

31 Philosophy, Authority of Knowledge and Ingenuity in Education

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31.1 Abstract

Like any other part of humankind's intellectual achievements, knowledge and ingenuity in Education need to be written and rewritten in terms of what is of importance to present-day literati. Philosophy of Education itself develops in specific contemporary historical and cultural contexts. It presumes to deal with problems that have had various expressions since even ancient times. The history of intelligence does not describe a simple linear progression from Plato and Aristotle to our present intellectual situation. The displays of philosophical issues that arise in different disciplines are mainly insightful about matters of ethics, aesthetics, ontology or logic. Developments in areas such as medieval epistemology, or phenomenology and hermeneutics provide some of the problems that have had to be thought through, as well as using historical materials as guides and aids. These proposed explanations provide new lenses or studying and interpreting the past, and this revised version of the past then provides some new ways of looking at the importance of knowledge in education at the present. Therefore, understanding ingenious education should involve both formal settings (schools/universities) and informal settings (families, communities, libraries, workplaces, civic organizations, unions, sports teams, campaigns and elections, mass media, and so on). It seems reasonable to suggest that, following the Athenians of the Classical Age; an effective education will coordinate if not integrate these formal and informal settings. That is, formal creative education is a term reserved for the organized system of schooling that aims, as one of its primary purposes, to prepare future well-educated citizens for participation in public life.

Keywords: Philosophy, Knowledge, Education, Ingenuity, Intellectuality

In the 20-21th centuries, the university faced a principally new type of cultural development and transformation to get adapted to new conditions. Change of Cultural epochs lead to a change in criteria and principles conditioning the university education system. Largely it affected “externally invisible and inaudible” factor, “the fluid of spiritual life” of the university, “human immaterial sub-basis” of its existence (Jaspers, 2006) - its humanitarian meaning. This can nowadays indicate that existence of the traditional university is challenged. The goal of providing courses that meet employers' changing demands dominates discussions about higher education these days and informs many university system initiatives. Values of Education develop in specific historical and cultural contexts. It presumes to deal with problems that have had various expressions since even ancient times. The history of intelligence, knowledge, ingenuity does not describe a simple linear progression from Plato and Aristotle to our present intellectual situation and studying and interpreting the past provide some new ways of looking at the importance of knowledge in education at the present. According to the ancient understanding, there are five virtues of knowledge: *technê*, *epistêmê*, *phronêsis*, *sophia*, and *nous*. Various translations have been offered for each of these terms. Most often, *technê* is translated as craft or art. While *epistêmê* is generally rendered as knowledge, in this context, where it is used in its precise sense, it is sometimes translated as scientific knowledge. The full account of *epistêmê* in the strict sense is found in *Posterior Analytics*, where Aristotle says that we think we know something without qualification (*epistasthai...haplôs*) when we think we know (*gignôskein*) the cause by which the thing is, that it is the cause of the thing, and that this cannot be otherwise. As though to emphasize the necessity of what is known, he most

frequently uses geometry as an example of epistêmê. In this regard, it should be pointed out that Aristotle uses the notion of cause (aitia) in a broader sense than it usually has in contemporary thought. However, one must not confuse this usage with our contemporary understanding of knowledge and science, which include experimentation and some of our contemporary assumptions about the relation between theories (the domain of 'knowledge') and practice (the concern of 'craft' or 'art'). Conducting experiments to confirm hypotheses is a much later development. Rather, translating epistêmê as scientific knowledge is a way of emphasizing its certainty. In any event, as soon as Aristotle introduces these five terms, he turns to the distinction between the first two virtues. First, he defines epistêmê, as he says, in its accurate sense and leaves aside its analogous uses. Outside of modern science, there is sometimes skepticism about the application of theory to practice because it is thought that theory is conducted at so great a remove from reality, the province of practice, that it can lose touch with it. In fact, at the level of practice, actual experience might be all we need. In addition, within science, theory strives for a value-free view of reality. As a result, scientific theory cannot tell us how things should be — the realm of 'art' or 'craft'. Therefore, we must turn somewhere else for answers to the insightful, but still practical, questions about how we should live our lives. However, some of the features of this contemporary distinction between theory and practice are not found in the relation between epistêmê and technê. Therefore, understanding inventive education should involve both formal settings (schools/universities) and informal surroundings (families, communities, libraries, workplaces, civic organizations, unions, sports teams, campaigns and elections, mass media, and so on). It seems reasonable to suggest that following the Athenians of the Classical Age, an effective education will coordinate if not integrate these formal and informal settings. That is, formal creative education is a term reserved for the organized system of schooling that aims, as one of its primary purposes, to prepare future well-educated citizens for participation in public life. The study of knowledge importance in education has closely paralleled the study of wisdom. Aristotle distinguished between two different kinds of wisdom, theoretical wisdom and practical wisdom. Theoretical wisdom is, according to Aristotle, "scientific knowledge, combined with intuitive reason, of the things that are highest by nature" (Nicomachean Ethics, VI, 1141b). For Aristotle, theoretical wisdom involves knowledge of necessary, scientific, first principles and propositions that can be logically deduced from them. Aristotle's idea that scientific knowledge is knowledge of necessary truths and their logical consequences is no longer a widely accepted view. Thus, for the purposes of this discussion, I will consider a theory that reflects the spirit of Aristotle's view on theoretical wisdom, but without the controversy about the necessary or contingent nature of scientific knowledge. Moreover, it will combine scientific knowledge with other kinds of factual knowledge, including knowledge about history, philosophy, music, intelligence. There are many views in the historical and contemporary philosophical literature on wisdom that have knowledge, as opposed to humility or accuracy, as at least a necessary condition of wisdom Aristotle *Nicomachean Ethics* VI, ch. 7), Descartes (*Principles of Philosophy*), Richard Garrett (1996), John Kekes (1983), Keith Lehrer & Nicholas Smith (1996), Robert Nozick (1989), Plato (*The Republic*), Valerie Tiberius (2008), Dennis Whitcomb (2010) and Linda Zagzebski (1996) for example, have all defended theories of wisdom that require a wise person to have knowledge of some sort. All of these views very clearly distinguish knowledge from expertise on a particular subject. Moreover, all of these views maintain that wise people know "what is important." The views differ, for the most part, over what it is important for a wise person to know, and on whether there is any behavior, action, or way of living, that is required for wisdom. An alternative approach to wisdom focuses on the more positive idea that wise people are very knowledgeable people. Many scholars who were concerned with matters of knowledge and intelligence also focused on manifestations of talent and creativity such as Kant, William James, to name just a few. Issues of talent and creativity in education has attracted the attention of thinkers for thousands of years, especially as there are complex issues in great quantities that have great philosophical interest. Even a brief review reveals that they touch on some but by no means all of the issues that have generated dynamic debate down the ages. Restated more explicitly in terms familiar to philosophers of education, the issues, and the discussion flitted over are:

- Education as transmission of knowledge versus education as the development of inquiry and reasoning skills that are conducive to the development of autonomy (which, roughly, is the tension between education as conservative and education as progressive, and also is closely related to differing views about human “perfectibility”—issues that historically have been raised in the debate over the aims of education).
- The question of what this knowledge, and what these skills, ought to be;
- The questions of how creative learning is possible, and what it is to have learned something;
- The distinction between creative educating versus teaching versus training versus indoctrination.

The interrelationship between intelligence, knowledge, ingenuity and creative teaching continues today. Intelligence theory influences the way we identify and assess students, our attitudes toward giftedness and gifted students, the models upon which we base our programs and interventions, and many other aspects of creative knowledgeable education. Yet with the surge in new creativity and intelligence theories, many of these theories and their potential applications remain under examined.

However, how to organize the multitude of intelligence theories? Both Sternberg (1990) and Gardner, Kornhaber, and Wake (1996) propose classification schemes in their texts on intelligence, knowledge and creativity in education. Sternberg suggests that we view intelligence theories in terms of the metaphors on which they are based: geographic, computational, biological, epistemological, anthropological, sociological, and systematic.

Graduate and undergraduate education programs with an intelligence and ingenuity focus have been significant enrollment (and profitability) growth areas for universities. The rapid program development to meet both end-user requirements and student interest has been fueled by a variety of creative solutions. This phenomenon exists in spite of the fact that there remains no consensus on whether there is or should be an academic intelligence in teaching. The need for creative and intelligence educational programs is both real and time-critical. The purpose and the work at the universities are to close the gap between current (and projected) intelligence requirements and the supply of creative and quality education and research. The experience has shown that there are three critical components that must be factored into the development of any creative and intelligence education program in order to successfully close this gap. These three components follow:

1. Pedagogical foundations: Intelligence education is a new academic field, even as it is a combination from mature disciplines in policy, science, technology, as well as operational use. The sustained national/international interest in security and intelligence provides the impetus to take advantage of this creativity by starting with a clean slate to develop a solid pedagogical foundation based on the new knowledge from learning research. Such a foundation should include

- Programs built on both individual student and programmatic learning outcomes
- Coherent assessment methods using both direct and indirect means that determine if the program and the students are achieving the outcomes
- Programs that accommodate different learning styles, allowing the program to adapt around the student rather than around the professor
- Active learning and team-building components that engage students and teach team-skills
- Use of technology to not only maximize efficiencies, but to provide value added learning strategies

2. Multi-discipline approaches for a diverse set of students: The creative and intelligence education field requires a multi-discipline approach to meet customer demand from a variety of operational, policy and research requirements. Effective creative education must be prepared to deliver programs to assist policymakers with technical appreciation and understanding;

- Provide future professionals or business leaders with a solid foundation of key intelligence issues, including policy implications, emerging solutions, and opportunities for their engagement
- Offer brainpower and security technologists a more holistic view of the intelligence operating space and its supported and supporting fields

3. Research and Innovation: Effective research becomes creative in education.

Moreover Science education continues to be a field in the making and as such is characterized by the coexistence of a number of different approaches to (or, perhaps, styles of) teaching and learning. These questions form the background against which the present paper presents the field starting with reflection on science/technology from Greek Antiquity to the rise of contemporary philosophy of science education in the mid-19th to mid-20th century. This is followed by a discussion of the present state of affairs in the field of ingenuity education.

For centuries, the study of logic has inspired the idea that its methods might be connected in efforts to understand and improve thinking, reasoning, and argument as they occur in real life contexts: in public discussion and debate; in education and intellectual exchange; in interpersonal relations; and in law, medicine and other professions. Informal logic is the attempt to build a logic suited to this purpose. It combines the study of argument, evidence, proof and justification with an instrumental outlook which emphasizes its usefulness in the analysis of real life arguing.

The pedagogical and practical interests that characterize informal logic are already evident in ancient times. The First Sophistic is a movement motivated by the notion that one can teach the art of logos in a way that can be useful in public discussion and debate. Aristotle's rhetorical and logical works are especially notable for their systematic attempts to understand and teach the principles of real life arguing. Within informal logic and argumentation theory, his views and general outlook remain relevant today.

Competency-based education turns the traditional model on its head. Instead of awarding credits based on how much time students spend learning, this model awards credits based on whether students can prove they have mastered competencies—the skills, abilities, and knowledge required in an area of study. Competency-based education combines an intentional and transparent approach to curricular design with an academic model in which the time it takes to demonstrate competencies varies and the expectations about learning are held constant. Students acquire and demonstrate their knowledge and skills by engaging in learning exercises and activities. It is also important for a student to endeavor to be a professional in a special field. Being professional isn't something easily defined but teaching students professional behavior is part of the instructional agenda. Sociological use of word professional is more rigorous. Profession is an occupation requiring extensive, systematic knowledge of or training in arts and sciences. Professions are distinguished from other occupations by several characteristics: Professionals form associations that regulate their profession's internal affairs and represent their interests to outside bodies.

• Responsibility

Professionals deal in matters of vital importance to their clients and are therefore entrusted with grave responsibilities and obligations. Given these inherent obligations, professional work typically involves circumstances where carelessness, inadequate skill, or breach of ethics would be significantly damaging to the client and/or his fortunes.

• Accountability

Professionals hold themselves ultimately accountable for the quality of their work with the client. The profession may or may not have mechanisms in place to reinforce and ensure adherence to this principle among its members. If not, the individual professional will (e.g. guarantees and/or contractual provisions).

• Specialized, theoretical knowledge

The skill of professionals is based on systematic, theoretical knowledge, not merely on training in particular techniques. Professionals render specialized services based on theory,

knowledge, and skills that are most often peculiar to their profession and generally beyond the understanding and/or capability of those outside of the profession. Sometimes, this specialization will extend to access to the tools and technologies used in the profession (e.g. medical equipment).

- Institutional preparation

Professions typically require a significant period of hands-on, practical experience in the protected company of senior members before aspirants are recognized as professionals. After this provisional period, ongoing education toward professional development is compulsory.

- Autonomy

Professionals have considerable autonomy over their work. Professionals have control over and, correspondingly, ultimate responsibility for their own work. Professionals tend to define the terms, processes, and conditions of work to be performed for clients (either directly or as preconditions for their ongoing agency employment).

- Ethical constraints

Due to the other characteristics on this list, there is a clear requirement for ethical constraints in the professions. Professionals are bound to a code of conduct and ethics specific to the distinct profession (and sometimes the individual). Professionals also aspire toward a general body of core values, which are centered upon an uncompromising and un-conflicted regard for the client's benefit and best interests.

- Merit-based

In a profession, members achieve employment and success based on merit and corresponding voluntary relationships rather than on corrupted ideals such as social principle, mandated support, or extortion (e.g. union members are not professionals). Therefore, a professional is one who must attract clients and profits due to the merits of his work. In the absence of this characteristic, issues of responsibility, accountability, and ethical constraints become irrelevant, negating any otherwise-professional characteristics.

- Professional Associations

Professionals form associations that regulate their profession's internal affairs and represent their interests to outside bodies

Based on the discussion a classification can be constructed of three principal ways of regarding Knowledge, Professionalism, Ingenuity Education and Creativity:

- As the systematic clarification of the nature of Logic and as an element and product of human culture
- As the systematic reflection on the consequences of technology for human life
- As the systematic investigation of the practices of engineering, invention, designing and making of things. A guiding idea in this approach to Education is that the design process constitutes the core of Creativity, such that studying the design process is crucial to any project that attempts to understand Competency and Education.

Creativity is in fact possible in any activity that engages our intelligence.

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