

The ecological paradigm as a theoretical framework for pedagogical model examination

This editorial provides concise description of the ecological paradigm as a theoretical framework and outlines significant studies that contributed to our knowledge on pedagogical models when examined through the ecological lenses.

The classroom ecology paradigm promulgated by Walter Doyle (1977, 1986) was envisioned as a naturalistic approach to the study of classroom life as it unfolds. It was suggested as an alternative approach that addressed shortcomings of product-process studies prevalent at that time that (a) lacked an explanation of the nature of the link between teaching behaviors and student learning and (b) focused mainly on the teacher without considerations of students' behavior and its consequent effect on teacher's behavior. Within the ecological paradigm all classroom events are viewed through notions of order and academic work. Order refers to the manner in which the teacher and students cooperate to accomplish work, while academic work signifies a collection of academic tasks that direct students' actions and thoughts (Doyle, 1983).

Both order and academic work are accomplished via an interdependent and interrelated set of three task systems: instructional, managerial (Doyle, 1977), and student social (Allen, 1986). Instructional tasks relate to the presentation and practice of subject matter, while managerial tasks refer to rules, routines, and expectations necessary for accomplishing these tasks. Student social tasks, on the other hand, denote student social agenda and social interactions.

All three systems exist, function, and interact in physical education settings (Jones, 1992). Therefore, an understanding of each of these task systems and their interactions is critical to gain an understanding of how order is achieved and how academic work, and therefore learning, is accomplished. Since all three tasks systems are interrelated and interdependent, a change in teacher or student behavior in one system, for example, may result or cause an action or a change within another task system.

For instance, since one of the major goals of student social task system is socializing (Allen, 1986), students in a physical education class may choose to jog slower during the warm-up to allow for a conversation to take place. Consequently, to maintain order this change may cause the teacher to alter her next task from instructional to managerial, which in turn may have a negative impact on academic work. A more thorough explanation of an ecological paradigm relative to physical education and how it has been applied in physical education research can be found in the works of Hastie and Siedentop (2006).

Crucially, ecological paradigm has been found to be useful to examine instructional, managerial and student social task systems in a number of settings. Henceforth this editorial presents noteworthy studies to date that employed this paradigm to contextualize the investigations of events that occurred within various pedagogical models such as Adventure Education, Sport Education, and Cooperative Learning.

When examining tasks and accountability of a secondary adventure camp Hastie (1995) noted strong accountability for accomplishing managerial tasks and variance in accountability in performance outcomes. However, the most significant finding of the study was high levels of student task involvement in the absence of any formal accountability. Hastie (1995) theorized that high levels of task involvement could be explained by optimal level of challenge that can be achieved by students themselves as well as student social task system shaped by the structure and nature of Adventure Education becoming the driving force of the instructional task system.

The first comprehensive ecological analysis of Sport Education in middle school physical education examined how work gets accomplished and investigated levels of student engagement and compliance as well as the accountability systems operating within the season (Hastie, 2000). The findings demonstrated high levels of student engagement and compliance with instructional and managerial tasks. In fact, teacher's managerial system and, more importantly, the student social system in Sport Education were found, not only to contribute, but also to drive the instructional task system.

Sinelnikov and Hastie (2008) extended our understanding of task systems operating in Sport Education by examining responses of high school students to novel-to-them demands of this instructional model, which

required significant group work, cooperation between students, peer instruction and student responsibility. In line with Hastie's (2000) assertions, the analysis of video records, interactive student journals, group and individual interviews confirmed high levels of compliance with explicit tasks in the managerial and instructional task systems with low levels of off-task behavior. Significantly, Sinelnikov and Hastie (2008) uncovered disruptions in the student social task system leading to some students finding different ways of fulfilling their social goal of having fun and achieving goals that were supporting the teacher's instructional and managerial agenda.

Dyson, Linehan, and Hastie (2010) examined one PE teacher and her 47 students to provide the description and interpretation of ecology of Cooperative Learning in elementary physical education. They found that organizational structure of Cooperative Learning allowed managerial time to decrease as the unit progressed to provide time for increasing numbers of refining, extending, and applying tasks. Moreover, similar to research in Adventure Education (Hastie, 1995) and Sport Education (Hastie, 2000; Sinelnikov & Hastie, 2008), the student social system helped instructional demands of the unit with students providing peer instruction, correcting errors, and exhibiting helpful social behaviors. The individual student accountability, which is the driving force of task systems, was reinforced through self-accountability (e.g., task sheets), peer and group accountability (e.g., peer teaching and roles), and teacher accountability (e.g., random competency checks by teacher) and was mostly embedded in the tasks and structure of Cooperative Learning.

As we can see from the ecological research, some pedagogical models provide embedded accountability within their structure and tasks. Additionally, in cases of Adventure Education, Sport Education, and Cooperative Learning the student social task system does not impede, but rather advances, the instructional and managerial task systems. In some cases, this causes the transformation of the student social task system that triggers students to achieve their social goals through different avenues that may contribute to the teacher's agenda and to other task systems.

This editorial advocates a case for continuing to employ the ecological paradigm in examining physical education and described its relevance to sport pedagogy researchers. These illustrations and findings of exemplar ecological research provide the precedents for examining other pedagogical models more holistically. It is clear that to fully understand and explain what Siedentop referred to "life in the gym", especially in the case of pedagogical models, an ecological perspective accounting for all task systems and their interplay is indispensable. As Hastie and Siedentop (2006) poignantly write, "[t]hose studies that have examined either teacher behaviors or student performance without examining the classroom behaviors of the other face the risk of making claims that trivial, or altogether misleading" (p. 223).

Dr. Oleg A. Sinelnikov
Department of Kinesiology
University of Alabama (AL, USA)

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