Chapter 15
Applied Behavior Analysis as a Teaching Technology

Amoy Kito Hugh-Pennie
Hong Kong Association for Behavior Analysis, China

Hye-Suk Lee Park
KAVBA ABA Research Center, South Korea

Nicole Luke
Brock University, Canada

Gabrielle T. Lee
Michigan State University, USA

ABSTRACT

Applied behavior analysis is known as an effective way to address the needs of people with autism spectrum disorders. The layperson may also associate behavior analysis with forensic psychology through their experience of crime dramas such as Criminal Minds: Behavior Analysis Unit. However accurate or simplified these portrayals they are a very narrow view of the larger field of behavioral science. Behavior analysis has a host of applications in the real world. Some of these applications include but are certainly not limited to the determination of social policies, advertising, policing, animal training, business practices, diet and exercise regimens and education. In this chapter the authors will focus on how applied behavior analysis can be used as a teaching technology from the behavioral and educational literature that has the potential to help lead the way out of the educational crisis faced in the United States of America and abroad.

INTRODUCTION

Applied behavior analysis (ABA) is a science traditionally tied to solving practical problems based on the discoveries from the basic science of behavior. It is the application of behavioral principles to change socially significant behavior to a meaningful degree through careful observations and systematic experimentation (Baer, Wolf, & Risley, 1968). Webster’s Dictionary (n. d.) defines technology as the...
use of scientific knowledge to solve a practical problem. One of the defining characteristics of ABA as “technological” is that its effects are replicable and available to others via precise descriptions of procedural operations (Baer et al., 1968). Thus, not only any instruments, apparatus, or techniques, but also strategic methodological processes developed within the behavior analytic tradition, are included in the definition of technology (Layng & Twyman, 2013) herein described in this chapter. Simply, ABA is a technology which is used to change behavior.

Lattal (2008) further distinguished technologies developed within the behavior analytic discipline as endogenous technology (e.g., the operant chamber) while those developed outside of this discipline as exogenous technology (e.g., the iPad™). Assimilating or merging exogenous technology with endogenous technology can produce powerful effects on evaluation in our society, particularly when applied to our education system (Escobar & Twyman, 2014).

Endogenous technology can be defined as the applications of discoveries from the laboratory to solve student learning problems in the classroom via systematically sequenced educational outcomes with frequent measures to mastery, learner-centered active responding opportunities, and individualized pacing toward the ultimate goals. Pedagogy has always been an integral part of the research tradition of behavior analysis (Keller, 1968; Lindsley, 1991; Skinner, 1968). Despite the existence of empirically validated pedagogical practices shown effective in facilitating student learning, advances of exogenous technology applied in the classroom seem to remain independent of and ignorant of endogenous technology.

For example, in a review of evidence-based online instructional strategies, it was reported that online instructions involving multi-media did not produce superior effects in student performance (Means, Toyama, Murphy, Bakia, & Jones, 2010). Such results were not surprising, as those studies compared lectures delivered via either in-person or video formats. Both instructional methods were literally identical and consisted of passive learning without active student responding. Advanced exogenous technology alone, without integrating endogenous technology as the foundation, yielded no significant educational outcomes. ABA offers many benefits if implemented in the classroom. These include ways to teach, ways to organize teaching materials and objectives, and ways to think about schooling in general.

Unfortunately, adapting exogenous technology without endogenous technology in the education system is common. In its 2016 National Education Technology Plan, the Office of Educational Technology defines technology as those tools that a classroom has for learning such as: laptops, computers, iPads™, and phones (US Department of Education, 2016). This definition does not fully account for the essential learning process necessary for successful educational outcomes and ignores the role of teachers who serve as scientists to apply scientific knowledge to solve practical learning problems. Such a prevailing notion has contributed to an ongoing culture that dismisses teachers as valued and technological, which has become a barrier when discussing practical solutions to a serious problem. As a result, ABA is not being consistently used in schools and this may pose a problem.

Recent test results still show that children in the United States are performing in school below average when compared to other children in the world (Carnoy & Rothstein, 2013). The need to improve our education system is imperative; even though we have spent money and time to do so, we have yet to be competitive on the world stage. Science and digital technology have given us access to a great number of wonderful tools, but without a science of teaching we cannot effectively use these tools to improve the learning of our children. The process or the way we teach is an area of opportunity for change.

Hundreds of effective pedagogical tactics and strategies have been identified as evidence-based procedures in the behavioral literature (See Greer, 2002, Chapters 5 and 6 for a list of over 200 such tactics). These tactics and strategies constitute a technology of teaching and as such should be included in our