

## **Andragogical Design Thinking: A Transition to Anarchy in and Beyond the Classroom**

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### **Abstract:**

Methods of instruction based on traditional lecture, passive learning, and hierarchical classroom structure are ineffectual for achieving higher level, authentic learning outcomes. As educators increasingly recognize this, there has been a shift from these standard practices to more radical modes of active teaching and learning, which have proven to be much more effective in enabling students to connect, synthesize and operationalize innovative conceptual frameworks. Conventional ways of teaching however, are still deeply entrenched, and in order to transcend obsolete andragogical methods, a design thinking approach can offer a viable process by which instructors and students synergistically discover and invent ways of learning that are uniquely suited to the conditions, constraints, and opportunities of each class.

This research shares specific examples that initiate a shift from quasi-fascist to anarchistic classroom structures; from authoritarian to negotiative dynamics; from emphasis on expertise to that of exploration; and from performance (grades) to process (risk-taking and willingness to fail). The key findings demonstrate that students developed more confidence with increased autonomy, experienced higher levels of engagement and enjoyment in the course, and performed better in achieving the course learning outcomes.

### ***Key Words:***

Anarchy, Design Thinking, Negotiation, Synergies, Active Learning, Engagement.

## Background

The derivation of this qualitative study emerged through a decade of teaching architectural design studios, and the realization that the same methods used for *teaching students how to design* can be applied to *designing how to teach students*. If the purpose of the architectural design process is to optimize spatial solutions based on a set of contextual and physical constraints, then an analogous set of principles can be applied to teaching: As part of the educational design process, instructors develop ways to optimize the learner's experience and better achieve course learning outcomes, taking into account such constraints as the number of students in the class, demographic composition, individual education background, disparate abilities, course level and allotted class time.<sup>1</sup>

One of the primary goals of design education is to cultivate an experimental and exploratory disposition—a capacity that is greatly diminished in adult learners. Most college students have spent their previous 12-13 years indoctrinated in an educational system that emphasizes obedience to authority, discipline and self-restraint, conformity to universal standards, and results/performance over process/risk-taking. To be drivers of innovation, designers must be able to break away from convention and think both creatively and critically. To build the types of characteristics which are sought in the field, as well as attain a heightened degree of authenticity in the classroom setting, it became necessary to revamp the approach to design education in general, for which traditional methods of learning are often not appropriate.

As a culmination of participation in a course redesign workshop, as well as scanning the literature on the scholarship of teaching and learning, the hypothesis regarding the andragogical effectiveness of a design thinking methodology was formulated as follows: Through a design thinking approach that strives for achieving anarchy in the classroom, design students would be encouraged to be more genuinely exploratory, thereby honing their creative and critical skills in a way that could not be nurtured through old-fashioned pedagogical approaches. In addition to changes in behavior and disposition, the broader scope of the learning experience (from engagement to comprehension to performance to retention) would be substantially improved through the application of principles of design thinking in the classroom.

This study was conducted at a small, liberal arts university in the Pacific. It is an open-access institution whose mission is to serve the indigenous population, many of whom were raised in an environment that neither encouraged them, nor prepared them academically, to obtain a college degree. Unlike students from more prestigious schools—students who have been bred to succeed academically—first-generation students often do not have a history of high academic performance nor a climate of academic learning fostered in their home environment, and the majority lack both the financial and the psychological support to pursue a college education.

These disadvantages are compounded by the fact that primary and secondary school education is designed to inculcate obedience in students and creates a numbing

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<sup>1</sup> This also reflects Buchanan's (1992) repositioning of domains of design from "complex systems and environments for living, working, playing, and learning" to "activities and organized services".

culture of deference to authority. It produces students who are accustomed to taking directions, seek “correct” answers over actual learning, and value performance (grades) over process (what they actually learned). This system leaves them wholly unprepared for the realities of professional life—or any career, for that matter—where graduates are expected to think innovatively and critically, to take initiative to solve problems, and to be resilient in the face of inevitable setbacks along the way.

Prior to the study, some identified pre-challenges for the students included:

- a debilitating reliance on authority (students do not know how to think for themselves, how to “meaningfully provoke”, or how to take on larger-scale initiatives);
- the excessive amount of material required to master for complex capstone projects; and
- overcoming past teamwork experiences that have been fraught with conflict—irreparably damaging friendships and working relationships—which, as a result, reduced productivity, quality of work, and willingness to collaborate.

A priority for the course was to integrate insights and perspectives from other disciplines as well as to work in an interdisciplinary fashion with other students and faculty. To that end, participants in the process included:

- Faculty member from the Environmental Studies program;
- Faculty member and students from the Senior Accounting course;
- Representatives from university administration (who must approve of the initiatives); and
- Student representatives, who, as the end users, expressed the need for a new type of social/intellectual/collaborative gathering space that reflects the different and varied ways in which this generation of students interacts.

This study was undertaken to satisfy the requirements of a Faculty Development fellowship in Design Thinking, funded under a Federal Title III grant, and was the latest phase of a number of initiatives by the university administration to promote and incentivize improvements in instructional methods.

## Theory

### ***What is Design Thinking?***

Design is the process of *optimizing* solutions to a problem within a given set of constraints; what is considered ‘optimal’ is not a fixed state, but rather falls on a continuum between the ‘practical’ and the ‘ideal’, depending on the nature and degree of the constraints. Design cannot be self-referential in the way that purely aesthetic endeavors inherently are, but instead must be purpose-driven; that is, design addresses an identified challenge or problem, and works towards a measureable, concrete goal. The nature of the process is both non-linear and iterative, where each iteration should not be seen as merely a random effort of trial and error, but rather as affording opportunities for improvement and further growth. The design process is steeped in what Buchanan (1992) refers to in his “wicked problems” approach as fundamental

indeterminacy: there are no single right answers, but instead many possible solutions of varying effectiveness.

Design Thinking (DT), therefore, requires a mindset of thinking “outside the box” (i.e., that which has not been done before), as well as thinking outside one’s “comfort zone” (i.e., a willingness to take risks and to fail). Designers are pioneers who must fearlessly venture into the realm of the absurd. In order to devise novel solutions, DT entails questioning—and perhaps abandoning—long-held assumptions, conventional wisdom, and accepted practices. Design, as a form of technology, is, according to Dewey, “an art of experimentation” (cited in Buchanan, 1992).

Design Thinking is comprised of three components: The ‘purpose’, which is the goal to be achieved, and which guides the designer’s efforts; the ‘problem’ (aka the design challenge or task), which is identifying areas for improvement; and the ‘process’, which are the methods employed by which to solve the problem and achieve the goal. The Institute of Design Thinking at Stanford (<http://dschool.stanford.edu/dgift>) has developed a model that breaks down the process phase into the following steps: empathy, definition, ideation, prototyping (implementation), and testing. These basic principles are the foundation of any designer’s education, but ironically not yet of the educator’s design. Other US schools employing DT include the University of Minnesota, MIT Institute of Management, and Illinois Institute of Technology Institute of Design. International universities who are embedding DT in their curricula include University of Toronto, Technical University of Denmark, Milan Institute of Technology, University of Technology, Sydney, and the National University Singapore.

### ***Why Anarchy as an Andragogical Goal?***

In a political context, anarchism is a body of thought that seeks to abolish and challenge rigid hierarchies (like the State), rethink and dismantle capitalist ideological structures, disrupt modes of forced coercion, build a society based on communist aspirations, free people’s desires from historically oppressive social norms, and create organic and communal societies based on mutual aid and social justice (Berkman, 2003; Bowen & Purkis, 2004; Chomsky, 2005; Cole, 2008; Guerin, 1970; Rocker, 1989; Sheehan, 2003). Howard Zinn (1971) offers a useful definition of anarchy that is relevant in an academic context:

1. A state of disorder due to absence or non-recognition of authority; and/or
2. An absence of government and absolute freedom of the individual, regarded as a political ideal.

The term itself typically carries negative connotations, and is often associated with destructive traits that would be considered undesirable for the classroom, such as unruliness, chaos, disorderly conduct, incivility, and absence of the rule of law. However, in the DT paradigm, perhaps these are precisely the behaviors and characteristics that are most conducive to authentic learning and that we should encourage. Such a libertarian environment would allow students to follow their natural inclinations rather than suppress them, to be free to explore and make mistakes with impunity, and to reclaim their autonomy and accountability for what they do and learn in the classroom.

#### Potential Benefits of an Anarchic Classroom:

- Students are more invested and engaged in the course;
- Students have a more meaningful understanding of learning outcomes;
- Students feel empowered through choice and control;
- Students develop more autonomy and initiative, which leads to greater confidence in their abilities and less insecurity;
- Students are motivated internally rather than through external validation;
- Students appreciate the value of making mistakes;
- Students embrace a rigorous rationalization process, which leads to more critical/deeper thinking;
- Students experience a greater sense of accomplishment at the end of the course;
- Students take greater accountability for personal success and failure, which will make them more resilient;
- Students demonstrate better retention of material;
- Students contribute more relevant ideas to the discourse than the instructor;
- Students experience a higher level of enjoyment of the course; and
- Students are more motivated for lifelong learning beyond the course.

### Literature Review

#### **Anarchy**

The concept of anarchy as an instructional method has been discussed in various forms since the 1970s (Freire, 1970; Illich, 1971; Chappell, 1978). The major overarching theme is to empower learners in an authentic manner of action, as opposed to the traditional approach of providing linear information to passive learners. Haworth (2012) reminds that anarchist models of pedagogy in themselves may simply continue to contribute to the socialization of students as consumers, unless a truly open environment is created and sustained. Early in the development of anarchy, Feyerabend (1984) wrote an Anarchistic Theory of Knowledge, which argues that breaking from traditional methods is reasonable and necessary. He further stated that effective teaching is inquiry-based and the role of an effective instructor is to guide the learner's curiosity. He supports spontaneity in thought, perception and action, and his distinction between learner and instructor is ambiguous and transitory. Horton and Freire (1990) also focus on the curiosity aspect of anarchy, reinforcing that the instructor is a facilitator to support learner curiosity and exploration. Ultimately, the goal of this approach is to create an environment where the learner constructs their own meaning in their own way, on a path to becoming who they are themselves. Illich (1971) reaffirms the authentic role of an anarchist pedagogy, which has no boundaries and resembles much of what we have learned in the power of authentic informal learning settings. Ultimately Rouhani (2012) indicates that the power of anarchist theories can remove the concept of the instructor as an authority, which sets the stage for creating self-regulated learners, who are in control of their own learning. Spoto (2015) cautions that although students may respond positively to the anarchist methods to teaching and learning, rigid university systems are unable to relinquish control and their archaic policies of status

quo. A small step, which would be conceived is to rethink instructional methods using a different design, such as Backward Design or Design Thinking.

### ***Design Thinking***

Design Thinking (DT) is a term which has been used in many forms, both inside the academy and with specific reference to traditional design disciplines. Historically, an initial concept of DT in the sciences can be traced to Simon's (1969) work, *The Sciences of Artificial*; and for engineering to McKim's (1973) book, *Experiences in Visual Thinking*. Later, Rowe's (1987) book *Design Thinking* addressed the concept for architects and urban planners. Faste (1994) built upon McKim's theory to address DT as a method, which can be used as an instructional tool. In addition, DT is being used as a new model for integrating appropriate, relevant and meaningful instructional technology into the classroom (Brooks, 2010).

Carroll, Goldman, Britos, Koh, Royalty & Hornstein (2010) view DT as a way to provide a more authentic approach to teaching and learning, concentrating on the skills, which most learners will need for their careers. The careers do not focus on identifying one correct standardized answer, but more where students can tackle the "wicked problems" (Buchanan, 1992) they will encounter on the job and in life. In higher education, DT is becoming more common in the disciplines of engineering, medicine, business, law, architecture and education; one university (Radford University) even offers a graduate degree in Design Thinking (Goldsman, Kabayandondo, Royalty, Carroll, & Roth, 2014). Marin, Hargis and Cavanaugh (2013) found that when using DT, learners felt an enhanced focus on building a classroom community through learning experience addressing essential questions, which they selected and pursued. Meinel & Leifer (2010) developed four basic rules to DT. The rules include the Human Rule; Ambiguity Rule: Design Thinkers Must Preserve Ambiguity; Re-design Rule: All Design Is Re-design; and Tangibility Rule: Making Ideas Tangible Always Facilitates Communication. Each of these rules can be integrated well through active learning methods which foster authentic student engagement.

### ***Active Learning and Student Engagement***

Active learning is a common goal in many educational settings, and although interpreted and implemented differently, there is a clear consensus of the potential usefulness. Active learning has also been highly correlated to student engagement (National Survey of Student Engagement, 2012). Most recently, Freeman, Eddy, McDonough, Smith, Okoroafor, Jordt & Wenderoth (2014) discovered through a meta-analysis of 225 studies, students in classes with lecturing were more likely to fail than classes with active learning. Langley and Hargis (2015) found that when active learning methods such as concept mapping, commercial storyboarding, and wikis, student engagement increased. In addition, Davidson, and Hargis (2016) found that one specific utility of integrating appropriate, relevant and meaningful technology, such as an Infographic can act as an effective active learning assessment tool. Gao and Hargis (2010) found that along with engagement, active learning strategies built metacognitive abilities and self-efficacy. The two attributes of metacognition and self-efficacy are critical for both achievement and perhaps, more importantly, continuous learning as these factors also foster self-related learning (Hargis, 2000; Zimmerman, Bonner, & Kovach, 1996).

## Methods

The participants of the study included undergraduate students in their senior year majoring in Environmental & Interior Design. The sample included two male and five female students between the ages of 21-28 years, with mixed cultural identities and educational backgrounds.<sup>2</sup>

Qualitative data was collected from the seven participants over the 16-week, spring 2016 semester. The analyses were conducted on progress and final artifacts as direct measurements; and questionnaires, naturalistic observations, student evaluations, and anecdotes as indirect evidence.<sup>3</sup>

In order to develop a radically different approach to teaching, an important first step was to identify the traditional methods that would be challenged; these are the methods that Freire refers to as the “pedagogy of oppression” (1970):

1. The teacher teaches and the students are taught;
2. The teacher knows everything and the students know nothing;
3. The teacher thinks and the students are thought about;
4. The teacher talks and the students listen;
5. The teacher disciplines and the students are disciplined;
6. The teacher chooses and enforces their choice, and the students comply;
7. The teacher acts and the students have the illusion of acting through the action of the teacher;
8. The teacher chooses the program content, and the students adapt to it;
9. The teacher confuses authority of knowledge with...professional authority, which [is] set in opposition to the freedom of the students;
10. The teacher is the subject of the learning process, while the students are mere objects.

A set of contrasting teaching strategies derived from principles of design thinking was then crafted to be adopted by the instructor and implemented for the study:

1. Question all assumptions about how to run the course--even (or especially) those practices that are touted as “tried and true”; actively challenge conventional wisdom;
2. Be open and willing to make spontaneous and ostensibly absurd decisions;
3. Consider the widest spectrum of possibilities for each decision, however implausible, and do not reject anything without deliberation;

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<sup>2</sup> Because of the nature of our institution to serve the disadvantaged, our student-to-faculty ratios are intentionally low, so that students can receive the personalized attention that many of them need.

<sup>3</sup> Since the writing of this paper, the same approach has been adopted in two other courses, both of which have yielded similar positive results.

4. Prior to the beginning of the semester, invite students to offer input in developing the content and outcomes for the course;
5. During the course, give over as much autonomy and decision-making power to the students as appropriate (for seniors this can begin the first day, but for freshmen, it may be introduced gradually and increase over the duration of the semester, or only pertain to low-stakes decisions);
6. Relinquish control of short-term outcomes and results, while still adhering to long-term objectives;
7. Focus on *managing* the class and *facilitating* learning rather than *achieving* goals (process-oriented rather than results-oriented approach); make it clear to the class from the outset that they should not expect the instructor to “teach”;
8. Require that all decisions made by the class be rigorously justified, and that students acknowledge the consequences of their choices, both positive and negative;
9. Be willing to embrace pedagogical missteps and brace the class for frequent failed events; use these events as an opportunity to find the value in making those mistakes through regular reflection; and
10. Welcome suggestions from students for further improvement along the way.

### ***CASE STUDY: EID 471 Commercial Design Studio (Spring 2016)***

#### ***Development of Project Typology and Parameters***

- Instructor met with students one month prior to the beginning of the semester to discuss what types of projects they would be most interested in doing—preferably project types that were different from what they had done previously, and which they would like to explore.
- Instructor shared a brainstorming document in which students could mutually construct and exchange ideas; this provided a forum for ongoing dialogue in defining the project parameters.

#### ***Site Selection***

- Instructor identified all possible site options on campus to situate the project.
- As a class, each site was investigated.
- Students made the final selection of the project site, but had to rigorously justify their choice—producing exhaustive lists of pros and cons for each option—before it was adopted.
- Students then drafted a defensible recommendation for their proposal to university administration.

#### ***Team Formation***

- Students were given the option to compose their own teams or to form them through random assignment; the former option was chosen.



- Students were then given the platform to openly discuss categorical criteria for team assignments (e.g., scheduling issues, history of relationships, compatibility, skill sets and diversity, complementarity, etc.), but they also were allowed the opportunity for confidential issues to be discussed privately with the instructor if necessary.
- After the discussions had been summarized, the assignment options were then distilled and presented to the class.
- Balloting was closed; after announcing the team assignments the floor was opened again for further discussion or objections.
- For greater efficiency, as well as to promote camaraderie early on, students worked at first as a single group on analytical tasks, the information from which was shared by all. These tasks included precedent studies, codes research, sustainability research, site analysis, programming analysis, client interviews, surveys, budgeting issues, etc.
- Students only worked in teams when it became necessary (in the design, or synthesis, phase); however, to diminish any competitive impulses, continuous cross-pollination of ideas and efforts was encouraged to maintain an atmosphere of collegiality and cooperation between teams.
- At any point during the semester, students reserved the option to mutually dissolve their partnerships if they were convinced that their differences were insurmountable and the collaboration had become counterproductive. Having this option, while never exercised, helped to alleviate stress. Often it compelled them instead to define different degrees of collaboration.

### ***Scheduling and Deliverables***

- Students determined the deadlines for interim assignments and tasks within the larger timeframe of the semester, based on how many days they felt they needed to complete the assignment well, and also coordinating with their workload from other courses.
- Students were also given the discretion to determine the project deliverables they deemed necessary to present at the end of the semester. Because of the greater investment students had in their work, they did not defer to the minimum requirements as might be expected; instead, they discussed all the possibilities to present their projects in a way that was efficient, but also optimally reflected the complexity and rigor of their work. The list of deliverables generated by the class exceeded what the instructor would have asked of them.

### ***Assessment***

There were two major reviews in which the audience focused on very different aspects of the project. The first was a formative assessment (interim design presentation), the purpose of which was to solicit feedback from stakeholders, end users, and related experts. The second was a summative assessment (final design presentation) conducted by university administrators in which the focus was the economic and political feasibility of the project. These different assessments helped

students to understand both the problems and the solutions from divergent perspectives.

## Results

The class opted for self-selection over random assignment and ultimately decided to form three teams based on past history with each other, work schedules/availability, and individual workload. Though the process of team self-selection was considerably more time-consuming (which initially caused some anxiety because of the already very tight timeframe for the semester), students reported having a more harmonious experience—both within teams and between teams—and the work produced from this class was of a higher quality than in previous classes. (One of the team projects won the highest award from the local chapter of a national design profession organization.) Students were also observed to be more confident in their decisions, and were better able to defend them at their final presentation to the university's administration. At the end of the course, students also reported that they felt they had learned more in this course than in other courses in their major, because they were left to their own devices to figure things out on their own—or as one student put it: “we were forced to do it ourselves”. Another student stated three months later: “Had you not pushed us the way that you did, I don't think I would have grown to who I am today!”

The semester was not without periods of frustration and even occasional despair; but these moments—though sometimes uncomfortable to endure—were embraced in the spirit of Piaget's Disequilibrium through Accommodation or Assimilation. The negotiative discourse allowed for more honest and transparent (though fortunately ephemeral) expressions of how they felt about the course, and giving the students that space to vent their feelings at the moment was therapeutic as well as a reflection of trust in both the process and in the instructor. Even as far as halfway through the semester, when faced with a new dilemma or when under duress, students sometimes pleaded for unilateral decisions from the instructor; this eventually subsided when they realized that the instructor would not acquiesce, but also as they became more comfortable with the negotiative style of the classroom and their newfound autonomy.

The role of the instructor often came under debate, and was constantly subjected to reinterpretation. The anarchic approach was at first perceived as an abdication of the instructor's responsibilities as an educator, with students commenting that “it is your job to clarify”—an assumption I, myself, had never challenged before, and this quasi-accusation caused me to reflect on my role more deeply. The question of when to intervene was a frequent source of doubt: must the instructor feel compelled to clarify what the students don't readily understand? Ultimately, instead of explaining or providing the answer the students were seeking, I elected to give them cues which would help them to figure it out on their own. From this I concluded that my job as an educator was to help them “discover” rather than “impart” or “advise”.

The pilot course was successful on many levels, though there might have been other variables at play besides the andragogic approach that contributed to its success:

- This cohort group had known each other for 2-3 years, during which strong friendships between them had been formed prior to the course.

- All of the students had had at least two courses previously with the instructor, and were very familiar with her teaching style; their established relationship of trust likely made them more amenable to experimentation and departure from conventional norms.
- Four of the seven students were slightly older, and brought with them more college experience than the typical senior-level student.
- A majority of the class had above average aptitudes and highly disciplined dispositions relative to the general student population.

## Conclusions

Several lessons were learned from the pilot course, as well as some unexpected outcomes:

### ***Team formation***

More time was spent forming teams, which created delays in beginning the semester-long project, but this investment ultimately made for a more positive and productive process, as well as a higher quality outcome. Previously, when teams were randomly assigned, the group dynamic was often rife with interpersonal conflicts, which made for a much less efficient collaboration and negative outcome.

### ***Coordination and Organization***

As is often the case when there is no individual accountability for specific tasks—and especially at the beginning when students are not yet accustomed to being the decision-makers—the first challenge was how to overcome collective inaction. An effective way to pre-empt this inertia was to identify short-term tasks on a daily basis, and then have the class designate who was to be responsible for each. Progress was monitored through shared documents on G-Drive, and regular updates and comments were disseminated to students. Because organization and coordination of both input and output from numerous sources quickly became cumbersome and unwieldy, editing of shared digital documents was limited to authors only. Another file was then created for brainstorming purposes in addition to unregulated, miscellaneous input from the rest of class, which was then screened by authors for inclusion in the primary documents at their discretion.

### ***Emergent Synergies***

As the transition was made to the anarchic classroom, students' behavior and attitudes changed in unintended ways. The unstructured, unscripted, and unpredictable format led to the emergence of unexpected synergies that would not have occurred in the traditional course format. Transferring responsibility to the students for the decisions that mattered to them brought out deeper and more critical thinking skills. As a result of their greater autonomy, students were more willing to take on less pleasant tasks of their own accord, because they deemed the additional work to be in the best interests of their project. They even took it upon themselves—without any prompting—to anticipate relevant questions, and pursue pre-emptive measures to address future problematic issues, sometimes in advance of what the instructor was prepared for.

The anarchic format—though amplifying the students’ insecurities at first—generated increased confidence from within, and reduced the reliance on external validation in the form of teacher’s praise or good grades. Students still cared about those acknowledgements, but more in a supplementary fashion. This process, in turn, alleviated some of the anxieties associated with the desire to perform well, because it was the independent, as well as risk-taking behavior that was valued. At the end of the semester, once students had some time to reflect, they reported a greater passion for the discipline, and greater joy in the learning process.

### ***The Anarchic Approach***

Giving full autonomy to the students was uncomfortable for them at first and periodically throughout the term (and for the instructor for different reasons) because they expected and wanted to be directed. As they became more familiar with the practice of self-determination in the classroom, and began to see the advantages of engaging in the instructional dialogue, they eventually came to embrace the new approach and grew more confident—often offering suggestions for improvement even when they were not solicited. However, this was not a linear process, and when confronted with new challenges they felt unprepared for later in the semester, students would occasionally revert back to requesting to be told what to do. But when they came to realize that that was no longer an option, the requests finally ceased.

### ***New Andragogical Perspectives***

Many long-held assumptions, expectations, and traditional teaching practices were subject to scrutiny as mandated by this study, and were ultimately replaced with more effective perspectives and approaches to learning.

### **TEAMWORK**

<b><i>Conventional Andragogy:</i></b>	<b><i>Anarchic Andragogy:</i></b>
<ul style="list-style-type: none"> <li>• Conflict in teamwork is inevitable—and an unavoidable aspect of working with others that must be tolerated.</li> <li>• The collaborative process is cumbersome and often yields to the lowest common denominator.</li> <li>• Imposed team assignments are justified by the belief that in order to learn how to adapt to the “real world” and the trials and tribulations of professional life, this coercion is necessary.</li> </ul>	<ul style="list-style-type: none"> <li>• The focus in teamwork should be on reinforcing positive attributes rather than overcoming negative ones; on learning how to optimally collaborate and cooperate as essential skills; and on valuing diverse points of view as vital to robustness and innovation.</li> <li>• The collaborative process is synergistic, and can yield results that are greater than the sum of the individual inputs.</li> <li>• Rather than accepting and conforming to dictatorial models of teamwork that were customary in the boomer generation, propagate new models for interaction that are more appropriate for the post-millennial generation.</li> </ul>

**AUTHORITY**

<p><b>Conventional Andragogy:</b></p> <ul style="list-style-type: none"> <li>• The instructor represents authority (as in being authoritative as well as being an expert in their field), and is seen as the repository of wisdom and knowledge.</li> <li>• As an authority figure, the instructor must maintain order and structure in the classroom; obedience and deference are equated with reverence and respect.</li> <li>• The instructor must show that they are in charge by retaining complete power, and are therefore solely responsible for the outcome of the course.</li> </ul>	<p><b>Anarchic Andragogy:</b></p> <ul style="list-style-type: none"> <li>• The instructor is a facilitator who acts in a supportive capacity rather than in a leadership capacity; exhaustive expertise in an era of instant and widely accessible information via the internet is no longer achievable, or even relevant.</li> <li>• Maintaining order has no correlation with learning, only with the desire to control; if students are distracted or not motivated to stay on task, the focus should be on how to generate more interest and engagement, not on suppression of behaviors that deviate from the norm.</li> <li>• The instructor may advise or counsel, but need not take on the role of benevolent dictator. By empowering the students to take more control over their learning experience, they also assume responsibility for the outcomes of the course.</li> </ul>
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**DECISION-MAKING**

<p><b>Conventional Andragogy:</b></p> <ul style="list-style-type: none"> <li>• Decisions are top-down and are not subject to negotiation, nor must any rationales be offered; they must be accepted without argument.</li> </ul>	<p><b>Anarchic Andragogy:</b></p> <ul style="list-style-type: none"> <li>• Any and all decisions are negotiable by all parties; the alternatives where the most compelling justification is presented and garners the most support will be adopted.</li> </ul>
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**Recommendations**

Several practices that yielded positive results will continue to be applied and developed in future courses; the following is a summary of those prescriptions:

Choice and autonomy make for a richer, more productive learning experience than the more controlled and disincentivizing pedagogical paradigms that still represent the status quo. Create an environment that fosters independence and encourages risk-taking. Reward failed attempts and perseverance, not just successful endeavors.

Instead of the instructor determining the homework assignments, project types, and exam material for a course, allow students themselves to negotiate both the deliverables based on course learning outcomes, and the due dates that give them sufficient time to complete the assignment and accommodate deadlines for assignments in their other courses. As a class, make an inventory every day of what should be accomplished by next class. This routine entails that students must offer thoughtful justifications for their decisions, which not only engages them more—making them think more deeply about what they are learning—but also hones their critical thinking skills. Allow students to submit questions on specific topics they think are important for them to know for their exams.

For large-scale or long-term projects, eliminate authoritarian team assignments and hierarchy, and allow teams to self-generate; as this approach is more relevant to the post-millennial generation and the future of how we will work, encourage them to introduce this new model to the workplace rather than accept the conventional structuring. In this way, students can become the vanguard as they venture out of the classroom and embark on their professional careers.

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