

Chapter 10

Building Epistemic Awareness in the Early Childhood Classroom

Theory, Methodology, and Technology

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ABSTRACT

It is evident from the information in the previous chapters in this book that there is much to be learned about how technology fits into the world of early childhood education (ECE). This chapter discusses some exciting new thinking about epistemology and how children and teachers learn and how this could relate to technology and all learning with young children and their teachers. The new understanding of preschool education potential demands new approaches to these vital years of schooling if we are to prepare our children to succeed in the increasingly demanding academic environments.

INTRODUCTION

A remarkable convergence of new knowledge about the developing brain, the human genome, and the extent to which early childhood experiences influence later learning, behavior, and health now offers policymakers an exceptional opportunity to change the life prospects of vulnerable young children, says a new report from the Center on the Developing Child at Harvard University “The early childhood years lay the foundation for later economic productivity, responsible citizenship, and a lifetime of sound physical and mental health,” says Jack P. Shonkoff,

(2007, p. 2) director of the center and one of the report’s principal authors. Early childhood education has long been accepted as important for preparing young children to enter the academic world. Recent reports from the Office of Economic Development (2006) support high-quality preschool education as one of the most promising ways to help strengthen the future economic and fiscal position of our states and nation. There is also growing recognition of the importance of supporting the development of mathematical and scientific knowledge and skills in young children which includes technology. (Moon & Schweingruber, 2005)

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vital years of schooling if we are to prepare our children to succeed in the increasingly demanding academic environments. Research on the development of cognitive skills related to science, technology, engineering and mathematics has provided fascinating new ideas concerning what young children can do, but very little guidance for adults about how to use this information in caring for young children. Unfortunately, these advances in understanding of children's thinking do not seem to be shaping practice and policy in early childhood. "The tremendous gaps between what is known from developmental research and the usual content of curricula and the nature of practice in early childhood settings may inhibit children's ability to reach their potential (NRC, 2005). Furthermore, when applied research is carried out, it is often not guided by theoretical frameworks and does not draw on research on cognitive development.

The professional challenges that this raises for the early childhood field are formidable. Individuals have to mount new mental structure as well as accumulate relevant data for the structure. It is as if learners have to get to the middle of the lake without a rowboat. The theoretical task is two-fold: to spell out how new mental structures are acquired and to achieve a theory of environment that supports such learning (Gelman & Brenneman 2004). We believe that Denise's work is a start to understanding how new mental structures are acquired and an approach to possible conceptual change. Because this area of research is new in the field of early childhood education we have provided a review of all current research to build a chain of logic for support if this work. As you read this chapter we have included some direct connections to the relationship between technology and epistemology. As you read the research it is important that you think through the implications for technology and all learning in your classroom.

PERSONAL EPISTEMOLOGY

The study of epistemology (i.e., knowledge) is derived and deeply rooted in the disciplines of philosophy, sociology, and anthropology. For centuries the nature of knowledge has been a profoundly controversial and heavily debated topic, including early childhood. In this chapter, personal epistemology is applied to early childhood development and children's perceptions of early learning. For our purpose, personal epistemology is defined as an individual's *beliefs* about the nature of knowledge and the nature and process of knowing (Hofer & Pintrich, 1997). What are an individual's beliefs about the nature of knowledge and the process of knowing? How do we know what we know? When we are in the process of constructing our knowledge, how do we make decisions about what we believe and whom we believe? Do beliefs about knowledge matter in terms of student learning? The study of personal epistemology focuses on these types of questions. These issues directly relate to how teachers and children learn technology and the decisions they make to use technology. This chapter will share insights how epistemology forms and how you as a teacher make the decisions you make about what technology to teach and how to use technology when teaching. This chapter will help you think about your approaches and conceptual change needed if we are to truly become teachers and users of technology. In addition the author explains the new research field of epistemology in young children which directly influences how they learn, interact, and develop. Although this field of research has struggled to achieve a single definition or a best-fit methodological approach; and embraces multiple conceptualizations of the construct there continues to be a significant amount of progress in the study of personal epistemology.

Personal epistemology has been heavily researched in college students (King & Kitchener, 1994; Perry, 1970; Schommer, 1990) and more recently has focused on development in adoles-

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