutral (D) Disagree (E) Strongly Disagree
- 8 I was self-motivated and maintained strong interest in the subject throughout the course.
(A) Strongly Agree (B) Agree (C) Neutral (D) Disagree (E) Strongly Disagree

Course Evaluation

- 9 Course content was in accordance with, and met, the stated course objectives.
(A) Strongly Agree (B) Agree (C) Neutral (D) Disagree (E) Strongly Disagree
- 10 Course textbooks, readings or other support materials were current, relevant and informative.
(A) Strongly Agree (B) Agree (C) Neutral (D) Disagree (E) Strongly Disagree
- 11 I learned a great deal from the course.
(A) Strongly Agree (B) Agree (C) Neutral (D) Disagree (E) Strongly Disagree
- 12 I was intellectually challenged/stimulated by the course.
(A) Strongly Agree (B) Agree (C) Neutral (D) Disagree (E) Strongly Disagree

METACOGNITION



The studio is a place for learning by doing. However, doing without thinking and more importantly without thinking about our thinking results in little more than blind training. It may seem obvious but it is important to remember that thinking precedes and accompanies any doing and the more challenging the doing the more critical thinking becomes. Furthermore, there must be thinking about thinking and doing for learning to occur.

Introduction

Metacognition is the process of thinking about thinking. It is standing outside our heads and observing and directing your thought processes. Metacognition makes experiences personally meaningful by consciously examining them and incorporating relevant information into our cognitive structures.

Metacognition produces insights into which thought and behavior patterns are most beneficial—it is a way of learning how we learn. If we know how to learn, the ever changing world will be a constant source of growth instead of frustration. What is learned today may or may not be of any use tomorrow. However, knowing how to learn never becomes obsolete.

To simply do something does not mean that we learn it. Learning requires understanding what has been done, valuing that understanding and considering its implications for our existing knowledge and behavioral patterns.

You may believe that you are at the mercy of your mind—that you are a victim rather than a director of your thinking. Metacognition is an excellent tool for overcoming this belief. Through it, you can learn to consciously and deliberately control your thinking—you can become a self-directed thinker.

To take control of your thinking is to increase your efficiency and effectiveness. Working harder or thinking harder is not the goal. The goal is to work and think more efficiently—to do more in less time. A key to thinking more effectively and efficiently is metacognition—thinking about how we are thinking as we are thinking.

Elements of Metacognition

Metacognition includes planning, monitoring and assessing. Planning involves deciding on how a task is to be carried out and why

it should be done in that way. Monitoring “involves both looking backwards to the plan and looking ahead to anticipate appropriate future moves.” (Beyer 1987, 194) Assessing involves attending to the quality of the product, the quality of procedures used and the skill with which obstacles were handled.

Key metacognition operations include:
(Beyer 1987, 193)

Planning

- Stating a goal
- Selecting operations to perform
- Sequencing operations
- Identifying potential obstacles/errors
- Identifying ways to recover from obstacles/errors
- Predicting results desired and/or anticipated

Monitoring

Keeping the goal in mind
 Keeping one's place in a sequence
 Knowing when a sub goal has been achieved
 Deciding when to go on to the next operation
 Spotting errors or obstacles
 Knowing how to recover from errors, overcome obstacles

Assessing

Assessing goal achievement
 Judging accuracy and adequacy of the results
 Evaluating appropriateness of procedures used
 Assessing handling of obstacles/errors
 Judging efficiency of the plan and its execution

The Thinking Disposition

Metacognition is hard work—it requires effort and attention. Most importantly it requires a willingness to engage in such thinking, a disposition to stay with it until the goal has been achieved and a belief that the skillful use of one's mind can achieve one's goals. Experts have identified a number of dispositions that support effective thinking.

Someone who is disposed to develop effective thinking is likely to: (Beyer 1987, 212)

1. Seek a clear statement of a problem, a thesis, a question.
2. Deliberately examine a variety of viewpoints.
3. Seek to be well informed.
4. Use credible sources.
5. Seek a number of alternatives.
6. Seek/give reasons.
7. Seek/provide evidence.
8. Be open-minded.
9. Be willing to change a position/judgement when evidence and reasons are sufficient to do so.
10. Judge in terms of situations, issues, purposes, and consequences (not in terms of fixed, dogmatic precepts or emotional, wistful thinking).
11. Persist in carrying out a thinking task.
12. Be slow to believe—be skeptical.
13. Be objective.
14. Suspend judgement when appropriate/sufficient evidence and reasoning are lacking.

Thinking dispositions often run counter to our natural inclinations which may include: (Beyer 1987)

1. To go with the information that is immediately in front of you.
2. To go with the first solution that pops up.
3. To focus on winning an argument rather than finding the truth.

4. To use thinking skills to persuade rather than to establish what is true or accurate in as objective terms as possible.
5. To judge on the basis of dogma or personal bias.

Definition of Thinking

John Barell defines thinking as “a search for meaning and understanding that can involve the adventurous generation of options, the attempt to arrive at logical, reasonable judgements, and reflection on the process.” (Barell 1991, 7) These four activities; the search for meaning; the generation of adventurous ideas; the application of reasonable judgement; and reflecting on the process; are the essential activities of thinking. These processes can be understood through the types of question that we might ask ourselves.

“These questions seek meaning and structure amid disorder.

Do I have a problem?

Is it important to solve?

What kind of problem is it? (Define, clarify, classify.)

Do I recognize any feelings associated with this situation?

How can I create a visual/mental representation of the situation?

Can I reduce this dilemma to several important elements or parts (e.g., causes, concepts, ideas, principles, feelings)?

How can I relate this situation to any I have seen before?

How can I relate it to my prior experience/knowledge?

How can I reflect upon unstated assumptions, beliefs, biases, definitions of terms, concepts?

Can I redefine it, look at it in a different way?

What can help me?

What kinds of resources do I need?

What do I want to do?

What is my objective?

Here our thinking can become adventuresome.

What will my overall strategy be?

What alternatives can I think of?

What are my options?

Here our thinking must seek reasonableness.

Which ones are best and why?

What evidence supports one alternative over another?

Is there counter-evidence to suggest an different approach?

What action will I take and why?

Here our thinking is reflective.

How will I know if I succeed?

How well am I doing?

How well did I do?

What might I do differently next time? Why?”

(Barell 1991, 16)

Other reflective questions would include:

What did I know that enabled me to do the project more efficiently?

What other way could I have done it?
 What did I do first to accomplish the task? . . . Next? . . . Next?
 How did I know I was doing it correctly and well?
 What kinds of obstacles did I encounter and how did I deal with them?
 How would I help someone else do it?
 What did I do that was most helpful to the process?
 What would be helpful to learn?

References

Barell, John. 1991. *Teaching for Thoughtfulness*. New York: Longman
 Beyer, Barry K. 1987. *Practical Strategies for the Teaching of Thinking*. Boston, MA: Allyn and Bacon, Inc.

Project Reflections

The preceding discussion has explored thinking about thinking in a general way. The ideas can be applied in this studio by reflecting on your process and products. Reflections may be assigned or you may choose to do them to enhance your learning. The goals of reflections are to assist your learning process and provide the teacher an understanding of what you have learned.

Instructional Objectives

To be able to reflect on an experience and identify meaningful things that have been learned.

To be able to communicate your thoughts in written form that is grammatically correct, specific and clear.

To be able to use your sketchbook as a record of your thoughts.

Reflection Questions

Reflections should respond to the following questions as identified in class. Be specific—relate all reflections to specific examples. Respond to all aspects of the questions in a thoughtful and clear manner.

New

Describe a minimum of three new things that you learned from the project and describe how they were learned.

Old

Describe a minimum of three things that were reinforced or expanded by the project.

Process

Describe a minimum of three things you did that were particularly helpful in solving the problem and describe why they were helpful.

Preliminaries

Describe a minimum of three things that you learned from the preliminaries.

Improvement

Describe a minimum of three ways that you could improve your response to the project.

You may include sketches to help communicate your ideas.



TIME MANAGEMENT



School like professional life and living in general is a problem of time management. Given that days are not going to get any longer we each must decide how to spend the time we have. One of the great things about time is that no matter how we spent the last 24 hours we are allotted another 24 each new day. How are you going to spend your new allotment?

Time Management & Grades

Research by Bruce K. Britton and Abraham Tesser (1991) indicates that there are three factors connecting time-management and academic achievement. The following identifies the factors, the percentage they contributed to success and typical associated attitudes and behaviors.

Short Range Planning: (16%)

1. Making a daily to do list;
2. Spending time each day planning;
3. Developing a clear idea of what you want to accomplish during the next week;
4. Setting and honoring priorities.

Time Attitudes: (11%) Feeling that

1. You are in charge of your own time;
2. You can say no to people if it would interfere with your school work;
3. You are making constructive use of your time.

Long-Range Planning: (9%)

1. Having a set of goals for the entire quarter;
2. Regularly reviewing your class notes;
3. Completing major assignments before they are due. Not working on them the night before.

Given this as an indicator of the importance and impact of time-management on your success in school the following ideas are offered to aid you in improving your odds for achieving your goals.

Self-Management

You cannot manage time you can only manage yourself in relationship to time.

"There is only so much of it, and no matter what you do, you can't get more. The clock cannot be speeded up or slowed down. Time is the only resource that must be spent the instant that it is received, and it must be spent at one fixed rate: sixty seconds per minute, sixty minutes per hour.

Thus, the very notion of time management is a misnomer. For we cannot manage time. We can only manage ourselves in relation to time. We cannot control how much time we have; we can only control how we use it. We cannot choose whether to spend it, but only how. Once we've wasted time, its gone—and it cannot be replaced."

(Mackenzie 1990, 12)

Or to put it in a series of definitions (Hobbs 1983), if we define **Time** as the occurrence of events one after the other and **Management** as the act of control then, **Time Management** is the act of controlling events. Therefore, although it is called Time-Management what is really being addressed is how you choose to do what you do. It is taking control of your behavior to achieve your goals.

In order to manage how you spend your time you must know how much is available and how it is currently being spent. Identifying committed and discretionary time and doing a time log are two ways of identifying the resource and how it is being used. Based on this a plan can be devised to get us where we want to be.

Discretionary Time

We do not control all the time/events in our lives. Some is committed or controlled by others (time spent in class, at work, in a meeting, etc.), some is required by our physical bodies in order to stay healthy and alert (sleep, food, exercise, etc.) and some is discretionary (time that we have control over). If we take control of the events that occur in all our discretionary time to accomplish our most vital tasks we will be managing our time effectively.

Therefore, a place to begin time management is to discover the limits of our discretionary time. Layout a typical week and identify all the blocks of time that are committed to others or required for our health.

Time Log

Analyzing how you currently spend your discretionary time is an important first step in achieving better time management. The best way to gather this information is to keep a time log. The task is to evaluate how you currently spend your discretionary time and begin to make changes to accomplish your most vital tasks. To do this you must identify your goals and priorities and the values upon which they are based.

Setting Priorities

The most fundamental issue in time management is the establishment of priorities that are congruent with our personal values. The greatest danger is letting low priorities that are urgent supersede our most vital priorities.

Our priorities should be based on our most fundamental values—our vision of and understanding for who we are at our core. These values may include integrity, honesty, hard work, self-esteem, intelligence, family, health, etc. When these are stated as “unifying principles” (Hobbs 1983) and acted upon we experience personal congruity—a fit between what we believe and what we do.

A unifying principle (Hobbs 1983) is a value communicated in an action statement that is clarified in a paragraph. For example: (Hobbs 1983, 20)

Be honest with myself and everyone around me. Be open and fair with my boss, teachers, family, and friends. . . . See that all my business dealings are fair, completely aboveboard, impeccable.

Have high self-esteem. Continually develop and maintain a strong sense of personal worth as I relate to myself and others.

Grow intellectually. Expand the mind with a depth and breadth of reading and thought.

Once you have written your unifying principles they should be prioritized—ranked according to their relative importance. Based on these you begin to construct your long, intermediate and daily goals. For example, a long range goal may be to positively impact the quality of the environments that people inhabit. This might translate into the somewhat shorter range goal of graduating from college with a degree in some environmental design discipline. An intermediate goal might be to pass all my courses this quarter with a specific grade goal for each. A still shorter goal would be to successfully complete the current assignment. An immediate goal—a

daily action item—might be to read ten pages of the assignment and note important concepts.

Given this understanding of your values and long and intermediate range goals you are now ready to examine how you currently spend your discretionary time and to make changes to bring what you do in line with your values.

“**Congruency** is experiencing balance, harmony and appropriateness with the events in your life.” (Hobbs 1983) It is controlling your events so that they are in alignment with your values. It results in a sense of peace and satisfaction and gives you energy to do the current task.

Daily Planning

"Time management starts with planning. You should take fifteen to thirty minutes at the very beginning of each day to plan that day. For every minute you spend planning you will save time doing the task. We are spending time to save time. We are planning to work smart. To get the most for our efforts."

(Hobbs 1983)

To plan a day is to make and prioritize a to do list—to establish what you are going to accomplish that day. First, make the list of tasks in any order that they come to you. The next and critical step is to prioritize the list in terms of their importance to meeting your goals. In prioritizing the list you must differentiate between the urgent and the vital.

"Urgent has to do with how we act. We act on the urgent things. Vital is an evaluation of the importance of something to us in terms of our goals and values. Vital tasks rarely must be done today. Urgent tasks call for instant action. It is the urgent that draws us into action. We must put a sense of urgency on vital events."

(Hobbs 1983)

As a tool, Hobbs (1983) suggests using the following scale to note priorities:

- A = Vital (life sustaining)
- B = Important
- C = Limited Value/Some Value
- D = Worthless
- * = Urgent

Note that the letters A, B, C, and D are used to indicate how vital the task is to achieving your long range goals within your unifying principles. The asterisk is used to indicate urgency. Priorities can be established with the following questions. (Hobbs 1983)

Which of my long range and vital goals should I work on today?

If today I could only do three or four additional projects of value what would they be?

Which of all projects will give the highest payoff?

Which of the projects does the boss/teacher consider most vital?

What will happen if I don't do the projects today?

Which items on previous daily lists should I work on today?

Of all the tasks to be done today which will make me feel best to get rid of?

What do my personal values suggest I do today?

Based on these questions the urgency has been put aside. The A's represent those tasks that most support your long range and vital goals. After you have designated all the tasks on your list with a letter and asterisk as appropriate you must rank order them within each letter group—set the As in order (A1, A2, etc.). You now have the information to plan your day. Your goal is to accomplish A1 first within the most appropriate discretionary time slot. You then proceed to A2, etc.

A key point in making the initial task list or establishing what is to be accomplished for A1 today is to divide the project into parts to

be accomplished within appropriate discretionary time slots. This keeps us from procrastinating. It is critical that the immediate goals that go into a to do list be small enough to be accomplished in a short period of time or they will reinforce procrastination.



Time Wasters

The same things seem to prevent all of us from achieving our objectives effectively. These “time wasters” include: (Mackenzie 1990, vii-viii)

1. Attempting too much at once
2. Procrastination
3. Doing it myself (that is, not delegating)
4. Not saying no
5. Personal disorganization (cluttered desk)

An approach to addressing these time wasters can be thought of as the application of the four D's—Do it, Delay it, Delegate it, Delete it.

Do It

To decide to do something means making a commitment as to when and for how long you are going to focus on the task. The first rule is “do it now.” To do something effectively you must decide on a specific period of time that you can focus on the task. How long can you give the task your undivided attention without burning out—loosing focus? This will vary for different subjects—for those you like it will be easier for you to stay focused for a longer period of time. For example, if you feel that physics is a real problem for you then commit to working on it for fifteen or thirty minutes. At the end of that period decide if you are going to stop or if you feel that you can go another fifteen. If your focus is wandering stop and do something else. Preferably something that you would enjoy more. Another approach is to set a specific portion of the task to be done—I will read two pages.

Closely related to this process of setting specific periods of time for a given task is the “do it now” rule. It is far more effective to do fifteen minutes of a big task now and fifteen minutes a little later than it is to put it off until you have to do two hours of something you do not like. “Do it now” means that you make progress on all the high priority tasks starting now.

Another important aspect of “do it now” is focus—the “Concentration of Power.” Concentrate means to focus upon. Power is the ability to accomplish effects. Concentration of power is the ability to focus upon and accomplish the most vital priorities in producing optimal effect.” (Hobbs 1983) A key here is that you are concentrating on those events that contribute directly to the accomplishment of your vital goals.

Giving the task your undivided attention is essential to completing it efficiently and effectively. This begins with creating the appropriate setting and support. For example, if you are going to read, find a good chair that will support you in an upright position. Have a good light that will supply adequate illumination without glare. Make the place quiet. Sit upright and place all your attention on the reading. Get involved with understanding what you are reading. Underline, make notes and diagrams. Reread sections that are not clear. Stop at the end of the assigned time and reward yourself.

Note: You cannot do two things that require conscious intellectual involvement at once. If you are aware of the music you are not aware of what you are reading.

Delay It

Choosing not to do something can be a valuable decision. You may not have the appropriate information, there may be other tasks that are more important or you may not be able to give a task your focused attention. To delay a high priority task is to assign a specific time in the future that you will do it.

Delegate It

Some tasks are better done by others. To delegate a task is to recognize that others are competent. The difficult part is to give up control and let the other person do it their own way. If you delegate a task then let it go so that you are free to concentrate on your priorities.

Delete It

Choosing not to do something is an important choice. We often get caught up in commitments that we have made—“my word is my bond.” Some times it is more important to our mental and physical health to say that we cannot do something or that we are changing our mind and choosing not to follow through. Make commitments based on your vital priorities.

Procrastination

Hobbs (1983) identifies seven key ideas to help avoid procrastination of the top priority tasks—the tasks that support our vital priorities.

1. Make a prioritized action (to do) list every day. Use the questions identified under establishing priorities to construct the list.
2. Refer to your long range goals when establishing your priorities. This will help you separate the urgent from the vital.
3. Keep top priority items in front of you. Keeping them visible and in front of you gives them sense of urgency.
4. Cut overwhelming top priority tasks into small chunks that can be accomplished now within a specific block of discretionary time.
5. Chain yourself to your desk until the chunk is done.
6. Reward yourself when a task is done. Try rewarding yourself with a high top priority item that is fun (reading to expand an interest, exercise to stay healthy).
7. Anticipate interruptions during time designated to accomplish top priority tasks. Plan interruptions to occur at another time. Find a place to hide.

Sleep

It is important to address the issue of sleep. Lack of sleep seems particularly to impact students in the environmental design disciplines. Sleep does not waste time—lack of sleep wastes time with loss of efficiency, comprehension and poor judgement. Most X-acto knife cuts occur when people are tired. Research and our experience tells us that if we are to function effectively we need a consistent and stable pattern of sleep that yields between six and eight hours of rest depending on the person. If you fall asleep in class it is not because the lecture is boring—which it may be—but because you are not getting enough sleep. Therefore, set a time to go to bed and get up that will produce the rest you need and stick to it. If you manage your time effectively you can achieve all your vital priorities while getting the sleep your body requires.

The One-Third Rule

Over the years as I have asked students about the time they spend in different activities a pattern has emerged. I call this pattern the one-third rule. By this I mean that a full-time architecture student should expect to spend a third of their time studying, a third sleeping, and a third socializing. Study includes both time in and outside of class. Socializing includes eating, exercising, and other personal activities.

On a daily basis this means 8 hours studying, 8 hours sleeping and 8 hours socializing. On a weekly basis this means 56 hours studying, 56 hours sleeping and 56 hours socializing.

Obviously this distribution will vary some depending on the student and the specific course load in any given quarter. For example, a student might choose to study 10 hours, sleep 7 hours, and socialize 7 hours per day. However, if the distribution varies dramatically from the one-third pattern, students will find themselves falling behind, becoming sick or burning out or perhaps all three.

Studying architecture is a full-time job that must be part of a balanced life if a student is to enjoy the process and ultimately be successful in their lives and the profession.

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Time Log

Finding out how we actually spend our time is often the first step to good time management. The object is to control the events in our lives so that we are making progress toward our most vital goals.

Most offices require that you keep a record of how you spend your time. This record is used to keep track of what it is costing the office to produce the work and in some instances it is used to bill clients on an hourly basis. The record is usually kept in fifteen minute increments. Time records are also used as a planning and estimating tool to determine job costs and schedule time for each phase of the process.

On a personal level, we often do not have a clear picture of how we actually spend our time. Without information on our actual use of time it is impossible to decide if and how our activity patterns should be changed. Any changes should result in effective time management in terms of achieving your personal goals.

Instructional Objectives

To be able to gather data on specified events given the parameters and reporting form.

To be able to analyze and draw observations based on the data.

Exercise

You will be asked to or may wish to undertake on your own the making of a record of how you spend your time for various periods and with various levels of detail. There is no right or wrong answer to this exercise. The goal is to generate information that would be useful to you in improving your time management.

Requirements

The time should be recorded in fifteen minute increments. Round all times to the nearest fifteen minutes.

For classes beginning at ten minutes after the hour the actual class time should be recorded as starting at fifteen minutes after the hour.

Detailed Time Record

A detailed time record keeps track of every minute of time twenty four hours a day. This level of detail will provide you with an overall view of where your time is going. In recording the time you must or can use the following time codes.

Time Codes

01-Sleep: Time spent sleeping.

02-Hygiene: Time spent bathing, shaving, makeup, dressing, etc.

03-Eat: Time spent eating.

04-Home: Time spent cooking, cleaning, washing clothes, yard work, etc.

05-Travel: Time spent getting somewhere by foot, car, bus, etc.

06-Shop: Time spent buying food, clothes, CD's etc.

07-Work: Time spent earning money.

08-Exercise: Time spent working out, running, playing sports, swimming, etc.

09-Social: Time spent talking with friends, dates, parties, etc.

10-Meet: Time spent in club, organization, church, service, drama, etc. activities and meetings.

11-TV: Time spent watching television.

12-Family: Time spent with your father, mother, sister, etc.

13-Misc.: Anything that does not fit anywhere else.

14-Studio Class: Time spent in class for this studio.

15-Studio Study: Time spent studying for this studio.

Code numbers 16 and up will be defined in class or you may use them in any way you choose. When used to track time associated with classes the even numbers should be used for class time and the odd ones for study time as indicated above. If your classes do not use up all the available codes you may use them to keep track of anything you wish.

The illustration shows an example of how the Time Logs are to be filled out. Include the name along with the code if it makes the record clearer for you.

You might consider doing some color coding to make the record easier to read and extract data from.

Do not try to fill the form out by memory. It is easiest and most accurate if you keep it with you and update it at the beginning and end of each activity.

Process

Make as many two sided copies of the time log as you will need for the exercise or your own interest. Fill them out and keep them until it is time or you want to analyze the data.

Make copies of the summary form and use it to record your analysis. The form suggests that a two week period would produce a good view of how you spend your time.

	MON	TUE	WED
6 AM	11	11	11
	22	22	22
	53	51	53
7:00	35	51	35
	51	51	51
	41	55	41
8:00	41	51	41
	41	61	41
	41	61	41
9:00	41	65	41
	41	18	41
	41	18	41
10:00	41	18	41
	41	58	41
	41	88	41
11:00	45	88	45
	99	53	99
	53		53
12 Noon			





Week _____

Name _____

Time Log

	MON	TUE	WED	THU	FRI	SAT	SUN
6 AM							
7:00							
8:00							
9:00							
10:00							
11:00							
12 Noon							
1 PM							
2:00							
3:00							
4:00							
5:00							
6:00							
7:00							
8:00							
9:00							
10:00							
11:00							
12 Midnight							



	MON	TUE	WED	THU	FRI	SAT	SUN
12 Midnight							
1 AM							
2:00							
3:00							
4:00							
5:00							
6 AM							

If you find yourself using this side of the form for other than sleep you are probably not getting enough sleep!

Time Codes

01–Sleep	18
02–Hygiene	19
03–Eat	20
04–Home	21
05–Travel	22
06–Shop	23
07–Work	24
08–Exercise	25
09–Social	
10–Meet	
11–TV	
12–Family	
13–Misc.	
14–Studio Class	
15–Studio Study	
16	
17	



Time Log Summary

Name _____

TIME CODES	WEEK:	WEEK:	TOTALS
01-Sleep			
02-Hygiene			
03-Eat			
04-Home			
05-Travel			
06-Shop			
07-Work			
08-Exercise			
09-Social			
10-Meet			
11-TV			
12-Family			
13-Misc.			
14-Studio Class			
15-Studio Studio			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
TOTALS			
	168	168	336



CONCEPT MAPPING



Concept mapping provides a visual representation or road map of our understanding or knowledge of something. It is a useful tool for externalizing and clarifying the understanding of concepts and their interrelationships. Concept maps allow us to simultaneously see multiple relationships and thereby evaluate a system of ideas as a whole.

Introduction

Our knowledge of things (Novak & Gowin 1984) is constructed from our perceptions of objects and events where an object is anything that exists and can be observed and an event is anything that happens or can be made to happen. Our constructed knowledge takes the form of cognitive structures—systems of interrelated concepts. These frameworks of knowledge (Wesley & Wesley 1990) provide the basis for learning and integrating new knowledge. A concept map attempts to show a set of concepts and the relationships between them.

“A concept is an abstraction; it pulls together a lot of facts. It organizes them and perhaps makes sense of them.” (Hyde & Bizar 1989, 9) It is a regularity in objects or events designated by a label (chair, love). Concepts are constructed by people, societies and cultures. They organize our reality and direct our perceptions of the world.

Educating is the process by which we actively seek to change the meaning of experience. Meaningful learning occurs when we choose to relate new knowledge to relevant concepts and propositions we already know. “Concept maps . . . represent meaningful relationships between concepts in the form of propositions” (Novak & Gowin 1984, 15) where a proposition is “two or more concept labels linked by words in a semantic unit. For example, “sky is blue” would represent a simple concept map forming a valid proposition about the concepts “sky” and “blue.” (Novak & Gowin 1984, 15)

Concept Maps & Learning

“The best way to help students learn meaningfully is to help them explicitly see the nature and role of concepts and the relationship between concepts as they exist in their minds and as they exist “out there” in the world or in printed or spoken instruction.” (Novak & Gowin 1984, 24)

Concept mapping “will help students to extract specific concepts (words) from printed or oral material and to identify relationships among those concepts.” (Novak & Gowin 1984, 24-28)

“Concept maps present a way to visualize concepts and the hierarchical relationships between them.” (Novak & Gowin 1984, 28) It supports visual thinking by allowing the visual perceptual system to take in and the mind to process multidimensional relationships simultaneously.

Concept mapping externalizes concepts and thereby affords the perception of new relationships and hence new meanings—concept mapping can foster creativity.

Concept maps provide a basis for dialog concerning the validity of linkages, missing linkages, missing concepts and the meaning of concepts. Learning is an individual activity that cannot be shared but meaning must be shared, discussed, negotiated and agreed upon. Concept maps facilitate both individual learning and the creation of shared meaning.



Concept Maps & Memory

“Organization.

The brain spontaneously imposes its own subjective organization on all material it remembers. . . . The more we deliberately organize the material, the more we are helping the memory process. . . . Moreover, the very activity of organizing the material is itself helpful in memory.

Keywords.

Keyword notes are far more effective than phrases or sentences. The brain automatically drops the inessentials. . . . The [key] words are rich in imagery, . . . [and] the very act of extracting the key words involves you more in understanding the material and further increases the depth of processing.

Association.

Since words and ideas that are closely associated are recalled together, it helps memory if they are put together visually in the notes.

Clustering.

There are seldom more than seven or eight sub centers, so the material can be organized into a number of easily remembered chunks.”

(Russell 1979, 176-177)

George Miller (Russell 1979) showed that our immediate memory is limited to seven items plus or minus two. The critical issue is the number of “chunks” and not the quantity of information in a chunk. Therefore, effective memory can be increased by reorganizing the information into larger but not more chunks.

Visual Memory.

“Since visual images are much better recalled than words, the more visual the mind map is made, the better.”

(Russell 1979, 177)

Use color, because it is remembered more than black and white, to reinforce different themes and differentiate between groups of concepts by outlining, putting on a background and/or sharing a common color. Use images such as three-dimensional forms, diagrams, pictures, etc.

“Outstandingness.

Whenever an item is outstanding in some way or another, it is better remembered. . . . [Every map] should be unique; you should use different key words, different colors, and different shapes.

Conscious Involvement.

The more you participate actively and consciously, . . . the better. . . . Wherever possible, think of original ways to note the material. The greater the originality and creativity, the greater the interest, and the better the memory.”

(Russell 1979, 177)

A Map of Mapping

The concept map on the facing page is taken from the article “Concept mapping: A Brief Introduction” by Walter and Beverly Wesley (1990, page 4). It is both a good example and a map of concept mapping.

A concept map will include a number of concepts, show the relationships between them and reflect their relative degree of generality. General concepts go at the top with more specific concepts hierarchically ordered below. The concepts in the example are placed in boxes with relationship noted by connecting lines and words. Connections between concepts are linear (vertical) as well as horizontal. The horizontal connections or cross links show relationships between concepts across the major segments of a map. The linear links are shown with straight and the cross links by curved lines. This allows the map to be read as a sentence or series of sentences. For example, the center section of the example can be read:

*“A **concept map** shows **relationships** between **concepts** which are **perceived regularities** in **objects** and **events** which are **designated** by a **label**, for example a **word** or other **symbol**.”*

(Wesley & Wesley 1990, 3)

Many people indicate that concept mapping gives increased personal control over learning and makes it more meaningful—produces a deeper understanding of the material. The major complaint is the time required to construct a map—an indication of the time required for true conceptual learning.



Making Maps

The following provides some suggested steps that support the process of creating a concept map.

Step 1: Identify the major concepts.

The dominant concepts often appear in titles, subtitles and leading sentences in paragraphs. Choose the key concepts carefully and list them. Are any key concepts implicit—implied or understood but not directly stated in the reading or presentation? Are you mistaking an object or event for the more inclusive concepts those events or objects represent? Concepts are usually abstract nouns such as honesty, democracy, beauty, function, structure, wall, color, chair and drawing.

Do not try to select the concepts one at a time and put them into the map as you go. This linear approach will cause problems because the map is holistic. You must consider all the concepts and search out patterns before you attempt to construct a map of their relationships.

Step 2: Map the concepts from most inclusive (abstract) to most specific (concrete).

Do you know what the author means by each concept you have identified? Construct brief definitions based on the text and augmented with a dictionary or other resources.

Rank order other concepts in terms of importance and inclusiveness—put the most inclusive concept at the top and list the others in order below. Remember that concept maps should be hierarchical; that is, the more general, more inclusive concepts should be at the top of the map, with progressively more specific (concrete), less inclusive, concepts arranged below them. Begin building the concept map working from the most important concept down the ranked list.

Have you redrawn the map again and again to more clearly represent your understanding of the hierarchy and relationships? Expect to take more than one try to construct a map. Use overlays of tracing paper to alter and refine the map until it presents the relationships clearly and efficiently.

Step 3: Link the concepts with a line and linking words.

Choose linking words carefully. Examples of linking words include: needed by, made of, changes, can be, as in, from, contain, determines, have, increased by, indicates, is, used for, is where, would become part of, tries to, is either, are involved in, takes place when, affects, with, for, produces, combined to form, beginning as, such as, separates, influence selection of, is evaluated by, etc.

Step 4: Branch out from each concept to include definitions, illustrations, and factual information.

“Generally speaking, the more specific information that can be included in a concept map the more useful the map will be as a study guide and writing guide.” (Clarke 1990, 169) Identify any specific examples that may help clarify the map. The examples may be objects or events.

Step 5: Use cross—links to analyze additional relationships.

“Working from top down usually explicates the main relationships. Other relationships (links) appear when one looks at two concepts on an evolving map and asks, Is there a connection between these two concepts?” (Clarke 1990, 169) Look for cross links between concepts in different sections of the map.

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