

## COMMENTARY

# Computer Mediation, PBL, and Dialogicality

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The articles in this special issue of *Distance Education* touch on a range of fascinating and important issues. These are issues that are only now beginning to be identified, let alone understood, and we will undoubtedly be struggling with them for years to come. There are obviously many perspectives one can bring to bear on these topics, and as I read the articles and began to enter into silent dialogues with their authors, I found myself wanting to raise all sorts of questions. What follows, however, is of necessity quite limited and deals with only one basic issue. I should also note that what I have to say is limited by the fact that I come to this discussion as an outsider to the study of distributed problem-based learning (dPBL) environments, especially those that are electronically mediated. Of course a fresh perspective can provide new insight, but the reader should not hesitate to recognize limitations in what I have to say that derive from a restricted understanding of this field.

With this as background, the issue that I would like to raise concerns a claim about mediation of human action and consciousness. This is the claim that action and mind are fundamentally shaped by the “cultural tools,” or “mediational means” that individuals and groups employ (Wertsch, 1985, 1991, 1998). A correlate of this is that with the introduction of a new cultural tool into the flow of human action we should be on the lookout for qualitative transformation of that action rather than a mere increment in efficiency or some other quantitative change.

One can trace this claim to several sources, but I take L. S. Vygotsky as my starting point. In a report that he delivered in 1930 on the “instrumental method in psychology,” Vygotsky wrote that “by being included in the process of behavior, the psychological tool [sign] alters the entire flow and structure of mental functions. It does this by determining the structure of a new instrumental act, just as a technical tool alters the process of a natural adaptation by determining the form of labor operations” (Vygotsky, 1981, p. 137). The central psychological tool that was of concern to Vygotsky was natural language, but he clearly intended his claim to apply to a host of other items as well, including “language; various systems for counting; mnemonic techniques; algebraic symbol systems; works of art; writing; schemes; diagrams, maps, and mechanical drawings; all sorts of conventional signs; and so on” (p. 137).

Writing in 1930, Vygotsky could not, of course, have included computer hardware and software in his list, but it is now widely recognized that his general claims apply in interesting ways to these as well. Hence the need to understand how new forms of computer-mediated

distance communication and learning might “alter the entire flow and structure of mental functions.” And given that Vygotsky was concerned with how such mental functions can occur on the “intermental” (i.e., socially distributed) as well as “intramental” (i.e., individual) plane of functioning, this means that we should be concerned with how the entire flow and structure of communicative and collaborative processes, as well as individual mental processes, might undergo such transformation.

When applied to dPBL processes, how can this general set of claims be concretized? In fact, all kinds of issues come to mind, but I shall be particularly concerned with one in what follows. Specifically, I shall be concerned with how the dialogic processes of interaction may be altered with the emergence of computer-mediated interaction. Borrowing from authors such as Bakhtin (1981, 1984) and Yakubinskii (1922), I shall be concerned in particular with how this new form of mediation may give rise to a new kind of monologism.

In order to make some of these points more tangible, I turn to the articles in this special issue. In one way or another, all the authors recognize that a new form of mediation is involved in the phenomena they are examining. The most obvious way this surfaces is in references to an “asynchronous conferencing system” (Björck), an “asynchronous threaded discussion tool” (Orrill), an “asynchronous forum” (McConnell), and “asynchronous communication tools” (Ronteltap & Eurelings). The commonality of terms suggests that all the authors are aware that the collaborative processes they are investigating are somehow different from face-to-face communication. On the other hand, however, there seemed to be some unintended ambivalence on this issue. The authors often make comments suggesting that computer mediation is simply a detail, or something that provides a quantitative increment in efficacy, but no fundamental change to the processes involved.

It seems to me that it is worth considering the possibility that we may need a more radical realignment of our analytic approach. Rather than viewing the introduction of a new cultural tool as making an existing form of action easier or more efficient, it may be important to consider how it introduces fundamental change—sometimes to such a degree that we can question whether the same form of action is involved at all. Furthermore, in accordance with the concept of “spin-off” that I have developed elsewhere (Wertsch, 1998, chap. 2), the way in which action and mental processes may change with the introduction of a new cultural tool into the picture is often unforeseen. In many cases this new tool is developed with no intention of influencing change in social or psychological processes, but it is precisely in these areas that one may find its most powerful and lasting legacy.

My point amounts to taking up something that goes beyond the already significant contributions the authors have made. Nonetheless, it may be important to take into consideration the possibility that one cannot simply add asynchronous communication tools into an existing mix of social and psychological processes without changing them in fundamental, unintended ways and that this may be one of the most interesting aspects to consider in computer-mediated PBL. It seems to me that this is what Ronteltap and Eurelings are getting at, for example, when they note that “participants in our experiments experienced a new way of communication that affected their level of activity” (p. 19 of ms.) and what Björck is touching on when he writes about the “meta-commenting” (p. 10 of ms.) that seems to emerge in unique ways in dPBL. At the same time, Björck argues that “students mastering dPBL are using highly conversational approaches” and “engage in online discussion in a richer format”

(p. 5 of ms.), claims that seem to suggest that computer mediation is a straightforward extension of face-to-face interaction.

Returning to the authors' hints about how this new form of mediation may lead to qualitative transformation in the flow and structure of social and psychological processes, several points suggest themselves. For example, in her discussion of "critical limitations" of threaded discussions, Orrill writes of the problems that ensue when "there is no clear feedback to allow participants to discern whether their point is clear" (p. 11 of ms.). And Steinkuehler, Derry, Hmelo-Silver, and DelMarcelle struggle with a related point when they note that "Orchestrating each online asynchronous discussion in order to insure all voices are heard is difficult" (p. 20 of ms.). They also take up this issue in their observation that "In metacognitive terms, the Group Whiteboard is vital; it structures not only the *group product* but the *group process* as well" (p. 18 of ms.).

The point I wish to pursue is perhaps reflected most forcefully in some of Björck's transcripts of "engaging in dialogic inquiry" (p. 9 of ms.). For example, in Excerpt 4, Elsie makes an extended commentary on points raised by several of her interlocutors. This is taken to be an example of "meta-commenting," a practice that seems to add a dimension of reflective cognitive processing. It is conceivable that what Elsie did in this case could have occurred in some sort of face-to-face interaction, but unless the "speech genre" (Bakhtin, 1986; Wertsch, 1991) were highly constrained, such extended commentary by a single speaker would be highly unusual. What computer-mediated PBL settings seem to provide, then, are opportunities for this sort of extended, reflective commentary. These are opportunities that emerge due largely to the fact that the medium involved allows a single speaker/writer to hold the floor for as long as he/she likes and by the fact that one is not under the time constraints that characterize face-to-face verbal interaction. In other words, some crucial new properties of social communication—and presumably mental processes as well—have arisen with the use of this new form of mediation.

All this is not to say that either the cultural tools or their consequences are inherently good or bad. On balance, the authors of these articles tend to view them as offering beneficial new opportunities for the development of communities of learners and cognitive growth, and there are good reasons for believing this to be true. As with any cultural tool, however, the new forms of computer mediation involved here undoubtedly have constraints as well as affordances (Wertsch, 1998). I think it is generally too early to be certain about the affordances, let alone the constraints associated with this new form of mediation, but in closing I would like to engage in a bit of speculation about what the latter might be. This speculation is based on ideas about the nature of human dialogue developed by Bakhtin (1981, 1984) and Yakubinskii (1923). Both of these figures viewed dialogicality as an essential property of being human, and this led them to raise questions of how dialogue differs from monologue and how various forms of dialogue can be distinguished.

One of the basic dimensions along which they wished to differentiate forms of dialogue had to do with the intensity of give and take involved when voices come into contact. This can range from a rapid-fire exchange of abbreviated utterances between interlocutors who know each other well to extended, maximally explicit, monologic utterances between strangers that may take minutes, hours, or even longer to produce. In the latter case, human speech and consciousness is still inherently dialogic, in Bakhtin's view, but the dynamics are fundamentally different. Yakubinskii and others developed some of these ideas along other paths,

arguing that the monologic tendency represents a higher level of development and that emerges largely in the context of mass literacy and other changes in modern societies.

Regardless of where one stands on the details of these ideas, it is possible to recognize a general distinction between the give and take of intense, rapid-fire, face-to-face dialogue, where utterances are often fragmentary and interrupted, on the one hand, and a sequence of turns, each of which involves an extended, maximally explicit, fully developed, and uninterrupted utterance, on the other. And it seems to be precisely the latter that comes to occupy a privileged place when collaborative processes come to be mediated cultural tools that introduce asynchronicity into the system. In short, the use of newer asynchronous communication systems may be introducing a larger element of change into PBL, and its consequences for cognition, identity, and collaboration, than we normally recognize. To be sure, what I have said amounts largely to speculation based on passing comments made by the authors of these fascinating articles, but in my view it is an area that deserves a great deal of additional attention as we move into a new world of computer mediation.

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