FOREWORD

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The theme of engaged learning with emerging technology is a timely and important one. This book proclaims the global relevance of the topic and sharpens its focus. I would like to open the book by sketching some of the historical context and dimensions of application, before the chapter authors provide the substance.

Engagement with the world - To be human is to be engaged with other people in the world. Yet, there has been a dominant strain of thought, at least in the West, that directs attention primarily to the isolated individual as naked mind. From classical Greece to modern times, engagement in the daily activities of human existence has been denigrated. Plato (340 BC/1941) banished worldly engagement to a realm of shadows, removed from the bright light of ideas, and Descartes (1633/1999) even divorced our minds from our own bodies. It can be suggested that this is a particularly Western tendency, supportive of the emphasis on the individual agent in Christianity and capitalism. But the view of people as originally unengaged has spread around the globe to the point where it is now necessary everywhere to take steps to reinstate engagement through explicit efforts.

Perhaps the most systematic effort to rethink the nature of human being in terms of engagement in the world was Heidegger's (1927/1996). He argued that human existence takes place through our concern with other people and things that are meaningful to us. This analysis reversed many philosophic assumptions, including the priority of explicit knowledge. Our understanding of stated facts requires interpretation based on our previous and primary tacit understanding of our world and our concerns. Our active engagement in the world is a prerequisite for any learning.

Vygotsky's (1930/1978) socio-cultural psychology can be seen as an expansion of Heidegger's critique of Western assumptions. Not only is explicit theoretical knowledge reliant upon tacit practical knowledge, but individual learning is reliant upon collaborative learning. Vygotsky showed how most learning begins with interpersonal interactions and is only

secondarily internalized as individual knowledge. So it is our engagement with other people—whether in our family, tribe, classroom or workplace—that provides the primary context, motivation and source of new knowledge.

In the past several years, a number of theories have elaborated the perspectives of Heidegger and Vygotsky in ways that are particularly relevant to issues of engaged learning. Situated learning (Lave & Wenger, 1991) has stressed that learning is a matter of participating in communities of practice. Distributed cognition (Hutchins, 1996) has shown how engagement with artifacts can be central to learning. Activity theory (Engeström, Miettinen, & Punamäki, 1999) emphasizes engagement in a whole activity structure including tasks, people, artifacts and social structures. Group cognition (Stahl, in press) argues that knowledge is primarily built in the interactions of small groups.

Dewey (1949/1991) is a major source of the current discussion of engaged learning. Adapting the philosophic critique of individualism in Hegel (1807/1967) and Marx (1867/1976) to his pragmatist viewpoint, Dewey drew out the consequences for education. He opposed behaviorist and didactic training that emphasized drill and practice in favor of engaging students in inquiry into open-ended problem contexts. Fifty years after Dewey, we are still trying to introduce engaged learning into the classroom.

Engagement with learning - There are many dimensions to engagement with learning. As a number of the chapters will stress and illustrate, the nature of the problems that students are given is critical. If we want students to engage with a problem, it must be one that they "care about" in Heidegger's terms; it must involve issues that make sense to them within their interpretive perspectives on the world. In terms of Vygotsky's zone of proximal development, it should be a problem that challenges their current understanding but is within reach of their understanding, given some support by the people who are working on the problem with them. This may mean that they work collaboratively on a problem that they could not master on their own, or that adequate computer support is provided to guide them the way a mentor might.

Of course, not every problem can be in an interest area of every student. One student might have a passion for science, another for reading, drawing, sports or music. By having students work together on stimulating problems that have been designed and supported to optimize chances of successful knowledge building, educational activities can lead to increased interest and engagement with a new learning domain. Engagement with problems, people and domains can have a synergistic effect.

People are engaged in many communities simultaneously: family, neighborhood, religious, school, friendship, online, etc. These are primary contexts and motivators of engagement. People tend to learn the culture of their communities quickly and effortlessly. Communities of various sizes and formats can be formed for purposes of engaged learning. In some cases

students can be introduced to professional communities (e.g., NASA), in other cases mini-communities can be constructed that are based on the professional community but are more accessible to the students (e.g., model rocket clubs). Communities can be built online so that people with a particular interest can interact with others around the world. Groups can also be formed to create new engagements, such as classrooms in different countries corresponding with each other as a way of learning foreign languages. Engagement generally grows through involvement in such communities. Often, small groups form within larger communities so that participants can get to know each other better and establish a shared history. It is in the intense interactions within such small groups that knowledge is likely to be constructed and shared.

One should not think of engagement as an individual attribute. Communities are engaged with specific issues; that may well be why they originally formed and continue to persist. Small groups also engage in activities. The community or group engagement may not so much be motivated by the desires of their individual members as vice versa. Individual engagement is often a consequence of being involved in an engaged group. One is motivated by the group effort. If a researcher looks closely at the behavior of a group, what appears is not a clear causation in either direction between individual and group; they tend to constitute each other's engagement through subtle interactional moves.

Similarly, engagement is neither a purely intellectual, affective nor social phenomenon. Engagement may involve cognitive tasks and the manipulation of conceptual materials. But it is also a feeling that people have that they are participating in something that is important and interesting. Further, it is a social undertaking, done with, for or because of other people and groups. The impetus to do something, the options available and the methods for accomplishing it are likely to be defined by the culture of some community. What is learned, the motivation to learn it and its socially accepted value are intimately intertwined in ways specific to each case.

So engaged learning can involve engagement with problems, with a domain of knowledge, with communities and with small groups. It can be observed at the individual, small group and community unit of analysis. It appears as a blending of intellectual, affective and social relations.

Engagement with technology - These days, engagement with learning is likely to mean engagement with technology. This is because networked computers seem to offer open-ended possibilities for promoting and supporting engaged learning. They can connect geographically isolated and dispersed individuals into collaborative groups. They can provide scaffolding for learning without requiring the presence of a skilled mentor. They can offer access to worldwide resources. They can incorporate computationally powerful tools.

Unfortunately, this tantalizing potential is not yet at hand. Commercially available media do not support engagement. They are largely designed based on the individual transmission model: they allow individuals to access facts and to transmit opinions. To go beyond this, we need to design technologies that can serve as mediators of person-to-person interaction that goes beyond superficial socializing and exchange of opinions to engagement in deep knowledge building (Scardamalia & Bereiter, 1996). But to do this, we need to understand computer-mediated collaborative learning interaction much better than we do now. It is a complicated process, sensitive to many factors and not predictable from any. It is easy to know what will prevent successful engaged learning, but hard to know how to foster it, particularly given today's technology. While computers are indeed computationally powerful, the technology for programming learning environments is frustratingly rigid. Educational innovators face a wicked problem in trying to realize the potential of emergent technologies.

The far-reaching goal set forth in this book, to design and promote technologies for engaged learning, requires a worldwide effort. Fortunately, the book simultaneously represents a global engagement with this task. The following chapters pursue the educational and technical potential from diverse international perspectives.

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