

Intuition in Education: Teaching and Learning Without Thinking

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Albert Einstein once said that intuition is “the only truly valuable thing,” claiming that only “intuition resting on sympathetic understanding of experience” can apprehend the elementary laws of the universe. He also felt that, even in everyday activities, people should emulate the instincts of animals by being “more intuitive — they should not be too conscious of what they are doing while they are doing it.” “The intuitive mind is a sacred gift, while the rational mind is only its faithful servant,” he cautioned, “but our society honors the servant and has forgotten the gift.”¹

The gift of intuition has been forgotten in education.² The time may, however, be ripe for renewed interest in educational intuition.³ The best jobs in the global economy are going to so-called “knowledge workers” who address ill-structured problems in unpredictable ways by combining real time information flows with available knowledge to generate rapid new intuitive insight.⁴ Perhaps as a result, intuition has recently become a hot research topic in psychology.⁵ Malcolm Gladwell’s survey of that research in *Blink: The Power of Thinking Without Thinking* has been one of the big best sellers of 2005.⁶

In this essay I draw upon this research to provide a programmatic account of intuition in education to guide further investigations. I first challenge the received analysis of intuition, and provide an alternative; then summarize an explanatory model of intuition consistent with the alternative analysis; and finally, drawing upon that model, consider the rightful place of intuition in teaching and learning.

THE MEANING OF “INTUITION”

Intuition is frequently defined as “immediate apprehension.”⁷ For the OED “intuition” is “direct or immediate insight,” with “an intuition” being an instance of this. For philosopher-physician Alexis Carrel, “intuition”, like a sixth sense, “comes very close to clairvoyance; it appears to be the extrasensory perception of reality.” For art theorist Rudolph Arnheim, intuition in art is “the underlying vision of what is to be attained.”⁸ Roget’s Thesaurus lists “sixth sense,” “hunch,” “feeling in one’s bones,” and “gut instinct” as synonyms. “Intuition” has also been linked to the “flow” experience,⁹ and what athletes and sports psychologists refer to as being “in the zone.”¹⁰

Some “paradigm” examples of intuition will guide our inquiry. Curator Thomas Hoving, in just two seconds, recognized as a forgery a statue that experts had spent fourteen months authenticating (*BPT*, 5–6). Physician Glyn Brokewsha sent patients testing negative for various diseases to hospital based on clinical intuitions that were frequently correct.¹¹ Comedian Robin Williams says of his art “When it works, it’s like freedom. You are in control but you’re not. The characters are coming

through you.”¹² Basketball legend Bill Russell says that at the highest level of play, “my premonitions would be consistently correct,” as though he knew the play patterns of teammates and opponents “by heart.”¹³ Harpsichordist Wanda Landowska says “I prepare meticulously and then play in freedom... preparation is organizing the intuition.”¹⁴

Richard Rorty notes that, in its broadest sense, “intuition” in philosophy means “immediate apprehension” and that “immediate” has as many senses as there are relevant forms of mediation not present in the apprehension, such as, mediation by inference (for a proposition), definition (for a concept), or justification (for a decision).¹⁵ Rorty states that there are four principal meanings of intuition in philosophy:

1. unjustified true belief not preceded by inference (such as, a hunch), a sense Rorty claims to be philosophically uninteresting;
2. immediate knowledge (without inference) of the truth of a proposition, such as knowledge of self-evident or synthetic a priori truths;
3. immediate knowledge (without definition) of a concept; and
4. non-propositional knowledge of an entity, which knowledge may be a necessary condition for, but not identical with, intuitive knowledge of the truth of propositions about the entity in sense 2.

Bertrand Russell famously dubbed intuition in sense four as “knowledge by acquaintance” as contrasted with “knowledge by description.” The paradigms of intuition in this sense are the sensory intuitions of the empiricists (the direct knowledge via sensation of the redness of the red door) and the intellectual intuitions of universals proclaimed by the rationalists.

When viewed against our paradigms, this classification scheme is not very useful. First, it suffers from an *epistemic* bias. All four cases deal with belief, truth, knowledge or reality. No mention is made of *practical* intuition, that informing or guiding artists, athletes or even working scientists (who claim that intuition grants them fruitful insight, not propositional knowledge in sense two. In practical intuition we speak of actions and patterned activities unmediated by explicit justifications or plans.

Second, intuition in patterned activities indicates that the account also suffers from a bias towards the *discrete* rather than *continuous*; it calls attention to intuitions of discrete truths, concepts or features of reality, and neglects the *directive* intuitions of athletes and artists like Russell and Landowska that guide patterned activity through time. This kind of intuition was important in the philosophies of Plato and Aristotle, and will be among our primary concerns as philosophers concerned with teaching and learning.

Third, though Rorty’s sense one includes only unjustified *true* beliefs, what we call intuitions in the sense of hunches or premonitions are frequently *false*. What are we to say of intuitions that do not pan out? Rorty’s claim that the sense of “intuition” associated with hunches or gut instincts lacks philosophical interest is also questionable. Consider that Russell’s premonitions were “consistently correct,” or that

Einstein, the most persistently intuitive of twentieth century physicists, was also the greatest. These facts call Rorty's comment upon sense one into question, because while these leaders were guided by hunches or premonitions that could have proved false, it is questionable that their beliefs and decisions were therefore "unjustified," a point I will return to below.

A last note: even if intuitive knowledge of concepts and intuitive non-propositional knowledge of entities (senses three and four) retain some place in a comprehensive account of intuition in education, they are irrelevant to our paradigm cases of intuition, and will be neglected in what follows.

INTUITION AS IMMEDIATE, NON-RATIONAL APPREHENSION

If Rorty's classification is not very useful, neither is the received general definition of "intuition" as "immediate non-rational apprehension." I will show this by examining the defining terms "immediate," "non-rational," and "apprehension."

IMMEDIATE

Intuition can be thought to be immediate in two senses, without mediation (the sense Rorty emphasizes) and without duration, or coming "at once." This second sense, of intuitions as "bolts of lightning" or "sudden flashes," is also frequently emphasized.¹⁶ The two senses are related, in that mediating processes take time. Psychologist Janet Metcalfe, for example, contrasts intuitions with cognitive processes that are "slow and incremental," a phrase that entails both senses of "mediate": slow as opposed to instantaneous, and "incremental" as requiring step-wise inferences.¹⁷

There is, as already suggested in the Latin root, something uncanny or astonishing about intuition — how *can* people come to such insights without the mediation of thought? There have as a result been persistent efforts to explain intuition away. Many have posited "unconscious inferences" to mediate between what is presented and apparently intuited conclusions. In *Blink*, Gladwell also suggests unconscious mediation in his idea of intuition as a mental process taking place behind a "locked door" (*BPT*, 48).

Reliance on unconscious inferences to explain intuition away is not likely to be promising. Consider that to "infer" means "to conclude or derive by reasoning from something known or assumed." The Latin root is *in+ferre* where *ferre* means "to bring or to carry" (as a ferry boat brings or carries passengers from place to place), and the word "infer" suggests bringing in or carrying down, as in a step-wise deduction of theorems from axioms. In contemplating unconscious carrying we may think of a milkmaid carrying a pail unconsciously, meaning without attention. But in that case outsiders can observe her carrying her pail and so can she if her attention is called to it. In intuition, on the contrary, the allegedly unconscious inferences cannot be observed by anyone, even if attention is directed towards them. The idea of unconscious inferring thus remains a mystery and explains nothing.

This fact can be further clarified by investigating Gladwell's image of a "locked door" that hides cognitive processes "under the surface" (*BPT*, 77). There are processes "taking place in the brain," as we might say, but with advances in cognitive

science less is terminally “locked away.” Consider an electronic calculator. We type in the problem and in the blink of an eye the correct answer appears. Here we can unscrew the case and look inside. We see a circuit board, but no calculations. An electronics engineer explains that the machine operations consist of electrons moving through switches, where the arithmetic functions are wired into the switching circuits. Once we understand how the machine works, we are not likely to insist that, beyond the movement of electrons, something inside the machine is doing anything *like* the operations of long division as performed by hand. It is sufficient to see that the circuits are modeled on arithmetic laws.

Similarly, in the case of mathematical intuitions, a person with mathematical sophistication examines a problem, perhaps taking in only a few salient features, and later is visited by a sudden intuitive solution. If we were to open his skull in the interim, we would see a mass of grey matter — a neurological network — but no inferences. A cognitive scientist might explain how electro-chemical impulses move through the net in accordance with programs established by biological conditioning and learning. Once we understand the operations of the brain in this way, we are, by parity of reasoning, not likely to insist that something inside the brain beyond electro-chemical impulses is actually making inferences. It is sufficient to see that the wetware programs are approximate analogs of rules of inference, and give generally similar results.

The sense of “immediate” that entails “without duration” also needs to be questioned. Electrons move rapidly through circuit boards, and electro-chemical impulses move rapidly through neurological networks. Cognitive scientists time these movements, and their durations can be theoretically explained. So, while it took Hoving only two seconds to detect the forgery at the Getty, he may not, as Gladwell demonstrates, have been able to do it in just one, and certainly not in none.¹⁸ The point is that intuition may be very fast without being immediate, and its duration becomes increasingly an empirical question as cognitive science advances.

In sum, intuitions are indeed mediated, but not by inferences or like processes that are in principle unobservable. They are mediated by brain processes that take time and that are, with modern imaging technology, increasingly observable and measurable.

NON-RATIONAL

There are also two relevant senses of “rational” and the less technical “reasonable” to consider. In the first, or *descriptive*, sense, “rational” means “of, based on, or derived from reasoning,” where “reasoning” means “the drawing of inferences or conclusions from known or assumed facts.” In this sense “rational” suggests employment of formal inference procedures; a synonym of “rational process” which emphasizes its explicit nature is “ratiocination.” The related term “reasonable” suggests informal, *practical* reasons in making decisions and justifying actions.

In the second, or *normative*, sense, to say that a belief, statement, decision, or action is “rational” or “reasonable” means that it “conforms to reason, is sensible, is not extreme or foolish.” In this sense the intuitions of habitual gamblers are not

rational or reasonable, but those of Picasso, Einstein, and Bill Russell generally are. Moreover, just as electronic calculations generate conclusions result from a process that is “rational” or “reasonable” in this sense, so do such intuitions. In this way we can talk of these intuitions as “justified.”

APPREHENSION

Defining intuition in terms of “apprehension” builds a *receptive bias* into the notion that may be found in the Latin root, but no longer dominates modern usage. The Latin root of apprehension is *ad+prehendere*, meaning to seize or grasp. By extension, the mind can be said to apprehend, that is, to seize or grasp, to take in and hold, a presented concept or truth. Croce, to counter this receptive sense of intuition as apprehension, as merely *grasping* or *taking in*, emphasized the active, expressive, directive, *giving out* function of intuition in art, declaring that “to intuit is to express and nothing more.”¹⁹ This expressive view, however, is equally one-sided. We would do well to insist on a more balanced view that recognizes the unity of, or easy flow between, perception and expression in intuition.

To summarize: intuitions can guide or generate both beliefs and actions, are both discrete and continuous, and both receptive and expressive. Intuitions are not immediate — in intuition, the perception of stimulus conditions and the resulting beliefs or actions are mediated by brain processes that are in principle observable and have measurable duration. Finally, intuitions in the sense of hunches or intimations need not be non-rational or *unjustified*. Intuitions of expert artists, scientists, and athletes may be “consistently correct,” providing an empirical justification.

EXPLAINING INTUITION: LONG TERM MEMORY, PATTERN RECOGNITION, AND EXPERTISE

I now briefly consider an explanatory model of intuition that is fully consistent with the definitional conclusions reached above and recent psychology.

Gladwell hints at this model in explaining intuition as resulting from “thin slicing.” Humans are capable of rapidly sensing patterns in situations based on very narrow slices — that is, small and unrepresentative samples of experience — and producing responses that are automated and accelerated versions of what rational analysis might conclude or prescribe. “Thin slicing” enables us, without conscious effort, to sift through a situation, zero in on what is salient, and throw out everything that is irrelevant (*BPT*, 22, 23).

Herbert Simon has provided an essentially similar, though far more complete, explanation of intuition that has considerable heuristic value.²⁰ For Simon short term memory has a relatively small storage capacity, and the conscious mind, as a serial processor, can perform only one, or at most a small number of simultaneous operations. These facts limit human attention and conscious problem solving. Long term memory, however, has very large storage capacity and is, metaphorically, like a large and ever-expanding encyclopedia with an elaborate index in which all entries are both associated (“chunked”) and cross-referenced. Human intelligence makes use of its limited conscious memory and problem-solving capabilities to activate efficient search procedures within the long-term memory to generate and assess

possible solutions. It relies heavily upon the associational and indexing devices to make the store of memory accessible as needed.

Awareness of successes and failures of prior conscious problem solving efforts permits successful moves to become habitual, that is, to be internalized as automatic reflexes activated by experiential cues. Analytical thinking becomes “frozen into habit,” permitting the conservation of conscious mental attention and effort by withdrawing from consciousness those aspects of situations that are repetitive or irrelevant. For Simon, the associational and indexing devices of long-term memory comprise the base for intuition, which he understands as the capacity to meet situations with relevant responses without relying on conscious mental operations.

The explanation of intuition as based on ever-expanding long-term, indexed, and cross-referenced memory links intuition directly to expertise. To test this connection Simon presented novice and expert physicists with problems and asked them to verbalize their thinking strategies. He found that the experts (1) solved problems in much less time, (2) required fewer steps, (3) spent less time per step, (4) wrote down fewer steps, and (5) expressed more confidence in themselves and their conclusion. Novices, in short, used “conscious and explicit analysis,” while experts “avoided conscious calculations,” and their solutions “exhibited the usual appearance of intuitions.” This conclusion will now guide us in investigating the appropriate place of intuition in education.

INTUITION IN EDUCATION

I begin with a few general remarks about the value of intuition. Drawing a rough distinction, we may say that intuition has both intrinsic and instrumental value, and that the two are closely related. Starting with intrinsic value, intuition is often accompanied by positive emotion. Simon’s experts expressed more confidence in themselves. Curator Thomas Hoving speaks of a “mental rush” accompanying his intuitions about works of art (*BPT*, 50). Former NFL star Dave Meggyesy has said that “being in the zone” is the “essence of the athletic experience,” and moments of intuitive play are “the underlying allure of sport.”²¹ Mihaly Csikszentmihaly discovered that “flow” is characterized by “emotional buoyancy” and “a heightened sense of mastery.”²²

In short, intuition often has a zestful, “feels good” quality that contributes directly to the value of life! That it feels good, however, hardly can justify reliance upon it. That would require showing that intuition also has instrumental value, that (a) intuition is more *efficient*: that it can produce results similar to those produced by explicit rational procedures with less effort, or (b) that intuition is more *effective*: that it can (under certain conditions) produce even better results than explicit rational procedures.

Simon’s expert problem solvers support (a), and his model explains that experts develop neurological habits that effectively *substitute* for explicit procedures. Gladwell’s book, on the other hand, is full of suggestive examples supporting (b). Two will suffice:

1. Psychologist John Schooler showed that, while almost everyone can immediately remember a face, when subjects are directed first to describe the face it impairs their ability to remember it.
2. The first stabs of amateurs guessing the quality of food tastes correlated at .55 with experts, but after they were directed to analyze the tastes verbally before judging, the correlation fell to .11.

Schooler labels this phenomenon “verbal overshadowing” (*BPT*, 119). Simon’s model explains it in terms of flooding the conscious mind with explicit information beyond its capacity for efficient use in initiating search procedures in long-term memory.

There is thus a direct connection between the “feels good” quality of intuition and its effectiveness, its intrinsic and instrumental value. In “flow” experiences, according to Csikzentmihaly, the “heightened sense of mastery” is matched by “highly efficient performance.” The successes of Einstein, Picasso, Landowska, and Bill Russell testify to this. When experts are guided by intuition, as Simon explains, they are making optimal use of biological conditioning and prior learning. Their “heightened sense of mastery” is thus an accurate proprioceptive awareness of themselves as masters.

INTUITION IN TEACHING AND LEARNING

We judge Landowska’s performance by its musical value, Picasso’s by its artistic value. In judging Bill Russell we may advert to his sheer athleticism, but we also have more specific criteria such as points scored, field goal percentage, and games won. The artistic, athletic, and educational situations are similar in providing opportunities for achieving intellectual and practical mastery through acquisition of general problem-solving heuristics and traits of intellectual and moral character. We can speak, for example, about a student’s “intellectuality” much as we speak of Russell’s “athleticism.” There are also more specific educational values — for example, the broad goals and narrow objectives associated with various school levels and subject matters: Algebra I or World History or Creative Writing.

Each educator is presented from minute to minute with information-rich circumstances, under various institutional constraints, which present innumerable opportunities for generating both general and specific educational value. Whether or not novice teachers begin with good natural instincts, they, like Simon’s novice physicists, lack rich experience “frozen into habit,” indexed and cross-referenced in long-term memory. They are thus more likely to focus more on explicit goals and objectives, and be guided by explicit curriculum guides and lesson plans, and are also likely to be more efficient and effective by reliance on these explicit procedures. Experienced teachers, on the other hand, like Simon’s experts, have a rich body of experience that guides them in scanning their immediate circumstances for opportunities and then rapidly and flexibly responding without the explicit mediation of consciousness to generate educational value. When they are relatively free of institutional constraint, their work can exhibit intuition.

When we turn our attention to learners, it is useful to recall R.S. Peters's definition of education as "initiation into worthwhile activities."²³ Students are not merely passive recipients of instruction, but initiates, that is, novice participants in the intellectual and practical fields contained in the curriculum. Following Mortimer Adler's useful framework, we can divide teaching-learning incidents into didactic instruction, discursive seminar dialogues, and heuristic intellectual coaching episodes.²⁴ The didactic episodes convey basic facts and provide training in basic cognitive routines, discursive seminars exemplify the values inhering in the activities through discussion, and heuristic coaching passes on capacities for nuanced performance through "learning by doing."

In discursive and heuristic episodes learners are novice participants and not mere recipients. We would expect that, as novices, regardless of their natural talents, their most effective performances as participants will at first be guided largely by explicit rules and maxims. As teachers, we do not merely engage students in discussion, but also teach and consciously model rules of good speaking and listening. As coaches in heuristic episodes, we do not trust to incidental learning through trial and error, but explicitly teach and consciously model practical maxims and rules of thumb. Through steady repetition and guidance, however, we shape habit formation, thus reducing reliance on conscious thinking and problem solving procedures. Students, in short, do not remain novices forever. They make intuitive conjectures, or spontaneous artistic or athletic moves, by processes they cannot, even with coaxing, explain. For those most gifted, such intuitions appear early and suddenly, bringing unpredicted facts into the educational situation, setting problems for teaching which go beyond curriculum guides and explicit objectives.

Didactic teaching, structured discussion, and guided performance do not exist for their own sake. Their purpose is to pack in a heavy dose of concentrated experience, and then, through drill and repetition, to freeze it into habit and make it accessible for spontaneous use. As Einstein put it, "education is that which remains when one has forgotten everything learned in school."²⁵

1. The sources are: "valuable thing" letter reprinted from an extensive collection of Einstein letters at dialogues, <http://www.dialogus2.org/EIN/intuition.html>; "sympathetic understanding" Albert Einstein, *The World as I See It* (New York: Citadel Press, 1993), 22; "they should not be too conscious" cited at <http://tennyo.com/einstein/main.html>; "sacred gift" in an email from Howard Bloom to Neil Greenberg and cited on-line at <https://notes.utk.edu/Bio/greenberg.nsf/11b7b90a9fa8e19585256c76000ed30a/25f4f2f5e0cc667485256d330070aa70?OpenDocument>.

2. There are, significantly, no entries for "intuition" in either James W. Guthrie, ed., *Encyclopedia of Education* (New York: Macmillan Reference Library, 2002) or in Marvin C. Alkin, ed., *Encyclopedia of Educational Research*, 6th ed. (New York: Macmillan Reference Library, 1992), though these works do include entries for such concepts as "creativity" and "critical thinking," suggesting that research on intuition in education is negligible. An important (but also somewhat neglected) exception is Nel Noddings and Paul J. Shore, *Awakening the Inner Eye: Intuition in Education* (New York: Teachers College Press, 1984).

3. There has been some recent interest in the topic of intuition in philosophy of education. See Inna Semetsky, "The Role of Intuition in Thinking and Learning: Deleuze and the Pragmatic Legacy," *Educational Philosophy and Theory* 36, no. 4 (2004): 433-454; and the closing section of Daniel Vokey, "Teaching Professional Ethics to Educators: Assessing the 'Multiple Ethical Languages' Approach,"

in *Philosophy of Education 2005*, ed. Kenneth R. Howe (Urbana, Ill.: Philosophy of Education Society, 2005), 125–133.

4. The term “knowledge worker” was coined by Peter Drucker. The role of such workers in networked enterprise is explained in Manuel Castells, *The Rise of Network Society*, 2nd ed. (Oxford: Blackwell, 2000). The place of rapid thinking in knowledge work is emphasized in Stan Davis and Christopher Meyer, *Blur: The Speed of Change in the Connected Economy* (New York: Time Warner, 1999); and Bill Gates, *Business @ The Speed of Thought* (New York: Time Warner, 1999). For Davis, the essence of the “blur” phenomenon is speed, intangibles, and connectivity.

5. See, for example, Timothy D. Wilson, *Strangers to Ourselves: Discovering the Adaptive Unconscious*, (Cambridge, Mass.: Harvard University Press, 2004); the recent work is synthesized in a new handbook, Ran R. Hassin, James S. Uleman, and John A. Bargh, eds., *The New Unconscious* (Oxford: Oxford University Press, 2005).

6. Malcolm Gladwell, *Blink: The Power of Thinking Without Thinking* (New York: Little Brown, 2005). This text will be cited as *BPT* in the text for all subsequent references.

7. See, for example, Richard Rorty, “Intuition,” in *The Encyclopedia of Philosophy*, ed. Paul Edwards (New York: Macmillan Reference, 1967), 204–212.

8. Rudolph Arnheim, *The Genesis of a Painting: Picasso's Guernica* (Berkeley: University of California Press, 1962), 9.

9. Mihali Csikszentmihalyi, *Flow: The Psychology of Optimal Experience* (New York: Harper and Row), 2000.

10. Aynsley Smith, “In the Zone: Training Your Mind as Well as Your Body,” <http://www.cnn.com/HEALTH/library/SM/00001.html>; also Andrew Cooper, “In the Zone: the Zen of Sports,” <http://www.shambahalasun.com/Archives/Features/1995/Mar95/TheZone.htm>.

11. Glyn Brokensha, “Clinical Intuition: More than Rational?” *Australian Prescriber* 25 (2002): 14–15.

12. William R. Corliss, “Playtime for Gonzo,” *Time*, December 28, 1987.

13. William F. Russell, *Second Wind: Memoirs of an Opinionated Man* (New York: Random House, 1979).

14. Jack Pfeiffer, “Recording Landowska at home,” liner notes to Wanda Landowska, “Bach: The Well Tempered Clavier,” New York, RCA, 1987 (orig. 1954).

15. Rorty, “Intuition,” 204.

16. Drayton Boylston, “Can ‘Gut Instincts’ Get You Ahead?” *Daily Journal* 105, no. 39 (2001).

17. J. Metcalfe, “Intuition,” in *Encyclopedia of Psychology* 4, ed. Alan E. Kazdin (Oxford: Oxford University Press), 363–364.

18. Gladwell, *Blink*, 232: “Even the giant computer in our unconscious needs a moment to do its work...immediate judgements that are accurate take time measurable in seconds, not just milliseconds.”

19. Benedetto Croce, *Aesthetics as Science of Expression and General Linguistic* (1902).

20. R. Franz, “Herbert Simon: Artificial Intelligence as a Framework for Understanding Intuition,” *Journal of Economic Psychology* (2003), <http://www.rohan.sdsu.edu/~frantz/HSimon.html>.

21. Cooper, “In the Zone.” On the other hand, negative intuitions, those deriving from the sense that something is wrong or that an activity is off course, are frequently accompanied by negative emotions. When critic Bernard Berenson was confronted with a forgery, he had a queasy feeling in his stomach, a genuine “gut feeling,” while speculator George Soros has back spasms when he senses the markets going against his trades (*BPT*, 51).

22. Csikszentmihalyi, *Flow*.

23. The idea of education as initiation into worthwhile activities is developed in R.S. Peters, “Education as Initiation” (lecture delivered at the University of London Institute of Education, London, 1964). Gert Biesta, in “Education, Not Initiation,” in *Philosophy of Education 1996*, ed. Frank Margonis (Urbana, Ill.: Philosophy of Education Society, 1997), has challenged the “initiation” metaphor, which he takes as entailing a transmission model of education, and encouraged the adoption of an agency model which privileges difference over transmission. Biesta, however, does not consider, or even cite, Peters’s classic formulation. The “worthwhile activities” intended by Peters include transformational as well as normal

work, and allow for all of the differences and new identities which are regularly exhibited in intellectual and artistic fields. Thus I doubt that Biesta's argument would carry much weight against either Peters's notion of "initiation" or my use of it here.

24. Mortimer Adler, *The Paideia Proposal: An Educational Manifesto* (New York: Macmillan, 1982).

25. See <http://tennyo.com/einstein/main.html>.