

Chapter 6

Effects of Tangible Teaching Materials According to Evaluation of Cognitive Development

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ABSTRACT

Students who have difficulty communicating with others verbally may be referred to as “individuals in the learning process of concept formation” rather than individuals with severe intellectual disability (SID) and/or autism spectrum disorder (ASD). Insufficient understanding of these individuals makes it more difficult to deal with comorbid behavior disorders. This chapter introduces an original evaluation battery using “Ohta Staging” and “Task of Birds” as tools to measure cognitive development. Four cases of individuals who grew up with strong behavior disorders will be described by employing the battery. Cognitive features of each case are detailed through original handmade tangible teaching materials (OHTTMs). The chapter will discuss the effects of object-based communication using OHTTMs, as it relates to the cognitive development measured by the battery, in terms of reducing behavior disorders. OHTTMs will be evaluated as communication and informal assessment tools rather than teaching aids.

INTRODUCTION

This chapter will focus on students who have difficulty with verbal communication. Some of the students are nonverbal. Other students express their requests with finger pointing or gestures, speak several words and echolalia, or use patterned phrases. Standardized tests and/or intelligence tests may be insufficient when assessing levels of intellectual development. This is because many of these individuals cannot respond to verbal instruction in an adequate manner. They may be referred to as “individuals in the learning process of concept formation” instead of individuals with SID and/or ASD.

Difficulty with social interaction is common in these individuals. Their frequent displays of emotional confusion may be expressed in an unsociable manner. Factors preventing them from social reciprocity

DOI: 10.4018/978-1-5225-6240-5.ch006

include lack of verbal expression and emotional confusion expressed in an inappropriate manner. This includes temper tantrums, self-injuries, a strong attachment to peculiar objects, screaming, biting, or kicking. It may also include destructive actions like throwing or striking things.

In turn, supporters may face challenges in educating these individuals. Teachers in special schools, teachers in classes or special classes in common schools adopting an inclusive education system, or staff helping with activities of daily living (ADL) in welfare service places acknowledge that they are responsible for providing appropriate educational or psychoeducational approaches. However, supporters may be confused by the communicative difficulty and cognitive diversity displayed in these individuals.

These practitioners may ask for practical methods when faced with difficulty and diversity. Cognitive features are observable in these behaviors, including finger pointing, eye gazes toward others, or manipulation of objects. Measured cognitive level and imbalance of development in the individuals associated with those actions may help supporters understand how to proceed with their work.

In this chapter, the effect of object-based communication, especially in manipulating objects, is discussed as it relates to cognitive functioning. First, an original evaluation battery comprised of “Ohta Staging” and “TOB” is introduced to assess cognitive development. Ohta Staging evaluates the development of symbolic functioning (Ohta & Nagai, 1992). TOB evaluates the development of visuomotor skill, respectively (Tatematsu, 2004, 2006). Both tools can be implemented with simple procedures.

The battery has been used in non-research settings (i.e., special schools, after-school day services in social welfare programs) and other support institutes in Japan where requiring significant time and extensive training is often unrealistic (Grodberg, Weinger, Kolevzon, Soorya, & Buxbaum, 2012; Tatematsu, 2006). Ohta Staging, established in 1992, and TOB, added in 2006, have become well-known in special schools for intellectually disabled individuals in Japan.

Second, some cases of individuals who grew up with strong behavior disorders are described by employing this battery in conjunction with other measures to assess adaptive behaviors, including the Vineland-II adaptive behavior scales (Sparrows, Cicchetti, & Balla, 2005; Tsujii et al., 2014). The cognitive features of those cases are detailed using OHTTMs. OHTTMs, implying three-dimensional materials manipulated by user and facilitator, were used as communication tools during the tutorial activity in venues providing social welfare services. These cases showed improvement in communication; the effects extended to their daily activity in those venues. Reports by supporters and caregivers indicated that the awareness of the students’ cognitive features by supporters was key to desirable change.

Third, the chapter analyzes the reasons why individuals with strong behavior disorders accepted the tutorial activity without refusing. The effect of object-based communication using OHTTMs as it relates to the cognitive development measured by the battery is discussed in terms of reducing behavior disorders. OHTTMs are evaluated as both informal assessment tools and communication tools rather than teaching aids.

BACKGROUND

Diversity of Students Who Have Difficulty Communicating With Others Verbally

The significance of measuring the level of cognitive development is increasing not only in special schools but also in welfare-service venues for individuals with SID and/or ASD in Japan. Especially, after-school day service for disabled students has increased and diversified since the Child Welfare Law

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