

Article

Reclaiming Liberal Education

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Abstract: The main purpose of this paper is to articulate and defend an updated concept of liberal education. To achieve this purpose, the paper has attempted two things. First, to provide a meaning for the notion of liberal education by drawing upon, and discussing briefly, the ideas of three British philosophers, namely, Paul Hirst, Richard Stanley Peters, and Michael Oakeshott. And second, to discuss the need for an updated concept of liberal education, by pointing out the shortcomings of the traditional/classical concept of liberal education, in the context of contemporary reality. The implications of an updated notion of liberal education are also pointed out. The discussion highlights the fact that there is a need to reclaim the value of liberal learning not only in higher education but at all levels of education.

Keywords: liberal education; knowledge; dialogue; critical thinking; intellectual autonomy; imagination; creativity

1. Introduction

In the midst of a rapidly changing world, and with problems in both education and the society at large, the question of how schools and universities can best educate their students is once again brought to the fore. This is certainly not an easy question to answer, and Aristotle's [1] thinking is still very contemporary:

The existing practice is perplexing; no one knows on what principle we should proceed—should the useful in life, or should virtue, or should the higher knowledge, be the aim of our training? all three opinions have been entertained (Aristotle, *Politics*, 1337a32-b1).

Questions, of course, about the best or the most appropriate kind of education, as is well known, have been debated over the centuries. The reason is that education is a normative concept, just as is 'justice' or 'courage'—any definition of it reflects the philosophical, ideological and ethical preconceptions of the definer [2,3]—so any conception of education is contestable. Therefore, arguments about whether education should primarily consist in learning about those "useful" things, or learning about "virtue" or "higher knowledge", to use Aristotle's own terms, cannot be settled. This is a problem that is recognized. And yet, in the context of contemporary reality, the need to articulate a new conception of education is both pressing and legitimate, for it is such a conception that can help us answer the question regarding the kind of education our students will receive in the various disciplinary areas, including even the natural sciences. Even though there has been a recent attempt to reclaim the value of liberal learning in higher education [4,5], the value of liberal education, at all levels of education, has been recognized by scholars ever since its conception [6,7]. True, there have been many objections to liberal education. But, as Entwistle argued, most of these objections can be refuted [8]. And with regard to the most widespread accusation of liberal education, he pointed out that:

[...] Contrary to the assumption of many critics (as, for example, in Freire's dismissal of traditional schooling as educational "banking") liberal education cannot be reduced to the

offering, ingestion and regurgitation of mere items of information. The various categorisations of the liberal curriculum as “forms of knowledge,” “realms of meaning,” “disciplines” or “voices” are a reminder that the assimilation of knowledge must be structured, significant, critical, concerned with understanding and, even, as in Oakeshott’s formulation, the outcome of a conversation (p. 7).

The purpose of this essay is to articulate and defend an updated concept of liberal education for mandatory education, based on the ideas of three British philosophers of education, namely, Paul Hirst, Richard Stanley Peters, and Michael Oakeshott. Even though the meaning of liberal education can be debated, as it has been, over the centuries (due to society’s changing educational ideas), the writings of the above three philosophers can help delineate a concept of liberal education that can be updated and be relevant to all education levels, and in line with recent scholarship in the field of education [9–11]. The need for such an updated concept of liberal education is imperative given the fact that students live, and will also work in the near future, in a complex and globalized world. Nussbaum’s notion of “inclusive global citizenship” necessitates a new approach to liberal education [10]. As she argued, citizens in an “interlocking world” need to develop “imaginative understanding” —that is, the ability “to think what it might be like to be in the shoes of a person different from oneself” (p. 43). Such “narrative imagination” is of crucial importance if our goal is to help students transcend barriers set up by both physical and cultural distance, as well as by distrust. And this ability needs to be considered by an updated concept of liberal education. In short, liberal education should become more humanistic and inclusive.

Also, as I will discuss later in this paper, liberal education should be more critical, in the sense that it fosters the development, not only of critical thinking but also of critical consciousness. Such a perspective on liberal education is in line with Daniel Mulcahy’s work [10,11]. But while Mulcahy bases his concept of liberal education on pragmatist philosophy (which incorporates in it feminist theory as well as critical pedagogy), I base my defense of liberal education, as I said above, on the original writings of Hirst, Peters, and Oakeshott, given that importance they attached on intellectual autonomy as well as the skills of thinking critically, insightfully and imaginatively. In addition, the work by Hirst and Peters did address a concept of liberal education applicable to mandatory education, so the value of such work needs to be considered. Nowadays, ‘thinking for oneself’ inevitably becomes a primary goal of an updated liberal education. People of all ages are bombarded on a daily basis with so much information which needs to be critically evaluated by people themselves before they make informed decisions. At the same time though, intellectual autonomy and thinking skills need to be complemented with empathy, caring and generally with a more humanistic attitude toward the world.

2. The Meaning of Liberal Education

Even though the term ‘liberal education’ derives from the concept of ‘liberal arts’ of medieval Europe, that is, a system of education, which aimed at the cultivation of free human beings (through a curriculum that consisted of two parts, namely, the trivium -grammar, rhetoric, and logic—that came first and the quadrivium—arithmetic, geometry, astronomy, and music—that came later), the idea of liberal education, despite its disputed origins, seems to be grounded in a deep and long historical tradition, which goes back to Ancient Greece. For it was there that a distinction was made between vocational training, whose objective was the training of slaves, and education, which was appropriate for free citizens [12,13]. It is important though to note that education in Ancient Greece was based on the ‘knowledge of the good’ [7]. This notion of ‘goodness’ was used in a moral sense. Plato’s notion of ‘paideia’ as “the education in arete (excellence) from youth onwards, which makes men passionately desire to become perfect citizens, knowing both how to rule and how to be ruled on the basis of justice” [14] (p. 643e) does show the importance that was attached to moral knowledge. This moral knowledge is also captured in Aristotle’s notion of ‘phronesis’ [15]. Aristotle, in distinguishing between three kinds of knowledge—that is, ‘episteme’ (theoretical knowledge), ‘techne’ (practical knowledge), and ‘phronesis’ (practical wisdom)—did point out the importance of phronesis in decision making, which for him had an ethical and a political dimension [16,17].

To understand Aristotle's notion of *phronesis*, one must look at a subtle difference between his philosophical thinking and that of his predecessors, namely, Plato and Socrates, as regards education. While for Socrates and Plato the aim of education was the attainment of knowledge, which was necessary for personal development and the function of the society—and that is why the attainment of knowledge was considered a virtue by itself—for Aristotle, the aim of education was the attainment of personal happiness and goodness in life. This 'goodness' was of two kinds, namely 'goodness of intellect' and 'goodness of character'. Thus, for Aristotle, the aim of education stemmed from a philosophy of life, which was grounded in ethics and politics [17,18]. What was common, however, among all three thinkers was their belief in the value of a well-rounded education as well as their belief that the development of reason was an important goal of education, because reason was considered the first step toward morality [15].

More recently, the term liberal education has been used by many different people to mean many different things [19–21]. Even though the term came into wide usage in the English language in the late eighteenth and early nineteenth centuries, with a curriculum consisting largely of the "classics" (i.e., Greek and Latin), more recently, it has been used synonymously with such terms as general education, liberal arts education or liberal studies, and it has also been identified with what might be called a core curriculum. However, despite the number of different interpretations of liberal education, as Hirst pointed out, a consensus about its main purpose appears to exist. This purpose is the development of free human beings who know how to use their minds and are able to think for themselves [19]. A historical review of liberal education shows that liberal education is an education that liberates human beings from "the bondage of ignorance, prejudice, and provincialism" [7] (p. 3).

In this sense, the aim of liberal education is not the development of professional competence. That is, its aim is not to produce scientists, mathematicians or engineers, but citizens who can think and act intelligently and responsibly. Moreover, such an education has the potential to free the mind of the students from ordinary, everyday experience, which, although of importance for teaching and learning purposes (i.e., it can be meaningful as students are able to make connections with familiar things), does not help with broadening the students' intellectual horizons. According to Oakeshott, liberal education is the only education that provides a "liberation from the here and now of current engagements [. . .] the intellectual poverty and the emotional morass of ordinary life" [22] (p. 30).

Yet this aim could be interpreted rather narrowly, and liberal education be identified with a kind of intellectualism, and even accused of being elitist. One of the reasons might be that the initiation into the various disciplines—an important goal of liberal education [12,19]—has been interpreted simply as an acquisition of knowledge. However, a look at Hirst's 'forms of knowledge', at Oakeshott's metaphor of 'education as conversation', and also at R.S. Peters' concept of the 'educated person', can indeed shed some light on some misconceptions about liberal education, can help clarify its meaning, and thus help us reclaim its value in the context of contemporary reality. Even though a (short) discussion of the ideas of these three philosophers cannot provide the historical depth and breadth—necessary for an understanding of both the origins and the development of the concept of liberal education—it can, nevertheless, point to the importance of central ideas/goals of liberal education in the context of mandatory education, and not just in the context of higher education.

3. Hirst's 'Forms of Knowledge'

Hirst, more 40 years ago, had argued for "the demand for an education whose definition and justification are based on the nature and significance of knowledge itself, and not on the predilections of pupils, the demands of the society, or the whims of politicians" [20] (p. 32). So he focused on the nature of knowledge per se. His work on the nature of human knowledge led him to argue that there are seven distinct categories of knowledge that he called 'forms of knowledge' (i.e., mathematics, physical sciences, human sciences, history, religion, literature and the fine arts, philosophy) [19,20]. According to his analysis, these seven forms have their own distinctive concepts and logical structure, their own mode of inquiry (i.e., each form has developed its own particular techniques and skills for

exploring experience, for testing its own distinctive expressions, and answering its own distinctive questions), and they cover all kinds of things that human beings can know about the world. According to him, “a consistent concept of liberal education must be worked out fully in terms of the forms of knowledge” [19] (p. 393).

Hirst’s insistence on these forms of knowledge rests on his argument that these forms represent different and distinct ways to understand and experience the world. However, the central goal of liberal education, according to Hirst, is not simply students’ initiation into these forms of knowledge [19–21]. In other words, the initiation into these forms cannot, and should not, be interpreted simply as the acquisition of knowledge from the various disciplines (i.e., ‘forms of knowledge’). Thus, the initiation is not an end-in-itself, but, rather, an initiation, as Dewey argued, into the “collected wisdom and understanding of the species” [23]. For Hirst, and this is of crucial importance too, the initiation into the forms of knowledge involves the development of important intellectual skills [19]. As he pointed out:

Each form of knowledge, if it is to be acquired beyond a general and superficial level, involves the development of creative imagination, judgement, thinking, communicative skills, etc., in ways that are peculiar to itself as a way of understanding experience (p. 399).

It is the acquisition of the aforementioned skills that helps develop the intellect in each of the four major modes of thought—that is, the logical, the empirical, the moral and the aesthetic [19,20]. It is not, therefore, a coincidence, in the light of what Hirst argued, the importance that the Association of American Colleges and Universities attaches to liberal education [5]. Thus, it is evident that liberal education is a holistic kind of education and can make a significant contribution to both personal development and the achievement of social goals. Although its primary goal has been the development of the intellect, its contribution to decision making in the context of tackling everyday issues, even to citizenship education, has to be recognized and acknowledged.

However, what is also important to point out is that the ultimate goal of liberal education is a change in perspective. For Hirst, the acquisition of knowledge (from all ‘forms of knowledge’) leads not simply to a change in students’ cognitive structure but to a change in the way they see the world. Indeed, Hirst [19] argued that “to acquire knowledge is to learn to see, to experience the world in a way otherwise unknown” (p. 401). And it is interesting to note that such a goal is in line with the idea of “aesthetic/transformational experience”, despite the fact, that the latter is based upon Dewey’s aesthetic philosophy [23,24].

The change in outlook, as a result of knowledge acquisition, is also an idea that R.S. Peters put forward when he formulated his concept of the educated person that I discuss in this paper. However, it should be pointed out here that there have been indeed a number of philosophers, cognitive scientists and educators who link significant learning with seeing the world differently [25,26], without though acknowledging the names of Paul Hirst and R.S. Peters, or simply the idea of outlook change, as an educational outcome, in line with a liberal education philosophy in general [27]. By the same token, Hirst’s contribution to the development of the idea ‘nature of science’ should also be acknowledged. Even though he did not talk explicitly about the notion ‘nature of science’, he did point out the crucial importance of students’ ability to recognize the various ‘forms of knowledge’ for what they are [20]. For Hirst, the ability to recognize, for example, and differentiate between, an aesthetic judgement and an empirical assertion stems from one’s understanding of the various ‘forms of knowledge’ and hence from considerations on which their validity depends. It goes without saying that from the perspective of his work on the ‘forms of knowledge’, and regardless of any criticisms of such work (e.g., do forms of knowledge have their own logical structure?), claims to knowledge presuppose an understanding of each form’s distinctive questions and mode of inquiry.

4. Oakeshott’s Metaphor of ‘Education as Conversation’

To understand Oakeshott’s views on education [22,28], one has first to get clear about one fact: it is only through education that, according to Oakeshott, we can become fully human. In other words, it is

only an educated person that is fully human. Starting with the view that human beings live not in a world of objects but in a world of ideas, human life is enacted in meaningful linguistic interactions with other human beings. He expressed an existentialist perspective that there is not a given, an essential, 'human nature' which we can strive to acquire or achieve at some point in our life (i.e., we are nothing at birth) but we become what we become through our interactions with others. Central to his idea of interaction, taking place within a community of teachers and learners, is the notion of the initiation of each generation into the human heritage. And this initiation, in turn, takes place through a conversation, in which we learn to listen to and speak the various 'voices' (or languages) of human understanding. It is of note, though, that while for the teacher the initiation entails a commitment on his/her part to 'being human', for the learner it is a process of 'becoming human'.

Although the metaphor of conversation is applicable to many forms of education, Oakeshott's uses it in order to promote and defend liberal learning. According to Oakeshott, we are inheritors, neither of an inquiry about the world, or even about ourselves, nor of an accumulating body of knowledge, but of a conversation, which began in the primeval forests and which was extended and made more articulate in the course of centuries. This conversation can be 'an unrehearsed intellectual adventure' [28].

Liberal education, according to Oakeshott [22], initiates students into the art of this conversation in which they "learn to recognize the voices, to distinguish their different models of utterance, to acquire the intellectual and moral habits appropriate to this conversational relationship" (p. 39). Human understanding comes as a result of students' engaging in conversation with their cultural inheritance and its distinct voices. Thus, students make their "debut dans la vie humaine" (p. 39). These voices, according to Oakeshott, represent the achievements of humanity, its insights in the various disciplines (or forms of knowledge). No one of them (voices), even that of science, should dominate the conversation. Each has something to add, in order to enrich the conversation, which becomes an endless 'intellectual adventure', during which "we enter into a variety of modes of understanding the world and ourselves" (p. 39).

The conversation one can engage in can be with one's self, with other persons, and even with texts. However, even though this conversation focuses on cultural heritage, even though it is an initiation into the moral values and intellectual habits and achievements of the society, its scope is—and should not be limited to—the prescribed content of the disciplines. This might sound a naïve argument, but the point that needs to be made here is that the richness of that content has to be exploited and brought into the conversation. The term 'richness' is to be contrasted with that of 'sterility,' which is very likely to be connected with the teaching and learning of school subjects (e.g., in science education, the presentation of content knowledge can take place in the form of facts to be learned or in the form of ideas that can be brought into a conversation such that the richness of these ideas is revealed to the students). Thus, it is quite evident that for Oakeshott [22], education is not about the transmission of facts or ideas; it is rather about an invitation to an open-ended dialogue. And this dialogue is central to liberal education—that is, an education that provides a "liberation from the here and now of current engagements [. . .] the intellectual poverty and the emotional morass of ordinary life" (p. 30). I will take up this point (i.e., liberating students from "shackles" of everyday experience) when I discuss the role of empowerment in an updated notion of liberal education.

Thus, it is worth stressing that, despite any criticism of Oakeshott's ideas (as vague and even utopian, or even his idea that it is only through education that one becomes fully human), his view of liberal education, as an initiation into the whole of human experience through an understanding of the 'voices'—the various languages and their meaning one may very well say—in an on-going conversation of the humankind, deserves special attention. For it is such a view of education that can be seen as an alternative to, and, in fact, given as, an antidote to instrumentalist/utilitarian/technocratic conceptions of education, or simply to curricula and instructional sequences that supposedly make schooling and learning interesting and attractive. For Oakeshott, education, properly speaking, is an initiation into "the skills and partnership" of the conversation of humankind, in which we learn not only to recognize the various 'voices', but also to acquire "the intellectual and moral habits appropriate

to this conversation” [28]. It thus makes sense that for him it is this conversation which, in the end, “gives character to every human activity and utterance” (pp. 198–199).

5. R.S. Peters’ Concept of the ‘Educated Person’

The notion of the educated person derives directly from Peters’ concept of education [2]. According to his analysis of the concept of education, a person is considered educated if, and only if, the process he/she has participated in is truly educative—that is, it complies to three specific criteria: (a) “Implies the transmission of what is worthwhile to those who become committed to it, (b) involves knowledge and understanding and some kind of cognitive perspective, which are not inert, and (c) rules out the some procedures of transmission, on the grounds that they lack wittingness and voluntariness on the part of the learner” (p. 45).

Thus, Peters laid out a value criterion, a knowledge criterion, and a procedural criterion. It is evident that all three criteria need to be satisfied if a person is to be called ‘educated’. That said, it deserves to be noted that he attached great importance to knowledge and understanding of subject matter. In fact, for him, knowledge and understanding are more important than methods and procedures necessary for gaining such knowledge and understanding [29].

To be educated a person must at least have got as far as the understanding of and theories and have some familiarity with the methods and procedures whereby he acquires such understanding even if he lacks the mastery of such procedures (p. 29).

The idea (criterion) though that knowledge and understanding should not be inert point to the crucial importance Peters attached to the utility value of knowledge. Knowledge, according to him, will be something that one values and uses to interpret and understand human experience. As he argued [2], one is educated when one can “see the place of knowledge in a coherent patten of life” (p. 45). But Peters, in addition to knowledge and understanding, includes the development of what he calls ‘cognitive perspective’. Even though he does not explicate this notion in his writings, one could interpret ‘cognitive perspective’ as an awareness of the wider significance of knowledge and understanding for one’s life [27]. Such “a wider perspective on life” can help one distinguish between a knowledgeable person and an educated person [30]. A person, as Peters himself argues, can be highly trained in science but still lack cognitive perspective, on the grounds that he or she is unable to see the relationships of science to “everything else”. It is my interpretation that for Peters, even ideas that are apparently remote from human concerns or which have no immediate practical significance (e.g., knowledge of cosmology and astrophysics), enable one to become aware of his/her own condition as a human being [27].

For Peters, however, the way the acquisition of content knowledge takes place is also of crucial importance. As he writes, such acquisition should be done “in a way which involves not an inert understanding, but a concern for values underlying them” [29] (p. 29). Elsewhere [2], he pointed out that:

There must be respect for evidence and a ban on ‘cooking’ or distorting it; ere must be willingness to admit that one is mistaken; there must be non-interference with people who wish to put forward objections; there must be respect for people as a source of argument and an absence of personal invective and contempt for what they say because of who they are (p. 56).

It is abundantly clear that such values are crucially important in the context of teaching any school subject and, according to Peters, they should be developed through the teacher’s manner of teaching, which he calls ‘principles of procedure’ [2]. Such principles are central to learning, and Peters is quite explicit when he uses the case of science as an example: to learn science is not just about acquiring content knowledge (i.e., learning facts and understanding theories); it is also about learning “to participate in a public form of life governed by such principles of procedure” and, therefore, a person who is educated in science “will have to absorb these principles of procedure by means of which the content of scientific thought has been accumulated” (p. 56). Thus, for Peters,

the development of all forms of knowledge (e.g., historical; scientific) cannot take place in the absence of ‘principles of procedure’. Apparently, ‘principles of procedure’ are crucial because they determine the extent to which moral values, such as honesty and respect for evidence and people, and intellectual attitudes, or habits of mind, such as open-mindedness, healthy skepticism, tolerance of ambiguity and uncertainty, inquisitiveness, curiosity and wonder, can be developed.

For Peters, ‘principles of procedure’ and content knowledge acquisition are interrelated [2]. In fact, ‘principles of procedure’ are part of the curricular content (e.g., history, science), in the sense that content acquisition, in the absence of such principles, cannot help develop knowledge, understanding and a ‘cognitive perspective’ that are not inert (i.e., the three educational outcomes as outlined by Peters in his concept of education). (Here, one might want to distinguish between content acquisition in the form of specific facts and ideas, and content acquisition that frees the mind of the student from ordinary experience and thus broadens his/her intellectual horizons.) And just like Hirst, Peters viewed learning as a transformative process, something that derives from the ultimate purpose of education: “To be educated is not to have arrived at a destination; it is to travel with a different view” [31] (p. 20). Here one notices similarities between Peters’ thinking and Dewey’s notion of “aesthetic experience” [23], which is transformative. This may seem surprising due to the fact that while Dewey’s idea of transformation derived from his pragmatist, aesthetic philosophy, Peters’ ideas about education (just like Hirst’s) derived from an idealist philosophy. However, one should also be reminded of the common ground that has been found in the works of Dewey, R.S. Peters and Paulo Freire [32].

6. Updating the Concept of Liberal Education

Liberal education, it has been pointed out, “may appear dated, but the perspective it embodies is not” [33] (p. 778). It is a pity that it has been considered synonymous with the transmission of information (i.e., curriculum content) and has been accused of being irrelevant to everyday life. It is true, of course, that there are a number of objections to liberal education (e.g., it has an entirely cognitive orientation, it is elitist, it focuses on the achievements of Western civilization and neglects other contributions to human knowledge, it downplays the contribution of women, is insensitive to human concerns). However, most of these objections, as was said, can be refuted [8].

In addition, despite any criticism of both Hirst’s [19–21] work on the ‘forms of knowledge’ (e.g., Are these forms only seven? Is each form characterized by central concepts? Is there really any organization characteristic of each form?) and Oakeshott’s [22] metaphor of ‘education as conversation’ (e.g., Whose conversation are we talking about? Who ‘really’ gets to speak? Is there really a conversation between the various voices, such as those of science and poetry, or between the natural sciences and the humanities, for that matter?), from an educational perspective, their conception of education as an initiation into the various forms of knowledge and into a conversation that includes the various voices (or languages) is indeed invaluable. However, while this is true, an update of its ideas, which takes into account contemporary reality, is imperative.

Both Hirst’s forms of knowledge and Oakeshott’s conversation, while of crucial importance (because they help students appreciate the cultural achievements of humanity, and better understand the world in which they are placed as human beings), need to consider that the development of the human mind is influenced by the social context as well, and they both need to be complemented with a critical stance toward sociocultural and ideological factors. True, Oakeshott’s approach to the concept of education through the metaphor of conversation—perhaps the most powerful metaphor, in my view, for education—appears, by its very nature, to be more sensitive to the ‘other’. Nevertheless, like Hirst, who focused on the forms of knowledge, because for him the problem of the curriculum was epistemological (i.e., identifying forms of knowledge and structuring the curriculum in terms of these forms) [19,20], Oakeshott did not examine the role of the sociopolitical context in the process of understanding, even though his notion of conversation entails the development of one’s capacity to enter into dialogue and to critically reflect. It should be pointed out, of course, that Hirst himself

reconsidered his own 'logical' categorization of human knowledge in favor of an approach based on the notion of 'practice' [21,34].

By the same token, R.S. Peters' ideas need an update. Even though he argued that "the problem of the teacher is to pass on a body of knowledge in such a way that a critical attitude toward it can also develop" [35] (p. 19), his analysis was rather epistemological. He did make reference to the notion of the community, as he argued that knowledge and understanding have a personal and social purpose and are valued because they are "obviously necessary for the survival of the community" [29] (p. 90); [36] (p. 209). But his analysis did not include the role of sociocultural factors in the process of knowledge and understanding, which (factors), as research shows, are important even in science education [37,38].

Peters' notion of 'cognitive perspective', of course, as a sub-criterion by which to judge an educated person, as Scheffler argued, "is related to the idea of wholeness" [39] (p. 84). In this respect, as I have argued elsewhere, cognitive perspective relates to one's deep-seated beliefs, values, emotions, aesthetics and ethical conduct [27]. In other words, cognitive perspective goes well beyond epistemology and touches on worldview matters and humanistic concerns—both of which are important ideas even in the context of science education [40,41], especially in the context of studying socio-scientific issues [42,43]. Nevertheless, cognitive perspective itself is in need of an update, as a critical stance toward socio-cultural factors seems to be totally absent from it [27,44,45]. And it also needs to be complemented with human sensitivity, as Martin has eloquently argued [34].

According to Martin's critique, a liberally educated person, in accordance with Hirst and Peters' ideas, may be able to see the world through the lenses of the seven forms of knowledge, but he or she will not be able to act in the world. Moreover, feelings and emotions are absent from their concept of liberal education. Even though, as Martin argues, an educated person, in line with Hirst and Peters' notion of liberal education, has acquired knowledge about others, he or she will not be able to care about others, let alone act kindly toward them [34]. It is clear, from what Martin says, that an understanding of social issues, especially an understanding of social injustices, is insufficient without the feelings towards them. And, in this sense, even Peters' notion of 'the educated person' needs to be complemented with an emotional dimension, which includes sensitivity toward the world.

One, of course, could very well argue that Peters' original notion of 'cognitive perspective', as a holistic notion, implicitly includes emotional elements, but, certainly, this is a matter of interpretation [27,39]. At the same time, however, one needs to recognize the fact that Peters had already begun to respond to the criticisms regarding his concept of education as an initiation into the various forms of knowledge by including the issue of coping with the human condition [46]. Nevertheless, an update of liberal education makes easier its appreciation as a holistic kind of education [47], and also helps one realize that it is not irrelevant to the everyday lives of the students, and that it is not exclusively cognitive in its orientation.

What is important though to stress here is that even the original (classical) concept of liberal education, as has been defended by Paul Hirst, Richard Stanley Peters, and Michael Oakshott, points to one fact: it is a misconception to conceive liberal education simply as a general, broad education or conflate it with the transmission of information from the various disciplines. On the contrary, their ideas point to an invitation to an open and on-going dialogue, which will help students develop intellectual skills and moral values, and also become aware of the significance of information and knowledge for their own lives (the latter being quite explicit in R.S. Peters' writings [27]). But I would add that the ideas of the aforementioned philosophers do point to something more important and overarching and this is a democratic conception of knowledge itself, for, as Kelly [48] argued,

Democracy implies a view of knowledge as uncertain, tentative, problematic, provisional, evolutionary, and subjected to constant challenge, questioning, possible modification and change (p. 117).

It is apparent that such a view of knowledge points to, in fact necessitates, a curriculum which includes opportunities for the construction of knowledge. Therefore, such a curriculum must include

human issues and problems (perhaps as a separate curriculum strand) in addition to the traditional disciplines (or ‘forms of knowledge’). From an updated perspective on liberal education, such issues and problems are considered crucial as they provide students with opportunities to view knowledge as tentative and uncertain, and to develop not only critical and creative thinking skills, but also a critical stance toward social reality (social facts, situations, events). In short, opportunities for students to develop critical consciousness. Students, in engaging in dialogue and argumentation, interrogate the human condition—that is, the situation in which they, and other people, are placed as human beings. And such a kind of critique needs to be followed by praxis. While traditional (classical) liberal education focused exclusively on disciplinary knowledge, an updated liberal education needs to take into account social critique and be emancipatory. As Fenstermacher and Soltis point out, “Emancipatory teaching is a variant of the liberationist approach, with a strong social and political orientation. It is aligned with the notion of praxis, a concept that forges strong links between ideas and action” [49] (p. 52).

True, from a liberal education perspective, curricular content encapsulates the very notion of cultural heritage, as it (content) represents the knowledge that humankind has developed over the centuries. The value, therefore, of such knowledge cannot be dismissed, for “our capacity to understand our freedom and to choose wisely depends on our grasp of the full range of knowledge and understanding amassed by humankind [49] (p. 45). Such a view does point to the central role of disciplinary knowledge in the school curriculum but does not contradict the critical/emancipatory perspective on education [50,51]. Certainly, there may be an argument about the basis of the curriculum (i.e., subject-based vs issues/problems-based), in the sense that it is issues and problems that can really provide students with opportunities to critique social reality and become agents of change—their goal being the development of a more just and equitable world—but what is really at issue with regard to an updated concept of liberal education is whether students are empowered (whether through an issues-based curriculum or through a subject-based curriculum).

Thus, it is important to point out here the relationship between the acquisition of knowledge—a central feature of liberal education—and empowerment. But while no one would really argue against, or against the existence of, such a relationship, there is a crucial question to be asked: how can students, especially those from minority and marginalized groups, develop knowledge in the first place? What educator Ladson-Billing describes can be quite instructive. The fact, for example, that even inner city, urban African-American students are indeed very interested in the acquisition of scientific knowledge has been documented, through the questions they posed, by Ladson-Billing [52].

There is a science out there, in which African American students desperately (my emphasis) want to participate. This is a science that explains the epidemics of diabetes or AIDS in their community. This is a science that challenges social constructions such as race. This is a science that people can mobilize to fight social injustices and *intellectually empower people* (emphasis mine). This is a science that allows students to do something rather than sit passively while something is done to them (p. xxii).

From what Ladson-Billing says, it is clear that in order to intellectually empower students, science content knowledge ought to have some personal significance for them. It is this significance of disciplinary knowledge that can empower students. In the aforementioned case, this significance emerges from real world issues and problems. However, I would add that even though the starting point for teaching students from marginalized groups is—and should be—their own living conditions and problems, they should be helped to broaden their intellectual horizons by looking beyond their immediate surroundings and their everyday experience and by participating in a conversation that introduces them to important ideas and the wider significance of things, and this is why disciplinary knowledge is important [53–55]. This is the task of a truly liberal education, and even science (from the perspective that was quoted above) can make a significant contribution to the development, not only of critical thinking but also of critical consciousness. Such intellectual skills are crucially important in today’s world and we need to recognize the role of liberal education in fostering such skills [45].

One should be reminded that a truly liberal education is emancipatory in the sense that it frees the mind of the student, not only “from the unconscious grip of oppressive ideas about such things as their class, gender, race, or ethnic status”, which (ideas) “imprison and debilitate thought and action, cutting persons off from genuine opportunities for a better life” [49] (p. 51), but also from everyday reality and experience. And this can happen if and only if all students are given opportunities to participate in the conversation of humankind and thus broaden their intellectual horizons [22]. As R.S. Peters argued, a truly liberal education should not simply rely on existing interests but also cultivate and develop new ones [56].

An issue, of course, that is raised by an updated concept of liberal education is the epistemological basis of the curriculum. However, Kimball’s analysis, according to which liberal education has been inspired by two ideals, namely, a philosophical/contemplative and a political/civic [57], can resolve that issue. Even though such an analysis points to an idealist conception of liberal education (i.e., an education based upon timeless and universal values and ideas, and intellectual and moral habits of mind) and a relativist one (i.e., an education based upon the sociopolitical context and civic values), an updated concept of liberal education does consider both ideals, for there is a common ground shared between the two, even though they do appear to be quite distinct. Indeed, intellectual skills and intellectual autonomy as well as moral values are shared by both ideals (i.e., whether one considers the Platonic ideal of ‘reason’ or the Aristotelian or Ciceronian notions of intellectual inquiry and social engagement) [57,58]. The idea of dialogue, for example, a central notion in both conceptions (ideals) of liberal education, is crucial when students discuss about knowledge claims in a given disciplinary area (e.g., history, science) and also when they are involved in the study of human issues and problems, with the purpose of understanding them, so that, on the one hand, they experience an ‘awakening’ from oppressive factors and ideologies, and, on the other hand, they contribute, in one way or another, to the betterment of the human condition and of human life [45,47].

7. The Implications of Liberal Education Today

The discussion thus far has made, I believe, evident the value of liberal learning. While it is true that any concept of education is contestable—on the ground that education is a normative concept—there are certain merits inherent to an updated concept of liberal education. If we live in a complex and globalized world, thinking critically, creatively and ‘flexibly’—in fact, it is the intellectual flexibility that companies and businesses are looking for in their future employees-, communicating effectively, and making responsible decisions based on ethical reasoning are skills that all students need to develop [44,45,47,49]. In actual fact, the intellectual autonomy that liberal education aims to cultivate in students can be seen as a strong justification for its preference over other concepts of education [59–62]. And while it is also true that liberal education, in the past, was identified with the transmission of disciplinary knowledge, and with an academic, and, more often than not, sterile and irrelevant curriculum, an updated concept of liberal education, in line with what was discussed in this paper, points to the acquisition of knowledge, in a way that such knowledge is meaningful, fosters thinking skills [8,12,13,57–60], considers the social context (even the communitarian notion of ‘practice’ [63]), and also empowers in order to critique and act for some sort of change [27,44,45]. Indeed, a liberal education is truly liberal if it is also critical, in the sense that it fosters in students a critical stance, a critical attitude toward a reality that is imposed by dominant groups, so that they reassess the situation in which they have been placed as human beings.

Such an updated concept has implications for the role of the teacher, who must be knowledgeable—that is, he or she must have a grasp of the content of the disciplines he or she teaches, and of the knowledge of the traditions and the practices associated with those disciplines. Hirst had made this quite clear: Whether one talks about the appreciation of a poem, the forming of a historical hypothesis, or a scientific investigation, essentially one talks about activities that can be considered high arts. In this sense, they (activities) are not communicable simply by words. This, in turn, means that the acquisition of knowledge (from any ‘form of knowledge’) cannot be done simply by the solitary study of the symbols (e.g., words, formulae), as it requires “a master on the job” [20]. On the other hand, the role of the teacher is of crucial

importance when it comes to the development of moral values and intellectual habits of mind. One should be reminded of the importance R.S. Peters attached to what he called ‘principles of procedure’ [2], as was already discussed, which are acquired and developed through the teacher’s ‘manner of teaching’. Indeed, a critical attitude toward things must be central to a teacher’s manner of teaching if he or she intends his or her students to become critical thinkers and also individuals who can develop critical consciousness as well. By the same token, moral values should also be part of the teacher’s manner of teaching, if he or she intends his or her students to become moral agents, and generally individuals who will be called upon to make a decision about an issue and assume responsibility for that decision. Having said that, a liberal education is truly liberal when it succeeds in freeing the mind of the students from dogma, illusion, and any kind of constraint—the role of the teacher in fostering such freedom of thought is not simply crucial, it is central.

It also incumbent upon the teacher to make student learning an intellectual adventure. Teaching from a liberal education perspective entails seeing knowledge not as facts to be transmitted in order to be reproduced in a test, but as ideas that have the power to evoke a sense of mystery and wonder [23,45], and which can become sources of immense intellectual satisfaction, and even inspire [64]. The evidence, at least in the area of science education, does support this claim [65–72]. The notion of ‘intellectual satisfaction’ seems to have been downplayed—it is not a mainstream idea in educational discourse—or it is simply something that has been taken for granted. But one needs to recognize its role as a potent stimulus for learning. While the value of knowledge and understanding from the various ‘forms of knowledge’ can be, and is, in fact, justified by reference to some extrinsic reasons, which are often put forward by policy makers and curriculum designers, learning is inherently a private affair, and as such, students need to experience intellectual satisfaction in order to become engaged. Such an observation concurs with a sociological analysis of science education, according to which the value of science education seems to have been misplaced due to the different perceptions of that value by policy makers, teachers and students [73].

Thus, in talking about (an updated) liberal education, the following questions are imperative. These questions, which, in fact, refer to the central goals of liberal education, can be considered the implications of the concept of liberal education itself.

- To what extent do students develop critical and creative thinking skills, effective argumentation, communication and decision-making skills through their participation in learning activities across the school curriculum?
- To what extent do students develop moral values?
- To what extent are students’ minds freed from the constraints of everyday reality and also from oppressive/hegemonic factors which distort students’ views of reality?
- To what extent do students broaden their intellectual horizons?
- To what extent are they empowered to critique social reality by developing critical consciousness and to act in order to contribute to some sort of change?
- To what extent does student learning become an intellectual adventure, during which students experience a sense of mystery and wonder and also an intellectual satisfaction?
- To what extent do students see the world differently as a result of their education?

These are not rhetorical questions but questions of substance, which should be posed and answered within every disciplinary area, be it literature and the arts, history, or science, for it is crucial that each and every school discipline make a contribution to students’ liberal education. Even though the compassionate or narrative imagination, to take an example, can be cultivated by literature and the arts, as Martha Nussbaum recommended [9], it is important to stress that science can also play a role in the development of the imagination, even of the compassionate imagination too [45,74–82]. Even physical education (which does not belong in any of Hirst’s ‘forms of knowledge’) can make a contribution to a liberal education. Indeed, physical education can be taught in such a way that it transcends the psychomotor domain (i.e., through the development of moral values and intellectual habits of mind, in addition to teamwork, unity, and ethical behavior) [83,84].

Unless students' minds are freed from the constraints of everyday experience, unless students develop those intellectual skills that will make them both appreciate and interrogate their cultural capital, and unless they see the world differently in the end, we cannot really talk about liberal education. It seems that we have been paying lip service to the idea of liberal education, but, regardless of any critique of the ideas of Hirst, Peters, and Oakeshott, their respective notions of "forms of knowledge", "the educated person" and the "voices in the conversation of humankind" deserve attention even in an updated concept of liberal education, as was discussed in this paper.

8. Final Comments

This paper has attempted to make a case for the crucial importance of liberal education in the context of mandatory education. Even though there have been, from time to time, some fervent exponents of liberal education [6,12,13,59–62], it seems to be a fact that the commitment to liberal education, at least in North America, is in decline. True, there has been an interest in liberal education in the context of higher education but, in the light of what has been previously discussed, liberal education can be considered for all education levels. Primary education is indeed a place for developing "the embryo of liberal education" by laying the foundation for the various modes of understanding (e.g., historical, scientific, moral, religious) [20]. The renewed interest, of course, in liberal education in continental Europe over the past 30 years and the United Kingdom in the last decade needs to be acknowledged [4]. On the other hand, Mulcahy's proposal of a new paradigm for liberal education [10,11] represents, in my view, the first serious proposal for the revival of liberal education worldwide. My primary concern though in this paper was to reclaim the value of liberal learning, and liberal education in general, as I have already stressed, in the context of mandatory education. And this is the reason why I based my arguments for the crucial importance of liberal education on the writings of Oakeshott, Hirst, and Peters. In fact, the work by Hirst and Peters was meant to be applicable in mandatory education.

Given the various recent curricular reform initiatives, questions about what education students really receive is brought once again to the fore. The question, for example, about whether school science education makes a contribution to students' liberal education needs to be seriously considered. If the view that the only justification for the teaching of school science is that it contributes to a liberal education [85] is seriously considered, then the value of liberal education needs to be reclaimed. The importance of STEM education and other curriculum initiatives notwithstanding, it is liberal education that can provide students with a holistic education that contributes to both personal development and the achievement of social goals [45,64,86]. Dewey's argument should be seriously considered: "There is always a danger in a new movement that, in rejecting the aims and the methods of that it would supplant, it may develop its principles negatively rather than positively and constructively" [87] (p. 20). Science education reforms, as reactions to the academic tradition, might undermine or limit the possibility for students to come to appreciate the cultural value of science, to appreciate it as one of the various ways to know the world, and also to appreciate the fact that it has something to say about some matters of significance that can be really meaningful to the students [53,88].

The argument, as has already been pointed out, about the epistemological basis of a curriculum, which includes both the traditional disciplines and human issues and problems, does not stand up to criticism. Even though the traditional disciplines or 'forms of knowledge' appear to represent knowledge as something objective and absolute—which goes contrary to the idea that knowledge is personally and socially constructed—one has to bear in mind that there are always standards to be used for something to count as 'knowledge'. As Hirst argued, a necessary feature of knowledge is that there must be public criteria whereby 'the true' is distinguishable from the false, the right from the wrong and the good from bad. Indeed, it is these criteria that give 'objectivity' to knowledge (and, in this sense, an objectivity to the concept of liberal education) [19,20]. True, social constructivism challenges forms of knowledge as objective and arbitrary. But although all knowledge is a product of human endeavor, this does not mean that objective knowledge is unattainable. In fact, it has been

argued that “the sociality of knowledge does not undermine its objectivity and the possibility of truth, but is the condition for it” [89] (p. 196). Marta Nussbaum’s work has provided persuasive arguments about the pursuit of critical inquiry, of truth and objectivity in a globalized, humanistic context [90].

Hirst’s view of “public criteria” can be easily understood in the context of an issues-based curriculum, where social reality is involved. In such a case, some ‘objective standards’ are imperative in order for dialogue to take place. In the case, for example, in which students study socio-scientific issues, the common good and the betterment of human life can be considered ‘objective standards’ necessary for the achievement of a consensus. However, it is important to point out that even in the case of knowledge about physical reality consensus is also involved. Kuhn’s seminal work on the “structure of scientific revolutions” has provided ample evidence that ‘scientific truth’ is the result of a negotiation among scientists [91]. From such a perspective, the dualism between an issues-based curriculum and a disciplines-based curriculum is resolved. Even in the case of school science education, students can approach knowledge as something tentative, provisional, uncertain, and subject to revision and reconsideration not only in the case in which they study human issues and problems but also in the case of studying science per se [92]. Thus, they come to understand that even scientific inquiry and the construction of models that explain physical reality (e.g., an atom) do not aim at the discovery of an absolute ‘truth’ but rather at the improvement of our current knowledge. However, the view of knowledge as provisional and tentative is central to Kieran Egan’s theory of education, according to which education is conceived as a process, during which students recapitulate (i.e., repeat) the kinds of understanding, as these have appeared in our cultural history. These ‘kinds of understanding’ that Egan has called ‘somatic’, ‘mythic’, ‘romantic’, ‘philosophical’ and ‘ironic’ can be developed if students are given opportunities to develop them. The last kind, namely, ‘ironic’ is the development of an awareness that all of our knowledge is provisional and subject to revision [93]. Such an approach to education, especially when the latter refers to the development of ‘philosophic’ (i.e., conceptual) and ‘ironic’ understanding, is in line with a liberal education perspective [94,95].

It is beyond the scope of this paper to delve into the notions of truth and objectivity with regard to knowledge, but what must be pointed out is that students should understand the idea that all knowledge (e.g., historical, scientific) is tentative, uncertain and always subject to modification and change. And they should also understand the inter-subjective nature of knowledge (i.e., it is the agreement among people, whether scientists or students, that transcends personal beliefs, political views and ideologies). And from such a perspective, it makes sense to have a liberal curriculum, which includes both the ‘forms of knowledge’ (i.e., disciplinary knowledge), and human issues and problems. It would be a mistake, for example, to criticize Hirst’s forms of knowledge, or Oakeshott’s ‘voices in the conversation of humankind’ for that matter, from the perspective of social constructivism. As Young and Muller’s analysis shows, the social character of knowledge does not entail the rejection of its truth and objectivity [89]. Moreover, curricula cannot be seen only as political texts. Young and Muller’s argument is that it is precisely the social character of knowledge the only reason that knowledge can claim to truth and objectivity and, therefore, the only reason for preferring some curriculum designs to others.

Rational autonomy and intellectual freedom (i.e., two ideas/ideals that relate to the notions of truth and objectivity), which a liberal education aims to develop in students, appear to be crucial in today’s world, but, of course, even the value of these intellectual skills could be criticized from some other (than a liberal) education perspective. As was pointed out, education is a normative concept and, therefore, any conception of education (e.g., liberal, technocratic, progressivist, etc.) is contestable. But, I believe, the contribution of an updated concept of liberal education to students’ personal development and to citizenship education cannot be easily refuted, for it is difficult to argue against an education that cultivates, or aims to cultivate, ‘humanity’ (i.e., an education that makes us human) [90] and seriously considers the moral development of students [2,56,96]. On the other hand, I also believe that one’s attempt to criticize, and perhaps refute, an updated concept of liberal education can make an important contribution to the ongoing dialogue about liberal education.

Nevertheless, what should be noted in closing this essay is the centrality of the notion of ‘useful knowledge’, something that is very relevant to the context of mandatory education. Whether one looks at the classical concept of liberal education, as was articulated by Hirst and especially Peters (who was very critical of what he called “inert knowledge”) [2,27,56], or at an updated concept of liberal education, knowledge is about things that have some significance in life. Such a view—which concurs with both Mulcahy’s proposal for a new paradigm for liberal education [10,11] and Nussbaum’s work on education in a globalized world [9,90]—was expressed by British philosopher and mathematician Alfred North Whitehead [97]. For him, education is “the guidance of the individual toward a comprehension of the art of life” (p. 39) and “the acquisition of the art of the utilization of knowledge” (p. 4). In pointing out that “education [. . .] is useful, because understanding is useful” (p. 2), Whitehead argued that “there is only one subject matter for education, and that is Life in all its manifestations” (pp. 6–7). An updated concept of liberal education is indeed about “Life in all its manifestations”. What better argument could one produce for defending a concept of education?

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References

1. Aristotle. *Politics*. In *The Basic Works of Aristotle*; McKeon, R., Ed.; Random House: New York, NY, USA, 1966.
2. Peters, R.S. *Ethics and Education*; Allen and Unwin: London, UK, 1966.
3. Scheffler, I. *Reason and Teaching*; Bobbs-Merill: Indianapolis, IN, USA, 1973.
4. Haberberger, C. A return to understanding: Making liberal education valuable again. *Educ. Philos. Theory* **2018**, *50*, 1052–1059. [CrossRef]
5. Association of American Colleges and Universities. What is a Liberal Education? 2012. Available online: <http://www.aacu.org/leap> (accessed on 15 April 2018).
6. Carson, R. Science and the ideals of liberal education. *Sci. Educ.* **1977**, *6*, 225–238. [CrossRef]
7. Hoerner, J. An Historical Review of Liberal Education. ERIC DOCUMENT (ED 050677); 1970. Available online: <http://files.eric.ed.gov/fulltext/ED050677.pdf> (accessed on April 15 2018).
8. Entwistle, H. Liberal education: Elitist and irrelevant to everyday life? *Paideusis* **1997**, *11*, 8–17.
9. Nussbaum, M. Liberal education and global community. *Lib. Educ.* **2004**, *90*, 42–47.
10. Mulcahy, D. What should it mean to have a liberal education in the 21st century? *Curric. Inq.* **2009**, *39*, 465–486. [CrossRef]
11. Mulcahy, D. *The Educated Person: Toward a New Paradigm for Liberal Education*; Rowman & Littlefield Publishers: Lanham, MD, USA, 2008.
12. Adler, M. *The Paideia Proposal*; McMillan: New York, NY, USA, 1980.
13. Axelrod, P.; Anisef, P.; Lin, Z. Against all odds? The enduring value of liberal education in universities, professions, and the labour market. *Can. J. High. Educ.* **2001**, *31*, 47–77.
14. Plato. *The Republic*; Lee, H.D. Harmondsworth, trans; Penguin Books: Middlesex, MA, USA, 1955.
15. Gallagher, S. *Hermeneutics and Education*; SUNY Press: New York, NY, USA, 1992.
16. Aristotle *Nicomachean Ethics* Trans. *Terence Irwin*, 2nd ed.; Hackett: London, UK, 1999.
17. Barnes, J. *Aristotle*; Oxford University Press: Oxford, UK, 1982.
18. Jaeger, W. *Aristotle*; Oxford University Press: Oxford, UK, 1948.
19. Hirst, P. Liberal education and the nature of knowledge. In *Education and the Development of Reason*; Dearden, R., Hirst, P., Peters, R., Eds.; Routledge & Kegan Paul: London, UK, 1972; pp. 391–414.
20. Hirst, P. Knowledge and the curriculum. In *A Collection of Philosophical Papers*; Routledge and Kegan Paul: London, UK; Boston, MA, USA, 1974.
21. Hirst, P. Education, knowledge, and practices. In *Philosophy of Education—Major Themes in the Analytic Tradition*; Hirst, P., White, P., Eds.; Routledge: New York, NY, USA, 1998; Volume 1, pp. 384–395.
22. Oakeshott, M. A place of learning. In *The Voice of Liberal Learning. Michael Oakeshott on Education*; Fuller, T., Ed.; Yale University: London, UK, 1989; pp. 17–42.
23. Dewey, J. *Art as Experience*; Perigree: New York, NY, USA, 1934.

24. Pugh, K. Transformative experience: An integrative construct in the spirit of Deweyan pragmatism. *Educ. Psychol.* **2011**, *46*, 107–121. [CrossRef]
25. Jardine, D.; Clifford, P.; Friesen, S. *Back to the Basics of Teaching and Learning*; Lawrence Erlbaum: Mahwah, NJ, USA, 2003.
26. Schank, R. *Making Minds Less Well Educated than Our Own*; Lawrence Erlbaum: Mahwah, NJ, USA, 2004.
27. Hadzigeorgiou, Y.R.S. Peters' notion of cognitive perspective and its implications for science education. *Educ. Philos. Theory* **2017**, *49*, 1016–1028. [CrossRef]
28. Oakeshott, M. *Rationalism in Politics and Other Essays*; Liberty Press: Indianapolis, IN, USA, 1991.
29. Peters, R.S. *Education and the Education of Teachers*; Routledge & Kegan Paul: London, UK, 1977.
30. Peters, R.S. Farewell to aims? *Lond. Educ. Rev.* **1973**, *2*, 1–4.
31. Peters, R.S. Aims of education—A conceptual enquiry. In *The Philosophy of Education*; Peters, R.S., Ed.; Oxford University Press: Oxford, UK, 1973; pp. 1–35.
32. Beckett, K. John Dewey's conception of education: Finding common ground with Peters, R.S. and Paulo Freire. *Educ. Philos. Theory* **2017**, *50*, 1–10. [CrossRef]
33. Donnelly, J. Humanizing science education. *Sci. Educ.* **2004**, *88*, 762–784. [CrossRef]
34. Martin, J. Needed: A new paradigm for liberal education. In *Philosophy of Education*; Hirst, P., White, P., Eds.; Philosophy and Education London: London, UK; Routledge: New York, NY, USA, 1998; Volume 1, pp. 267–283.
35. Peters, R.S. What is an educational process? In *The Concept of Education*; Peters, R.S., Ed.; Routledge & Kegan Paul: London, UK; The Humanity Press: New York, NY, USA, 1967; pp. 1–23.
36. Peters, R.S. The justification of education. In *Philosophy of Education*; Hirst, P., White, P., Eds.; Philosophy and Education: London, UK; Routledge: New York, NY, USA, 1998; Volume 1, pp. 207–230.
37. Calabrese-Barton, A. Teaching science with homeless children: Pedagogy, representation, and identity. *J. Res. Sci. Teach.* **1998**, *35*, 379–394. [CrossRef]
38. Calabrese-Barton, A.; Osborne, M. Urban girls' participation in formal science settings: Playing with identities and borders. *Curr. Teach.* **2001**, *16*, 17–38. [CrossRef]
39. Scheffler, I. The concept of the educated person. In *Work, Education, and Leadership*; Howard, V.A., Scheffler, I., Eds.; Peter Lang: New York, NY, USA, 1996; pp. 81–100.
40. Matthews, M. (Ed.) Science, worldview, and education: An introduction. In *Science, Worldview, and Education*; Springer: Berlin, Germany, 2009; pp. 1–26.
41. Schulz, R. Philosophy of education and science education: A vital but underdeveloped relationship. In *International Handbook of Research in History, Philosophy and Science Teaching*; Matthews, M., Ed.; Springer: Dordrecht, The Netherlands, 2014; pp. 1259–1316.
42. Zeidler, D.; Nichols, B. Socioscientific issues: Theory and practice. *J. Elem. Sci. Educ.* **2009**, *21*, 49–58. [CrossRef]
43. Zeidler, D.; Sadler, T.; Simmons, M.; Howes, E. Beyond STS: A research-based framework for socioscientific issues education. *Sci. Educ.* **2005**, *89*, 357–377. [CrossRef]
44. Hadzigeorgiou, Y. On Humanistic Science Education. Eric Document, ED506504; 2005. Available online: <http://files.eric.ed.gov/fulltext/ED506504.pdf> (accessed on 15 October 2017).
45. Hadzigeorgiou, Y. Science, personal relevance and social responsibility: Integrating the liberal and the humanistic traditions of science education. *Educ. Pract. Theory* **2005**, *27*, 87–103. [CrossRef]
46. Peters, R.S. Democratic values and educational aims. In *Essays on Education*; Peters, R.S., Ed.; Allen & Unwin: London, UK, 1981; pp. 32–50.
47. Hadzigeorgiou, Y.; Konsolas, M. Global problems and the curriculum: Toward a humanistic and constructivist science education. *Curr. Teach.* **2001**, *16*, 29–39. [CrossRef]
48. Kelly, A. *Education and Democracy*; Paul Chapman: London, UK, 1995.
49. Fenstermacher, G.; Soltis, J. *Approaches to Teaching*; Teachers College Press: New York, NY, USA, 2004.
50. Freire, P. *Pedagogy of the Oppressed*; Penguin: London, UK, 1970.
51. Giroux, H. *Teachers as Intellectuals: Toward a Critical Pedagogy of Learning*; Bergin & Garvey: Westport, CT, USA; London, UK, 1988.
52. Ladson-Billing, G. Foreword. In *Teaching Science to Every Child. Using Culture as a Starting Point*; Settlage, J., Southerland, S., Eds.; Routledge: London, UK; New York, NY, USA, 2007.
53. Hadzigeorgiou, Y. A critique of science education as socio-political action from the perspective of liberal education. *Sci. Educ.* **2015**, *24*, 259–280. [CrossRef]

54. Stefanich, G.; Hadzigeorgiou, Y. Models and applications. In *Science Teaching in Inclusive Classrooms*; Stefanich, G., Ed.; Woolverton: Cedar Falls, IA, USA, 2001; pp. 61–90.
55. Stefanich, G.; Davison, J.; Hadzigeorgiou, Y.; Keller, E.; Payne, C.; Paulson, J. *Science Teaching in Inclusive Classrooms-Models and Applications*; Woolverton: Cedar Falls, IA, USA, 2001.
56. Hare, W.; Portelli, J. (Eds.) Peters Democratic values and educational aims. In *Philosophy of Education*; Detselig: Calgary, AB, Canada, 1988; pp. 339–357.
57. Kimball, B. *Orators and Philosophers. A History of the Idea of Liberal Education*; Teachers College Press: New York, NY, USA, 1986.
58. Kimball, B. (Ed.) *The Liberal aRts Tradition: A Documentary History*; University Press of America: Lanham, MD, USA, 2010.
59. Gardner, H. The years before college. In *Rethinking Liberal Education*; Farnham, N., Yarmolinsky, A., Eds.; Oxford University Press: New York, NY, USA; Oxford, UK, 1996; pp. 91–107.
60. Moulakis, A. Beyond Utility. Liberal Education for a Technological Age. University of Missouri Press: Columbia, MI, USA; London, UK, 1994.
61. Bloom, A. *The Closing of the American Mind: How Higher Education Has Failed Democracy and Impoverished the Souls of Today's Students*; Simon & Schuster: New York, NY, USA, 1987; Simon & Schuster: New York, NY, USA, 2012.
62. Hirsch, E.D. *The Schools We Need and Why We Don't Have Them*; Doubleday: New York, NY, USA, 1996.
63. Hirst, P.H. Education, knowledge and practices. In *Beyond Liberal Education: Essays in Honour of Paul H. Hirst*; Barrow, R., White, P., Eds.; Routledge: London, UK, 1993; pp. 184–199.
64. Phenix, P. Promoting personal development through learning. *Teach. Coll. Rec.* **1982**, *84*, 301–317.
65. Hadzigeorgiou, Y. Fostering a sense of wonder in the science classroom. *Res. Sci. Educ.* **2012**, *42*, 985–1005. [[CrossRef](#)]
66. Gilbert, A.; Byers, C. Wonder as a tool to engage preservice elementary teachers in science learning and teaching. *Sci. Educ.* **2017**, *101*, 907–928. [[CrossRef](#)]
67. Hadzigeorgiou, Y.; Garganourakis, V. Using Nikola Tesla's life and experiments as presented in the film "The Prestige" to promote scientific inquiry. *Interchange* **2010**, *41*, 363–378. [[CrossRef](#)]
68. Hadzigeorgiou, Y.; Kodakos, T.; Garganourakis, V. Using a feature film to promote scientific enquiry. *Phys. Educ.* **2010**, *45*, 32–36. [[CrossRef](#)]
69. Hadzigeorgiou, Y. The Role of 'wonder' and 'romance' in early childhood science education. *Int. J. Early Years Educ.* **2001**, *9*, 63–69.
70. Hadzigeorgiou, Y.; Klassen, S.; Froese-Klassen, C. Encouraging a "Romantic Understanding" of school science: The effect of the Nikola Tesla story. *Sci. Educ.* **2012**, *21*, 1111–1138. [[CrossRef](#)]
71. Hadzigeorgiou, Y. Wonder: Why is it important and how can it be evoked in the science classroom? In Proceedings of the 5th International Conference on Imagination and Education, Vancouver, BC, Canada, 14–17 July 2007.
72. Hadzigeorgiou, Y.; Schulz, R. What really makes secondary school students "want" to study physics? *Educ. Sci.* **2017**, *7*, 84. [[CrossRef](#)]
73. Claussen, S.; Osborne, J. Bourdieu's notion of cultural capital and its implications for the science curriculum. *Sci. Educ.* **2013**, *87*, 1–169. [[CrossRef](#)]
74. Hadzigeorgiou, Y. Imaginative science education. In *The Central Role of Imagination in Science Education*; Springer: Berlin, Germany, 2016.
75. Hadzigeorgiou, Y. Imagination and learning science. In *Encyclopedia of Science Education*; Gunstone, R., Ed.; Springer: Berlin, Germany, 2015; pp. 480–483.
76. Hadzigeorgiou, Y.; Fotinos, N. Imaginative thinking and the learning of science. *Sci. Educ. Rev.* **2007**, *6*, 15–23.
77. Hadzigeorgiou, Y. Romantic understanding and science education. *Teach. Educ.* **2005**, *16*, 23–32. [[CrossRef](#)]
78. Hadzigeorgiou, Y. Reclaiming the value of wonder in science education. In *Wonder-Full Education: The Centrality of Wonder in Teaching and Learning across the Curriculum*; Egan, K., Cant, A., Judson, G., Eds.; Routledge: New York, NY, USA; London, UK, 2013; pp. 40–65.
79. Hadzigeorgiou, Y.; Stefanich, G. Imagination in science education. *Contemp. Educ.* **2001**, *71*, 23–29.
80. Hadzigeorgiou, Y.; Kabouropoulou, M.; Fokialis, P. Thinking about creativity in science education. *Creat. Educ.* **2012**, *3*, 603–611. [[CrossRef](#)]
81. Hadzigeorgiou, Y.; Schulz, R. Romanticism and romantic science: Their contribution to science education. *Sci. Educ.* **2014**, *23*, 1963–2006. [[CrossRef](#)]

82. Lindholm, M. Promoting curiosity? Pitfalls and possibilities. *Sci. Educ.* **2018**, *27*, 987–1002. [[CrossRef](#)]
83. Mulcahy, D. Physical education, liberal education and the Leaving Certificate Examination. *Ir. Educ. Stud.* **2012**, *31*, 251–262. [[CrossRef](#)]
84. Krevetzakis, E. On the centrality of physical/motor activities in primary education. *J. Adv. Educ. Res.* **2019**, *4*, 24–33. [[CrossRef](#)]
85. Osborne, J.; Simon, S.; Tytler, R. Attitudes toward science: An update. Presented at the annual meeting of American Educational Research Association, San Diego, CA, USA, 13–17 April 2009.
86. Hadzigeorgiou, Y. Relationships, meaning and the science curriculum. *Curr. Teach.* **1997**, *12*, 83–89. [[CrossRef](#)]
87. Dewey, J. *Experience and Education*; Collier Books: New York, NY, USA, 1938.
88. Shamos, M. The myth of scientific literacy. *Lib. Educ.* **1996**, *82*, 44–49. [[CrossRef](#)]
89. Young, M.; Muller, J. Truth and truthfulness in the sociology of educational knowledge. *Theory Res. Educ.* **2007**, *5*, 173–201. [[CrossRef](#)]
90. Nussbaum, M. *Cultivating Humanity. A Classical Defense in Liberal Education*; Harvard University Press: Cambridge, MA, USA, 1998.
91. Kuhn, T. *The Structure of Scientific Revolutions*; University of Chicago Press: Chicago, IL, USA, 1970.
92. Bereiter, C.; Scardamalia, M.; Cassells, C.; Hewitt, J. Postmodernism, knowledge building, and elementary science. *Elem. Sch. J.* **1997**, *97*, 329–340. [[CrossRef](#)]
93. Egan, K. The Educated Mind. In *How Cognitive Tools Shape our Understanding*; University of Chicago Press: Chicago, IL, USA, 1997.
94. Egan, K. *Learning in Depth. A Simple Innovation that Can. Transform. Schooling*; University of Chicago Press: Chicago, IL, USA, 2011.
95. Stivaktakis, S. The Learning-in-Depth proposal: Its importance as a science curriculum strand. *Int. J. Learn. Teach. Educ. Res.* **2017**, *16*, 13–22. [[CrossRef](#)]
96. Standish, P. Moral education, liberal education and the voice of the individual. In *Education in the Era of Globalization*; Roth, K., Gur-Ze'ev, I., Eds.; Springer: Berlin, Germany, 2007; pp. 33–50.
97. Whitehead, A. *The Aims of Education and Other Essays*; (Original Work Published 1929); McMillan: New York, NY, USA, 1985.



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