

**Amiable Refutation:  
Finding the Positive Side of Argument**

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## **Amiable Refutation:**

### *Some Questions*

The idea of educating young learners in the art of argument is not new. Since at least as far back as the dialectical schools of ancient Greece the idea of educating people in formal structures of argument and critical thinking has been a primary aim of effective education. However, several decades of educational, developmental and communication theory may indicate caution against prematurely inculcating formalized argument in young learners, not because they cannot do it, but because they cannot objectify the reasons *for* doing it. Teaching learners to think critically and make sound decisions is paramount (Bloom, 1956), but weighing the risks of teaching argument against affective development should also be considered carefully. Are there indications of a developmentally appropriate age, (or more importantly a detrimental or ineffective age) in which to instill argumentation? Immature arguers may be more geared towards emotional persuasion than logical persuasion. Institutional aggression is a social phenomenon that has common manifestations in education. How will young people interpret the invitation to become argumentative? How will teachers frame it? What responsibilities do we have to others when we begin the argumentative process? How many adults remember developing a genuine dislike for a school subject based on negative interpersonal experiences: a lesson was delivered in an insensitive way, or at a developmentally inappropriate time? To what extent is teaching argument the right skill to apply, and to what extent is arguing effectively a matter of developmental *readiness*?

## **Science Reform: Research to the Rescue!**

Science is not absolute. All theory is open to refutation, and effective scientists accept this as a basic tenant of proposing a hypothesis. Likewise, educational standards should be built on the best available evidence, time-tested theories and research. The National Research Council's framework of the Next Generation Science Standards included "engaging in argument from evidence" as a key science practice (NGSS, 2013). The national framework begins calling for the development of argumentative logic as early as kindergarten, however when (and to what degree) a student is expected to demonstrate and utilize these skills of argumentation will vary from program to program, and state to state. The list of state participants and stakeholders of the NGSS standards, while very eclectic, is still predominantly national associations and universities. The standards were defensibly created by passionate subject-matter specialists, many of whom appear to have concluded that educators can teach argument to very young children. "Although it was previously held that young children are not equipped to engage in abstract thinking and reasoning, contemporary research on children's learning provides compelling evidence that they are capable of reasoning processes that are foundational to scientific thinking. The authors of the report [*NRC, Taking Science to School, 2007*] assert that, 'All children bring basic reasoning skills, personal knowledge of the natural world, and curiosity, which can be built on to achieve proficiency in science' " (Zemba-Saul, 2009). While that is the assertion, there would currently appear to be more studies exploring why youth

cannot construct arguments, rather than how they are succeeding at it. It is not *impossible* to teach a child to mirror a skill. It is easy to make inferences from developmental behaviors that might later develop into critical reasoning. From a human development perspective, children may have motives for their behavior that are vastly different from the objectives of science educators. There are more or less developmentally appropriate times to pursue certain learning objectives, and perhaps significantly better ways to scaffold communication skills as the need to teach argument emerges (Bloom, 1956).

The deeply held conviction that better schools will make a better society is fuel to reform movements. (Tyack & Cuban, 1995). P.T. Ashton made case study observations asserting that culturally embedded environmental factors are more responsible for the rate of a child's cognitive development (Ashton 1978). Cultural necessity and devised educational reforms are not necessarily built from identical motives. As an institution, a school can be a culture unto itself, and frequently divorced from the realities of real world experience. As an institution, one of education's unspoken goals is the perpetuation of more education, whether or not the common people think they need it. In the early 1980s a prodigy movement became popular that encouraged parents to intentionally mold children's learning environments into "purposeful instruments" that would guarantee a child would "have a superior mind" (Englemann & Englemann, 1981). Since that time, (which was also the advent of the age of technology, and the publishing of the "Nation at Risk" report) parents, educators and special interest groups have been more or less obsessed with making children smarter. Apparently all that has succeeded in doing is making anxious young adults. (Bayless, 2015). Early arguments from psychologists founded in Piagetian theory discouraged teachers from "speeding up" learning. Wadsworth insisted a teacher's job was "insuring that development in each stage is thoroughly integrated and complete (Wadsworth 1978). Teaching children to mimic intelligence is not the same as allowing them to develop their own constructive reasoning skills when they are ready. "The miseducation of young children, so prevalent in the United States today, ignores well founded and non-controversial differences between early education and formal education" (Elkind 1991).

Piaget's theory is basically an observation that skills are adopted and utilized in developmental stages. The differences between concrete operational and formal operational development have to do with being able to intentionally manipulate conceptual ideas rather than building understanding through concrete observation and experience (Wadsworth, 1989). Science educators would like to believe that all youth can develop hypothetico-deductive reasoning. Youth can demonstrate behavior *towards* formal operations, because that is where the brain's development is directed. Even when theorists and researches manage to encode a behavior in young learners, there is a history of research that supports the claim that, for the average student, abstract reasoning usually arrives about the same time as puberty. The ability to begin thinking abstractly might be triggered by pituitary hormones, but about the time abstract reasoning is possible, pituitary hormones introduce *other priorities* for adolescents. "In middle school students, the quality of peer relationships accounts for 33 to 44% of the variance in achievement" (Johnson, Johnson & Roseth, 2010). Developing arguments is something that students struggle with. "The task of formulating scientific arguments is challenging

for students in that it requires abstract thinking; generalizing from specific data to a theoretical claim and making connections across levels of abstraction (Takao and Kelly 2003). Takao and Kelly were speaking of college students in their paper, not sixth-graders. Young people have many conflicting developmental tasks, beyond their cognitive acquisitions. Particularly in puberty, they generally have strong social and emotional imperatives that could compete against the successful adoption of argumentation practices with their peers. Neimark reasoned in his work that many people have not progressed beyond concrete operations because their environment does not require any higher order of thinking. (Neimark, 1975). This echoes Ashton's observations. With the advent of the technological age, it may be that our environment has begun requiring more deductive reasoning skills to master our tools (and video games.)

While there has been much recent work generated to assert that young learners can indeed argue effectively (Berland, McNeill, 2010) there is also evidence that indicates that students often have difficulty constructing arguments, justifying claims with evidence and evaluating claims and arguments (Sadler, 2004, Driver et al., 2000). Even Piaget doubted that most *adults* would have the ability to transfer formal operational (abstract) reasoning beyond the areas of their own expertise (Piaget, 1974). Has our culture evolved to a place that necessitates higher-order thinking skills, or is it just the pipe dream of academia? We can teach people better reasoning skills, but we can't make them use them if they don't see a need to. To succeed in creating a learning community where argument is recognized as a valued skill, does our culture have to value it as a necessity? Is there some reason why in a democratic country people wouldn't value debate, argument and problem-solving? Has our educational system fallen that far out of synch with our constitutional ideals?

Education has to start by teaching young people to value each other and value each other's differences. As trite as that sounds, research cites that one of the challenges to successful argument is that both students and teachers naturally seek out consensus rather than differentiation (Zemba-Saul, 2009). Theorists to emerge from the Human Potential Movement would argue the humans are motivated towards belonging, intimacy, agreement and consensus, but not argument. (Maslow, 1943, McClelland, 1985).

## **How We Argue**

Designing a developmental sequence doesn't simply require making skills progressively more difficult, it requires considering the developmental attributions and motivations of the learner. In the case of argument, some early studies suggest that youth will not practice argument despite being able to demonstrate acquisition of the skills (Zemba-Saul, 2009), yet many parents would probably agree that their children, even before the age of five, know how to argue for things they want. So what is happening in the classroom that interrupts the assimilation and demonstration of argumentation skills? Socialization and the natural need to have a sense of belonging can become far stronger motives to young people than academic achievement, particularly when they are younger. A learning climate that respects the developmental priorities of young learners should be

a prerequisite of any inquiry-based program that wants to enhance interpersonal resiliency and the life-skills of critical thinking and effective questioning.

### The Recent History of Educational Aims

Social, cultural, psychological and developmental theorists, particularly those appearing around the Human Potential Movement, have written lengthy detractions against competitive educational structures (Kohn, 1992). Since the end of World War II, despite incredible national support for science education enhancement during the Cold War era, science began falling out of popular favor, possibly being perceived as part of the cause of international strife. Because of its demonstrated historical potentialities, science has become a field that frequently elicits distrust from the general public. Science and physics, however, have long been the “golden child,” and a primary interest of the government’s investment in education. It is science that drives industry. (Meltzer & Otero, 2015). The 1960’s and 70’s were a peak for the Human Potential and student-centered education movements, where free-thinking momentarily superseded critical thinking. The Student-centered reforms were a breath of fresh air to a war-weary world, but the pendulum may have swung too far to the left, and the reforms have not been without their own fallout. Our respite in the student-centered movement appears to have put self-indulgence above social responsibility. A quick trip through the de-evolution of American television talk and news programs would seem to verify that Americans are now bereft of the social graces necessary to dialogue effectively in a reasonable argument. In our modern sub-culture of biased news reporting, of impolite shouting matches where pundits fail to resolve any issues, of selective and self-indulgent disregard of opposition rather than thoughtful consideration of arguments, young people have few (if any) social models of effective, *purposeful* argument.

To its credit, the student-centered education movement taught us a great deal about the psychology and motivations of learning, it reestablished interest in constructivist theories, and it promoted social justice as a personal responsibility. However, regardless of the focus of *any* reform, education is still an institutional system that continues to enlarge. “As systems become larger and people and social systems become physically and socially more distant from each other, they have greater difficulty in communicating on a face-to-face basis. This often leads to growing distrust, disaffection, and feelings of powerlessness by those on the lower rungs of the bureaucracy.” (Shapiro, 2000). Institutional behavior change (reform) is perceived as “depersonalized, distant and bound by rules.” All these efforts towards creating an efficient educational system, are often driven by one-sided interests, and they fly in the face of effective communication. Without effective communication, the imperatives of parties are not understood, which leads to an eventual collapse of shared goals. The more a reform is an “us and them” proposition, the more likely it is that its efforts will be challenged.

There has been growing evidence of the detrimental effects of culturally embedded educational and institutional bullying (Cook, et al. 2010. Juvonen & Graham, 2014). Regardless of what we try to teach in a classroom setting, it would seem our educational culture is a far cry from promoting civil debate or demonstrating any interest in learning

it. At some basic level, bullying behaviors are accepted and reinforced, and have survived centuries. Good argument is not bullying, but as Patrick Leman has observed in a study of argumentation between youth of varying abilities, a persistent and unwavering arguer can convince a more intelligent arguer to abandon his or her claim: “when a less advanced position is adopted, the children who influence their peers invoke a particular and insistent conversational style.” (Leman, 2002). If children are any reflection of their progenitors, it would seem our culture occasionally chooses to value stubbornness, insistence and inflexibility as a sign of “being right.”

There are several theories and practices that will scaffold a healthy respect for the structures of argument and debate, and if the truth is that most people will not generate advanced abstract reasoning, perhaps focusing on increasing better interpersonal communication skills would be a valuable reform to our reform-obsessed education system. What follows is not evidence for or against argument. These are correlative discoveries which deftly map the challenging terrain of interpersonal communication. They have proven helpful in preparing people for challenging dialogue. How we *prepare* young learners so that they can successfully and positively engage with their peers in a challenging dialogue remains an under-addressed challenge of education which the last half century may have prepared us to address.

## **Theories of Development and Communication**

### **Temperament**

Theories of temperament go back centuries. Plato, Galen, Paracelus, Spränger, and Fromm are just a few of the proponents of temperament theory. The theory has reemerged throughout human history, and is still respected as a form of character analysis utilized in business and education fields. The theory of temperament argues that there are “types” of people, and behavioral responses are relatively easy to predict given a person’s temperament. David Keirsey (Keirsey, 1998) built his theoretical model off of the work of Isabel Meyers and the Meyers-Briggs Type Indicator, a psychometric questionnaire published in 1962 by the Educational Testing Service. Temperament sorting has remained a widely used tool in understanding personality for centuries, despite the occasional fed-up researcher claiming the test has low reliability (Pettinger, 1993). Without going into great detail, the MBTI posits there are four primary types of temperament and of those four, two are more inclined to succeed in roles required of effective debaters or arguers. The other two temperaments might be defined as being intrinsically against the idea of argument (consensus seeking.) Therefore, a highly persuasive model for promoting the adoption of scientific argument would contain a vision that defines the pro-social aspects of argument. For example: “Although argument in science can be competitive (as two scientists advocate for their ideas), it is also collaborative. Scientists use argument to vet ideas as they work toward a common goal—advancement of scientific knowledge” (Toulmin, Rieke, & Janik, 1984). This collaboration through critique is a process of negotiating meaning that distinguishes science from other disciplinary forms of argument” (Cavagnetto, 2010).

## Introverts & Extroverts

Not too far afield of temperament theory, Jung posited a continuum of externalized sensation-seeking or internalized reflective behavior, and he popularized the labels for this behavior extroversion and introversion respectively. (Jung, 1995). The continuum of extroversion-introversion has become a central dimension of human personality theories, and has been widely validated and expanded by many theorists over time. In respect to argumentation, it is highly plausible that while introverts may be capable of reasoning strong arguments internally, they will not be as skilled or comfortable making those arguments interpersonally. Hans Eysenck (Eysenck, 1967) proposes introversion and extroversion are differences in brain physiology, and identifies extroverts as impulsive, excitable and more given to habitual behavior (such as dominating introverts during conversations.)

## Adolescent Decision Making

As adolescents search for identity, their focus on peer status may frequently overshadow their cognitive and educational pursuits (Erikson, 1968). James Marcia (Marcia, 1980) building on theories of Erik Erikson, proposed four possible alignments for identity-seeking adolescents as they wrestle with making autonomous choices:

- Identity Achievement: the realistic consideration of identity options and a selection
- Identity Foreclosure: little or no consideration of alternative identities, premature acceptance of an imprinted identity
- Identity Diffusion: Inability to seriously consider or choose an identity
- Moratorium (Erikson): a delay in commitment to personal and occupational choices.

*(Adapted from Woolfolk, 1998)*

Current research indicates the moratorium of adolescence now continues into the mid-twenties for the average young American (Arnett, 2000). Negative or prematurely forced experiences in education (or from parents) can quickly and detrimentally elicit foreclosure or moratorium, affecting a young person's proclivity to a particular field of study. Argument, handled without sensitivity, has the potential to turn otherwise interested students away from subjects in which they may actually have an interest. Subjecting cognitively proficient introverts to peer argumentation may aid in their decision that science is not an interest.

## Society & Cooperative Education

There is a convincing case to be made that our public education system should be preparing young people for participation in democratic society (Walker & Stolis, 1997). Yet teaching youth about how groups form and function appears to carry little weight in the public education agenda of America. The introduction of "cooperative learning groups" stumbled into existence through the 1960's Human Potential Movement, social

justice and civil rights movements (Walker & Soltis, 1997). Enthusiasm for cooperative learning was palpable, yet there were few evidence-based resources that promoted student to student collaboration. Up to this time, after all, education was rows of desk facing forward, segregated schools, competitive rankings and students dreading being called upon to speak.

Cooperative learning classrooms were championed by David Johnson in the 1970s, and his developing body of research has gained numerous followers in the last forty years. There is much to be gleaned in their work when considering a re-introduction of argumentation. “The research that exists on peer learning...indicates it can have positive or negative effects on students’ achievement and well-being, depending on the nature of the program and how it is implemented” (Johnson, Johnson & Roseth 2010). While the goal of scientific argumentation is supposedly collaborative advancement of theory, proponents of the process would be wise to consider *how* collaborative interdependent groups are created. “Social interdependence exists when the accomplishment of each individual’s goal is affected by the actions of others” (Johnson, Johnson, Roseth 2010).

#### 5 Basic Components of Successful Cooperative Learning:

- *Positive Interdependence*: Individuals believe their success is linked to the success of others.
- *Individual Accountability*: each member carries a fair amount of the responsibility for the success of the group.
- *Promotive Interaction*: members help, assist, support, encourage and praise each other’s efforts.
- *Appropriate Use of Social Skills*: decision-making, trust building, communication and conflict management
- *Group Processing*: group members discuss how well they are achieving their goals and maintaining effective working relationships.

*(Adapted from Johnson, Johnson & Roseth, 2010).*

“Cooperative learning is inherently more complex than competitive or individualistic team learning because the students have to engage simultaneously in task work and teamwork” (Johnson, Johnson, Roseth, 2010). Successful cooperation is profoundly intentional. There are usually as many misdirected and hidden agendas in a group as there are individuals, if not more. People do not simply *choose* to work cooperatively. “Once groups cooperate with one another, they can practice support behaviors that help build trust among participants. When a group’s participants support each other, they can effectively solve initiatives and problems” (Vanderwey, Wallace, Hansen, 2014). Don’t forget, there are college degree courses in conflict management. Cooperation is hardly child’s play.

Identifying who is responsible for instructing young people in cooperative behavior in public schools seems to remain a mystery. A lack of funding has persistently whittled away at counseling staff. An average high school now has a counselor to student ratio of about 1:470 (Pratt, 2013). Tasking teachers with social development (or encouraging



them to disregard them) speaks to specific reform agendas. The epidemic of bullying entrenched in our nation (Cook, et al. 2010. Juvonen & Graham, 2014) might indicate we are asking teachers to take on more than they have *the time* or training to deliver, and it should impress upon the proponents of argumentation the size of the social edifice they are proposing to scale.

### Cultural Communication Theory

We live in a culturally diverse society. Students' cultural and linguistic backgrounds impact the knowledge and experience that they bring to the classroom, which influences their degree of comfort with the norms of scientific practice (Duschl et al., 2007). Ideally, we will need to value pluralism in the teaching of argument.

### The Culture of Poverty

Ruby Payne (Payne, 1998), made several excellent observations about poverty, recognizing that it has become a culture unto itself in a tiered society, and recognizing that communication strategies in families of generational poverty will frequently be at some variance with communication strategies of middle class groups. (Just as the communication expectations of the middle class culture can be at variance with upper class communities.) While there is clear evidence poverty exists disproportionately in non-Caucasian races, Ruby Payne's work focuses on the "hidden rules" that restrict movement between classes, *not* races. Many of these cultural rules of affluence are values-based, and are expressed in dialectics. A person's values structure can certainly influence the direction in which they choose to argue. Payne's book offers numerous supports and strategies for mitigating poverty-driven exclusion.

### Inter-cultural Conflict Styles

Mitchell Hammer, PhD, has proven that different cultures will approach problem solving and conflict resolution in very different ways. While conflict styles are culturally informed, and will usually find individual expression in high-stress situations, Hammer does assert that "conflict resolution approach can change based on a set of different experiences you may encounter outside of your primary cultural community." (Hammer, 2003). Hammer's tool for identifying conflict styles has undergone rigorous validation. He identifies four culturally-dependent conflict resolution styles:

- Discussion: Direct address with emotional restraint
- Engagement: Direct address with emotional expressiveness
- Accommodation: Indirect address with emotional restraint
- Dynamic: Indirect address with emotional expressiveness

While young people may be more open to learning new communication patterns, the assertion is that under duress (which could include being pressured into an argument) young people will revert to their primary cultural communication pattern. The basic human reaction to someone with a different conflict management style tends to be

rejection. Young people may be unaware that alternative conflict communication patterns exist and are deemed *more appropriate* by members of alternative cultures.

### Teaching the Social Child

Some people engage in argument passionately, and some do it very coolly; some force a rhetoric aimed at emotional persuasion and others simply expect that a logical argument should ultimately direct decisions (Leman, 2002). Young people, (and sometimes adults) who may have yet to have received sufficient experiences in the social dynamics of group process, tend to become overwhelmed when their ideas are challenged, or they feel the need to challenge the ideas of others. By making the process of refutation and group work intentional and objective, the social-emotional scaffolding necessary to support cognitive gains can be further developed.

Several of the theory and research-informed tenants that we purport prepare young people for effective and goal-focused social interaction (including argument) were coalesced as a methodology for the adventure education programs of Washington State University, however, the theories themselves have a long history of successful application in group building. (Vanderwey, Wallace, Hansen, 2014.) Here are some basics:

#### A Full Value Contract

“In a community, it’s important that everyone feels welcome and included. If individuals don’t feel accepted and valued for who they are, they are unlikely to take healthy risks and try new things. Furthermore, they are unlikely to fully contribute to the best of their ability”(Vanderwey, Wallace, Hansen, 2014). The term Full Value Contract (Project Adventure, 1991) refers to a group agreement that is collectively generated by a group before they begin working together. It is a binding agreement that the group will strive to honor all participants equally, and respect the level of participation each person chooses to allocate to the group. This agreement would precede “role assignments” in cooperative groupings, encouraging group members to each intentionally define behaviors that would support a safe and participatory learning space. A full value contract will only be as effective when it is embraced and enforced consensually by all participants in a group.

#### The Stages of Group Development

Bruce Tuckman (1965) laid the foundations of the four stages of group development almost half a century ago. He asserted that all groups go through stages of coming together (Forming), seeking role clarification (Storming), establishing procedural and functional guidelines (Norming) and successfully operating as a unit, (Performing.) Many proponents of his theory would assert that groups *must* go through all the staged of development, although a group need not necessarily enter in and out of stages in a prescribed order. (Schoel, Prouty and Radcliffe 1988). In terms of “cooperative groupings” in educational settings, there would appear to be an unspoken expectation of educators that simply because youth are assigned to a group together they are automatically going to “perform” successfully as a group because that is what the

assignment requires of them. An effective educator helps learners recognize that these stages are inherent in developing learning communities, and that storming is not necessarily a sign of group dysfunction.

### Effective and Ineffective Group Behaviors

“Behavior in a group can be viewed in terms of what its purpose or function seems to be. When a group member says something, is that person trying to get the group’s tasks accomplished (task-oriented behaviors), to improve or fix relationships among members (maintenance-oriented behaviors), or to meet some personal need or goal without regard to the group’s problems (self-oriented behaviors)? As a group grows and its members’ needs become integrated with group goals, there will be less self-oriented behavior and more task or maintenance behavior.” (Vanderwey, Wallace, Hansen, 2014).

Benne & Sheats (Benne & Sheats, 1948) laid out the initial functional group roles in 1948. These have been modified and expanded numerous times in the last several decades. In addition to functional group roles, when group participants focus predominately on themselves (self oriented behaviors) they may be doing so at the detriment of the group. Self-oriented behaviors can include withdrawing, clowning, competing, bullying, blocking group efforts, and dominating group efforts. Self-oriented behaviors may be an attempt of a youth to contribute when that youth has not had sufficient positive modeling of effective group engaging behavior. Self-oriented behaviors may also be an indication of a dysfunctional role system in the home. If a youth is enacting a role as a result of trauma-induced experiences, his or her teachers may decide that engaging in argumentation could do more harm than benefit and seek less confrontational roles.

### **Reform’s Dark Twin: The Systemic Spiral of Specialization.**

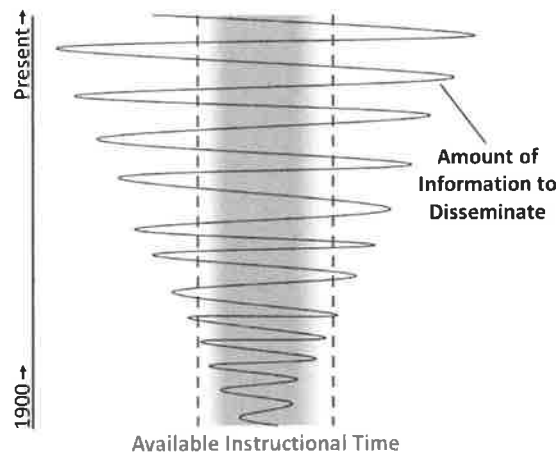
As organizational systems enlarge, specialization becomes unavoidable. As a function of expediency, specialists (operators, advocates, instruments) of a system usually must conform to basic operational tenants without question. To progress in education we feel it is imperative to keep young people current on new knowledge, but perhaps more than current knowledge what students need today is relevant skills. As systems enlarge their knowledge base, the level of specialized knowledge also increases. For example, once biology was primarily just the science of identifying and cataloging species and observing their behavior; now biology is divided into dozens of domains such as anatomical, medical, evolutionary, environmental, chemical and bio-engineering. This systemic phenomenon of increased knowledge is not constrained to science. All subject domains increase their pool of available knowledge over time.

“Kennedy (1995) compares the body of knowledge of mathematics to a great tree whose trunk is so broad that no one, even those who devote lifelong study to the subject, can get their arms completely around it. For this reason, he argues, rather than spending time

familiarizing themselves with the trunk and the roots, students can use technology (graphing calculators) as ladders to climb up into the branches and explore the leaves and fruit and see the sunlight in the tree of mathematics.”

(In Tonjes, Wolpow, Zintz 1999)

Imagine that knowledge is an ascending spiral, a whirlpool that gets wider and contains more and more information as time progresses. As our knowledge progresses upward, adding ever more specialized knowledge, one thing does not change: time. Draw a line anywhere in that spiral and call it “Available Instructional Time.” We will never significantly add more time to education than there are hours in a day, so the argument of what and how we teach becomes more pressing as we are overwhelmed with more knowledge.



*Graphic 1: Information vs. Time*

Technology is possibly the greatest tool we have at our disposal in the 21<sup>st</sup> century. The retention of factual information no longer appears to be as critical a component of learning because we have access to stored information in databases all over the world. We have tools of calculation and recall that work faster than the human brain. We appear to have all the answers at our fingertips. What we also have is at least one generation that is developing deficits in face-to-face interpersonal communication skills. What we also have is speciously motivated and executed research, unqualified claims, opinion masquerading as fact, and a glut of misinformation for the masses. As a result we appear to be emerging as a very skeptical population of information consumers.

The public backlash to “authoritative” knowledge may be a result of having access to too many “expert opinions.” Herein lies *an excellent justification* for mastering argument: what a democratic citizenry needs in the modern age is not a brain designed to retain great stores of subject minutia, what a democracy needs are people with the skills to interpret and validate the knowledge they are given, people with the ability to ask for and

question evidence, and most importantly people with the courage to make collective decisions based on the best information available. If this is true, then argument and critical thinking are essential practices, then it behooves us to make sure they are embraced as cultural necessities, not just passing trends in an educational reform.

## **Conclusions and Recommendations**

If we are going to ask young people to interact with each other in quasi-competitive situations, in front of their peers, we should take advantage of what the social science and psychology fields have brought to light through decades of research. Sometimes it doesn't matter how much we think we know about *how* to teach, sometimes what determines achievement is how a young person feels about their experience of learning.

Very few teachers will enter the field of education as specialists. Most teaching schools train generalists with endorsements in areas of interest. Taking a systems approach to our ever-evolving educational institution, it seems highly unlikely that true specialization can be achieved before college without a massive restructuring of the basic model of public education. Schools and parents would have to start identifying "tracks" at very early ages, which fundamentally undermines a young person's autonomous development and potentially undermines the democratic ideal of self-determination. Critical thinking and communication skills are the bedrock of interactive learning. Imagine how much more potent our democracy would be if our persuasion was founded in positive and mutual benefit.

In order to support the incorporation of argumentation as an educational practice:

- 1) Look past implementing argument as a part of "a subject-matter reform" or any other kind of reform. Argumentation remains an important skill for building self-efficacy and interpersonal sensitivity, demonstrating learning and understanding, for participating in a democratic society, and for the further promotion of subject specific knowledge.
- 2) Assert that much of 21<sup>st</sup> century learning is *skills-based* learning and not subject matter learning. Learning is active. Knowledge is passive.
- 3) Consider the full range of potential outcomes for teaching skills at a particular developmental age. Cost/Benefit analysis.
- 4) Recognize that argument is not an activity in a vacuum. It requires a broad range of prerequisite communication and social skills that must be developed through consistent practice. In many cases the prerequisite skills may be the ones from which the students truly profit in their adult lives.

## Bibliography

Arnett, J. (2000). Emerging adulthood: A theory of development from the late teens through the twenties. *American Psychologist*, 55(5), 469-480.

Ashton, P.T. (1978). Cross-cultural Piagetian research: An experimental perspective. *Harvard Educational Review* (Reprint Series No. 13).

Bayless, K. (March 2, 2015). What is helicopter parenting? [web log article]. *Parents.com*. Retrieved from: <http://www.parents.com/parenting/better-parenting/what-is-helicopter-parenting/>

Benne, K.D., Seats, P. (1948). *Functional Roles of Group Members*, Journal of Social Issues Vol 4., p.41-49

Berland, L., & McNeill, K. (2010). A learning progression for scientific argumentation: Understanding student work and designing supportive instructional contexts. *Science Education*, 94, 765-793.

Bloom, B. S.; Engelhart, M. D.; Furst, E. J.; Hill, W. H.; Krathwohl, D. R. (1956). *Taxonomy of educational objectives: The classification of educational goals*. Handbook I: Cognitive domain. New York: David McKay Company

Cavagnetto, A.R. (2010). *Argument to Foster Scientific Literacy: A Review of Argument Interventions in K-12 Science Contexts*. Review of Educational Research, September 2010, Vol. 80, No. 3, pp. 336-371

Cook, Clayton R.; Williams, Kirk R.; Guerra, Nancy G.; Kim, Tia E.; Sadek, Shelly (2010). "Predictors of Bullying and Victimization in Childhood and Adolescence: A Meta-analytic Investigation" (PDF). *School Psychology Quarterly* (American Psychological Association) 25 (2): 65-83.

Driver, R., Newton, P., & Osborne, J. (2000). Establishing the norms of scientific argumentation in classrooms. *Science Education* 84(3), 287-312.

Duschl, R. A., Schweingruber, H. A., & Shouse, A. W. (Eds.), (2007). Taking science to school: Learning and teaching science in grades k-8. Washington, DC: National Academy Press.

Elkind, D. (1991). Formal educations and early childhood education: An essential difference. In K.M. Cauley, F. Linder, & J.H. MacMillian (Eds.) *Annual Editions: Educational Psychology 91/92* (pp27-37). Guilford, C: Duskin.

Englemann, S. & Engelmann, T. (1981). *Give your child a superior mind*. New York: Simon & Schuster.

Erikson, E.H. (1968). *Identity, youth and crisis*. New York: Norton.

Eysenck, H. J. (1967). *The biological basis of personality*. Springfield, IL: Thomas Publishing.

Hammer, M.R. (2003). *The Intercultural Conflict Style ® (ICS®) Inventory ICS Facilitator's Manual ®* Hammer Consulting, LLC. Ocean Pines, MD.

Johnson, D.W., Johnson, R.T., Rosteh, C. (2010). *Cooperative Learning in Middle Schools: Interrelationship of Relationships and Achievement*. Middle Grades Research Journal, Volume 5(1) , 2010 pp.1-18.

Jung, Carl (1995). *Memories, Dreams, Reflections*. London: Fontana Press. pp. 414–5. ISBN 0-00-654027-9.

Juvonen, J., Graham, S. (2014). "Bullying in Schools: The Power of Bullies and the Plight of Victims". *Annual Review of Psychology* (Annual Reviews) **65**: 159–85

Keirsey, D. (1998). *Please Understand Me II: Temperament, Character, Intelligence*, Prometheus Nemesis Book Company, Del Mar, CA

Kennedy, D., (1995). Climbing around the tree of mathematics. *Mathematics Teacher*, (88)6 460-465 In Tonjes, M., Wolpaw, R., Zintz, M. (1999). *Integrated content literacy*. (4<sup>th</sup> Ed.) McGraw Hill College, NY.

Kohn, A. (1986). *No contest: the case against competition*. Houghton Mifflin Company, New York.

Leman, P.J. (2002). *Argument structure, argument content, and cognitive change in children's peer interaction*. The Journal of Genetic Psychology, 2002, 163(1), 40-57.

Marcia, J (1987). The identity status approach to the study of ego identity development. In T.H. Honess & K. Yardley (Eds.), *Self and Identity: Perspectives across the life span*. London: Routledge & Kagan Paul.

Maslow, A.H. (1943). A theory of human motivation. *Psychological Review* 50 (4) 370–96. Retrieved from <http://psychclassics.yorku.ca/Maslow/motivation.htm>

McClelland, D.C. (1985). *Human motivation*. San Francisco, Scott, Foresman

Neimark, E. (1975). Intellectual development during adolescence. In F.D. Horowitz (Ed.) *Review of Child Development Research* (Vol.4) Chicago: University of Chicago Press.

NGSS Lead States, (2013). *Next Generation Science Standards: For States, By States* Retrieved 7/31/2015 online at: <http://www.nextgenscience.org/>

- Payne, R.K. (1998). *A Framework for Understanding Poverty* (revised ed.) RFT Publishing, Highlands, TX.
- Piaget, J. (1974). *Understanding causality*. (D. Miles and M. Miles, Trans.) New York: Norton.
- Pittenger, David J. (November 1993). "Measuring the MBTI...And Coming Up Short." (PDF). *Journal of Career Planning and Employment* **54** (1): 48–52.
- Pratt, T. (2013). The high school guidance counselor shortage. *The Hechinger Report*, Teachers College, Columbia University. Retrieved 7/31/15 from: <http://nation.time.com/2013/12/03/the-high-school-guidance-counselor-shortage/>
- Project Adventure, Inc. (1991). *Adventure Based Counseling Workshop Manual*. Dubuque, Iowa: Kendall/Hunt Publishing.
- Takao, A. Y., & Kelly, G. J. (2003). Assessment of evidence in university students' scientific writing. *Science & Education*, 12, 341–363 in: Examining Arguments Generated by Year 5, 7, and 10 Students in Science Classrooms. Choi, A. Notebaert, A. Diaz, J., Hand, (2010). *Research in Science Education*, Vol. 40(2), p.149-169.
- Toulmin, S., Rieke, R., & Janik, A. (1984). *An introduction to reasoning* (2nd ed.). New York, NY: Macmillan
- Tuckman B.W. (1965). Developmental Sequence in Small Groups. *Psychological Bulletin*. No. 63: 384-399.
- Tyack, D. & Cuban, L. (1995). *Tinkering toward utopia: A century of public school reform*. Cambridge, MA, University Press.
- Sadler, T. (2004). Informal reasoning regarding socioscientific issues: A critical review of research. *Journal of Research in Science Teaching*, 41, 513–536.
- Schoel, J., D. Prouty, and P. Radcliffe. (1988). *Islands of Healing, A Guide to Adventure Based Counseling*. Project Adventure Inc. Hamilton, MA.
- Shapiro, A. (2000). *Leadership for constructivist schools*. Scarecrow Press, Inc. MA
- Toulmin, S., Rieke, R., & Janik, A. (1984). *An introduction to reasoning* (2nd ed.). New York, NY: Macmillan.
- Vanderwey, S., Wallace M.L., Hansen, A., (2014). *Facilitating the Experience: Mastering the Art and Science of Group Dynamics* ” 67 pages. WSU Extension Pub. EM069E
- Wadsworth, B.J. (1978). *Piaget for the classroom teacher*. New York: Longman



Wadsworth , B.J. (1989). *Piaget's theory of cognitive development: An introduction for students of psychology and education*. (4<sup>th</sup> ed.) New York: Longman.

Walker, D.F., Soltis, J.F. ((1997). *Curriculum and aims*. (3<sup>rd</sup> Ed.) New York: Teachers College Press, Columbia University.

Woolfolk, A. E. (1998). *Educational psychology, seventh edition*. MA: Allyn & Bacon

Zemba-Saul, C. (2009). Learning to teach elementary school science as argument. *Science Education*, 93, 687–719.