From Teaching for Understanding to Educating for Understanding the World

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Abstract

The article maintains that the "Teaching for Understanding" movement successfully achieved one key objective – developing effective teaching frameworks for understanding the subjects taught in schools. However, it failed with respect to two other core objectives – constructing a comprehensive educational concept that promotes in-depth, critical understanding of the world, and making such understanding the focus of the educational enterprise. The movement's important achievement is attributable to the development of a new paradigm – "the performance view of understanding." However, this paradigm led the movement to a narrow concept of education for understanding that concentrated almost solely on teaching methods, meanwhile discarding crucial educational components such as the contents taught in school and its organization of knowledge. In order to achieve these objectives the article suggests four central steps: expanding the movement's educational objectives, scrutinizing the content taught in schools, designing an ideological-political position and changing the basic organizational patterns of schools.

Introduction

The term "Teaching for Understanding" denotes the movement that has enjoyed considerable currency in educational circles both in Israel and internationally over the past several decades. As I will maintain, the movement successfully achieved one key objective – developing effective teaching frameworks for understanding the subjects taught in schools. However, it failed with respect to two other core objectives – constructing a comprehensive educational concept that promotes in-depth, complex, critical understanding of the world, and making such understanding the focus of the educational enterprise. Further, I will argue that this failure resulted, at least in part, from a number of related lapses by a majority of the movement's theoreticians, their critics included, and I will suggest several steps that may be taken to address these problems and advance the movement – from teaching for understanding to education for understanding the world.

The Teaching for Understanding Movement

Teaching for Understanding is not an institutional but, rather, a conceptual movement (or insight) of educational academics and practitioners who share a pedagogical sentiment and conceptual disposition that was addressed in articles and conferences and implemented in schools worldwide. Beginning in the 1990s the movement gained recognition and began to be implemented in Israel largely under the influence of the Branco Weiss Institute.

Among the best-known proponents of the movement are David Perkins and Howard Gardner, founding members of Harvard University's Project Zero. Both have published widely on understanding and teaching and both nurtured an impressive cadre of thinkers, scholars, and practitioners who initiated projects on teaching for understanding. Project Zero's flagship program is "Teaching for Understanding," at the core of which is the concept of "understanding performance," which "require [the students] to extend, synthesize, and apply what they know" (Wiske, 1998, p. 4).[i] To that basic concept the developers of the program added three more components: generative topics, understanding goals, and ongoing assessment (1998, p.4).

Other leading thinkers and scholars of the movement approach the subject from different perspectives, among them Martin and Jacqueline Brooks (1977) who emphasize the constructivist dimension of teaching for understanding and Grant Wiggins and Jay McTighe (2013) who identify six facets of understanding (explanation, interpretation, application, perspective, empathy, and self-

understanding) and advocate application of "backward design" for teaching for understanding (i.e., first defining the understanding goals; then determining the evidence necessary to assess them; and thereafter designing appropriate instructional methods).

Prominent among British educationists is Douglas Newton (2000) who developed a general, research-based concept of understanding and its development. In Israel, as well, there developed an original framework for teaching for understanding – the so-called "Community of Thinking" – that develops understanding through a fertile question, research questions and concluding performances (Harpaz, 2014).

These and other thinkers and scholars developed the dominant paradigm in the field of teaching for understanding that responded to two problems. The first is defining the concept of "understanding." This concept originated in the domains of philosophy and cognitive science. Beginning in the late nineteenth century, philosophers grappled with the concept of understanding and formulated their insights in the field of hermeneutics (Dilthey, 1996; Gadamer, 1975). Cognitive psychology, which emerged in the second half of the last century, explained understanding in terms of a model called "information processing."

The problem for educational thinkers was that both concepts were too abstract and removed from teaching practice to serve as useful concepts for education. Dilthey's and Gadamer's key concepts – "empathy", "hermeneutical circle," and "fusion of horizons" – were fruitful concepts for interpreting texts and interpreting the act of interpretation, but much less so for guiding the practice of school teachers. Mental representations, mental models and schemas were helpful concepts for explaining the operation of the mind.

However, as Gardner remarked, "one cannot directly examine mental representations" (Gardner, 1999, p. 132), and as Perkins noted the "representational view of understanding" was linked to the folk conception of understanding that equates understanding with perception as exemplified in expressions like "I see what you mean" and "I see the point" (Perkins, 1998, p. 44). Such expressions, he warned, "suggest not

only that understanding involves attaining an internal representation but that it comes quickly, like a visual gestalt" (1998, p. 51). [ii] A new definition of 'understanding' was needed.

The performance view of understanding served as a breakthrough concept. Evading the philosophical abstractions and focusing on agreed upon practical expressions of "understanding behavior," the concept was now viewed as "the ability to think and act flexibly with what one knows" (Perkins, 1998, p. 40), and this ability is expressed in a series of well-defined, systematic and practical understanding performances of students in the classroom. This new definition would provide practical guidance to teachers who wanted to cultivate understanding in their classrooms.

The performance concept of understanding served as a springboard for constructing an elaborate instructional framework that is continuously developing and which serves as the foundation of the "Teaching for Understanding" movement. Within this framework, important distinctions were made between understandings in various disciplines and beyond (Gardner and Boix Mansilla, 1994; Boix Mansilla, & Gardner, 1997). Educators identified intuitive theories that impede acquisition of new knowledge and offered teaching methods to address them (Gardner, 1991); they introduced various types of questions that promote understanding (Harpaz, 2014); and they designed understanding generating feedback and assessment mechanisms (Wiske, 1998).

The concept of understanding performances served as a point of departure for coping with the second problem that thinkers and scholars of teaching for understanding confronted, i.e., developing a practicable framework for teaching in existing schools. Efforts to develop a framework to promote understanding are hardly new. John Dewey made initial attempts beginning at end of the nineteenth century. Yet earlier, were Michel de Montaigne in the sixteenth century and before him Socrates and Plato in the fourth century B.C. However, these efforts to develop frameworks for teaching for understanding were unsuitable to modern, mass education schools. Socratic dialogue, for example, is an ideal framework for cultivating critical understanding

in a setting of intimate dialogues among participants on all sorts of fundamental issues, but it doesn't have much to offer in today's crowded classrooms.

Likewise, various methods of "adventurous teaching" inspired by Dewey's thinking were ineffective in typical schools (Cohen, 1989). William Kilpatrick's "project method" in the early twentieth century (Kilpatrick, 1918), Jerome Bruner's "discovery learning" in the 1960s (Bruner, 1961), and various inquiry-based learning methods that followed all demanded fundamental changes in schools and, therefore, either were abandoned or were neutralized by the existing framework of schools in which they were implemented. By comparison, frameworks of teaching for understanding that developed from the performance concept of understanding were tailored to the operation and structure of schools.

Criticisms of the teaching for understanding movement

As is the case with prevailing paradigms in other fields of knowledge, likewise one finds critics in the area of teaching for understanding. Two Canadians are among the most prominent. Kieran Egan (1997) didn't directly challenge the concept embodied in teaching for understanding, yet a criticism is implicit in his educational philosophy. His central claim is that this concept is insufficiently sensitive to the phases of cognitive development of young learners, prematurely subjecting them to the "philosophic stage" in the development of understanding, thus impairing critical potential capacities, particularly the creative imagination. This infirmity leads, in turn, to superficial understanding and a lack of vitality in thinking.

Karl Bereiter (2002) criticized directly what he called the "performance perspective" of teaching for understanding, asserting that it faltered in precisely the two areas that were considered its strengths: a clear and workable definition of "understanding" and dictating effective teaching methods that flowed from this definition. He maintained that the performance perspective reduces understanding to a collection of performances (explanation, interpretation, application, etc.) without explaining the precise meaning of the term "understanding" and, in effect, vitiates the concept.

According to Bereiter, the concept of understanding performances is at its heart a "process approach" that emphasizes procedures and cognitive skills at the expense of conceptual knowledge – the essence of what should be understood. The most evident problem with this characterization is the resulting concept of teaching that follows: ". . . teaching for the test – defining a set of performances that will be accepted as evidence of understanding and then schooling learners in those performances" (Bereiter, 2002, p. 101).

The criticisms of the dominant paradigm in teaching for understanding are compelling and call for fresh thinking. To my mind, however, our most earnest efforts will not rescue the paradigm of teaching for understanding from two fundamental failures: it neither constructs an educational concept that will enable learners to achieve in-depth, complex, critical understanding of the world in which we live nor does it establish teaching for understanding as the focus of the educational enterprise. I will clarify these points in the sections that follow.

Understanding knowledge and understanding the world

Isn't teaching for understanding designed to help students understand the world they live in? If so, why do I claim that it is failing in this respect? The key to answering these questions lies in the commonly overlooked fine distinction between two associations of the term "understanding" in the context of teaching for understanding. The first association – the one preferred in the movement – emphasizes the association of understanding to the learned **knowledge** and, more specifically, the knowledge learned in school. The second association, which does not receive the attention it deserves, emphasizes the relation of understanding to **the world and to the individual** who lives and acts in it.

In the first instance, the central question is what will be recognized as understanding of knowledge taught in school and how will it be advanced. As we have noted, the "Teaching for Understanding" movement furnished a clear and

practical answer to this question – and this is its key strength. And yet, even if the student demonstrates understanding of the knowledge presented in class, it does not follow that s/he understands the world in which s/he lives and functions. This is so because the school knowledge that has been mastered may be insignificant for understanding the world or, at best, important but partial.

In the second instance where the focal point is the student's ability to understand the world and himself, a fundamentally different question is involved: What would be considered as understanding the world and how will we go about promoting it? The answer implicates a central concept – one's **world view**. A world view is an amalgam of ends, values, and knowledge that guide a person's choices and actions. A learner's understanding of the world finds expression in the world view that develops over the course of his or her education. Thus, we can say that the learner understands the world only if s/he has developed a coherent and applied world view based on broad, reliable knowledge that concerns the formative aspects of the world. If this is so, understanding one or another bit of knowledge is insufficient. One must understand a whole series of facts and theories essential for understanding the world, make appropriate connections between them, and apply them in real world situations. The measure of understanding school knowledge is the quality of students' understanding performances whereas the litmus test of understanding the world is the quality of the students' world view. The goal is not to fashion a single world view that is shared among all students but, rather, to enable each learner to develop his or her own coherent and dynamic world view.

This analysis suggests that education for understanding will lead a learner to understanding of the world and him or herself only if two conditions prevail. First, that what is being taught is truly formative and authoritative knowledge that is essential for understanding the world. Second, that the organization of contents and the teaching for understanding are directed towards active integration of the different elements of taught material with an eye towards constructing students' coherent and dynamic world view. I have maintained that these two conditions do not prevail in existing schools even when they adopt and implement teaching for understanding.

Below, I will adduce evidence that schools do not satisfy these two conditions. Presently, however, I want to emphasize that the movement for teaching for understanding poses a circumscribed question, which is not tailored to developing students' understanding of the world: What teaching methods will lead to understanding of the knowledge taught in school?[iii] By contrast, an educational movement whose objective is understanding of the world and oneself poses a broader question: What are the contents, organizational patterns, and teaching methods necessary for an educational environment to promote students' understanding of the world and themselves?

The relationship of the two movements is asymmetrical. The movement of educating for understanding of the world subsumes the movement of teaching for understanding as an essential element. One cannot understand the world if one does not master the knowledge intended to achieve that goal. The movement of teaching for understanding, on the other hand, does not subsume educating for understanding the world since, as stated, students are liable to understand the knowledge taught in school without understanding the world. This alone is one important reason to opt for understanding of the world as the primary objective of education for understanding. But there is another, more important reason as well: our prevailing and anticipated reality that is fraught with unparalleled complex, social, economic, cultural, and identity challenges. Only if we succeed in developing in-depth, complex, and critical understanding of the world in our learners will we be able to equip them with essential skills and motivation to cope with those challenges – and we are obligated to do so. We cannot settle for the understanding of knowledge that currently prevails in schools.

However, such a far-reaching goal is only achievable if it forms the core of teaching and learning in schools. I have argued that teaching for understanding faltered on precisely this point. Accordingly, to avoid a similar fate with respect to education for understanding of the world, it behooves us to address the causes of this failure.

Why has teaching for the understanding been marginalized in schools?

Despite the fact that teaching for understanding has been functioning for decades in many places throughout the world, it has not succeeded in taking its place at the center of school systems. And despite its efforts to develop teaching methods adapted to the practices of existing schools, it remains marginalized. We ought not assign principal blame to the movement's guiding paradigm but, rather, to the policies of the educational systems in which the movement operates. These systems are based on uniform standards and high-stakes examinations that reinforce traditional teaching – authoritarian teaching geared towards standardized tests. But this assertion is insufficient to exonerate the paradigm of teaching for understanding because it also suffers from a structural defect that prevents it from taking a central place in teaching even in most schools that seek to implement it.

The failure is rooted in the movement's non-systemic approach to schools. It functions as if it is possible to change a single component of the schooling system – the teaching methodology – and leave the other elements unaltered. However, if the educational system was initially designed to serve a purpose other than teaching for understanding, then any attempt to change only a single element is doomed to failure.

Many educational thinkers have unpacked the systemic structure of schools and the fact that its purpose is delivery and reproduction of knowledge. Seymour Sarason (1996) identified the organizational regularities of schools that, in turn, establish the behavioral regularities of teachers and students in classrooms. Zvi Lamm (1976) demonstrated how the basic structures of schools depend on the ideology of socialization, which, at its core, is associated with a pattern of teaching – the "imitation pattern." Ted Sizer (1984) has dwelled in great detail on the way in which the structure of class periods, the number of students a teacher meets within the course of a week, and the structure of the teacher's job lead teachers to compromise and prevent them from implementing teaching for understanding, notwithstanding their best intentions. David Tyack and Larry Cuban (1995) characterized the systemic foundation of schools as the "grammar" of schooling and demonstrated how it impedes all efforts to effect change.

In several articles (Karmon, 2007, 2010, 2016), I have introduced the concept of "organization of knowledge" as a means of integrating and focusing these important insights, maintaining that we should view schools as a system that organizes knowledge for purposes of teaching and learning in terms of a hierarchy of knowledge levels. The first is the institutional level, i.e., schools' most fundamental and general patterns of organization. At the root of these patterns is the "organizing framework" that forms the foundation of schools' organization of knowledge at all levels – the so-called "school subject" – which functions as a general mold with fixed characteristics that organizes the taught knowledge. Next, within the environment created by the institutional level, the content level establishes the areas of knowledge that will be taught and their respective curricula. It is only on the heels of these two levels that we arrive at the third level – teaching, i.e., how teachers organize the knowledge established in the previous two levels for delivery in the classroom. Stated otherwise, teachers organize the contents that were determined in the content level in accordance with the organizing framework – the school subject – that was designed in the institutional level. It can be shown that the fundamental characteristics of the school subject are decidedly geared towards delivery by the teacher and reproduction by the student – and not towards student understanding.

The potency of the school's systemic dimension and the fact that the element of teaching is derivative of other foundational elements rather than the formative one lead to an inescapable conclusion: so long as teaching for understanding is unable to effect a profound change in the foundational elements of schools, there is little chance that it will establish itself at the center of and play a leading role in schools.

In light of the two fundamental failures of the "Teaching for Understanding" movement it is necessary to forge a new concept of educating for understanding that focuses on education for understanding the world and oneself and that offers a path to move from the periphery to the core of

schools. In order to develop such a concept, we must go beyond teaching for understanding and even beyond the various criticisms associated with it because even the critics largely share the views that give rise to the two fundamental failures that we have identified. In what follows, I will offer four steps to formulating such a new concept.

Education for understanding the world: four central steps

The first and most important step entails **expanding the educational objective** of the movement in three dimensions: (1) From understanding of the knowledge taught in school to understanding of the world; (2) From implementing education for understanding only with respect to teaching to implementing it in all systemic elements of the school; and (3) From discrete understanding performances to a general world view that embodies a multiplicity of understanding performances and the relationships between them.

The second step, which follows from the first, involves **scrutinizing the content taught in schools**. Engagement with the curriculum is controversial, as it implicates deep ideological, political, and theoretical disputes – one reason that may explain why the movement of teaching for understanding refrained from dealing with it. Nonetheless, a movement that aims to promote understanding of the world is obliged to offer a systematic and reasoned framework for a newly designed curriculum.

One possible framework could be based on the "four spheres of meaning" (Karmon, 2016) – four interrelated contexts that give meaning to our contemporary lives in two senses of the word: meaning as understanding reality and meaning as the significance of and reason for living. The four spheres of meaning are: the personal sphere; the communal sphere; the state and national sphere; and the global and environmental sphere.

The spheres of meaning are dynamic and historically context-sensitive. Evidently, they are undergoing expansion. Thus, for example, until the mid-nineteenth century, most of humanity constructed the meaning of their lives with reference to the first two spheres – personal and communal. Emergence of nation states marked the addition of a third powerful sphere of meaning that influenced the first two. Beginning in the last third of the twentieth century, with accelerated development of globalization and environmental developments that crossed national boundaries, a fourth sphere of meaning emerged that exerted strong influence on the others.

Two spheres of meaning find virtually no expression in the common curriculum – the personal sphere and the global-environment sphere. Since these two spheres have a profound influence on our understanding of the world and of ourselves, a movement for educating for the understanding of the world is obliged to include their content in the curriculum. For example, to understand the self in relation to the world, it is advisable to study subject matter such as psychology, sociology and anthropology aligned with core humanities such as philosophy, literature and history, supplemented by varied group workshops related to interpersonal and emotional aspects. Understanding the global-environmental sphere demands deep and lasting integration of subjects such as sustainable economies, cultural studies, ecology, systems thinking, and global citizenship.

Such a framework, however, is insufficient for making informed choices regarding the essential contents for understanding the world and the self. To make these choices we must establish a set of priorities among and within the spheres. And this requires the third step: **systematic design of an ideological-political position**. Here, again, the movement of teaching for understanding avoids taking a stand. The reason for this is clear enough: involvement with teaching frameworks supposedly devoid of ideological and political points of view confers broad audience appeal. And, indeed, teaching for understanding should suit all social and cultural sectors. However, is that really so? Not precisely. Implicit in the pedagogy of teaching for understanding is a guiding ideological and political concept embodying values such as rationality, critical thinking, pluralism, and personal autonomy. The movement makes no public claims regarding its core values, but policy makers who hold

divergent values – nationalists, ethnocentrists, traditionalists, and the like – are well aware of them and obstruct the movement's access to their schools in various ways. In current circumstances, therefore, the movement of teaching for understanding comes up short however you look at it: it doesn't enjoy the important educational advantages reserved for educational concepts that flow from an integrated socio-political position, and it doesn't win a broader audience by abstaining from such a position.

The preferred course, therefore, is to articulate with clarity the core values of education for understanding the world and to expand them to relevant ideological and political contexts. Even if this course of action invites divisions and disputes, it is preferable to the current situation because education based on a rich and cohesive ideological-political narrative promotes a deep sense of meaning and purpose among teachers. A second rationale was mentioned earlier. The existence of an ideological-political concept makes possible an informed and reasoned ordering of priorities among the many subjects that compete for place in the curriculum. How so? Consider the following: suppose we agree that global thinking doesn't receive due attention in our curriculum and, by consequence, that graduates' understanding of the world in which they live is unsatisfactory. Nevertheless, time constraints force us to choose among a mass of possibilities. Should we focus on poverty and hunger in Africa, the accumulation of fortunes by a few hundred capitalists, and environmental injustice, or should we target economic development, the free flow of goods and information, and the diverse, hybrid cultures that exist today? The preferred answer of many educators is: "All of the above." Yet this response is untenable. Over and above the time constraints, a long line of researchers in cognitive psychology, neuroscience, and processes of teaching and learning maintain that in the absence of focus on a few key ideas discussed from multiple perspectives and which are the subject of meaningful understanding performances, very little of what is taught is retained in long-term memory or transferable to new contexts (Willingham, 2014; Perkins, 2014). Thus, it is precisely the educational movement whose ultimate objective is understanding of the world that is obliged to decide on the most important subjects for understanding the world that will serve as the focus of learning. And this determination cannot be made intelligently and responsibly without a clear ideological-political concept.

Finally, establishing and developing an education for understanding of the world demands a fourth, critical step: a **profound change in the basic organizational patterns of schools** such that they will support education for understanding the world. I have argued that the organizing framework of the school subject is the foundation of knowledge organization in contemporary schools (Karmon, 2007). This framework was developed for delivery and reproduction of knowledge in learners' consciousness. All its basic characteristics are geared to this purpose. The central learning performance is the examination that measures the learner's reproduction of knowledge. Questions are closed in nature and demand a single correct answer. The guiding principle in choice of the knowledge to be learned is, "Choose the basic agreed-upon knowledge in the field." The sources of knowledge are what the teacher delivers, and special materials that are of one sort – textbooks, workbooks, and websites specifically tailored to the material on the test. Time divisions are in small, standardized units (typically 45-50 minutes) that occur at fixed daily and weekly intervals – 6 to 7 per day; 35 per week – that are taught one after another interspersed with short breaks.

These basic characteristics of the school subject constrain efforts in teaching for understanding the world. Accordingly, the basic and indispensable change is a transition from organizing knowledge into school subjects to knowledge organization in an understanding-based organizational framework– "spheres of meaning" (Karmon, 2010). A sphere of meaning is an organizing framework of knowledge and teaching whose purpose is to develop understanding of the world through the taught content and simultaneously to cultivate the student's cognitive, emotional, and moral engagement with that content. It can be based on the traditional disciplinary structure of existing schools or on social or other theoretical problems (bearing upon understanding of the world and the self) that require cross-disciplinary knowledge. All the basic characteristics of spheres of meaning differ from the organizing structure of school subjects. The key learning performance involves experience with creating in the learned domain. That creative experience may be expressed in constructing knowledge, in an artistic product or in a relevant social action; questions are open-

ended, generated in large part by students themselves, the answers to which call for applying the methodologies and thought processes of the particular discipline; the focus of taught knowledge are the central ideas that drive the discipline and the principal disputes that expose its theoretical and moral complexities; the sources of information, to the extent possible, are primary sources; allocation of time is characterized by a reduction in the number of disciplines taught concurrently in order to allow more active engagement in them and by flexible units of time both in and out of school. Significant amount of learning time is the student's responsibility.

The transition from subjects to spheres of meaning demands material changes in other patterns of organization and action in schools. For example, a significant portion of teachers' working hours will be devoted to planning and thinking in collaboration with other teachers and facilitated feedback to learners; to a certain extent, learning will take place outside the classroom walls and beyond the confines of the school; a large part will take place in learning frameworks other than the traditional classroom, such as one-on-one mentoring, small group learning, theme-based study groups, and the like.

The fourth step clarifies a major point that has been emphasized several times: meaningful and enduring education for understanding the world cannot come about within the framework of the patterns of organization and action in existing schools. Failure to grasp this critical point is one of the primary reasons for the marginal status of the movement of teaching for understanding. Of course, there is no guarantee of success in "upgrading" teaching for understanding to education for understanding the world. However, if the analysis proposed here is correct, the corollary is clear: education for understanding the world necessitates reinventing schools.

Conclusion

The movement of teaching for understanding made significant contributions to pedagogy and to the educational discourse. The performance concept of understanding effected the translation of abstract philosophical and psychological theories into teaching methods and created fertile ground for research and improved teaching. Yet, over the course of more than two decades, the movement's failures and limitations have become increasingly clear. The movement of teaching for understanding did not establish itself at the core of schools and did not adequately help students and graduates understand the world in which they live. The source of these failures stems from the movement's basic assumptions. Accordingly, it is necessary to design a new concept – education for understanding the world. This new concept doesn't stand in opposition to teaching for understanding but, rather, incorporates it as one of its elements. Therefore, the important pedagogical and theoretical insights of the teaching for understanding movement will continue to serve us going forward. Nevertheless, the most important conclusion of this essay bears repeating: the teaching for understanding movement in its current form is inadequate to the central educational challenge of our time – educating young people for complex and in-depth understanding of the world and themselves that will confer the knowledge, skills, and motivation needed to make the world a better place.

Notes

[1] The definition of the concept 'understanding performance' was not uniform. Elsewhere in the book, Wiske herself defined it "as the ability and inclination to use what one knows by operating in the world" (Wiske, 1998, p. 72). Gardner claimed that "An individual understands a concept . . . to the extent that he or she can apply it appropriately in a new situation"(Gardner, 1999, p. 119), and Perkins defined it as "the ability to think and act flexibly with what one knows" (Perkins, 1998, p. 40). Although not uniform, all the definitions emphasized the basic intuition that a performance of understanding is "going beyond the information given" (Bruner, 1973) and that "understanding performances ask the learner to stretch" (Perkins, 1998, p. 42-43).

[2] The attitudes of Perkins and Gardner toward the representational view of understanding were quite complex and, at least in the Perkins case, changed considerably during the years of the Teaching for Understanding (TfU) project. In his book "Smart Schools" (1992), published in the first years of the TfU project (started in 1988), Perkins goes out of his way to show the "reciprocal relationship" between mental images and understanding performances. He refers to his approach as the "performance **perspective** on understanding" (Perkins, 1992, p. 78, emphasis added) and sums up his discussion of the issue as follows: " . . . mental

images and understanding performances occur in a kind of reciprocal relationship. Helping students acquire mental images . . . equips them for understanding performances. But also, involving students in understanding performances . . . helps them build up mental images. So there is a kind of partnership between mental images and understanding performances" (ibid., pp. 82-83).

Six years later in his contribution to the comprehensive book describing the TfU project (Wiske, 1998), he goes out of his way to show the grave shortcomings of the "representational view of understanding" and his approach is no longer a mere "perspective" but a full-blown "performance **view** of understanding" (my emphasis). In an extended discussion of the two views of understanding he demonstrates not only the problematic ramifications of the representational view for teaching for understanding, but the strong conceptual and practical independence of the performance view. He stresses that in many cases one understands without having a mental image and that having a mental image is no warranty of understanding (Perkins, 1998, pp. 42-51). What was seen originally as an important perspective added to the dominant representational paradigm of understanding had become a paradigm of its own, dethroning the old one.

Gardner, on the other hand, seems much more favorably disposed to the representational view, and his attitude resembles the "early Perkins". In his book "The Disciplined Mind," published in 1999, he does declare that "one cannot directly examine mental representations," but "viewed up close" the performance approach, "reveals its cognitivist assumptions and affinities through and through" (Gardner, 1999, p. 132). His main concern is to show that the performance view is not behavioristic. The relationship he finds between understanding performances and mental representations is perceived by him as a proof of the matter. He ends his discussion of the issue arguing that "students are unlikely to be able to succeed regularly in responding to new and unfamiliar challenges unless they have altered their initial flawed representations," and that '[t]he acid test of the performance view of understanding is the development of more adequate and more flexible representations" (1999, p. 132). Disregarding these different attitudes towards the representational view, both Perkins and Gardner remained firm believers in the performance view as the high road for defining understanding and teaching for it.

[3] The issue of content in school is a noticeable lacuna in the TfU movement and in the teaching for thinking movement generally. A glaring exception to this rule is Gardner's important book, "The Disciplined Mind" (1999). Lately, Perkins also has begun to deal with the content question. See, Perkins, 2013; 2014.

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About the Author

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