

**CURRENT RESEARCHES IN  
EDUCATIONAL SCIENCES  
IX**

**Editors**

**Ömer Tuğrul KARA**

**Akın EFENDIOĞLU**



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## **PREFACE**

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# CHAPTER 1

## CONCEPTUAL CHANGE TEXTS AS AN INSTRUCTIONAL MATERIAL: 11TH GRADE STUDENTS' ATTITUDE LEVELS AND EXPERIENCES<sup>1</sup>

Şeyda GÜL<sup>2</sup>

### INTRODUCTION

The constructivist approach argues that knowledge cannot be directly transferred from teacher to student, but must be actively constructed by the student themselves. Many science educators have emphasized that using the principles revealed from constructivist learning theory to replace students' alternative concepts with more scientific concepts in the teaching process and to develop an effective teaching approach can be more effective (Özatlı & Bahar, 2010).

As is known, learning is the interaction of new information with existing concepts, and therefore cannot be seen as simply adding new information to the existing knowledge structure. Indeed, this process requires a major restructuring of individuals' existing conceptual systems (Scott vd., 1992). When students interact with learning materials, they often encounter information that seems to contradict their prior knowledge, beliefs, or attitudes, which can lead to cognitive conflict. Resolving these types of cognitive conflicts places significant demands on the student's cognitive system. However, dealing with information that is inconsistent with these demands or expectations is crucial for learning, as it can initiate deeper and more detailed processing of new information and encourage the reorganization of previous knowledge structures (Baadte & Dutke, 2013; Vosniadou, 1994).

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## CHAPTER 2

### INDIVIDUAL DIFFERENCES IN FOREIGN LANGUAGE LEARNING: MOTIVATION FOCUSED REVIEW

Kübra KIRAÇ DEMİRAY<sup>1</sup>

#### INTRODUCTION

Individual differences refer to the range of learner characteristics that all individuals possess but to varying degrees, and these differences play a significant role in shaping how second or foreign languages are learned (Li, Hiver, & Papi, 2022). By examining individual differences, researchers are better able to explain why learners reach different levels of proficiency and to uncover the cognitive, emotional, and social processes that underlie language learning (Ellis, 2022). In this sense, individual differences can be understood as the personal attributes that make learners unique, contributing to human diversity and creating both opportunities and challenges across learning contexts. As Dörnyei (2005) observes, these differences consist of learner-specific traits and dispositions that influence how individuals approach learning and the outcomes they ultimately achieve. Much like travelers carrying their own luggage, learners bring their personal characteristics with them throughout the language-learning journey. Even when learners are placed in seemingly identical learning environments, variations in performance and language use can only be fully explained by considering these individual differences (Cohen & Dörnyei, 2002). Because learners differ widely in how easily and successfully they acquire an additional language, research on individual differences has become increasingly important in explaining variability in language learning success and developmental paths (Pawlak, 2021). In the field of second and foreign language learning, a wide range of individual difference variables have been identified, including cognitive factors such as language aptitude and learning strategies; affective factors such as anxiety, attitudes, self-confidence, and will-

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## CHAPTER 3

### DATA SIMULATION USING MULTIDIMENSIONAL ITEM RESPONSE THEORY

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Yeşim Beril SOĞUKSU<sup>2</sup>

#### INTRODUCTION

Multidimensional Item Response Theory (MIRT) consists of mathematical models that explain the relationship between an individual's probability of giving a correct response to a test item and multiple latent variables that affect the responses. In order for individuals to provide a correct response to a single item, they need to possess multiple abilities, each of which is represented as a separate vector on each dimension (Reckase, 2009). In MIRT, which focuses on the interaction between the dimensions of test items and individuals' performance on these dimensions, individuals' performance on different dimensions can be determined. MIRT is the multidimensional scaling of items. In MIRT, items are modeled in a multidimensional space by assigning values from individuals' thetas to the items.

In terms of dimensionality, MIRT is divided into three types: between-item, within-item, and complex-structured models in which both models are used together (Wang, Chen & Cheng, 2004). In the simple-structured between-item model, there are homogeneous subtests, each within itself. In other words, the test consists of different unidimensional tests; therefore, it is also referred to as the multiple-unidimensional model. In this model, which is appropriate for measuring learning outcomes in content areas, each subtest is associated with only one ability and measures a single ability/trait. In the between-item model, the discrimination parameters take non-zero values in only one dimension.

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data simulation based on the multidimensional 2PL model was presented using the R programming language.

The findings indicated that the bias and RMSE values of the discrimination parameters ( $a_1$  and  $a_2$ ) were higher than those of the difficulty parameter ( $d$ ). It was also observed that increasing the number of items led to a noticeable increase in the estimation error of the discrimination parameters, whereas increasing the sample size resulted in only a limited improvement in parameter estimation. These findings highlight that estimating discrimination parameters in multidimensional models can be more challenging and emphasize the importance of carefully defining simulation conditions.

Overall, the example presented in this chapter provides a practical reference for researchers conducting simulation studies within the framework of MIRT and contributes to a clearer understanding of data generation and parameter estimation processes in multidimensional item response theory models.

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## CHAPTER 4

### DATA SIMULATION USING UNIDIMENSIONAL ITEM RESPONSE THEORY

Yeşim Beril SOĞUKSU<sup>1</sup>  
Hatice GÜRDİL<sup>2</sup>

#### INTRODUCTION

In contrast to Classical Test Theory (CTT), which focuses on making inferences from observed scores to true scores, Item Response Theory (IRT) comprises falsifiable models based on model data fit analyses. This theory relies on a rigorous evaluation of the consistency between the proposed model and empirical data. By modeling the relationship between the latent ability being measured and the probability of correctly answering an item through the Item Characteristic Curve (ICC), IRT enables the simultaneous scaling of individuals and items on a common metric. Grounded in strong graphical representation and a solid mathematical foundation, IRT provides estimates of reliability and standard error of measurement across different ability levels. Due to these advantages, IRT has found extensive application in the fields of psychometrics and educational measurement. This chapter presents an overview of unidimensional IRT models and, within this context, demonstrates an example of data generation based on these models (Hambleton, Swaminathan, & Rogers, 1991).

#### IRT Models for Dichotomously Scored Items

When the responses to test items consist of only two categories—such as yes/no or correct/incorrect—the items are dichotomously scored. In educational assessment, responses to multiple-choice tests are typically scored dichotomously. If the examinee answers an item correctly, they receive a score of one (1); if the response is incorrect, they receive a score of zero (0). The probability of a respondent pro-

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## CHAPTER 5

# EPISTEMIC JUSTICE IN EDUCATIONAL GOVERNANCE: REFRAMING KNOWLEDGE, AUTHORITY AND LEGITIMACY IN CONTEMPORARY SCHOOL SYSTEMS

Okyanus Işık Seda YILMAZ <sup>1</sup>

### INTRODUCTION

Educational governance has long been examined through the lenses of accountability, efficiency, policy enactment, and institutional performance. Over the past three decades, scholars have analyzed how managerialism, performativity, and data-driven reforms have reshaped school systems globally (Ball, 2003; Ozga, 2009; Braun, Maguire & Ball, 2010). These analyses have illuminated how governance increasingly operates through standards, indicators, benchmarks, and comparative metrics, often privileging quantifiable outputs over contextual judgment. Yet beneath these structural transformations lies a deeper, less visible question one that remains insufficiently theorized within educational leadership scholarship: whose knowledge counts in educational decision-making?

The question of epistemic authority who is recognized as a credible knower has been rigorously developed in contemporary epistemology, particularly through the work of Miranda Fricker (2007), who introduced the concept of epistemic injustice to describe the wrong done to individuals specifically in their capacity as knowers. Fricker distinguishes between testimonial injustice, which occurs when a speaker's credibility is unjustly deflated due to prejudice, and hermeneutical injustice, which arises when structural interpretive gaps prevent individuals from making sense of their social experiences. While this framework has generated extensive debate in philosophy, political theory, and feminist scholarship (Ander-

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Educational governance cannot be sustained on technical rationality alone. It must also be sustained on epistemic fairness. Only when credibility is distributed in ways that recognize diverse forms of knowing can governance remain not merely efficient, but just.

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## CHAPTER 6

# GLOBAL CITIZENSHIP EDUCATION BEYOND THE CURRICULUM: INTERDISCIPLINARY METHODOLOGIES, SCHOOL CULTURE AND EDUCATIONAL LEADERSHIP

Filiz TUNCEL<sup>1</sup>

### 1. INTRODUCTION

Global citizenship has a more tangible status than ever before, due to globalization's impact on the nation-state (Dower & Williams, 2002). The significant transformation in citizenship induced by globalization is the emergence of a broader spectrum of affiliations and behaviors that are fundamentally moral rather than tied to legal status. Ross (2007) suggests that citizenship is currently seen as a complex, flexible identity performed within a global political society. Given these advancements, the concept of citizenship, as it is constructed, is particularly pertinent in a global context. However, it is essential to think beyond national borders, as globalization has intensified and social, political, and environmental challenges have emerged worldwide. In this context, global citizenship is a multifaceted concept that involves becoming more aware of global issues through intercultural understanding, sustainability, social justice, and human rights (UNESCO, 2015; OECD, 2018; Oxley & Morris, 2013).

The literature from the previous five years on global citizenship studies has shown increased methodological diversity, with mixed methods research offering opportunities to discuss more than just the quantifiable aspects of people's views on global citizenship but also their contextual and experiential aspects (Bamber, Bullivant, & Stead, 2018; Pashby, Costa, Stein, & Andreotti, 2020). Furthermore, by analyzing how attitudes toward global citizenship change over time, longitudinal studies offer more precise information on the durability of educational

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Second, the study is influenced by the size and character of the current literature, which may reflect prevailing policy discourses and theoretical stances in global citizenship education. Even though an attempt was made to incorporate studies from both outside Türkiye and within it as well as a variety of disciplinary viewpoints, some local customs and experiences may still be neglected. This drawback highlights the need for more studies that experimentally investigate global citizenship education across various school types, geographic locations, and sociocultural contexts.

Then, the chapter's examples of school-based implementation are illustrative rather than factual. They are meant to aid in conceptual clarity and to show how theoretical ideas can be applied to real-world teaching situations. By using qualitative case studies, ethnographic techniques, or mixed methods designs, future research could build on these illustrative frameworks to examine how global citizenship education is implemented in real school settings.

Finally, while the main focus of this chapter is on schools, educators, and educational leadership, families, local governments, civil society organizations, and transnational networks are all playing a bigger role in shaping global educational citizenship. To gain a more thorough understanding of global citizenship education as a multi-layered educational transformation, future research using interdisciplinary and participatory methodologies could further investigate the dynamic interactions between schools and their broader social and political environments.

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## CHAPTER 7

# EDUCATOR PREPARATION FOR AUTISM SPECTRUM DISORDER: BUILDING AN INTERDISCIPLINARY PROFESSIONAL IDENTITY

Ömer ŞIHANLIOĞLU<sup>1</sup>

### INTRODUCTION

The field of education for individuals with Autism Spectrum Disorder (ASD) is at a significant threshold. Over the past two decades, while the global prevalence of ASD has grown markedly, our understanding of its neurodevelopmental complexity has also grown (Lord et al., 2022). Autism Spectrum Disorder (ASD) is no longer viewed through a narrow behavioral or medical lens; it is now considered a multifaceted condition that uniquely affects social communication, sensory processing, emotional regulation, and cognitive functions in each individual. This broadened understanding has significant implications for educators. Both general and special education classrooms require professionals who can provide not only academic learning but also address students' sensory, communicative, and behavioral challenges. Both general and special education classrooms require professionals who can provide not only academic learning but also address students' sensory, communicative, and behavioral challenges.

This section examines the critical gap between the complex, multidimensional needs of individuals with Autism Spectrum Disorder (ASD) and the traditional monodisciplinary models that still predominate in educator training. As a response, this section supports interdisciplinary approaches that require professionals to integrate knowledge from different fields and design holistic approaches, fundamentally reconceptualizing the professional identity of ASD educators. The professional identity is examined as how practitioners understand their values, knowledge, goals, and roles within a broader network, and graduate educa-

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ciplinarity), from expertise in isolation to collaborative competence, and from focusing on parts of the child to supporting the entire child.

## **SUGGESTIONS**

**Master's Programme Design:** Universities should design interdisciplinary master's programs that engage students from various professional backgrounds (special education, speech-language pathology, linguistics, occupational therapy, psychology) for collaborative projects and joint coursework.

**Curriculum Development:** The programmes should include foundational knowledge from multiple disciplines, case-based learning experiences requiring integrated problem solving, and opportunities for supervised practice in interdisciplinary settings.

**Pedagogical Strategies:** Educators should embed reflective activities and formalised processes that encourage learners to examine and reflect on their developing professional identities and provide structured opportunities for interdisciplinary collaboration and dialogue.

**Institutional Support:** Educational institutions should provide support structures for interdisciplinary collaboration in practice, including joint planning time, team-based service delivery models, and professional development in interdisciplinary capabilities.

**Policy Development:** Policymakers should consider certification or endorsement pathways for ASD professionals that recognize interdisciplinary preparation and encourage the development and sustainability of such programs.

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## CHAPTER 8

### THE SECONDARY POSITIONING OF FATHERHOOD: A THEORETICAL, STRUCTURAL, AND FAMILY SYSTEMS PERSPECTIVE

Ece ÇOKAY TAŞCIOĞLU<sup>1</sup>  
Elif ULU<sup>2</sup>

#### INTRODUCTION

Parenthood, as one of the most transformative roles individuals assume throughout their lives, occupies a central position not only in terms of children's development but also in the construction of adult identity and the organization of the family system. Developmental psychology literature has long emphasized the decisive role of parenting in children's cognitive, emotional, social, and behavioral development. Numerous theoretical frameworks—from attachment theory and the ecological systems approach to socialization models and self-determination theory—have positioned parent-child interaction as the fundamental context of development (Bronfenbrenner, 1979; Ainsworth et al., 1978; Darling & Steinberg, 1993; Ryan & Deci, 2000).

When the developmental stages individuals pass through across the lifespan, as well as the roles and responsibilities they undertake, are considered, parenthood emerges as a role that individuals adopt through their own children and that influences many areas of their lives. According to Erikson's (1963) psychosocial development theory, the stages of young adulthood and adulthood—characterized by the conflicts of intimacy versus isolation and generativity versus stagnation—correspond to the period during which individuals most commonly assume the role of parent. When the emotional bond established with the child

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ature. Reconsidering the gendered assumptions embedded in parenting research and making fathers' caregiving experiences more visible may contribute to a more balanced and inclusive understanding of the family system.

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## CHAPTER 9

# EVALUATION OF THE COLOR AND AESTHETICS THEME IN THE VISUAL ARTS COURSE CURRICULUM IN TERMS OF COLOR EDUCATION

Meral PER ÇAKAR<sup>1</sup>

### INTRODUCTION

Art education is an educational activity that enables individuals to express their feelings and thoughts using various artistic tools. Through art education, individuals acquire aesthetic awareness, adapt to the evolving needs of society, and can grow into highly creative individuals. Visual arts education, which occupies a prominent place in art education, is a creative process that enables individuals to freely express themselves and develop aesthetic value standards through the elements of art and design principles.

The teaching of color, one of the design components with the most subcategories in visual arts education, is of great importance. Color teaching is a process that begins at an early age and continues throughout the educational process. Geçen (2018) found that children aged 6-7 can classify primary and secondary colors, and that cool and neutral colors can be taught. Turkut and Kazu (2018) state that the color knowledge provided to middle school students has a positive impact on their success in other subjects and ensures long-term retention in learning. Similarly, Engin (2019) found that university students studying art who were given a separate course on color knowledge were more successful in other subjects and in their artistic designs. Çağlayan (2018) states that for students to produce high-quality work by using design elements and components correctly, a conscious process consisting of the stages of theoretical knowledge, analysis of historical examples, and application should be followed in color teaching.

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1. Color knowledge can be introduced starting from the 1st grade, and advanced color knowledge (color harmonies, color theories, color psychology, etc.) can be adapted to students' grade levels in subsequent grades. This can enable students to diversify their creative expression methods and gain a deeper aesthetic sensitivity.
2. Research evaluating previously implemented visual arts course curricula has identified issues regarding the program's applicability (Uysal & Dadakoğlu, 2024; Yurdakal, 2019; Ertürk, 2013). Therefore, new studies based on the applicability of the activities included in the Color and Aesthetics theme of the 2025 Visual Arts Teaching Program in classroom settings and on teacher opinions can be conducted.
3. In this study, only the Color and Aesthetics theme of the program was examined in terms of color teaching. Therefore, in new studies on this subject, other themes included in the program can be examined from a broader perspective in terms of color teaching.

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