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Special education teachers' perceptions of and practices in individualizing instruction for students with intellectual and developmental disabilities in China

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BOSTON UNIVERSITY
WHEELLOCK COLLEGE OF EDUCATION & HUMAN DEVELOPMENT

Dissertation

**SPECIAL EDUCATION TEACHERS' PERCEPTIONS OF AND PRACTICES IN
INDIVIDUALIZING INSTRUCTION FOR STUDENTS WITH INTELLECTUAL
AND DEVELOPMENTAL DISABILITIES IN CHINA**

by

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ABSTRACT

In recent years, the concept of individualized instruction has gained increasing attention among special educators, researchers, and policy makers in China. At the same time, many are concerned that as a concept borrowed from Western countries, individualized instruction may not be successfully implemented in China's social and cultural context. The literature, however, has revealed little empirical information about what Chinese teachers actually do and think about individualized instruction. This study therefore aimed to investigate Chinese special education teachers' perceptions and practices related to individualizing or adapting instruction for students with intellectual and developmental disabilities (IDD). Specifically, the investigation focused on teachers who taught elementary Chinese language arts and math in public special education schools for students with IDD in Shanghai and were considered as effective teachers by school administrators. A generic qualitative research design was utilized. Semi-structured interviews were conducted with a total of 31 teachers from six schools. Thematic analysis was employed to analyze the interview data.

Analysis revealed that the participants shared many similarities in their practices

and perceptions. In general, they recognized the wide range of student differences existing in their classrooms and the necessity of adapting instruction to accommodate student differences. However, in reality, practices and beliefs associated with one-size-fits-all approaches of teaching were prevalent. Although all participants described making efforts to address individual differences, these efforts seemed to be inadequate, as indicated by significant limitations in both assessment and adaptation practices reported in the study. The participants perceived fully addressing the needs of individual students as difficult and described challenges in four areas.

The study revealed that teachers seemed to hold the conflicting perceptions that instruction should be adapted to accommodate individual needs and that the structure of standardized approaches of teaching should be maintained. In this context, a *fenceng instruction* method was used to address individual differences, which involved minor changes to traditional standardized approaches of teaching; instruction tailored to each individual's need was not found.

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Chapter 1

Introduction

Tailoring instruction to meet individual student needs, often referred to as individualized instruction, has long been considered as the cornerstone of special education and the most important feature of effective special education practice in the U.S. (Landrum & McDuffie, 2010). According to Hallahan and Kauffman (2006), the fundamental ideas that form the basis of individualized instruction for students with disabilities in the Western countries can be traced to the work of the first pioneers of modern day special education in the 1800s. These pioneer special educators taught students with disabilities with the idea that “the child’s characteristics, rather than prescribed academic content, provide the basis for teaching techniques” (Hallahan & Kauffman, 2006, p.25). The passage of the U.S. federal law, the Education for All Handicapped Children Act (PL 94-142) in 1975 codified individually designed instruction to address students’ unique needs as the central element of special education. This hallmark law and its amendments define special education as “specially designed instruction . . . to meet the unique needs of a child with a disability (Individuals with Disabilities Education Act [IDEA], 2004). Specially designed instruction means “adapting . . . the content, methodology, or delivery of instruction . . . to address the unique needs of the child that result from the child’s disability” (IDEA 2004 Regulations, 2006). To deliver specially designed instruction, the laws further require that an Individualized Education Program (IEP) be developed for each student who is eligible under the law.

Since the passage of the IDEA in 1975, there have been numerous lines of research on the topics of individualizing and adapting instruction for students with disabilities in the literature in the U.S. For example, researchers have conducted investigations on what constitute individual differences and how to determine individual needs and make educational decisions accordingly (e.g., Deno, 2003; Fuchs & Fuchs, 1986; Speece, 1990); how educators perceive and use instructional adaptations for students with disabilities to accommodate their individual needs (e.g., Janney & Snell, 1997; Scott, Vitale, & Masten, 1998); and how provision of adaptations affect teaching and learning (e.g., Lee, Wehmeyer, Soukup, & Palmer, 2010). Extensive research (e.g., Collins, Hager, & Galloway, 2011; Dunlap & Kern, 1996; Lee et al, 2010; Stecker, Fuchs, & Fuchs, 2005) has demonstrated that instruction adapted to individual needs had positive effects on the behaviors and learning of students with disabilities.

The concept and practices of individualized instruction for students with disabilities in the U.S. were first introduced to the mainland China in the 1980s shortly after they were codified into law in the U.S. in 1975 (Chen, 1994). Since then, individualized instruction has gained increasing attention among special educators, researchers, and policy makers. Chinese scholars have explained the concept of individualized instruction and highlighted the importance of designing instruction to accommodate the individual needs of students with disabilities (Chen, 1994; Sheng, 2005). They have also introduced and analyzed the practices of developing and implementing IEPs in the U.S. and provided recommendations on how to provide individualized instruction for students with disabilities in Chinese classrooms (Deng &

Guo, 2010; Xiao, 2005; Yu, 2011). Published articles written by special education teachers have described strategies that they used to individualize instruction (Lai, 2016; Liu, 2004; Yuan, Zhang, & Pang, 2009). Legislation (Regulation on the Education of Persons with Disabilities, 2017) and the central government's policy documents (e.g., Ministry of Education, 2007, 2016) call for attention to individual differences and implementation of individualized instruction for students with disabilities.

While showing interest and support for individualized instruction, some scholars have expressed concerns about the challenges of successfully implementing this concept given China's social and cultural context (Ding, 2001; Ding, Gerken, VanDyke, & Xiao, 2006; Zhao & Hua, 2006). They pointed out the differences between China and the U.S. in terms of cultural values, educational practices, and available resources, and argued that these differences might affect acceptability and feasibility of individualized instruction in Chinese schools.

Cheng (1998), for example, described individualism–collectivism as an important dimension of cultural differences between Western and Asian countries that may have an impact on educational practice and thinking. According to Cheng (1998), in Western cultures, where individualism is valued, education is meant to empower students. Students are encouraged to “develop according to their unique needs and potentialities” (p.16), and education system is expected to adapt to the needs of individuals with varying abilities and interests. By contrast, in Chinese society, where a collectivist culture dominates, education system is characterized by conformity and uniformity. School education is designed to “instill in children the norms and expectations of the society”

(p.15), and students are supposed to learn to adapt themselves to the expectations shared by the community. In view of such differences, it can be assumed that individualized instruction, which requires attention to individuals and adaptations to expectations and instructional practices, may not be well suited to the teaching philosophy of Chinese teachers. In addition, according to Cheng, in a collectivist society, the educational system tends to be a highly centralized system with strict standardization as exemplified by standardized curriculum and school facilities. Local schools and teachers, therefore, are left with little freedom to modify some aspects of educational experiences, which may make individualized instruction difficult to achieve. In addition to cultural differences, scholars have also pointed out some other factors that may impede implementation of individualized instruction in Chinese schools, such as the practice of whole-class instruction as a norm, high student–teacher ratios, inadequate teacher training, and limited teaching resources (Ding, 2001; Ding et al., 2006).

Although individualized instruction for students with disabilities is advocated in China, with all these barriers that have been described as concerns, one may wonder whether and how instruction is actually individualized for students with disabilities in Chinese schools. To what extent is individualized instruction accepted and implemented by Chinese teachers? What do these teachers think and do in regards to individualizing instruction? Do the potential barriers pointed out by Chinese scholars actually impede individualization of instruction? If so, what could be done to facilitate successful implementation? These are important questions to answer to ensure appropriate instruction delivered to students with disabilities in China. However, a close examination

of Chinese literature revealed little empirical information related to these questions. This study, therefore, aimed to address these questions by investigating Chinese special education teachers' perceptions and practices related to individualizing or adapting instruction for students with disabilities. Specifically, the investigation focused on perceptions and practices of special education teachers teaching elementary (Grades 1–6) Chinese language arts and math in public special education schools for students with intellectual and developmental disabilities (IDD) in Shanghai, China.

Statement of the Problem

Extensive U.S. research (e.g., Collins et al., 2011; Lee et al, 2010) has demonstrated that quality education for students with IDD requires instruction tailored to accommodate their individual needs. Legislation (Regulation on the Education of Persons with Disabilities, 2017) and the central government's policy documents (e.g., Ministry of Education, 2007; 2016) also call for implementation of individualized instruction in special education schools for students with IDD. However, there has been the concern that differences in cultural values, educational practices, and available resources between China and U.S. may impede teacher acceptance and use of individualized instruction in Chinese schools (Ding, 2001; Ding et al., 2006; Zhao & Hua, 2006). Given the need for individualized instruction for students with IDD and the concern about potential barriers to implementing it in schools in China, it is important to examine: (a) whether and how teachers in special education schools for students with IDD in China implement individualized instruction, (b) how these teachers perceive the concept and practice of adapting instruction to individual students' needs, and (c) barriers and facilitators to

individualizing instruction for students with IDD in these schools. Research on this topic would provide information to help teacher educators and school administrators better prepare and support teachers who work with this student population and to ensure that appropriately adapted instruction is provided to meet their needs. Because an examination of literature revealed little research investigating this topic, there was a need for research.

Research Questions

The purpose of this study was to investigate and describe Chinese special education teachers' perceptions and practices related to individualizing or adapting instruction for students with IDD. Specifically, the investigation focused on perceptions and practices reported by teachers teaching elementary Chinese language arts and math in public special education schools for students with IDD in Shanghai. The following research questions guided the study:

How do elementary Chinese language arts and math teachers in public special education schools for students with IDD in Shanghai individualize or adapt instruction for their students?

How do these teachers perceive the concept and practice of individualizing or adapting instruction for students with IDD?

What are the barriers and facilitators to individualizing or adapting instruction for students with IDD in these schools?

Chapter 2

Literature Review

The purpose of this study is to identify teachers' perceptions and practices related to individualized instruction for students with disabilities in China. This chapter includes a review of the extant literature as related to (a) the concept of individualized instruction, (b) approaches to individualizing instruction for the general student population and students with disabilities in the U.S., and (c) education and individualized instruction for students with IDD in China.

The Concept of Individualized Instruction

The term *individualized instruction* has been used extensively in both general and special education literature in the U.S and in China. It has various definitions and theoretical frameworks (e.g., Talmage, 1985; Sindelar, Collins, & Applequist, 2007; Zhao & Hua, 2006), which has resulted in a wide range of practices and programs that are identified as individualized instruction (e.g., Kliever & Landis, 1999; M. C. Wang & Walberg, 1985). In essence, the term implies practices that are in contrast to rigid standardization and uniformity in education, for example, traditional whole class instruction in which teachers present the same curriculum content to all students and use instructional methods geared to students' common needs. Instead, there is an emphasis on recognizing individual differences and using a variety of strategies to provide educational experiences that meet each student's unique needs. Individualized instruction therefore can be defined broadly as instruction that involves any procedures or strategies used to address students' individual differences and make the programs of studies and lessons

suitable for the learning needs of individual students (Heathers, 1977).

To individualize instruction, one needs to “accept the basic premise that children of the same age have different cognitive and affective characteristics” and “they cannot be expected to learn the same body of content, in the same length of time, in the same way” (Jeter, 1980a, p. 6). Educators have different views on what aspects of individual differences are instructionally relevant and necessitate the individualization of instruction, and these views shape the practice of individualized instruction. For example, when considering the basis of individualized instruction, general educators often think about students’ current performance in a skill or content, prior knowledge, learning style, and interest (Tomlinson, 1999), while special educators, particularly those teaching students with IDD, also take into account students’ intellectual, communication, health, physical, sensory, and social and behavioral characteristics (Snell & F. Brown, 2011). Rate of learning used to be viewed as the most salient aspect of learner variance by general educators, and based on this view, many programs of individualized instruction developed in the U.S. in the 1960s and 1970s took a “modular, self-paced approach” (Schoen, 1976, p. 352), allowing students to proceed through the units of course at his or her own rate. In some writings at that time, individualized instruction referred specifically to self-paced instruction (Schoen, 1976).

Individualized instruction involves two essential components: (a) identification of individual characteristics and needs via student assessment and (b) arrangement of educational environments and provision of instruction to meet individual needs, especially through curricular and instructional adaptations. Individual characteristics and

needs can be identified through informal and formal methods of assessment. Informal methods involve teachers “stay[ing] alert to” learner differences and providing adaptations intuitively (e.g., a teacher stops instruction to explain a topic in a different way in response to a student’ question; Weber, 1977). In more formal approaches to assessment, there is a systematic attempt to provide “a unique program for each student” (Weber, 1977, p. 327) and a conscious sequence of diagnosis, prescription, teaching, and assessment for progress monitoring. With formal approaches, students’ background information and performance data are systematically collected and carefully examined to identify individual learning needs (F. Brown, Lehr, & Snell, 2011; Fuchs & Fuchs, 1986).

Adaptations can be defined as adjustments made in the instructional environment, content, and methods to enhance a student’s performance or allow at least partial participation in activities (Udvari-Solner, 1992). Adaptations can be made to the structure, sequence, and scope of learning content; learning objectives; teacher–learner roles; learning environments; grouping formats, modes of presentation; time and pacing; learning activities and tasks; and methods of evaluation (Janney & Snell, 2011; Talmage, 1985; Udvari-Solner, 1992). In practice, teachers may adapt any of the components and may do so in a variety of ways. For example, in some approaches to individualized instruction, students are required to learn the same content with the same materials to the same standard but are free to learn at their own pace (Gibbons, 1970; Jeter, 1980a). In other approaches, students may be required to learn the same content but allowed to engage in different activities and demonstrate learning in different ways; still others may prescribe different content for different students based on their needs and interest or

allow students to choose what they will learn (Gibbons, 1970; Jeter, 1980a).

Burns (1973) pointed out that there is an ideal concept of individualized instruction, which refers to that which is custom-tailored to match each student's needs; however, in reality, individualized instruction may not "take into account all the features of the ideal" (p. 26). Teachers may (a) allow different ranges of options for adapting certain components of an educational program; (b) address a limited number or a full range of learner variables; (c) adapt instruction for each and every student or selected students; or (d) provide individualized instruction only in some activities or give attention to each student's needs throughout a school day (Gibbons, 1970; Heathers, 1977; Talmage, 1980). There are many factors that may affect how individualized instruction is executed. According to Talmage (1980), the challenges of individualizing instruction first lie in the fact that individuals are complex organisms with many different characteristics that affect their learning and teachers are faced with the task of teaching not one but a group of students who demonstrate different learning needs. Too, the extent to which instruction is individualized may be related to educators' understanding of individual differences, knowledge about and techniques of teaching, and societal demands for education and degree of tolerance for diversity (Grinder & Nelsen, 1985; Talmage, 1980). Other possible related factors include student population served; current school goals, policies, and practices; district and school curricula; classroom teaching practices; teacher competency; staffing resources; class size; and availability of curriculum materials and facilities (Grinder & Nelsen, 1985; Talmage, 1980; M. C. Wang, 1992).

What follows is a more detailed review of the various approaches and programs

that have been developed by U.S. educators to address individual differences. It begins with a review of that literature focused on the general student population, followed by a focus on students with disabilities. The key features of effective practices in individualizing instruction are presented for both populations.

Individualized Instruction for General Student Population in the U.S.

Individualization of instruction has long been emphasized in education for the general student population in America. Many believed that elements of individualized instruction were practiced in teaching activities as early as in the colonial era (Blake & Mcpherson, 1973; Grinder & Nelsen, 1985). For example, in the ungraded one-room schools, students were allowed to progress at their own rate through the limited textbooks and met with teachers one-on-one to recite what they had studied (Grinder & Nelsen, 1985; Grittner, 1975). Grinder and Nelsen (1985) referred to the practice at this time as “individualized instruction by default” (p. 26), as instruction was individualized in some respects by necessity and intuition instead of by design. In the middle of the 1800s, age-graded schools, as a more economical way to educate the increasing numbers of students, became the dominant pattern of school organization in the U.S. In the graded school system, instruction was based on “grade standard” and individual differences were disregarded. Students at the same grade level were expected to learn the same materials prescribed by textbooks in the same way and within the same period of time (Blake & Mcpherson, 1973).

In reaction against the “lockstep” of the graded school and undifferentiated whole class instruction, educators initiated a number of plans and systems to promote

individualization of instruction in the later decades of the 19th century. Examples of these earliest attempts included semiannual or quarterly promotion plans to provide more flexibility in grade placement, multi-track and ability grouping to provide instruction better matched to students' abilities, and programs of individualized instruction that were featured by self-directed and self-paced learning and continuous progress of students on a nongraded basis (Whipple, 1925). Since these pioneering works, researchers and practitioners have continued to search for better ways of providing individualized instruction for the general student population. Numerous approaches and programs were developed (Jeter, 1980b; M. C. Wang & Walberg, 1985).

These approaches and programs to individualization have taken various forms, but they all relied on one or both of the following two types of techniques for provision of individualized instruction (Jeter, 1980b). The first involves school or class organizational arrangements to facilitate individualization or "make individualized instruction possible" (Jeter, 1980b, p. 24). The second technique focuses on curricular and instructional provisions, including adaptations to instructional content, methods, and materials.

Organizational arrangements. Among the many organizational techniques used by general educators to address individual differences, grouping practices have received the most attention. For a long time, ability grouping was the most common measure taken by general educators to adjust learning to individual differences (Good & Stipek, 1983; Slavin, 1987). However, concerned about the possible negative impacts of ability grouping on students, since the 1980s educators have advocated for the use of alternative

grouping plans such as cooperative learning groups and flexible grouping (Flood, Lapp, Flood, & Nagel, 1992; Slavin, 1987).

Ability grouping. Ability grouping refers to the practice of grouping students based on the similarity of their ability and achievement levels for the purpose of instruction (Steenbergen-Hu, Makel, & Olszewski-Kubilius, 2016). Ability grouping involves three components: identification of students with certain similarity, physical placement of students into groups, and use of certain instructional strategies for students placed together. Some researchers also used the term homogenous ability grouping to describe this practice and distinguish it from heterogeneous ability grouping, with the latter referring to purposefully grouping students with various ability and achievement levels for instruction (Moody, Schumm, Fischer, & Jean-Francois, 1999).

There are at least three broad types of ability grouping: between-class, within-class, and cross-grade (Kulik, 1992; Steenbergen-Hu et al., 2016). Between-class ability grouping refers to the practice of assigning students in the same grade into different classes based on their ability or achievement for some or all subjects. Within-class ability grouping involves assigning students within a class to small homogeneous groups based on their ability or achievement. By contrast, cross-grade ability grouping involves grouping students from different grades for instruction in a particular subject based on their achievement in the subject (Kulik, 1992; Steenbergen-Hu et al., 2016). Grouping plans within each type have differed in terms of the basis of grouping (e.g., students' general ability or ability specific to a subject), methods for measuring abilities, group size, and group stability (Kulik, 1992; Steenbergen-Hu et al., 2016). Many researchers also

considered special programs for students with special education needs as a type of ability grouping (Slavin, 1987; Steenbergen-Hu et al., 2016).

The literature is replete with debates about the advantages and disadvantages of ability grouping (Kulik, 1992; Slavin, 1987). The rationale for its use has been based on the assumption that by reducing the range of student variance in a group or class, ability grouping makes it easier for teachers to pay attention to and provide instruction matched to individual student needs, therefore leading to improved student achievement (Slavin, 1987). Opponents of ability grouping, however, raised questions about this assumption. They contended that individual differences are so complex that forming truly homogenous groups is impossible and that student variance will continue to exist regardless of grouping patterns (Marsh, 1968; Kulik, 1992). The practice of grouping students by ability, however, may lure teachers into the belief that students within the same group are alike and make them less likely to adapt instruction for individuals (Marsha, 1968).

It was further argued that ability grouping is especially detrimental to students in lower ability groups. These students may experience a lack of models and stimulation from higher ability students, lower expectations from teachers, and lower quality of instruction compared to peers in higher ability groups (Allington, 1983; Slavin, 1987). In regard to social-emotional development, possible negative impacts include stigma attached to students in lower ability groups and consequent negative self-concept and attitudes towards schools (Chorzempa & Graham, 2006; Slavin, 1987). Furthermore, opponents criticized ability grouping as an undemocratic practice that generates

segregation, unequal educational opportunities, and discrimination towards students from economically and culturally disadvantaged families (Haller & Davis, 1980).

Given the debates about the value of ability grouping, researchers conducted studies to examine its effects. In the area of academic learning, several meta-analyses revealed that the effectiveness of ability grouping depended on the types of grouping practices and students' ability levels (Kulik & Kulik, 1992; Slavin, 1993; Steenbergen-Hu et al., 2016). In general, when comparing ability grouped classes with ungrouped classes, between-class ability grouping had no effect or a small positive effect on the achievement of higher ability students and no effect for average and lower ability students; cross-grade grouping had positive effects, regardless of students' ability levels; and within-class ability grouping also had positive effects for students of all ability levels (Kulik & Kulik, 1992; Slavin, 1987, 1990a, 1993; Steenbergen-Hu et al., 2016). However when comparing within-class ability grouping (i.e., within-class homogeneous ability grouping) with within-class heterogeneous ability grouping, lower ability students achieved more in heterogeneous groups, average ability students benefitted more in homogeneous ability groups, and no differences in achievement gains were observed for higher ability students in the two different types of small groups (Lou, Abrami, Spence, Poulsen, Chambers, & d'Apollonia, 1996).

Fewer research studies and reviews have examined social-emotional outcomes as related to ability grouping. A meta-analysis conducted by Kulik and Kulik (1982), focusing on ability grouping in secondary schools, found that compared to students in ungrouped classes, students in ability grouped classes had more positive attitudes towards

the subjects they were learning, but there were no differences in self-concept or attitudes towards school. Taken together, these findings seemed to provide some support for the use of ability grouping for the general student population. None of these studies, however, included students with IDD.

Researchers also noticed that curricular and instructional adaptations might play a role in the effect of grouping practices. Researchers reported that when ability grouping was accompanied with differentiated instructional methods and materials for students at different ability levels, it was more likely to result in improved student performance (Kulik, 1992; Lou et al., 1996; Slavin, 1987). Lou et al. (1996) conducted a meta-analysis of research on within-class grouping (both homogeneous and heterogeneous) and noticed that although within-class grouping produced greater achievement gains compared to no grouping, the effect sizes were higher in classes where teachers used different materials across groups than in classes where the same materials were used for all students. Given the role of curricular and instructional adaptations, many researchers have cautioned that ability grouping alone may not guarantee improved student performance; they must be complemented with appropriately adapted instruction (Kulik, 1992; Slavin, 1987).

The pros and cons of ability grouping have not been fully settled by research, and the debates persist (Steenbergen-Hu et al., 2016). However, some researchers have agreed that ability grouping may be beneficial to students if (a) teachers can adjust group membership in response to mis-assignment and student growth; (b) it is based on student performance in a specific content and other student characteristics such as interest; and (c) it is paired with adaptations (Slavin, 1987; Tieso, 2003).

Alternatives to ability grouping. Since the 1980s, with increased concern about the possible negative effects of ability grouping, especially issues related to equity, some researchers proposed alternative grouping plans (e.g., Johnson & Johnson, 1999; Moody et al., 1999). One of the most popular alternatives is cooperative learning groups, a type of within-class heterogeneous small group that involves students' "positive interdependence," "promotive interaction," and "individual accountability" to achieve group goals (Johnson & Johnson, 1999, p. 73). While ability grouping aims to promote teaching and learning by controlling individual differences, cooperative learning puts emphasis on exploiting individual differences. A large body of research has supported the effectiveness of cooperative learning in promoting academic achievement, race relations, mutual concern among students, and student self-esteem, among other positive outcomes (Slavin, 1990b).

Another alternative to ability grouping is flexible grouping. Proponents of flexible grouping recommend varying grouping arrangements based on students' needs and instructional goals (Flood, et al., 1992; Hoffman, 2002). When making decisions about the most appropriate grouping strategies for an instructional experience, teachers should consider several key variables. These include: the basis for grouping (e.g., students' skills, interest, and activity); group size and composition (e.g., individuals, dyads, small groups, and whole group); leadership (teacher-led or student-led); group goal structure (individualistic, cooperative, or competitive); and materials for groups (same material for all groups, different levels of material, different themes within a topic, or different topics; Flood, et al., 1992; Lou et al., 1996).

Curricular and instructional strategies. General educators have also relied on curricular and instructional practices to individualize instruction. The curriculum and instruction related approaches discussed in the literature are presented in this section.

Individualized systems of instruction. In the 1960s and 1970s, interest in individualized instruction for the general student population reached a peak in the U.S. (Rothrock, 1982). Widely used approaches to accommodating individual differences among students included computer-based teaching, audio-visually mediated instruction, individualized assignments, learning contracts, and individual projects (Bangert, Kulik & Kulik, 1983). What gained the most attention were individualized systems of instruction that utilized a unit learning approach, in which “students work at their own rates through carefully designed units of course materials with the help of study guides” (Bangert et al., 1983, p. 143). These systems could be commercially or teacher- and researcher-developed. Some of the most influential large-scale systems were Individually Prescribed Instruction (Glaser & Rosner, 1975); Program for Learning in Accordance with Needs (Flanagan, Shanner, Brudner, & Marker, 1975); and Individually Guided Education (Klausmeier, 1975).

These systems had many common features. They included (a) division of the course content into small units of study, (b) use of pretests for placement at an appropriate point in the learning sequence for each student and periodic evaluations of progress to provide feedback on mastery of each unit, (c) considerable use of class time for individual work by students, (d) student progress through the units of study at different rates, and (e) mastery requirement for student advance from one unit to another

(Bangert et al., 1983; Bishop, 1971; Jernstedt, 1976). These systems relied on predesigned unit learning packages or programmed materials to allow students to work individually at their own levels and rates. In the individualized systems of instruction, each student had a course of study designed for him or her, and the teacher was responsible for “overall supervision, diagnosis, remediation, and prescription” (Bishop, 1971, p. 34).

Educators had high hopes for such individualized systems “to revolutionize teaching and to revitalize learning” (Bangert et al., 1983, p. 150). However, the overall outcomes of these systems at the elementary and secondary school level were disappointing. Evaluation studies produced inconsistent results, and several research syntheses revealed that in general, the individualized systems of instruction using the unit learning approach were no more effective than the traditional whole-class instruction (Bangert et al., 1983; Miller, 1976; Schoen, 1976). Bangert et al. (1983) conducted a meta-analysis of the effects of individualized systems on secondary school students and found that this approach did not contribute significantly to student achievement, critical thinking ability, self-esteem, or attitudes towards the subjects being studied.

Individualized systems of instruction had several flaws that prevented them from fulfilling their promises (Kepler & Randall, 1977; Slavin, Leavey, & Madden, 1984; Weber, 1977). These systems not only failed to provide adequate individualization but also lowered the overall quality of instruction. First, Molenda (2012) pointed out that the self-paced unit learning approach only responded to student differences in skill levels and rates of learning; individualization in instructional content and methods was limited as all

students used the same learning materials and in most cases the main instructional method was “text-based independent study” (p. 14). Exclusive use of programmed materials was reported to reduce the flexibility that was needed to adapt instruction to the full range of student needs (Kepler & Randall, 1977). In addition, it was noted that the wholesale adoption of individualized systems resulted in (a) inadequate direct instruction by teachers; (b) emphasis on basic skill learning and lack of attention to higher order learning; (c) reduced learning time due to time related to program management; and (d) reduced student motivation due to the lack of interaction with peers and teachers (Kepler & Randall, 1977; Slavin et al., 1984; Weber, 1977).

Alternatives to individualized systems of instruction. Recognizing the weaknesses of the self-paced unit learning approach, educators attempted to remedy its limitations. Slavin et al. (1984) developed an approach called Team Assisted Individualization, which involves students working on individually prescribed learning packages in heterogeneous teams. This approach was designed to motivate students through the use of team rewards and to increase teacher direct instruction time by having students take responsibility for most of the management tasks (e.g., checking answers and distributing materials). Teachers were freed to work with small groups of students who were drawn from the heterogeneous teams and who shared specific difficulties in learning, while other students worked on learning packages in their teams. M. C. Wang and Lindvall (1984) used the term adaptive instruction to describe approaches which emphasized accommodating individual differences through a system that involves a variety of “alternative strategies for instruction and resource utilization” and “built-in

flexibility to permit students to take various routes to, and amounts of time for, learning” (p. 161). Tomlinson (1999) used differentiated instruction to refer to “a flexible way of proactively adjusting teaching and learning” (p.14) that involves continuous formative assessments and provision of various learning opportunities. She emphasized adapting content, process, and products of instruction based on students’ readiness, interests, and learning profiles (Tomlinson, 1999).

More recent approaches to accommodating individual differences represent a response to the increasingly diverse student population that includes students with disabilities in general education classrooms (Tomlinson et al., 2003; M. C. Wang, Peverly, & Randolph, 1984). They stress proactively accommodating a wide range of student needs through built-in flexibility and provision of multiple learning options, “in contrast with planning a single approach for everyone and reactively trying to adjust the plans when it becomes apparent that the lesson is not working for some of the learners for whom it was intended” (Tomlinson, 2001, p. 4). Teachers are encouraged to create accommodating classrooms with practices such as differentiated instruction (Tomlinson, 2001), universal design for learning (Rose & Meyer, 2002), and other “universal” or generally effective instructional strategies to ensure that all students in general education classrooms have access to high-quality instruction that meets their individual needs. Individualized instruction in the U.S. literature is now more often used to refer to individually tailored instruction for a small number of students who have more intensive educational needs that cannot be met by less specialized interventions or “universal” teaching strategies (Janney & Snell, 2004).

Individualized Instruction for Students with Disabilities in the U.S.

Prior to 1975, many children with disabilities in the U.S. were either excluded from public schools or inappropriately educated (Winzer, 1993). Efforts to provide educational services for students with mild disabilities largely involved homogenously grouping these students based on their disability types and teaching them in remedial or special classes or schools (Dunn, 1968; Winzer, 1993). At the same time, most children with the most severe cognitive and physical disabilities were institutionalized, and few received special education services (Winzer, 1993). Movement towards deinstitutionalization and education began in the 1960s (Dunn, 1968; Herrick, 1973; Winzer, 1993). In 1975, the Education for All Handicapped Children Act was passed, which mandated that all students with disabilities receive a free and appropriate public education in the least restrictive environment. Individually designed instruction to address students' individual needs was formally recognized as the central element of special education.

What follows is a review of recommended practices for individualizing instruction for students with disabilities based on extant literature, with an emphasis on practices targeted at students with IDD. Specifically, what is included is an overview of the process of planning and providing individualized instruction for students with disabilities and detailed discussions of strategies for implementing the key components of individualized instruction: assessment and adaptations.

The process. Individualizing instruction for a student with a disability involves (a) individually determining student-specific learning goals and instructional strategies and

supports based on the student's characteristics and needs as determined by individual assessments and (b) implementing these components through curricular and instructional adaptations in order to help the student participate in class activities and pursue individual learning priorities. Giangreco, Cloninger, and Iverson (2011) recommended two phases in the process of planning and providing individualized instruction for students with disabilities: (a) an initial planning phase, in which a student's educational team develops an IEP to serve as the blueprint for the student's education for the upcoming year, and (b) a delivery, monitoring, and revision phase, in which teachers conduct "more refined and ongoing instructional planning" (p. 51) to implement the student's IEP, monitor the student's progress, and revise the instructional plans and the IEP as needed.

Initial program planning. The federal law requires that an IEP be developed for every student eligible for special education services as a mechanism for ensuring that an individualized and appropriate education is provided (IDEA, 2004). Yell and Stecker (2003) described an IEP as both a process by which the school determines the content of a student's educational program that addresses the student's unique needs and "a written document that is the blueprint of that program" (p. 74). The IEP document, as required by the IDEA (2004), must include key components such as a description of the student's present levels of academic achievement and functional performance; measurable annual goals and short-term objectives; plans for evaluating the student's progress towards meeting the annual goals; a specification of special education and related services and supplementary aids and services to be provided; and the date of initiation and frequency,

duration and location of the services. These educational decisions documented in an IEP “set the general direction for instruction and give a basis for developing detailed instructional plans” (F. Brown et al., 2011, p. 112).

One of the most important decisions in developing an IEP is determining individual students’ priority learning goals (F. Brown et al., 2011). Many experts (e.g., Ayres, Lowrey, Douglas, & Sievers, 2011; F. Brown et al., 2011; Giangreco et al., 2011; Ryndak, 2003) have recommended using a person-centered, functional-ecological approach to developing individualized curricula for students with severe disabilities. Building on the concept of the criterion of ultimate functioning (L. Brown, Nietupski, & Hamre-Nietupski, 1976), the functional-ecological approach to curriculum development for students with severe disabilities emerged in the late 1970s in response to the concern among advocates and researchers that the traditional developmental curricular approach “had not led to significant improvements in their quality of life” (Hunt, McDonnell, & Crockett, 2012, p. 139).

In contrast with the bottom-up, developmental curricular approach in which students are taught predetermined sequences of skills based on their mental age, the functional-ecological approach is a top-down, highly individualized approach, in which skills targeted for instruction are determined individually by examining what a particular student needs in order to function productively and independently in his or her current and future environments. The functional-ecological approach has emphasized teaching age-appropriate skills that facilitate students’ participation in natural activities in home, school, community, and vocational settings and contribute to meaningful adult outcomes

desired by the students and families (L. Brown et al., 1976). Two “additive” curricular foci, including social inclusion (e.g., membership in general education classrooms and social relationship) and self-determination (e.g., choice-making and self-directed learning), were integrated with the traditional functional life skill focus in the 1990s (Browder et al., 2004, p. 212).

Since the late 1990s, academic content from the general education curriculum has become another curricular focus for students with severe disabilities (Browder et al., 2004). The No Child Left Behind Act of 2001 (NCLB) was enacted to improve outcomes for all students by setting high academic standards. IDEA, originally signed into law in 1975, was reauthorized in 2004 to align with NCLB and specified that students with disabilities must be provided opportunities to access and progress in grade-level general education curriculum and participate in state assessments aligned with state academic standards in the areas of language arts, mathematics, and science. Experts have suggested teachers use the IEP process to “identify goals and objectives that are linked to the state’s academic content standards and are structured to document a student’s continuous progress toward mastering the content” (McDonnell & Copeland, 2011, p. 496).

This emphasis on teaching grade-level related academic content has raised some educators’ concern that the curricular content of students with severe disabilities would be driven by general education academic standards instead of individual needs as determined by ecological assessments, resulting in a loss of individualized IEPs (Ayres et al., 2011). However, experts generally agreed that students with severe disabilities should be taught academic skills and there is a way to provide a curriculum that incorporates

both general curriculum standards and students' unique needs (Ayres et al., 2011; Browder, 2012; Hunt et al., 2012). McGregor (2003) described two approaches for choosing academic skills for students' IEPs that are aligned with states' academic content standards: (a) the standards-based approach that starts with the academic standards and adapts or extends the standards to accommodate a student's needs and symbol use and (b) the standards-referenced approach in which teachers first determine a student's priority needs through an ecological assessment and then identify grade-level academic standards that are linked to the student's priority needs. What experts have recommended is that teachers balance their attention on academic, functional, and basic skills (e.g., communication, social, and motor development) based on the needs of individual students (Dymond & Orelove, 2001).

Delivery of services and progress monitoring. Once a student's IEP is developed, teachers must identify opportunities for teaching the priority learning goals outlined in the IEP (Giangreco et al., 2011). Instruction of individualized learning goals can be embedded in shared school or class activities that are designed for most students (Downing & Eichinger, 2003) or delivered via unique instructional activities designed for the individual student in either the classroom or in the community (McDonnell & Copeland, 2011). The next step is to identify methods for delivering instruction to the student. According to Janney and Snell (2011), this planning should include consideration of instructional settings, grouping formats, materials, and instructional methods (e.g., arrangement of teaching trials, prompting procedures, and reinforcement and error correction). Next, teachers should implement the planned instruction and collect

data to determine if instructional plans are effective and if adjustments to instruction should be made (Browder, Spooner, & Jimenez, 2011; F. Brown et al., 2011; Janney & Snell, 2011).

Assessment. Knowing each student's characteristics supports individualization of instruction. Two types of assessments play an important role in planning and implementing individualized instruction for students with disabilities: (a) initial assessments for curriculum and program development and (b) ongoing formative assessment for student progress monitoring (F. Brown et al., 2011). Assessment for program planning purposes entails direct observation of students' knowledge and skills in priority curricular areas determined to be needed by individual students; formative assessment is accomplished via direct observation of students' skill development for the purpose of adjusting instruction (Browder et al., 2011; F. Brown et al., 2011). Research has shown that adaptation based on ongoing formative assessment of individual students' performance was the key of effective individualization (Fuchs & Fuchs, 1986).

Adaptation. Adaptations are made for students with disabilities to compensate for challenges in important skill areas and "help create a match" between student characteristics and classroom demands (Udvari-Solner, 1992, p. 7). The literature has focused on discussion of various types of adaptations, criterion for evaluating the quality of adaptations, and effectiveness of adaptations.

Types of adaptations. Special educators have distinguished between routine or typical adaptations and specialized or substantial adaptations (Fuchs & Fuchs, 1998; Scott et al., 1998). Routine or typical adaptations are strategies directed towards the class

as a whole or provided in the form of alternative or multiple learning options to cater for a wide range of learner differences from the beginning of instruction (Fuchs & Fuchs, 1998; Scott et al., 1998). In contrast, specialized or substantial adaptations refer to adjustments individually tailored to address students' difficulty or needs (Fuch & Fuchs, 1998; Scott et al., 1998). Researchers have suggested teachers apply routine adaptations before using more specialized strategies or individualized adaptations for students who have more intensive needs (Janney & Snell, 2013, p. 11). Special educators have also distinguished between accommodations and modifications (Friend & Bursuck, 2011; Janney & Snell, 2011). Accommodations are changes made to the teaching or testing procedure in order to help a student gain access to information and demonstrate learning without significantly changing the instructional level, content, or performance criteria. Modifications, by contrast, are changes in what a student is expected to learn or demonstrate (Friend & Bursuck, 2011; Janney & Snell, 2011).

A variety of frameworks for organizing the curriculum and instructional components for making adaptations for students with disabilities have been developed (Janney & Snell, 2011; 2013; Udvari-Solner, 1992; 1996; Wehmeyer, Lattin, & Agran, 2001). For example, Janney and Snell (2013) proposed a model that classifies adaptations into three categories: curricular, instructional, and alternative. Curricular adaptations are changes made to the learning targets (what to teach) and reflect students' individual learning goals and objectives. Curricular adaptations include (a) teaching supplemental skills, such as study and organizational skills, to aid students' ability to learn; (b) teaching skills at different levels of complexity within a specific subject; and (c) teaching

alternative skills (i.e., skills in a different area; Janney & Snell, 2013).

Instructional adaptations are changes made to instructional process or activities to enable students to participate and benefit from instruction. Subcategories of instructional adaptations include adjustments to

- (a) grouping arrangements (e.g., varied group sizes, compositions, and formats);
- (b) physical and social environments (e.g., changes in lighting, physical arrangement of the room, and accessibility of materials);
- (c) methods and materials to convey information (e.g., varied lesson formats, additional teacher models and demonstrations, enlarged print, simplified reading materials, and use of more visuals and concrete materials);
- (d) responses required of the student to demonstrate learning (e.g., use of communication devices, oral responses instead of written responses, and an adapted keyboard to type an essay); and
- (e) personal support or supervision (e.g., additional prompts or feedback provided by teachers, paraprofessionals, and peers; Janney & Snell, 2013).

The third category of adaptations, what Janney and Snell (2013) called alternative adaptations, involves the target student working on an alternative activity within or outside of the student's general education classroom.

Criteria for quality adaptations. Janney and Snell (2011) emphasized that adaptations “should be made systematically and for a purpose” (p. 228). They proposed two criteria for making effective adaptations for students with disabilities. Although the criteria were discussed in the context of general education classrooms, they could be

applied to all settings (Janney & Snell, 2011). The first criterion is that adaptations should promote both social and instructional participation of students with disabilities in shared class activities. Janney and Snell emphasized that adaptations are inadequate when they are provided only for “socialization,” “exposure to the general curriculum,” or participation “by moving through the activity” (p. 229). Effective adaptations should promote students’ active involvement in class activities and meaningful progress towards individualized learning goals. The second criterion is that adaptations should be “only as specialized as necessary” (p. 229), which means that adaptations should be provided in a way that is nonintrusive for both the students and the teaching team.

Effects of adaptations. Research has demonstrated the positive effects of adapting instruction for students with disabilities. For example, Lee et al. (2010) observed high school students with disabilities in general education classes and found that presence of adaptations was associated with increased student academic-related responses and reduced behaviors that interfered with their learning. Other research has also shown that individualized, assessment-based adaptations, such as those which reduced task difficulty or incorporated individual students’ preferences, decreased students’ challenging behaviors and increased their task engagement and work production (Dunlap & Kern, 1996; Ferro, Foster-Johnson, & Dunlap, 1996; Weeks & Gaylord-Ross, 1981).

Education and Individualized Instruction for Students with IDD in China

In this section, a brief review of the history of and policy on educating students with disabilities in China provides a broad context for this study. This is followed by a review of the history and current status of educating students with IDD in China. Finally,

a summary of the status of knowledge regarding individualization of instruction for students with disabilities in the Chinese literature emphasizes the need for this dissertation study.

Special education history and policy. Special education in the mainland China began in the late 19th century when Western Christian missionaries established schools for Chinese students with visual and hearing impairments (Deng, Poon-Mcbrayer, & Farnsworth, 2001). In 1949 when the People's Republic of China was founded, special education became part of the state-run education system. However, by the mid-1980s, the development of special education was limited, and only a small number of students with disabilities were provided with services due to political instability and economic hardship (Deng et al., 2001; Mcloughlin, Zhou, & Clark, 2005). In the 1980s, the Chinese government launched a series of reforms under the Reform and Opening-up policy, resulting in significant social, political, and economic changes. As part of the reform in education, school attendance at elementary and middle school levels was made compulsory for all children, including those with disabilities. The Compulsory Education Law, passed in 1986, stipulated that local governments should establish special education schools or classes for students with intellectual disabilities, visual impairments, hearing impairments to ensure their access to compulsory education.

Following the passage of the 1986 Compulsory Education Law, special education began to receive increasing policy attention in China. Additional pieces of legislation, such as the 1990 Law of the People's Republic of China on the Protection of Persons with Disabilities and the 1994 Regulation on the Education of Persons with Disabilities,

were enacted to provide further legal bases for educating students with disabilities. These laws and regulations addressed a wide range of issues related to special education, such as the priority goals in developing special education in China, responsibilities of key stakeholders (e.g., central and local governments, schools, and families), educational settings or placement options, educational goals and basic approaches, teacher training, and funding.

Based on the laws and regulations, policy documents and work plans were developed by the government to provide more specific guidelines for developing special education and providing educational services for students with disabilities, such as the five-year plans for developing education for individuals with disabilities (State Education Commission & China Disabled Persons' Federation, 1996) and the national curriculum schemes for compulsory education in three types of special education schools (i.e., schools for students with IDD, students with visual impairments, and students with hearing impairments; Ministry of Education, 2007). The fundamental goals of these laws and policy documents are to improve both educational access and quality for all students with disabilities from preschool to higher education, but the primary focus has been students with less severe disabilities, including those with sensory impairments and those with mild and moderate intellectual disabilities. The priority goal has been to increase student enrollment at compulsory school levels.

With three decades' efforts, the elementary and middle school enrollment rate for students with disabilities has increased from less than 6% in 1985 to 72.1% in 2012 (Ministry of Education, 2013; State Education Commission et al., 1989). The rate is

higher in major cities and more developed regions. With the increased school enrollment of students with less severe disabilities, recent special education policy has started to place greater focus on promoting educational access for students with moderate and severe intellectual disabilities, autism, and multiple disabilities and improving the quality of educational services in general (Ministry of Education et al., 2009; Ministry of Education et al., 2014).

Education for students with IDD. Prior to the passage of the 1986 Compulsory Education Law, students with IDD, like students with other disabilities in China, had little access to educational services (Deng et al., 2001). In response to the requirements of the Compulsory Education Law, great efforts were made to make public education accessible for students with intellectual disabilities, which included building new special education schools and providing general education classrooms as a new placement option for some. However, few of these efforts were targeted at students with severe intellectual disabilities, and the majority of these students were still excluded from schools (McCabe, 2003). It was not until recent years when educating students with severe disabilities received increased policy attention that students with moderate and severe intellectual disabilities, autism combined with intellectual disabilities, and other multiple disabilities started to attend schools that previously served exclusively students with mild to moderate intellectual disabilities in major cities (H. Wang, 2003). As a result, these schools are now serving an increasingly diverse student population that represent a variety of disability categories and exhibit different and more complex learning needs. These schools were referred to as schools for students with IDD in this study.

Typically, schools for students with IDD offer educational services at elementary and middle school levels. Content of educational programs in these schools is typically established based on the national curriculum schemes and corresponding national curriculum standards for this type of schools (Ministry of Education, 2007, 2016). The national curriculum scheme specifies the goals of educating students in schools for students with IDD, principles of curriculum designs, subjects to be taught, and school schedules (e.g., length of a semester and number of classes within a week). Examples of required subjects taught in schools for students with IDD include Chinese language arts, math, life skills, and physical education; subjects such as information technology, rehabilitation, and leisure are suggested as electives. The national curriculum standards outline skills and knowledge that students with IDD are expected to master at different grade levels. Shanghai had its own curriculum standards for schools for students with IDD (e.g., Office of Elementary and Middle School Curriculum Reform Committee of Shanghai, 2009a, 2009b). After the Ministry of Education (2016) issued the national curriculum standards for schools for students with IDD, schools in Shanghai (and all other regions in mainland China) were required to adopt the national curriculum standards, starting from the fall 2017 semester.

In schools for students with IDD in China, the general model is one in which content area teachers alternate in teaching different subjects to the same class of students during a day, and in many classrooms, teachers work alone, without teaching assistants (Ellsworth & Zhang, 2007). Issues such as (a) lack of teaching assistants (Y. Wang & Mu, 2014); (b) high student–teacher ratios (Ding et al., 2006); and (c) inadequate preparation

of special education teachers (e.g., teacher training programs not emphasizing teaching methods (Y. Wang & Mu, 2014) are often described as barriers to providing quality instruction for students with IDD.

Individualized instruction for students with disabilities in China. Although individualized instruction for students with disabilities is advocated in China, related empirical research is limited. An electronic search of the China Academic Journal Network Publishing Database with keywords for individualized instruction (e.g., *individualized instruction*, *individualized curriculum*, *differentiated instruction*, and *individual differences*) and students with disabilities (e.g., *special education* and *disabilities*) generated 135 journal articles on the topic of individualizing or adapting instruction in the field of special education published between 1982 and 2017. Most of the articles ($n = 125$) were introductions of foreign practices (e.g., Sheng, 2011; Yu, 2011), anecdotal reports of Chinese teachers' practices (e.g., Lai, 2016; Liu, 2004), or conceptual or theoretical discussions of individualized instruction (e.g., Deng & Guo, 2010; Sheng, 2005; Xiao, 2005). Although there were a few empirical studies, they mainly focused on the content and development of IEP documents (e.g., who developed the IEPs and when and for whom they were developed; e.g., Lian & Chen, 2015; Xin & Cao, 2015; 2016; Zhu & Yu, 2011). Few studies have investigated the degree to which and the ways that instruction is individualized, teachers' perceptions of individualizing or adapting instruction, and the barriers and facilitators to the implementation of individualized instruction, pointing to the need for research on this topic.

Chapter 3

Methodology

This study was designed to explore and describe perceptions and practices regarding individualizing or adapting instruction among teachers in public special education schools for students with IDD in Shanghai. Specifically, the investigation focused on the perceptions and practices reported by teachers who taught Chinese language arts and math for elementary (Grades 1–6) students.

A qualitative research approach involving in-depth, semi-structured interviews was used to address the research questions. The rationale for using a qualitative approach was twofold. First, a qualitative approach is useful for exploring a topic when little research has been done on it and the researcher “does not know the important variables to examine” (Creswell, 2009, p. 18). Since individualizing instruction for students with IDD is a relatively new topic in China, it merits a qualitative exploration. Second, qualitative research has the advantages of (a) generating in-depth and contextually sensitive understandings and detailed descriptions of participants’ perceptions and experiences and (b) revealing patterns in what the participants do and think (Patton, 2015).

A generic qualitative inquiry approach was utilized (Caelli, Ray, & Mill, 2003). It means that this study did not follow the prescriptions of a single established qualitative methodology (e.g., grounded theory); instead, it utilized an eclectic combination of sampling, data collection, and data analysis methods best suited to answer the research questions (Caelli et al., 2003). The rest of this chapter provides an explanation of the researcher’s lens through which this qualitative study was conducted, followed by

descriptions of sampling strategies and participants, data collection and analysis procedures, and measures taken to ensure credibility of the findings.

Through the Lens of the Researcher

In order to provide sufficient information for the audience to understand “how a particular researcher’s values and expectations influenced the conduct and conclusions of the study” (Maxwell, 2013, p. 124), qualitative researchers are suggested to identify and clarify their research lens, including their experiences, predispositions, worldview, and theoretical orientation to the study in their research reports (Patton, 2015; Yin, 2016). In this section, I present my research lens by focusing on my personal background and bias as well as worldview and philosophical assumptions that guided this study.

Personal background and bias. I went to public elementary and secondary schools in China, where I gained my initial understanding about teaching and learning. In most of the classes I attended at that time, teachers delivered standard lessons to a whole class of 40–60 students, and we were expected to sit still, pay attention to what teachers said, and answer questions actively when cued. I then studied in a teacher education program in Shanghai for my bachelor’s and master’s degrees, both in special education. During this period, I was involved in two studies conducted in schools for students with IDD in Shanghai. I also did my practicum in one of the special education schools. These experiences provided me with background knowledge about the context, people, and activities in these special education schools. I came to the U.S. for my doctoral degree in special education. I took courses on how to teach students with severe disabilities, which was not systematically taught in my undergraduate nor graduate programs. I became

interested in looking at the features of educational services provided for students with severe disabilities in China in light of best practice guidelines for teaching this student population documented in the U.S. literature and thinking about factors that might have contributed to the differences and similarities in classroom practices between the two countries. All these experiences informed the design of this study and the analysis and interpretation of the data.

As a researcher, I was conscious of the potential biases and predispositions that I might bring to the study as a result of my prior experiences, such as a tendency to assume that teachers would individualize instruction to a very limited degree. Although I acknowledged that my research could not be value free, I tried to reduce distortions and other negative effects likely caused by my biases. I constantly reflected on my own experiences and preconceptions and their possible influences on this study, checked findings and conclusions against evidence, and looked for counterevidence and diverse perspectives from the data.

Worldview and philosophical assumptions. The philosophical position that most closely matches my view is critical realism, which is “one of a range of postpositivist approaches positioned between positivism/objectivism and constructivism/relativism” (Clark, 2008, p. 169). According to Maxwell (2013), a key feature of critical realism is the combination of ontological realism with epistemological constructivism. Critical realists posit that there is a real world that exists independently of human perceptions and is knowable. At the same time, our knowledge and understanding of the world is inevitably a social construction and cannot be purely objective, and

therefore every theory and conclusion of research is “a simplified and incomplete attempt to grasp something about a complex reality” (Maxwell, 2013, p. 53). Critical realists perceive reality as stratified and containing three domains: the empirical (human experiences and perceptions), the actual (the events that occur in space and time), and the real (the mechanisms and structures which generate the actual and empirical world; Bhaskar, 2008). Although critical realism does not prescribe specific research approaches or methods, it informed the design and conduct of this study in several ways. Two examples are emphasized here.

First, critical realism affected how I used and interpreted data. Critical realists view qualitative data, including interview data, not only as “texts to be interpreted, or as the constructions of participants . . . but also as evidence about the real phenomena . . . that the researcher wants to understand” (Maxwell, 2018, p. 23). In this study, I still saw participants’ accounts as their construction and sought to understand their subjective meaning and experiences (e.g., reported difficulty in individualizing instruction as teachers’ subjective perceptions). At the same time, I also used the accounts as a source of information to generate knowledge about events and processes occurring in reality (e.g., participants’ reports more or less reflecting how they individualized instruction and the difficulty they actually encountered in their classrooms).

Critical realists also emphasize that researchers attain “an adequate conceptualization of phenomena being explored” (Clark, 2008, p. 169) and take the expert role in the research process because “participants can never carry total awareness of the entire set of structural conditions which prompt an action, nor the full set of

consequences of that action” (Pawson, 1996, p. 302). As discussed in Chapter 1, in this study, I conceptualized individualized instruction as constituting two essential components: (a) assessment to identify individual needs and (b) adaptations in curriculum and instruction to meet individual needs; depending on the student population served and a number of other background factors, individualized instruction may be implemented in different ways and to different degrees. This conceptual framework informed the design of the study as well as data analysis and interpretation.

Participants and Settings

Thirty-one teachers teaching elementary Chinese language arts or math from six public special education schools for students with IDD in Shanghai participated in this study. This section presents the sampling strategies, participant recruitment procedures, and information about the schools and participants.

Sampling strategies. Two purposeful sampling strategies were used to “create a group of cases that provide information-rich data gathering and analysis possibilities” (Patton, 2015, p. 428). First, this study focused on teachers who were identified by school administrators as effective teachers, based on the assumption that effective teachers are more likely to have a good knowledge of individualized instruction and insights into the topic. Considering that teacher quality varies across schools, school administrators were not provided with specific criteria for effective teaching. Instead, effective teachers were broadly defined as those who plan and provide relatively high quality instruction as indicated by teacher behaviors and student performance as well as teachers’ reputation and awards. Nominators were asked to base their nominations on their own perceptions

of what teacher behaviors and student outcomes are indicators of high quality teaching and/or information from their schools' teacher evaluation system if there was one.

Second, purposeful sampling with logic of maximum variation (Patton, 2015) was used, with an intention to create a sample of effective teachers who represented some diversity on important teacher characteristics. These characteristics included the school in which they were teaching, grade level and subject they taught, teaching experience, and educational background. This sampling strategy was used because, according to Patton (2015), common patterns that emerge from a heterogeneous sample “are of particular interest and value in capturing the core experiences and central, shared dimensions of a setting or phenomenon” (p. 428). A tentative sample size of 15–20 participants was determined during the research design phase, based on the assumption that this sample size would be small enough to handle under my time and resource constraints but big enough to achieve some degree of data saturation (Guest, Bunce, & Johnson, 2006).

Recruitment procedure. The first step in the recruitment process was targeted on identification of schools and then teachers within the schools were selected. At the time when this study began, there were a total of 20 public special education schools providing Grades 1–6 educational services for students with IDD in Shanghai, with at least one school in each of Shanghai's 16 districts. Nine of the schools were in urban districts and 11 in suburban districts. Two special education experts were asked to help with identification of potential participating schools (selection criteria described below). One of the experts was a Shanghai city-level special education supervisor, who supervised special education services in the public school system in Shanghai, and the other was a

faculty member in a special education teacher preparation program in Shanghai, whom I knew personally. Both experts had more than 15 years of experience working with local special education schools and knew these schools well.

Initially, the city-level special education supervisor was asked to nominate three schools for students with IDD that (a) represented higher, average, and lower quality schools and (b) included both urban and suburban schools. The supervisor was asked to determine school quality based on her knowledge and judgment about these schools' curriculum and instructional practices, resources (e.g., personnel and facility), and reputation, because there were no objective measures of the quality of special education programs in China. The supervisor nominated three schools. Next, the university professor was provided with the same school selection criteria and asked to confirm or disagree with the special education supervisor's nominations. The nominations were verified. I contacted the administrators (principals or directors of teaching) of each of the three school, informed them of the study, and asked if they would be willing to have their teachers participate. All school administrators agreed.

The school administrators were then informed of the teacher selection criteria and asked to identify any teachers who met the criteria. They were asked to nominate teachers who (a) taught elementary Chinese language arts or math; (b) were perceived by them to be effective in teaching students with IDD; and (c) represented a diverse array of subject areas, grade levels, teaching experience, and educational background. The school administrators then distributed a recruitment letter (Appendix A) to the nominated teachers and asked if they were willing to participate in the study and if their contact

information could be shared with the researcher. All teachers agreed. This sampling procedure resulted in 12 teachers recruited from three schools.

Given the planned optimal sample size of 15–20 participants, a second round of recruitment was deemed necessary. The recruitment process was the same as that of the first round, except that the lower quality school identified by the special education supervisor in the second recruitment round refused to participate. In response to my request to nominate an alternative school for participation, the special education supervisor indicated that there were no other schools that she considered to be in the lower quality category; she identified another average quality school instead. This school agreed to participate. The second round of recruitment added 19 potential participants. As a result, a total of 31 teachers were recruited from six schools, each school from a different district, and they all completed the research procedures. The six schools had a total of 288 teachers teaching different subjects at preschool to Grade 9 levels to a total of 859 students with IDD in 100 classrooms at the time of the study. Table 1 presents the characteristics of the schools and the number of participants from each school.

Table 1

School Characteristics

School	Location	Quality	Number of Participants
A	Urban	Lower	2
B	Urban	Average	4
C	Suburban	Higher	6
D	Urban	Average	5
E	Suburban	Average	6
F	Suburban	Higher	8

Participant description. Table 2 presents the demographic information about the participants. At the time of the study, the participants ranged in age from 25 to 50 years old, with a mean age of 37.8 years old. These participants had an average of 14.6 years of experience teaching students with IDD, and the range was three to 26 years. Eight (26%) participants also had experience working as a general education teacher before they started teaching students with disabilities. All but two participants' highest degree was at the bachelor's level. Fifteen (48%) participants specialized in special education in their undergraduate studies; ten of them held a bachelor's degree in special education, and five of them focused on special education in three-year diploma programs that did not grant a degree and later pursued a bachelor's degree in a field other than special education (e.g., education in general, law, and arts). Sixteen (52%) participants did not specialize in special education in their undergraduate studies; ten of them focused on other fields of education (e.g., preschool education, elementary education, and education in general), and six majored in non-education fields (e.g., computer and information system management and English). All participants held a Shanghai (city-level) special education teacher certification and national level certifications in teaching Chinese language arts ($n = 14$; 45%), math ($n = 13$; 42%), or other content subjects ($n = 4$; 13%).¹

¹ In China, individuals who teach in special education schools do not have to complete a special education degree or diploma program. Shanghai city-level policy requires those teaching in special education schools to obtain a special education teacher certification by attending training courses and passing certification tests (Yu, 2008). There is no special education teacher licensure at the national level.

Table 2

Participant Demographics

Characteristic	n	%
Gender		
Female	30	97
Male	1	3
Age		
20–29	4	13
30–39	17	55
40–49	7	23
50 and above	3	10
Main subjects taught		
Chinese language arts	15	48
Math	16	52
Grades taught		
Grade 1 and/or 2	10	32
Grade 3 and/or 4	11	35
Grade 5 and/or 6	9	29
Other (Grades 3 and 5)	1	3
Years of teaching students with IDD		
0–5 years	2	6
6–10 years	7	23
11–20 years	18	58
More than 20 years	4	13
Education level		
College without a degree	1	3
Bachelor's	29	94
Master's	1	3
Areas of study/major		
Special education	15	48
Other education only	10	32
Non-education only	6	19

Fifteen (48%) participants were primarily responsible for teaching Chinese language arts and 16 (52%) teaching math. While the majority of the participants (90%) taught Chinese language arts or math only at the elementary school level, three participants (10%) also taught middle school level Chinese language arts or math.

Fourteen (45%) participants also taught other subjects in addition to Chinese language arts or math, such as life skills, moral education and society, and arts. In addition to class teachers, most of the participants ($n = 23$; 74%) also had other positions or responsibilities in their school, such as homeroom teachers, department directors, and school administrators.

The participants were asked to provide additional information (i.e. class size, number of teaching assistants, and number of students with different types of disability) about the elementary Chinese language arts or math classes that they taught. The class size ranged from five to 14 students ($M = 9.4$). Most of the participants ($n = 23$; 74%) reported having at least one teaching assistant in the classrooms. The student–adult ratio ranged from 2:1 to 12:1, with an average student–adult ratio of 6:1.

All participants had students with both autism and intellectual disabilities in their elementary Chinese language arts or math classes, who represented 8% to 100% of these teachers' class population ($M = 4.3$; range = 1–9). Twenty-nine (94%) participants had students with moderate and severe intellectual disabilities only, who represented 8% to 83% of their class population ($M = 3.0$; range = 1–10). Twenty-three (74%) participants had students with both physical impairment and intellectual disabilities, who represented 7% to 43% of their class population ($M = 1.6$; range = 1–3).

Other types of disabilities were less frequently represented. Eleven (35%) participants had students with other multiple disabilities (e.g., combinations of health impairment and intellectual disabilities, sensory impairments and intellectual disabilities, and more than two impairments), who represented 9% to 50% of their class population

($M = 1.8$; range = 1–4). Four (13%) participants reported having students with mild intellectual disabilities representing 8% to 36% of their class population ($M = 2.3$; range = 1–4). One participant (3%) described having one student with developmental delay.

Data Collection

Data were collected primarily through one-on-one semi-structured interviews with the participants. Interviewing was considered as an appropriate data collection method for this study because interviews are not only useful for understanding participants' perspectives, but also “a valuable way of gaining a descriptions of actions and events—often the only way, for events that took place in the past or to which the researcher can't gain observational access” (Maxwell, 2013, p. 105).

Interviews took place in the spring and summer 2017. I contacted each of the teachers who had agreed to participate to set up a face-to-face interview at a time and place convenient for the teacher. All the interviews were conducted at the school sites in an empty classroom or office when the participants had their break. At the beginning of the interview meeting, the participants were asked to complete an online demographic questionnaire (Appendix C) that began with a consent form (Appendix B). Sojump, a Chinese survey data collection and analysis platform was used for collection of information for this part of the study. I used an interview protocol (Appendix D) to guide the interviews. All participants were asked all of the questions in the interview protocol (except probe questions), in the same sequence, but adjustments were made to the protocol when necessary (e.g., changing the wordings and adding follow-up questions or

probes). During the interviews, I continued to probe until no new information was added. All interviews were conducted in Mandarin and audio recorded for the purpose of transcription. Notes were taken during the interviews. The interviews ($n = 31$) ranged in length from 30 to 97 minutes. Data collection ended when all the 31 teachers were interviewed.

Interview protocol. The interview protocol (Appendix D) consisted of a list of open-ended questions to seek information about the characteristics of students taught by the participants, what the participants did in response to student differences, and what they thought about individualizing or adapting instruction. Additionally, there were two structured, multiple-choice questions about the training that teachers had received in teaching students with IDD and individualizing instruction. The interview questions were carefully designed in order to yield valid data. For example, in addition to general questions about how they taught students with various characteristics and needs, the participants were also asked to describe a specific lesson that they taught and how they engaged students with different ability levels in the lesson. According to Maxwell (2013), asking questions about a particular occasion or event is more likely to produce concrete descriptions of what happened in reality. Also, because it was expected that teachers might have different understandings about the meaning of specific terms (e.g., individualized instruction and differentiated instruction), these terms were either replaced or accompanied by descriptive statements such as “the strategies that you just described as a response to individual differences” and “instruction that targets students’ different needs” in the interviews.

The interview protocol was piloted with two teachers who were not participants of this study. One of the teachers taught elementary Chinese language arts and the other taught elementary math, both in a special education school for students with IDD in Shanghai. The interview protocol was revised based on the two teachers' feedback, which resulted in changes in question wording to improve clarity.

Data Analysis

Interview data were analyzed using a thematic analysis approach (Braun & Clarke, 2006). Braun and Clarke defined thematic analysis as a method for identifying, analyzing and reporting important patterns of meaning (themes) related to the research question across a data set. Thematic analysis is a flexible method for analyzing qualitative data (Braun & Clarke, 2006) and compatible with the research questions, epistemological approach, and data collection method of this study. Data analysis in this study involved a combination of inductive and deductive thematic analysis: inductive as I generated codes and themes from the data and avoided imposing preconceptions, and deductive as I drew on the literature on what is individualized instruction and what quality individualization should look like to interpret the data. Analytic memos were written. A computer assisted qualitative data analysis software (CAQDAS) program, known as NVivo, was used to facilitate the storage, analysis, and retrieval of the data. The data analysis process was divided into the following four stages.

Phase 1. The first phase of data analysis involved preparing and getting familiar with the data, which was conducted concurrently with data collection. After each interview was conducted, the participant was assigned an identity code, and the interview

was transcribed verbatim in Chinese and then imported into an Nvivo database. When transcribing the interviews, I reflected on what the participants said, made notes, and highlighted interesting and relevant information. Data collected from the demographic questionnaire were organized using Nvivo's Case Classifications function.

Phase 2. The second phase started when data collection was completed. It involved disassembling (coding) and reorganizing (categorizing) the interview data using the constant comparative method (Glaser & Strauss, 1967). I started this process by open coding the first ten interviews that I conducted. For each of the ten interviews, I carefully read the transcript, identified segments of data that seemed to be important and relevant, and assigned codes to capture the meaning of the data. Two types of coding strategies were used. One was structural coding (Saldaña, 2013), which involved applying a label representing a broad topic of inquiry (e.g., "perceived challenges and barriers") to a large segment of data (ranging from a paragraph to several paragraphs). The other was more detailed coding that involved assigning more substantive labels (e.g., "generic instructional strategy: visual support") to phrases, sentences, or larger segments of data.

During the coding process, I constantly compared segments of data to other segments of data, data to codes, and codes to other codes; similar codes were grouped to create a smaller number of categories. The codes and categories derived from the ten interviews were then further compared and merged into a master list of codes and categories reflecting regularities and patterns across the cases. This list served as a tentative coding scheme to sort data from all the interviews. As subsequent interviews were analyzed and previously coded interviews were reread, codes and categories were

continually revised to better fit the data and capture the meaning. Nodes in NVivo, which represent codes and categories, were created and organized to facilitate the analysis.

Phase 3. The third phase began when all the interviews were coded, and it involved the development of themes. The coding process in the previous phase resulted in 38 codes (with subcodes) organized into nine categories (see Appendix E for the list of codes and categories). These categories served as the basis for generating themes. In this study, a category was considered “as a word or phrase describing some segment of data that is explicit, whereas a theme is a phrase or sentence describing more subtle and tacit processes” (Rossman & Rallis, 2003, p. 282).

The theme development process involved examining the nine categories of data to identify areas of similarity. Some categories went on to form main themes, whereas others were further combined. For example, “perceived facilitators” was a category with relatively few data and in some way related to barriers (e.g., large class size as a barrier and smaller class size as a facilitator), and therefore it was collapsed into “perceived challenges and barriers” to form a major theme.

This process resulted in five distinctive but related themes clustering around two broad topics: (a) what teachers did in response to individual differences and (b) the context related to how teachers responded to individual differences. During the analysis, I noticed that some concepts appeared in more than one subtheme or theme, such as the range and nature of student characteristics as both a rationale and a barrier to adapting instruction. This overlap, however, was not considered to be undesirable because it illustrated that “certain concepts and issues may cut across themes and provide a unifying

framework for telling a coherent story” (Braun & Clarke, 2012, p. 65). The five tentative themes were then reviewed in relation to the data to determine if they captured the most important information and were finalized. Themes were named and renamed to capture the substance and meaning of the data instead of the topics (e.g., “adaptation strategies” renamed as “inadequacy of adaptation”).

Phase 4. The fourth phase started concurrently with formal writing of the Results chapter of this dissertation, and it involved more detailed analysis within and across themes to describe and relate the themes, categories, and concepts represented by codes (Bazeley, 2013; Braun & Clarke, 2006). During this phase, as my understanding about the data evolved, revisions of codes and categories occurred, but it did not change the overarching themes. Several tools were used to facilitate the analysis, including visual display (e.g., Excel table with summary data for individual participants across key demographic variables and coding categories) and Nvivo (e.g., Matrix Coding function). Specific analysis strategies used included (a) partitioning variables, (b) counting, and (c) making comparisons and looking for variations (Bazeley, 2013; Miles, Huberman, & Saldaña, 2013).

The first strategy, partitioning variables, involved further examining coded data related to a theme, category, or concept to identify its dimensions or subcomponents. For example, the concept “modifications to learning objectives and tasks” as an adaptation strategy was identified as having the following subcomponents: in what ways learning objectives or tasks were adapted (i.e., different types of learning objective and task adaptations), for whom and in what occasions such adaptations were provided, and how

related instructional decisions were made. These subcomponents were closely examined to provide a thick description. The second strategy was counting the frequencies of themes and codes. Theme and code frequencies were determined based on the numbers and percentages of participants who talked about specific themes or ideas, and these numbers were used for verifying patterns (as well as deviations) and countering researcher bias (Maxwell, 2010).

The third strategy involved making comparisons across cases or subgroups of teachers to see if certain participants mentioned a theme or a key concept more or less frequently than others, if the concept being examined varied in its expression across the participants, and if there were outliers or deviating cases. For example, I compared adaptations to learning objectives and tasks reported by teachers across grade levels to examine if there were any differences; similarities and differences revealed by such comparison deepened my understanding of the data and enriched the description of the characteristics of the adaptation strategies. Descriptions of each theme based on analysis using these three strategies, accompanied by direct quotations from the interview transcripts to illustrate the analytic points, are presented in the Results chapter as the major findings of the study. Following descriptions of each theme, components from different themes were connected with each other to answer the three research questions, and the findings were interpreted in light of the literature, which is presented in the Discussion chapter.

Data saturation. Data saturation is generally defined as a point in a qualitative study when continued data collection or analysis produces no new information or insights

into the phenomenon investigated (Guest et al., 2006; Merriam, 2009). In this study, I sensed that data were saturated when I heard similar responses to the interview questions from many different participants in the process of data collection. Formal data analysis confirmed that data were saturated in the sense that 97% (37 out of 38) of the total number of codes developed for this study were identified within the first ten interviews and applied to the rest of the interviews. Although the remaining 21 interviews produced some new information, most of the information could be seen as representing variations on existing codes, and only one additional code was created to capture a new idea that started to emerge in the twentieth interview. In fact, after the initial master list of codes was developed based on analysis of the first ten interviews, revisions made to the list in later stages of analysis mainly reflected efforts to better capture important meanings that had been expressed in earlier interviews as my understanding about the data deepened, instead of accommodating completely new ideas unique to the later interviews. Similar to what Guest et al. (2006) found, in this study the full range of thematic discovery occurred almost completely within the first ten interviews.

Validity and Reliability

Methodologists have suggested that qualitative researchers provide information to indicate that their studies were conducted with rigor and that audiences can trust the results (Brantlinger, Jimenez, Klingner, Pugach, & Richardson, 2005; Merriam, 2009). However, there have been debates regarding how to ensure and evaluate soundness and rigor of qualitative research (Morse, Barrett, Mayan, Olson, & Spiers, 2002). With the concern that the concepts of validity and reliability are too closely tied to positivist

assumptions from quantitative research, some leading qualitative researchers have suggested adopting new terms or criteria for determining validity and reliability and hence ensuring rigor in qualitative inquiry. For example, Lincoln and Guba (1985) substituted validity and reliability with the concepts of credibility, transferability, dependability, and conformability. Other qualitative researchers, however, have continued to use the terminology of validity and reliability (e.g., Maxwell, 2013; Merriam, 2009; Morse et al., 2002). Morse et al. (2002) argued that the concepts of validity and reliability can be defined broadly and applied to all research “because the goal of finding plausible and credible outcome explanations is central to all research” (p. 14).

Adhering to the position of Maxwell (2013), who identified himself as a critical realist, I chose to use the terms validity and reliability in this study. Internal validity, paralleling the concept of credibility, refers to “the correctness or credibility of a description, conclusion, explanation, interpretation, or other sort of account” (Maxwell, 2013, p. 122). Several strategies were used to enhance internal validity of the findings of the study. The first strategy was member check, also known as respondent validation (Maxwell, 2013; Merriam, 2009). I sent transcriptions and primitive findings to the participants for them to review and to determine whether the findings accurately reflected their perceptions and experiences. All participants responded to the request to review the transcriptions, and they all agreed that the transcriptions were accurate. Thirteen (42%) participants responded to the request to review the findings, and they all agreed that the themes and descriptions reflected their practices and perceptions. The second strategy

was investigator's position (Merriam, 2009). I clarified my bias and assumptions regarding this research at the beginning of the study, which would allow the readers to understand how the interpretation was shaped by my values and expectations. The third strategy was peer review or debriefing (Merriam, 2009). Two Chinese graduate students in special education programs took the role of peers. They looked at some of the raw data, asked questions, and assessed whether the findings were credible based on the data. In addition, adequate engagement in data (e.g., continuing to interview participants and analyze data until saturation was reached) helped to enhance the validity of the findings (Maxwell, 2013; Merriam, 2009).

Reliability or dependability in qualitative research is concerned with "whether the results are consistent with the data collected" (Merriam, 2009, p. 221). Some of the strategies used to enhance internal validity of the findings could also enhance reliability or dependability, such as peer review and investigator's position (Merriam, 2009).

Generalizability or transferability in qualitative research is often discussed in terms of reader or user generalizability, which involves "the extent to which a study's findings apply to other situations up to the people in those situations" (Merriam, 2009, p.226). In this study, I provided detailed descriptions of the settings and participants and presented findings with adequate evidence in the form of participant quotes so that readers would be able to decide whether the findings could be generalized to their situations.

Chapter 4

Results

This study examined special education teachers' perceptions and practices related to individualizing or adapting instruction to meet individual needs of students with IDD in special education schools in Shanghai, China. Semi-structured interviews were conducted with a total of 31 teachers teaching elementary Chinese language arts ($n = 16$) and math ($n = 15$) in six public special education schools for students with IDD.

Analysis of the interview data revealed that the participants across the six schools shared many similarities in their practices and perceptions, and five themes were identified. In general, the participants recognized the wide range of student differences existing in their classrooms and the necessity of adapting instruction to accommodate student differences (Theme 1). However, in reality, practices and beliefs associated with one-size-fits-all approaches of teaching were prevalent (Theme 2). Although the participants described efforts to address individual differences, mainly through a *fenceng instruction* approach, these efforts were inadequate, as indicated by significant limitations in both assessment (Theme 3) and adaptation practices (Theme 4) reported by the participants. These teachers admitted that fully addressing the needs of individual students in their classrooms was difficult, if not impossible, and described the specific challenges and barriers that prevented them from doing so (Theme 5). The remainder of the chapter is a description of these themes.

Recognition of the Necessity of Adapting Instruction

The participants recognized the necessity of providing differential treatment to accommodate students' different needs, using words such as "necessary," "important," and "beneficial" to describe the practices related to individualizing or adapting instruction. This positive view was based on two factors: (a) teachers' perceptions of the benefits of making adaptations to address individual differences and (b) teachers' recognition of the wide variety of student characteristics existing in their classrooms.

Recognition of benefits of adaptations. Although some participants ($n = 8$; 26%) mentioned undesired consequences of providing differential treatment for different students, such as increasing teacher workloads, taking instructional time away from other students, and slowing down the pace of instruction, most of the participants ($n = 26$; 84%) acknowledged the positive effects of instructional adaptation on students, in theory or when it was implemented successfully in their classrooms. The participants believed that adapting instruction to meet individual needs could help students: (a) "learn something" and make progress ($n = 15$; 48%); (b) "have something to do" and be engaged in class activities ($n = 11$; 35%); (c) reduce problem behaviors ($n = 3$; 10%); and (d) increase self-confidence and sense of achievement ($n = 3$; 10%). Among these, the most frequently reported benefit was promoting student learning. A fourth-grade Chinese language arts teacher spoke of this: "Adapting instruction is a good thing. There are individual differences in any classroom, including special education classrooms. If you don't pay attention to the differences, some students will be helped and others will be left behind" (Participant 17). A third-grade math teacher explained how adaptations could

help her students with IDD at various ability levels learn math content:

I think it is necessary to differentiate instruction because every student with special needs has different levels of disability and ability. . . . In schools for students with IDD, it is impossible that one size will fit all. . . . For example, when teaching addition and subtraction within ten, I may require students in the highest ability group to solve the problems independently and allow students in low ability groups to use their fingers or calculators. We need to provide some assistance so that all students can learn the content. (Participant 2)

The second frequently mentioned benefit involved the role that adaptations play in providing students, especially those considered to have “low ability,” with “something to do” and a way to participate in the class, as a fourth-grade math teacher explained,

During practice activities, I differentiated tasks assigned to the students based on their ability levels. In this way most of my students could participate. High ability students were expected to use manipulatives to represent math concepts, and low ability students might listen to me saying the number names. You need to give them something to do. (Participant 3)

Recognition of demands of teaching a heterogeneous population. The participants recognized the variety of student characteristics in their classrooms and how student variance affected their teaching. When asked to describe their students, all of the participants included in their description the strengths and weaknesses of individual or subgroups of students in addition to the whole class, or spoke of varied skill levels among students in specific areas (e.g., variances in cognitive abilities, academic skills, language

comprehension and expression, and/or behavioral and social development). In addition, about half of the participants ($n = 15$; 48%) described the differences among their students as “wide,” using phrases such as “very unique individual characteristics,” “big ability differences,” and “more and more variance” to describe the heterogeneity of the student population.

Confronted with the heterogeneous student population, all participants reported that they or their school adopted a fenceng instruction approach in an attempt to address individual differences. The Chinese word fenceng (分层) literally means dividing something into levels. Some Chinese researchers translated fenceng instruction as teaching at different levels or multi-level teaching, and the practice mostly resembles within-class ability grouping described in the U.S. literature (Ding, 1997; Hu, 1992; Ye & Liu, 2010). The participants of this study demonstrated the use of fenceng instruction by classifying their students into groups by their ability. Most of the participants reported that they divided students into three groups representing different levels and used English letters A, B, and C to label high, medium, and low ability groups, respectively. A few participants divided the class into two or four groups.

It was apparent that the participants recognized between-group differences in their class. For example, a second-grade Chinese language arts teacher described group differences in learning Chinese pinyin: “Group A can read the pinyin letters independently; Group B students need some assistance; and Group C can only repeat after me” (Participant 27). In addition, about one-third of the participants ($n = 11$; 35%) also noted the complexity of individual differences that existed within the “same ability”

groups and a need to respond to such complexity. For example, a fourth-grade math teacher spoke of inter-individual differences within the high ability group: “I wish I could adapt instructional content and goals for each individual student because, for example, although they’re all in Group A, each of the Group A students has different ability levels” (Participant 22). Others highlighted the intra-individual differences resulting from students’ growth or uneven development across skill areas, and indicated that grouping of students should not be fixed but adjusted over time or according to the specific skills targeted for instruction. A sixth-grade Chinese language arts teacher stated,

There are no clear lines between the groups except between Group D and the other three groups. This is because Chinese language arts includes skills in listening, speaking, reading, and writing, and a student may be good at listening and speaking but can’t read or write well, and another student may be good at reading but not writing. So I have to adjust the grouping according to the skills targeted in a lesson. A Group A student in reading may be put in Group B when I teach writing. (Participant 25)

A first-grade Chinese language arts teacher concurred with this point:

Our students are so different. I roughly assigned them into ability groups, but this can’t capture student differences precisely. For example, a student may understand language very well but can’t speak. So after developing goals for different groups I still need to consider each student’s characteristics. A student in Group A may be put in Group B when I teach handwriting because he doesn’t have good handwriting skills. (Participant 1)

Predominance of Practices and Beliefs Related to Standardized Teaching

While the participants perceived adapting instruction to be beneficial and acknowledged that the wide range of student differences in their classrooms necessitated adaptations, the data revealed that practices and beliefs associated with standardized approaches of teaching remained dominant. The participants described planning instruction primarily at the whole class level and using textbooks and curriculum standards to guide their selection of instructional content. They also reported delivering instruction to the whole class using instructional strategies that were considered to be appropriate for all students.

Predetermined instructional content. When asked about their instructional planning processes, the participants mainly talked about semester planning that focused on what to teach and not their instructional approaches. All of the participants described such planning at a whole class level, with a predetermined set of skills and knowledge chosen for all students based on three sources of information: textbooks, curriculum standards, and/or student characteristics.

A compilation of teaching materials for a specific subject, 教材, often translated as textbooks, were reported to play a central role in many participants' planning processes. In China, there are a variety of textbook series developed at the national, provincial, or school levels for teaching required subjects (e.g., Chinese language arts, math, and life skills) in special education schools for students with IDD specifically, and these textbooks may be accompanied by supplemental teaching materials such as teacher reference books suggesting how to teach specific topics or skills (Tang & He, 2016).

About three quarters of the participants ($n = 22$; 71%) indicated that the instructional content was guided by one or more textbook series. Some participants ($n = 19$; 61%) mentioned the specific textbooks they used. The most frequently reported series, mentioned by 10 of the 19 participants, was the *Functional Chinese Language Arts* and *Functional Math* series developed by the Shanghai Luwan Special School (2005a, 2005b). The second most frequently reported one, mentioned by 8 of the 19 participants, was the *Textbook for Full-Day Peizhi Schools* series developed at the national level (Peizhi Schools Textbook Development Committee, 1992a, 1992b).² Six participants reported using textbooks created by teachers in their own schools.

In addition, over half of the participants ($n = 17$; 55%) reported that they referred to the *Shanghai Curriculum Guides* for schools for students with IDD in Chinese language arts and in math (hereafter referred to as Curriculum Guides; Office of Elementary and Middle School Curriculum Reform Committee of Shanghai, 2009a, 2009b) when making decisions about what to teach. The Curriculum Guides outlined what students in schools for students IDD are expected to learn in each grade span in different subjects.

Consideration of students' characteristics and needs in determining and adjusting instructional content was mentioned by all of the participants. However, in most instances, they referred to the students as a whole, without specific mentions of consideration of student differences or individual needs, indicating that teachers planned and adjusted instruction according to the general characteristics of the whole group of students and not

² Peizhi (培智) literally means cultivating intelligence. Peizhi schools refer to schools for students with IDD.

the individuals within the group. Only about half of the participants reported developing differentiated instructional goals for subgroups or individual students after the content and goals for the whole class were determined.

The specific roles that the textbooks, the Curriculum Guides, and information about student characteristics played in determining what to teach seemed to differ depending the subjects that the participants taught. Chinese language arts teachers often talked about starting with textbooks and selecting and adapting contents from the textbooks (e.g., adjusting the sequence, deleting content, and adding content from other curriculum materials) based on the characteristics and needs of the class. A first-grade Chinese language arts teacher stated,

Teachers in our school developed our own textbooks. There are Volume 1, Volume 2, Volume 3 . . . one volume for each semester. You just follow the sequence of the textbooks. . . . At the end of the semester, I also analyze how well the students have learned the content, and determine if the textbook content is appropriate and then plan for the next semester. (Participant 9)

Similarly, a fourth-grade Chinese language arts teacher highlighted how she chose content from the textbooks and other sources to meet the needs of the class as a whole:

Our school adopts Luwan Special School's Functional Chinese Language Arts series. We use these materials for instructional planning. I also consider students' characteristics. For example, we're now learning Volume 8, and I choose texts that match my students' reading level from the textbook. If the class learns quickly and finishes content in the book before the semester ends, I will look for

and add something appropriate for my students from other sources. (Participant 21)

Compared to Chinese language arts teachers, math teachers tended to put more emphasis on the role of the Curriculum Guide. While only 33% of the Chinese language arts teachers reported referring to the Curriculum Guide when planning what to teach, 75% of the math teachers reported doing so. Some math teachers described using the math Curriculum Guide to guide the selection and adaption of content from the textbooks, as a fourth-grade math teacher stated, “I adapt the content from the textbooks in order to cover all the four areas of math skills required by the Curriculum Guide” (Participant 30). Other math teachers emphasized adapting curriculum standards based on student characteristics, as a first-grade math teacher stated,

I determine what to teach based on the Curriculum Guide. I adapt the standards and goals from the Curriculum Guide based on the ability of the class. . . . I also make adjustments to the planned goals according to students’ responses and mastery level after teaching. (Participant 6)

Whole class instruction and “universal” teaching strategies. The participants were asked to describe their instructional practices and a sample lesson. Analyses of the responses to these interview questions revealed teacher delivery of “standard” lessons, including whole class instruction as the primary grouping format and use of “universal” instructional procedures targeted at students in general. In fact, when speaking of their instructional practices without being specifically asked about adaptation practices, about one-third of the participants only described instructional procedures for the class as a whole, without references to differential treatment for individual or subgroups of students.

A third-grade Chinese language arts lesson described by Participant 7 serves as an example. The topic of the lesson was to identify the logo for a Chinese postal service, the China Post, and one of the Chinese characters that make up the Chinese word for the postal service. The lesson was described as consisting of the following steps or activities:

1. Teacher showed the logo to the class and asked students if they saw the logo before, and students answered.
2. Teacher modeled saying the word and naming the logo, and students repeated in chorus twice and then took turns naming the logo.
3. Teacher asked students to recall where they saw the logo in their daily life and showed them pictures of places where they could find the logo and the word (e.g., China Post truck and Postal Savings Bank).
4. Teacher started to teach the character by asking high ability group students to spell the sound of the character in pinyin; other students repeated.
5. Teacher asked students to say the names of the strokes in the character following animated stroke order shown on the screen.
6. Teacher explained and modeled how to write the character in correct stroke order on the blackboard.
7. Teacher taught students how to use the character by asking students to make words using the character; she gave examples and explained meanings of words when students had difficulty.
8. Students in the medium and high ability groups engaged in seatwork of typing the character on their iPads while students in the low ability group worked with

a teaching assistant to trace and read the character on a flash card.

9. Students in the medium and high ability groups practiced writing the character as seatwork while students in the low ability group worked with a teaching assistant to trace and read the character on a flash card.

Lessons described by other participants differed from this one in many ways (e.g., topics, instructional techniques, and activities), but what they had in common was that most activities were described as teacher-led whole class instruction using instructional strategies targeted at students in general and adaptations were mentioned only in a few activities (e.g., Steps 4, 8, and 9 in the lesson example presented above).

Generally, the participants indicated that there were two basic components in their lessons: (a) teacher presentation of new instructional content (Steps 1–7 in the example) and (b) student practice or seatwork (Steps 8 and 9 in the example). In sessions of teacher presentations, or what some participants called content delivery, teachers typically conveyed standardized instructional content to the whole class through lecture type presentations and demonstrations. Most participants reported using a variety of modes to present information, including one or more of the following modes: explanations, demonstrations, modeling, and visual supports (e.g., concrete materials, photos and pictures, animations, interactive white-boards, PowerPoint slides, gestures, and actions). They also reported employing various strategies to promote students' understanding of information presented, such as providing contexts and activating background knowledge (e.g., creating contextual or story math problems). However, all these strategies were reported to be used more as general or routine adaptations provided for all students in the

class; the participants rarely reported changing methods or materials to convey information for individual or subgroups of students. The participants reported that they did provide opportunities for students to make active responses during presentations. When individual or subgroups of students were called on to answer questions, some adaptations were provided (e.g., low ability group students answering easier questions).

The second component of a lesson described by many of the participants was student practice or seatwork. A few participants also reported that they provided opportunities for students to engage in hands-on activities and games (e.g., exploring a math concept using manipulatives). When it came to these practice and hands-on activities, most of the participants (n =23; 74%) indicated use of grouping formats other than the whole class arrangement. Students were reported to work on tasks in one or more of the following formats:

- individually (students working independently or with one-on-one support or instruction from an adult);
- as pairs (e.g., a higher ability student working with a lower ability student);
- in small groups with students at different ability levels (e.g., three students from high, medium, and low ability groups respectively working together to complete a task); or
- in small groups with students of similar ability levels (e.g., high and medium ability students working independently with the teacher moving around to monitor their practice, while all low ability students receiving instruction or supports from a teaching assistant).

Practice and hands-on activities was another occasion in which adaptations such as differentiated tasks might be provided. However, all the participants reported that whole class instruction remained the primary grouping format they used.

In sum, analyses of lessons and instructional activities described by the participants revealed that the participants seemed to spend most of their instructional time on undifferentiated whole class instruction, in which the same instructional content was delivered to all students at the same pace using instructional strategies that were considered to be universally effective. Opportunities to address students' different needs were mainly provided when students were called on to answer questions during teacher presentation sessions and when students were engaged in practice and hands-on activities.

Whole class teaching beliefs. The participants seemed to hold the general beliefs that the structure of whole class instruction should be maintained. Many of them seemed to hold a firm belief that their priority responsibility was to deliver the planned content in a specific period of time, maintain the integrity of whole class instruction, and meet the needs of "the majority of students," with many of them using "certainly" in stating these priority responsibilities (e.g., "I certainly need to take care of the needs of the majority of students"). In addition, the participants' perceptions of whole class instruction as the norm and addressing the needs of the majority of students as the priority, together with their low expectations of students in low ability groups, appeared to play a role in shaping their instructional decisions. These beliefs seemed to contribute to teachers spending most of their instructional time on undifferentiated whole class instruction and limited opportunities to address some students' unique needs, especially those in low ability

groups. The following quote from a third-grade math teacher illustrate this plausible relationship:

Because there're only 35–40 minutes in a lesson period and I have to deliver the new content and guide Group A and B students' practice and Group C students have a low level of abilities, you certainly cannot spend too much time on Group C. (Participant 2)

Similarly, a third-grade Chinese language arts teacher stated,

If I have time, I certainly need to spend the time focusing on the whole class. Then I don't have much time left to pay one-on-one attention to that Group D student, who has cerebral palsy and are really severe. (Participant 7)

A participant teaching first- and second-grade math explained,

Because you have a lesson to deliver [to the whole class], you cannot [fully address individual needs]. For example, when the class is learning one plus seven equals eight, you can't teach the concepts of tall and short to a low ability student who is at the level of learning tall and short. It's difficult to embed such a different skill into the instruction. (Participant 19)

Conflicting perceptions. The first and second themes represent two sets of perceptions held by the participants that were in conflict with each other. One was their recognition of the demands of teaching a heterogeneous population and the benefits of adapting instruction to address individual differences; the other was their perception that the structure of standardized approaches of teaching should be maintained. Seemingly driven by these conflicting views, the participants took measures to respond to individual

differences without changing the whole class teaching structure. Such “adaptation in the context of uniformity” approach was reflected in how the participants identified individual differences and how they adapted instruction, which are discussed in the next two sections.

Imprecision in Identifying Individual Differences

In spite of their recognition of broad student differences, the participants were imprecise in identifying how their students specifically differed from each other. Analyses of their descriptions of student characteristics as well as how they got to know students revealed that most participants had a narrow understanding of what constitutes instructionally relevant individual differences and used limited methods to determine individual needs. When talking about student characteristics upon which their instructional decisions were based, the participants mainly focused on how well students could work within the predetermined curricular and instructional approaches. They pointed to students’ abilities to master the standard academic content, participate in whole class instruction, and stay on task in independent practice. Basic skills such as cognitive and communication abilities were also emphasized.

Over three quarters of the participants ($n = 24$; 77%) reported the methods they used to get to know their students. Most of these participants (18 out of 24) spoke in broad terms about relying on informal observations of students’ responses and behaviors as well as their own judgments. For example, a third-grade Chinese language arts teacher stated, “My assessment tool includes reviews [of what was previously taught] at the beginning of the lessons and observations of students’ responses during the instruction. If

they like your instruction, you can see it. . . . they follow your pace” (Participant 7). A second-grade Chinese language arts teacher, when asked about how she classified her students into ability groups, explained, “I know who has higher ability and who has lower ability . . . based on their responses to my instruction” (Participant 4). Some participants (11 out of 24) mentioned other methods of assessment, including teacher-made informal tests before and after instruction (e.g., asking students to read a passage to see which words they could or could not read); talking to parents and other teachers; and using developmental tests. A few participants also talked about assessments conducted by special education experts (e.g., university professors) and medical professionals before the students entered the school; however, they commented on the limited usefulness of those assessments.

In sum, data revealed the participants’ narrow focus and limited methods of assessment. This indicated that these teachers might lack critical understanding about their students’ individual needs and knowledge of how to get that information through assessment, which is the basis of effective individualization.

Inadequacy of Adaptation Strategies

All of the participants reported making some efforts to adapt their instruction to address student differences. However, these adaptations were mainly made at the group level (i.e., for students in different ability groups or students with similar ability within the same ability group), instead of for each individual student. For example, about half of the participants reported that when determining instructional content and developing lesson objectives, they primarily focused on the medium ability group. Using the

objectives for the medium ability group as a baseline, they increased expectations for students in high ability group and reduced expectations for those in low ability groups. Another approach involved teacher developing learning objectives at various difficulty levels on a lesson topic in the first place and then assigning these objectives to students based on their ability levels. Almost a quarter of the participants ($n = 7$; 23%) mentioned that their school required teachers to develop individualized learning goals and IEPs for each student (beyond adapting instruction for ability groups). However, when these same participants started to describe specific examples of adaptations, they actually talked about what was provided for subgroups, instead of individual students.

The participants described five types of adaptation strategies for subgroups or individual students (see Table 3). All of them reported changes in (a) learning objectives and tasks and (b) types and levels of instructor supports (i.e., teachers, peers, and teaching assistants). By contrast, changes in classroom environments and in ways (methods or materials) to present instructional information were less frequently or rarely reported. Slightly less than half of the participants also described additional instruction provided outside of class time as a strategy to address students' unique needs, which included teacher tutoring during lunch breaks and recesses, one-on-one interventions provided by specialists, and parent involvement in homework or teaching at home. Three patterns were evident regarding the types of adaptations reported to be provided by the participants for subgroups or individual students: reliance on modifications of learning objectives and tasks, dependence on different types and levels of instructor supports, and underutilization of environmental and presentation accommodations.

Table 3

Adaptation Strategy Codes

Code	n (%)	Examples
Modified objectives or tasks	31 (100)	<ul style="list-style-type: none"> • No response, passive responses, or access skills • Different academic skills or topics • Same skill, different difficulty levels or amount of work • Material support for response • Different ways to demonstrate learning
Different types/levels of instructor supports	31 (100)	
Teacher	27 (87)	<ul style="list-style-type: none"> • Providing more prompts, more attention or opportunities to respond during teacher presentations, and supervision or additional/alternative instruction during practice
Peer	23 (74)	<ul style="list-style-type: none"> • Helping with assignments, modeling, and tutoring
Teaching assistant	23 (74)	<ul style="list-style-type: none"> • Assisting in personal care, behavioral management, and instruction
More instruction outside of class	14 (45)	
At school	10 (32)	<ul style="list-style-type: none"> • Teacher tutoring during recess and one-on-one interventions by specialists
At home	7 (23)	<ul style="list-style-type: none"> • Parents supporting homework and teaching at home
Adapted learning environment	10 (32)	<ul style="list-style-type: none"> • Seating arrangement: specific student sitting close to the teacher or Group C sitting with Group A students
Changed methods of presentation	5 (16)	<ul style="list-style-type: none"> • Audio-recording of reading passages • Enlarged materials • Concrete materials to represent math concepts

Reliance on modifications of learning objectives and tasks. All of the participants reported making changes to what students were expected to learn or to do, emphasizing differentiation of learning objectives, task requirements, and assignments as their response to student variances. They provided a variety of examples of this category of adaptations, including

- (a) expecting students to learn different skills or topics (e.g., writing versus tracing Chinese characters and reading characters versus naming pictures and objects);
- (b) expecting students to learn the same skills but changing the difficulty level or amount of skills or tasks (e.g., reading a whole passage versus reading an easy part of the passage and writing difficult versus easy Chinese characters);
- (c) adding or changing materials to scaffold learning or providing material supports to assist completion of tasks (e.g., providing pictures as a clue for naming words or understanding texts and providing step cues); and
- (d) providing supports to facilitate use of standard methods of expression or allowing alternative response modes to demonstrate learning (e.g., pointing instead of providing oral responses and selecting the correct word or picture instead of writing the word to complete a cloze passage).

A comparison of the learning objectives of students in high and medium ability groups with those for students in low ability groups revealed that students in the high and medium ability groups were often expected to learn the same skill at different levels of complexity or with different levels of assistance or to learn different skills within the

same topic. By contrast, adaptations for low ability group students tended to involve more significant changes in learning expectations. For example, the participants reported that in math lessons addressing addition and subtraction, students in high ability groups were often expected to learn to solve word problems independently or use different methods to solve equations. Students in medium groups were expected to solve the same equations with material support (e.g., using manipulatives and calculators) or teacher support or solve the equations in the easiest way. By contrast, students in low ability groups were expected to learn to recognize numbers or count items.

A closer look at the participants' descriptions of learning objectives and tasks for students in low ability groups revealed their low expectations for this group of students. For example, a first-grade Chinese language arts teacher described how she gradually lowered expectations:

I show the flashcard paired with a picture to a given student. I have the student orally read the letter. If he can't, I'll have the student point at the picture. For those who don't pay attention and have limited speech. . . , I'll put the picture in front of the student and ask [what's it] and answer myself. There's at least a stimulus provided. (Participant 1)

Two characteristics regarding the expectations that the participants had for students with more severe disabilities were evident in the data. First, what was expected for students in low ability groups seemed to involve academic skills that were significantly limited in scope and depth and also lacked variations across grade levels. For example, Chinese language arts teachers from all grade levels consistently and

repeatedly reported identifying and naming pinyin letters, characters, and pictures as what was expected of students in low ability groups. These students were not required to acquire higher-level skills such as spelling and writing words and reading comprehension of written text, while other students in the same class were expected to learn these skills. Similarly, in math lessons, learning targets for students in low ability groups were often limited to counting and identifying numerals, regardless of their grade levels, while higher ability students were targeted for instruction on time, money and/or computation skills.

Second, for students with the most severe disabilities who had difficulty learning or demonstrating the basic academic skills, many participants reported adaptations that did not involve skills targeted for teaching or learning but focused on having students “participate” or experience the lessons. Some of them described having students exposed to or interact with learning materials by looking at, listening to, touching, and holding the materials shown or given by the teacher without targeting any active learning goals. For example, an adaptation provided for students who had difficulty learning to write Chinese characters was described as these students “getting a sense” of the structure of Chinese characters by touching and tracing the characters printed on sandpaper using their fingers (Participant 9). An adaptation provided for a student who had difficulty reading and pointing to Chinese characters was described as the teacher showing a flashcard to the student but expecting no response from the student, with a hope that the student will “finally get the skills one day given the continued stimulus” (Participant 7).

The rationale that the participants mentioned for choosing specific objective or

task adaptations for students in low ability groups often included deficit-based statements, and the decision-making process reflected a “watering down” approach to determining curriculum. The participants frequently mentioned that students in low ability groups cannot or lack ability to complete certain tasks and therefore they provided alternative or simplified tasks that matched students’ ability level so that they could participate. For example, a sixth-grade math teacher explained why Group C students in her class worked on identifying numbers while other students learning computation skills:

Group C students can’t add or subtract. What they can do is to imitate what I say. So when teaching eleven plus four equals fifteen, for example, I’ll have Group C students identify, read, and point at the number fifteen. They show some interest and they participate. (Participant 10)

Similarly, a first-grade math teacher stated, “Some tasks require high cognitive abilities and are beyond the capacities of low ability students. So I have to look for something that they can do and also related to what I am teaching and incorporate it into instruction” (Participant 6). Many participants further indicated that in their class the opportunities to provide alternative or simplified tasks for students in low ability groups were limited. They were provided only (a) by the teacher or the teaching assistant when other students engaged in independent practice or (b) when the whole class activity was one into which a task the student could do could be inserted.

Not all the participants were satisfied with this approach to adapting learning objectives for students in low ability groups. Several participants commented that with the adaptations they provided, such as having students passively point to or imitate

naming Chinese characters, pictures, and numbers, students might not be engaged in active learning or understand the meaning of learning materials.

Dependence on different types or levels of instructor supports. The participants reported three types of additional supports provided for subgroups or individual students. The most frequently reported one was additional teacher support, followed by peer support and teaching assistant support.

Additional teacher support. Most of the participants ($n = 27$; 87%) reported providing extra support for students in low and/or medium ability groups during class time. The extra support was provided in a variety of forms, including (a) prompting students who had difficulty responding to questions or completing tasks by modeling the answer and asking student to imitate the responses; (b) providing more supervision or additional instruction during practice sessions for students who had difficulty staying on task or had not mastered the skills targeted for learning (e.g., watching students complete their assignments and providing prompts during practice); and (c) providing instruction for students who had alternative skills or topics as learning objectives while other students were engaged in independent practice.

Peer support. Almost three quarters of the participants ($n = 23$; 74%) reported higher ability students providing assistance to lower ability students. Examples included assigning students of different ability levels to work together in pairs or in small groups so higher ability students help lower ability students complete assigned tasks such as oral reading and counting or check their answers. Another approach involved asking higher ability students to model answering a question then asking lower ability students to

answer the same question or repeat the answer. The participants also mentioned asking students who had mastered some skills to teach other students.

The participants described both advantages and disadvantages of peer support for lower ability students. Six participants who did not have teaching assistants in their classrooms emphasized that peer support freed them to aid more students. Too, it allowed students in low ability groups to participate in the instruction and to learn to pay attention to peers and created a positive classroom atmosphere. Two participants described benefits for higher ability students as this model enabled those students to practice skills learned. A few participants discussed the limitations of the use of peers to augment teacher instruction as the higher ability peers, also students with disabilities, lacked sufficient skills to teach their lower ability peers.

Teaching assistant support. The third type of instructor support identified was teaching assistant support, which is defined as supports provided for students by any adults other than the teacher. About three quarters of the participants ($n = 23$; 74%) reported having at least one teaching assistant assigned to their classrooms, including those paid by schools, those hired by parents, or parents, themselves, working as volunteers. While teaching assistants hired by the schools were often assigned to work with a small group of students, those hired by parents or parent volunteers typically worked as a one-on-one aide with a specific child.

Some participants described the specific supports that teaching assistants provided, including aiding the students with personal care, monitoring and managing students' behaviors, and/or providing instruction-related supports. According to some participants'

reports, an important role that teaching assistants played was to help students participate in teacher-directed whole class instruction. Examples included teaching assistants helping students stay in their seat and keep quiet during teacher presentations or modeling correct answers when teachers asked questions. A few participants also described teaching assistants providing additional or alternative instruction for students in low ability groups when teachers delivering instruction to the class. For example, one participant described a situation in which she was teaching a Chinese character to the whole class while the teaching assistant was providing additional instruction for students in the low ability group by modeling the pronunciation of the character “in a low voice” and asking the students to imitate it. In addition, teaching assistants were also reported to assist or teach students in low ability groups during seatwork activities such as handwriting practice sessions. Overall, the participants perceived teaching assistants in their classrooms as a great help.

Underutilization of environmental and presentation accommodations.

Environmental accommodations and presentation accommodations are changes made to classroom environments and methods used to present instructional information, respectively, that do not significantly change instructional content or performance expectations (Janney & Snell, 2011). In this study, there were limited reports of these two types of adaptations made for individual or subgroups of students. Fewer than one-third of the participants reported changing classroom environments to accommodate individual needs, and the most frequently described environmental accommodations were changes in seating arrangements, such as having a specific student sit closer to the teacher. Only

five participants reported adapting methods or materials used to present information. Examples included providing enlarged materials for students who had visual problems, providing audio recordings of reading materials for students who had difficulty understanding written materials, and using concrete materials when explaining math concepts to students who had difficulty understanding abstract concepts.

In sum, while the participants all reported making some adaptations in response to variances in student abilities, the adaptations were provided mainly at a group level and focused on changing (a) learning objectives, tasks, and expectations and (b) types and levels of instructor supports. These adaptation strategies seemed to be limited in range, types, and effectiveness.

Perceived Challenges in Addressing Individual Differences

Despite their recognition of the necessity of adapting instruction and intention and efforts to engage every student, the participants indicated that their current adaptation practices were inadequate and it was difficult to fully address the individual needs of their students. Many participants used such expressions as “It is important/good . . . but difficult” as they began to describe how they thought about individualized instruction.

For example, a sixth-grade math teacher stated,

Individualizing instruction is a good practice, but . . . it’s really difficult to achieve. We know it’s important, but currently we still focus on the whole class. “Taking care of every student” is an ideal concept. Teachers have tried to achieve it . . . , but what we’ve done is far from being satisfying. (Participant 23)

Similarly, a third-grade Chinese language arts teacher stated, “These [adaptation]

strategies are definitely necessary . . . , but as a teacher, I feel that I can only differentiate instruction in a rough way and meet the needs of some students. Precisely designed, individualized support is lacking” (Participant 31). The participants reported challenges in four broad areas related to adapting instruction: (a) creating sufficient adaptation opportunities in class for every student, (b) getting to know and teaching standardized academic content to students with severe disabilities, (c) collaborating with other stakeholders, and (d) planning adaptations. Types of challenges and their reported frequencies are shown in Table 4.

Table 4

Teacher Perception of Challenges and Barriers Codes

Subthemes	Codes	n (%)
Difficulty creating sufficient adaptation opportunities	Limited time/opportunities for adaptation	25 (81)
	Students’ complex and competing needs	20 (65)
	High student–adult ratio	17 (55)
	Whole class teaching arrangement	8 (26)
Difficulty getting to know and teaching students with severe disabilities	Difficulty teaching academic content to students with severe disabilities	16 (52)
	Students too disabled to learn	15 (48)
	Teacher lack of knowledge and skills	7 (23)
	Requirement of curriculum standards	7 (23)
Difficulty collaborating with other stakeholders	Difficulty getting to know students	6 (19)
	Lack of collaboration and support	12 (39)
	Lack of support from parents	11 (35)
Difficulty planning adaptations	Lack of support from experts/specialists	3 (10)
	Lack of time and resources for planning	10 (32)
	Heavy workload/no time for planning	7 (23)
	Lack of curriculum/teaching materials	6 (19)

Difficulty creating sufficient adaptation opportunities. Most of the participants ($n = 25$; 81%) reported that it was difficult for them to address every student's needs during class time. The participants indicated that they taught a large class of students who had very different (even conflicting) and often complex needs. With only one teacher and not enough teaching assistants, they did not have sufficient energy, time, or opportunities to effectively deal with the full range of student needs during a 35–40 minutes lesson period. Some students' unique learning needs, they reported, were therefore overlooked, especially the needs of those in low ability groups. In essence, this challenge represented logistic issues related to addressing individual differences in these teachers' classes and reflected a perceived mismatch between the range and nature of student needs and school resources and structure (i.e., high student–adult ratios and whole class arrangements).

Many participants ($n = 20$; 65%) associated this challenge with the range and nature of student needs (e.g., challenging behaviors and low abilities) in their classes. These needs put great demands on and competed for teachers' attention and instructional time. A fifth-grade math teacher stated,

The difficulty for teachers is that, our students have low ability and many problems. I can hardly take care of students in Group A because, although they are in Group A, they still need my support and a lot of time to learn. Then I don't have much time and energy to take care of Group B and C. (Participant 15)

Students' challenging behaviors (e.g., tantrum, running away, self-injury, avoidance of work, and off-task behaviors) were considered to be particularly problematic and reported as a barrier to adapting instruction by over half of the

participants ($n = 16$; 52%). These teachers emphasized that challenging behaviors interrupted the teaching and learning process; they had to spend time managing these behaviors, resulting in less time for instruction and adaptation.

More than half of the participants also emphasized school contextual factors, particularly large class sizes and/or insufficient personnel helping out in the classrooms as factors that prevented them from paying enough attention to each and every student's needs. For example, a first-grade Chinese language arts teacher emphasized the challenge associated with teaching a large group of students with different needs: "There're too many students in my class. . . . They also have many different types of disabilities. I'm not able to attend to all students at once or give individual attention to a particular student for a long time during instruction" (Participant 1). A fifth-grade math teacher highlighted the role of teaching assistant support:

When there are Groups A, B, and C or even more ability levels in a class, how can you distribute the 35 minutes to as many students as possible? It requires teaching assistants helping out. We don't have such support. . . . As a result, some students' needs are unintentionally overlooked. (Participant 29)

Almost half of the participants ($n = 15$; 48%) further indicated that assignment of (more) teaching assistants had helped or would help them better address students' individual needs. One-third of the participants ($n = 11$; 35%) pointed to smaller class sizes as a possible facilitator.

Difficulty getting to know and teaching standardized curriculum to students with severe disabilities. The second challenge was difficulty in assessing and teaching

students with severe disabilities. This challenge seemed to reflect a mismatch between the nature of students' needs and teachers' extant knowledge and skills, further complicated by requirements to teach standardized academic content to this student population.

First, a small number of participants ($n = 6$; 19%) reported difficulty in accurately predicting or knowing their students' performance as barriers to effectively addressing individual needs. A sixth-grade Chinese language arts teacher described the discrepancy between teachers' subjective judgment of what students could do and students' actual ability:

The other barrier is . . . there are many unexpected situations happening during instruction. Teacher predictions of students' performance may be different from their actual performance. This could be because you don't know your students very well, but I think . . . it is more likely because the students are unpredictable.

(Participant 25)

A fourth-grade Chinese language arts teacher echoed this, saying,

Sometimes I find I don't know my students very well. My previous observations may make me think, this student can do this. But actually when I'm delivering instruction, I find the student can't do what I have anticipated. . . . Although observation of students is an important part of differentiating instruction, there're problems that can't be revealed through observation. . . . Even after I working with a student for a long time, it's still likely that I don't completely know his weaknesses and strengths. (Participant 21)

Furthermore, over half of the participants ($n = 16$; 52%) described difficulty or struggle they experienced when trying to have students in lower ability groups master targeted academic skills and participate in related instructional activities. These participants indicated that despite the efforts that they had made, students in lower ability groups were still not able to learn what was taught or participate in instructional activities due to their limited learning ability, resulting in teacher frustration and confusion about what and how to teach this group of students. A fourth-grade math teacher described this challenge:

To be honest, math teachers in special education schools are stressed and sometimes get mad. Students don't understand [what is taught] . . . because math requires logic thinking. I feel I've tried very hard, but the adaptations I made only help Group B and C students participate. As we're getting students with more and more severe disabilities, I can't guarantee they're actually learning . . . because they are really severe, really severe. (Participant 3)

Another math teacher teaching sixth graders described her confusion:

What I'm confused about adapting instruction is how to get Group C students to participate and learn something. Some of them can't even recognize numbers when they get to the ninth grade. . . . These students are not interested in anything . . . and they don't have interest in the activities I designed. Then what can I do? I'm really confused. . . . Group B students can use calculators with the teaching assistant's support. Some other students can at least imitate what I say and be cooperative. For those who know nothing, even with a teaching assistant,

we don't know what else we can do. (Participant 10)

A second-grade Chinese language arts teacher emphasized that she did not know what adaptations she could make for students in low ability groups. She explained,

It would be easier if there were only one or two Group C students in the class, but when there are four or five, it's really, really challenging. . . . I can adapt instruction in some activities . . . for examples, activities that require students to speak. What strategies can I use to teach them to say a word if the students have limited speech? I can think about adaptations for Group A students easily . . . , but it's hard to come up with strategies for Group C. (Participant 27)

Experiencing these difficulties, some participants wondered what the learning goals for students with the most severe disabilities should be. Some of them questioned the appropriateness or necessity of teaching academic skills. A fourth-grade Chinese language arts teacher wondered, "Do they need to learn these skills? . . . They really have difficulty learning to read and write" (Participant 14). Suggestions were made to teach life skills or prerequisite skills as a priority, as a fourth-grade math teacher stated,

The difficulty is that we're getting students with lower and lower abilities. Only a few students can keep up with my instruction. . . . I wonder if it would be more helpful for these students to spend more time learning skills that match their mental age, like motor or life skills and wait to learn math until they have the required skills. Now these low ability students just lose their motivation to learn and waste their time in the class. (Participant 30)

Almost a quarter of the participants also indicated that they were challenged by

the requirement to follow the Curriculum Guides and to cover the content in the textbooks, which limited the flexibility to provide alternative learning options. A sixth-grade math teacher stated,

We're getting students with more and more severe disabilities. I feel it's hard for them to learn [math]. . . . Although some of the skills included in the Curriculum Guide, marked with a star, are required for higher ability students only, basically you need to follow the Curriculum Guide when you determine what to teach. . . . But every student is different. Does everyone have to [learn the same thing]?

(Participant 23)

Another math teacher teaching third and fourth graders spoke of the standardized tests that were related to the Curriculum Guides:

There'll be a test administered to all ninth graders [in schools for students with IDD in Shanghai] before they graduate, which will test the content in the Curriculum Guides. So I have to try to cover the content before the test. I can't adjust the pace too much to fit students' ability. (Participant 8)

While over half of the participants described their struggle related to teaching students with severe disabilities, only a small number of the participants ($n = 7$; 23%) mentioned that they lacked or needed to improve their knowledge and skills in teaching or making adaptations for students with IDD. It seemed that the participants tended to attribute the difficulty in teaching their students to the severity of students' disabilities, instead of their own lack of knowledge, skills, and training.

Difficulty collaborating with other stakeholders. More than one-third of the

participants ($n = 12$; 39%) described issues related to collaboration and communication with other stakeholders as a barrier to effective instruction and adaptation. Some ($n = 11$; 35%) emphasized that parents should play an important role in their child's education (e.g., helping students practice what was taught at school) and expressed a concern about some parents' low expectations of their child and lack of involvement resulting in low student outcomes. The following statement from a third-grade Chinese language arts teacher was typical:

Sometimes I have problems communicating with parents. Some parents feel that there's no need to spend too much time teaching their child. They give up on their child. . . . I try to individualize instruction, but students only spend a few hours at school each day. Their outcomes depend on whether the parents continue to teach them at home. (Participant 31)

Three participants (10%) also mentioned a lack of support from special education experts or specialists, such as special education supervisors, medical professionals, and speech therapists as a barrier.

Difficulty planning adaptations. The fourth challenge, reported by about one-third of the participants ($n = 10$; 32%), was limited time and resources for instructional and adaptation planning. These participants indicated that they had too much to do and too little time to do it, and their other responsibilities distracted them from preparing instruction and adaptations. A fourth-grade math teacher described this challenge:

Experts have a good intention when they advocate individualizing instruction, but they fail to consider the difficulty we teachers have. It requires a lot of work to

create different learning materials for different students. . . . I teach other subjects. I'm also in charge of a class as a homeroom teacher. I also have to do teacher research. Teachers have been under a lot of pressure. Having instruction individualized is our best wish . . . and we've tried our best. (Participant 3)

In addition, these participants indicated that limited curriculum and teaching resources that matched the Curriculum Guides added to their burden. For example, a first-grade math teacher described her stress:

In regular schools, they have textbooks and teacher reference books that match the curriculum standards and materials for student practice ready for use. We have nothing. I have to look for resources by myself. This is stressful. . . . I have to look for curriculum materials, design practice activities, make teaching tools. . . . I also teach other subjects. I feel I'm stressed. . . I do everything. . . . According to the Curriculum Guide, we need to teach four areas of math skills. So I have to look for curriculum materials when the skills required are not included in the textbooks. (Participant 6)

Chinese language arts teachers described similar experiences:

We want every student to achieve the best outcomes, but we don't have that much time. . . . We don't have enough teaching resources either . . . because students we're teaching now are different from those in the past. I have to make many changes to the old teaching materials. (Participant 25)

Some participants therefore wished that they could have reduced workloads, more time, and more resources for instruction and adaptation planning. One participant

(Participant 18) suggested that teacher reference books should be developed to include differentiated goals and assignments for teachers to use when teaching specific topics.

Chapter 5

Discussion

This study investigated perceptions and practices regarding individualizing or adapting instruction among teachers teaching elementary Chinese language arts and math in public special education schools for students with IDD in Shanghai. Semi-structured interviews were conducted with 31 teachers from six schools, including 15 Chinese language arts teachers and 16 math teachers.

Analysis of the interview data revealed that the participants across the six schools shared many similarities in their practices and perceptions, and five themes were identified. In general, the participants recognized the wide range of student differences existing in their classrooms and the necessity of adapting instruction to accommodate student differences. However, in reality, traditional practices and beliefs associated with one-size-fits-all approaches of teaching still dominate. Although all participants reported making efforts to address individual needs, these efforts were inadequate, as indicated by limitations in assessment practices and adaptation practices. The participants admitted that providing adaptations to fully address student differences in their classrooms was difficult and described the specific challenges and barriers that prevented them from doing so. What follows is a discussion of these findings as they relate to the three research questions, as well as limitations of the study, implications for practice and policy, and directions for future research.

Practices: Adapting Instruction Within the Context of Uniformity

The first research question related to teachers' practices in individualizing or adapting instruction for students with IDD. The data indicated that in the six schools for students with IDD, traditional standardized approaches of teaching seemed to be predominant. The participants described planning instruction mainly at the whole class level and aimed at the majority of the students, relying on textbooks and curriculum standards to determine what to teach, and using whole class instruction as the primary grouping arrangement, in which standardized content was presented to the entire class at almost the same pace using "generic" instructional methods. In this context, all the participants adopted a fengceng instruction approach in response to student differences. They classified students in the same class into ability levels and provided some adaptations mainly in the forms of (a) differentiated learning objectives and tasks and (b) different types and levels of instructor supports.

In comparison to the best practices in adapting instruction for students with IDD discussed by experts in the U.S. (Giangreco et al., 2011; Janney & Snell, 2011), the approach adopted by the participants of this study was characterized by (a) a focus on subgroups instead of individual students, (b) a lack of systematic and comprehensive assessments to identify individual needs, and (c) inadequacy of adaptations in both quantity and quality (e.g., range, type, and effectiveness of adaptation strategies). These characteristics are summarized in Figure 1 and discussed in the following sections with connections to best practices guidelines and implementation research conducted in the U.S. and China.

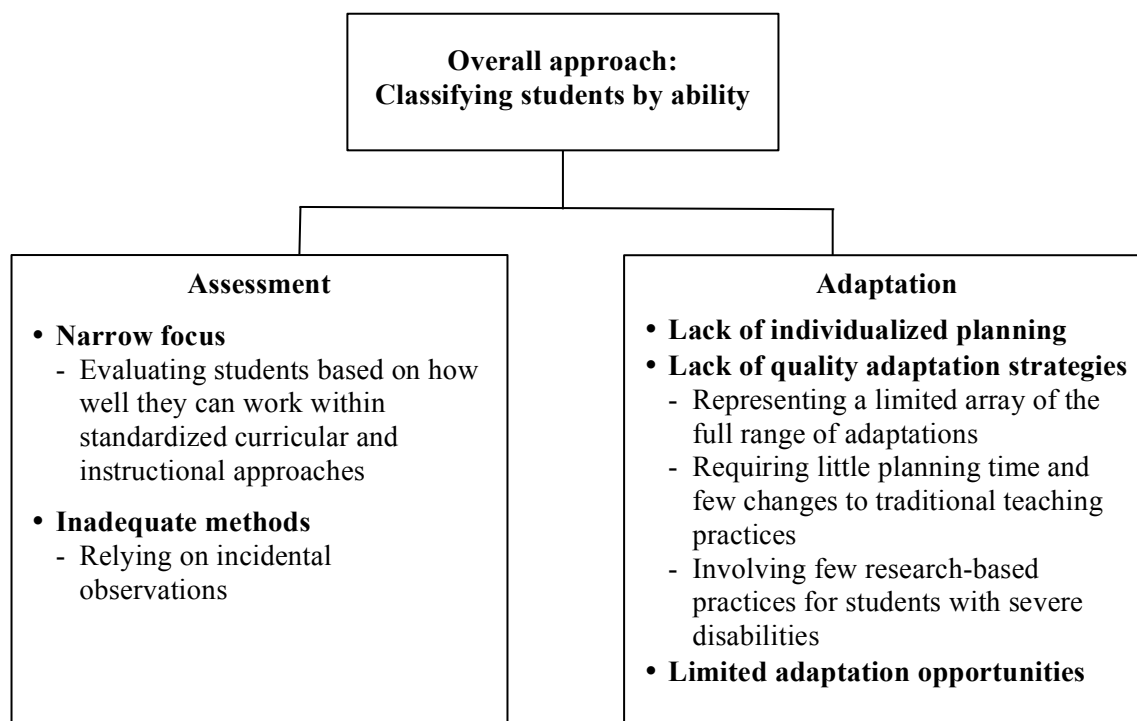


Figure 1. Practices in individualized instruction for students with IDD in China

Overall approach: Grouping students by ability. All the participants reported using fenceng instruction as the main approach to address individual differences among their students. Fenceng instruction, translated by some Chinese researchers as teaching at different levels or multi-level teaching, often refers to approaches to individualization that involve (a) classifying students with similar characteristics (e.g., ability, achievement, and interest) into ability groups or levels and (b) providing differential treatment for students at different levels (Ding, 1997; Hu, 1992; Ye & Liu, 2010).

Some Chinese educators (Ding, 1997; Zhong, 2010) equated fenceng instruction with (homogenous) ability grouping discussed in the Western contexts, as they both involve grouping students for instructional purposes on the basis of some similarity. However, the two concepts are not exactly the same. In a broad sense, within-class ability

grouping discussed in the U.S. literature typically involves physical placement of students into small groups as distinct units of teaching or learning (i.e., homogeneous small group instruction), which represents an organizational or structural feature of the class (Lou et al., 1996). Fenceng instruction, in its common forms documented in the Chinese literature (e.g., Cui & Zhu, 1995; Mao, 2000), places more emphasis on conceptually grouping students by ability and differentiating instruction and does not imply use of small group instruction. As shown in this study, participants demonstrated fenceng instruction by classifying students conceptually into low, medium, and high ability groups and providing adaptations for those different groups. However, students in the same ability groups were not necessarily placed together physically as an organizational or instructional unit. Instead, the participants reported implementing whole class instruction most of the time. During practice and hands-on activities, students might work individually (independently or one-on-one with an adult), as pairs, or in homogenous or heterogeneous small groups.

While ability grouping has been considered a controversial practice in the U.S. (Kulik, 1992; Slavin, 1987), fenceng instruction has gained popularity and support among Chinese educators. In fact, Chinese education systems in general have long been replete with various practices of sorting, grouping, and stratifying students by ability or achievement levels (Ding, 1997; Ye & Liu, 2010). Some scholars associated the prevalence of such practices with the equity and efficiency dilemma in education systems (Cheung & Rudowicz, 2003; Kariya, 2011). With a large population and limited educational resources, classifying or grouping students by ability, as a more efficient way

to deal with student differences, may be preferred by educators. On the other hand, as Cheung and Rudowicz (2003) pointed out, in the traditional Confucian culture, “inequality, segregation and hierarchy among people of differential ability” (p. 242) are often acceptable, which may form the basis of the prevalence of fengcheng instruction in both the general and special education systems in China.

It should be noted that, however, while fengcheng instruction may be effective for the general student population (Cheung & Rudowicz, 2003; Steenbergen-Hu et al., 2016), it may not be a valid or sufficient strategy for addressing the individual needs of students with IDD and may have negative effects on those with the most severe disabilities. An inherent limitation of fengcheng instruction is its focus on matching instruction to the characteristics and needs of homogeneous groups, instead of individual students. For the highly heterogeneous population of students with IDD, it is impossible to form truly homogeneous groups and unlikely that an adaptation provided for a group would fit the needs of each student in that group. Furthermore, as opponents of ability grouping have pointed out, classifying students by ability may lead to teacher belief that students within the same group are alike and make them less likely to pay attention to and adapt instruction for individual students (Kulik, 1992). What also raises concern is that, as some U.S. research has indicated, when students are classified or grouped by ability, those in lower ability groups are more likely to experience low expectations from teachers and lower quality of instruction compared to their peers in higher ability groups (Allington, 1983; Slavin, 1987).

This study found similar patterns. The participants, who implemented fengcheng

instruction, mainly spoke of differential treatment for students in different ability groups. Although some of them indicated that grouping was not fixed due to complexity of individual differences and reported adapting instruction for students within the same ability groups, little evidence existed showing that these participants systematically planned or provided adaptations at the individual level. In addition, participants tended to have low expectations, reported insufficient instructional time and adaptation opportunities, and seemed to make low quality adaptations for students in low ability groups. Although this study did not allow conclusions to be made about the relationship between these patterns and the use of fenceng instruction, given the potential negative effects of grouping students by ability and availability of more effective approaches to accommodating individual needs, fenceng instruction should be used with caution.

Assessment practices. The study revealed limitations in both the focus and methods of assessment conducted by the participants. Generally the assessments were narrow in focus and the methods seemed to be inadequate.

Narrow focus. Best practice guidelines in teaching students with IDD recommend that teachers comprehensively assess important areas of student development (communication, motor, sensory, and social and behavioral) in relation to environmental demands to identify skills needed for individual students to function in their current and future environments. It is recommended that individualized instruction be designed based on these identified needs (F. Brown et al., 2011; Giangreco et al., 2011). There was no evidence of these practices being implemented by the participants of this study.

Findings from this study revealed that when considering individual differences,

the participants mainly focused on how well students could work within the predetermined curricular and instructional approaches, which means that students were evaluated according to the skills expected of others or specified in the textbooks or curriculum standards. Those students who had difficulty meeting the demands of the standard curriculum were then classified into lower ability groups and likely assigned with simplified or alternative learning objectives or tasks that teachers perceived as at their level. Such practices reflect a deficit-oriented view on students with disabilities which focuses on what students cannot do in regards to the standard curriculum, instead of what they need and their own unique curriculum.

Inadequate methods. The way in which students are assessed affects the accuracy of the information derived from the assessment (F. Brown et al., 2011). In this study, most of the participants reported using informal observations to learn about their students, and in very few cases other methods of assessment were mentioned. There was no evidence of the participants systematically planning assessment processes or collecting and analyzing student performance data to make instructional decisions for students.

These findings suggest that many of the participants might heavily or even exclusively relied on incidental observations and their subjective judgments to determine students' learning and behavioral characteristics and needs. Researchers have pointed out that this approach can provide some valuable information for adapting instruction but recommended it as an adjunct to more objective, systematic assessment (Janney & Snell, 2013; Parsons et al., 2018). Special education experts have suggested that teachers make more accurate judgments about students' learning and consequently better instructional

decisions when they (a) deliberately plan assessment processes for individual students; (b) use a broad range of assessment methods and sources of information; and (c) objectively record, analyze, and use student performance data to design, evaluate, and adjust instructional programs on an ongoing basis (F. Brown et al., 2011; Fuchs & Fuchs, 1986). A lack of reports of teachers implementing these practices raises questions about the quality of adaptations provided by the teachers in this study.

A number of possibilities exist that may explain the limitations in assessment practices. For example, teachers' lack of knowledge, skills, and training might be a reason. A large portion of the participants, however, reported that they had received preservice and/or inservice training in assessing students with IDD. Then it is possible that these training programs did not address the best practices in assessment, that these teachers were not supported in applying what they had learned to practice, or that they were socialized into a school where best practices were not encouraged. Logistical reasons such as a lack of time to plan or conduct systematic assessments might also play a role. Furthermore, when examining assessment issues from a social and cultural point of view, some researchers (Berry, 2011; Carless, 2005) have pointed out that in countries with a Confucian heritage culture like China, assessments or examinations have long been used as a tool for evaluating and selecting students (summative assessment), instead of for planning or adjusting instruction (formative assessment). Within this examination-oriented cultural context, schools and teachers, including those serving students with IDD, may not perceive systematic formative assessment as a natural or essential component of educational processes and therefore are reluctant to implement them.

Adaptation practices. Analysis of teachers' adaptation practices yielded several interesting findings. All of the participants described making some adaptations for their students. However, a careful examination of reported adaptation practices in light of best practice standards in the literature revealed several patterns that raise questions about how well these adaptations could successfully meet the individual needs of students with IDD. These patterns or issues included: (a) a lack of individualized planning, (b) a lack of quality adaptation strategies, and (c) limited adaptation opportunities.

Lack of individualized planning. As previously discussed, best practice guidelines have suggested that educational programs for students with disabilities should be developed individually (F. Brown et al., 2011; Snell & F. Brown, 2011). However, adaptations described in this study were mainly provided at the group level and not based on solid assessment data. It is particularly interesting to notice that although several participants reported that they developed semester-long individualized learning goals and IEPs for individual students (beyond adapting instruction for ability groups), when these participants described specific examples of adaptations, they talked about what was provided for subgroups of students, instead of individuals. This might be because these teachers planned long-term learning goals at the individual level in order to conform to school requirements or administrators' expectations, but when it came to the phase of lesson planning and delivery, individualized goals were not transformed to short-term objectives or actually addressed in lessons. Also, in some other cases, there were descriptions of an instructional strategy used only for a specific student, but there was no evidence that the strategy was planned based on the student's needs, indicating that the

individual adaptation might be made incidentally, on the spot, instead of systematically planned.

These findings were similar to the results of previous research on IEP development and implementation in schools for students with IDD in China. Xin and Chen (2015) surveyed 115 teachers in schools for students with IDD in the city of Hangzhou; they found that only about 40% of the participants developed IEPs for each individual student and about 70% of these teachers referred to students' IEPs less than twice a month when planning instruction. Similarly, Lian and Chen's (2015) case study of one school in Hangzhou revealed that students' IEP goals were often disconnected with lesson objectives and the IEPs were not implemented in daily instruction.

Lack of quality adaptations. This study also revealed limitations in the range, types, and effectiveness of adaptation strategies utilized by the participants. As educators and researchers have suggested, a variety of components of an instructional program can be adapted, such as instructional objectives, learning environments, grouping formats, time and pacing of instruction, methods to teach and present instructional content, and methods of evaluation (Janney & Snell, 2011; Talmage, 1985). To effectively address individual differences among students, the range and types of adaptations provided should match the range and nature of student needs. Also, adaptations should be made in a way that incorporates best practices in teaching the targeted student population.

Given that students with IDD are a highly heterogeneous population, one would expect a wide range of adaptations provided in classes for these students. However, adaptations reported in this study consisted predominantly of (a) changes in what students

are expected to learn and demonstrate and (b) different types and levels of instructor supports. By contrast, instructional accommodations such as changes in learning environments, methods to teach and present instructional content, and time and pacing of instruction were either less common or almost absent from the teacher reports. In the rest of this section, utilization of different types of adaptation strategies is discussed.

Inappropriate modifications to learning objectives and tasks. As students with IDD have very different learning needs and skill levels, it is not surprising to find changes in what students are expected to learn and how they demonstrate learning as the most frequently mentioned adaptations. It was how learning objectives and tasks were adapted for these students that causes concerns.

Best practice guidelines on curriculum development for students with IDD have suggested that what students should be taught must

- (a) include a breadth of skills;
- (b) focus on priority skills that are meaningful, functional (related to life), and age-appropriate;
- (c) be at an appropriate level of difficulty that reflects high expectations (attainable yet challenging); and
- (d) be specified as measurable student outcomes, instead of descriptions of what teachers will do. (Downing, 2005; Giangreco, 2011)

In addition, adaptations should be provided for students to enable them to demonstrate what they know and can do.

Adaptations described by the participants of this study reflected few of these

recommended practices. Instead, skills targeted for instruction for students in low ability groups were significantly limited in scope and depth and lacked variations across grade levels. Basically, in Chinese language arts lessons, students in low ability groups were only expected to identify and read Chinese pinyin, characters, and pictures, and in math lessons, they were expected to identify numerals and count items. There was little evidence that the participants required students in low ability groups to learn more complex skills. The interviews also revealed that the participants had students who had the most difficulty learning and demonstrating academic skills look at, listen to, or hold learning materials or expected no responses from these students. Downing (1988) argued that in activities that involve such “passive instruction,” students with disabilities do not acquire critical skills that will lead to their improved competence in meaningful environments. Teachers in this study lowered their expectations to such a great degree that they were in danger of teaching little to the students.

In addition to issues related to “what to learn,” analysis of the objective and task adaptations also suggested insufficient supports provided for students who had difficulty responding orally and in writing. The participants did recognize some students had difficulty with these traditional modes of expression. However, in most cases, they spoke vaguely about providing alternate response modes by having students “point to,” “paste,” “look for,” or “select” something (e.g., pictures) without mentioning if, what, or how many response options were provided. It could be possible that teachers only presented one option and no distractors from which students selected correct responses. For example, when a student was expected to learn to identify the picture representing a

Chinese character, pointing to the only picture presented is not a valid indicator of the student acquisition of the skill of identifying the picture named; multiple choices are needed to do so.

In sum, the objective and task adaptations described in this study revealed that the participants did not seem to provide individualized, meaningful, or challenging learning goals that would facilitate students' active involvement in current or future environments. Nor did it seem that students were provided with effective means to demonstrate what they knew and could do. Although these teachers did show their good intention to have every student participate, participation in their statements seemed to mean having students do anything that they could successfully do versus something that would promote learning of new and useful skills. Similar concerns, such as age inappropriate modifications, decontextualized and meaningless tasks, and passive instruction for students with severe disabilities, have also been discussed in the U.S. literature (e.g., Caustion-Theoharis, Theoharis, Orsati, & Cosier, 2011; Downing, 1988; Downing & Peckham-Hardin, 2007), indicating developing appropriate individual learning goals for students with the most severe disabilities as an universal challenge faced by special educators in both countries.

High reliance on different types and levels of instructor supports. Another key finding from the analysis of adaptation strategies was the participants' high reliance on instructor supports (i.e., teachers, peers, and teaching assistants). However, whether the assistance provided by teachers, peers, and teaching assistants constituted appropriate support for these students is worth a closer look. First, assigning teaching assistants to

support students with disabilities is a common but controversial practice (Brock & Carter, 2013). Concerns about a lack of research evidence and inappropriate utilization of paraprofessional support have been documented in the U.S. literature (Brock & Carter, 2013; Giangreco, Suter, Doyle; 2010). Specific concern has focused on these individuals having primary teaching responsibility absent sufficient training and supervision. Although the participants of this study generally considered teaching assistants as a helpful resource, given limited information regarding the roles and training of teaching assistants revealed in this study and insufficient research on the use of this practice in China, we cannot say that teaching assistant support is a valid strategy for addressing individual needs of students with IDD in this study.

What also raised concerns is the participants' reliance on students in higher ability groups to support those in lower ability groups. Peer support, in the forms of students without disabilities providing social and academic support for classmates with disabilities in inclusive settings, has been widely accepted as an evidence-based practice (Carter & Kennedy, 2006; Carter, Sisco, Melekoglu, & Kurkowski, 2007). However, there is no research basis for the practice of students with IDD providing support for classmates with more severe disabilities. While these students might be able to serve tutor roles successfully when they were explicitly taught to do so, there was no evidence provided that pointed to any participants providing such instruction. It seemed that in this study teachers used peer support more as a way to free themselves to teach other students than a strategy for promoting meaningful learning of students.

Analysis of the instructor supports described in this study also revealed a lack of

components of systematic instruction. For example, almost all the participants reported having students in lower ability groups imitate what teachers, teaching assistants, or peers say or do as an adaptation strategy, but there was no evidence showing that those adult- or peer- delivered verbal or model prompts were provided using evidence-based prompting strategies as described in the literature (Snell & F. Brown, 2011; Spooner, Knight, & Browder, 2012). Nor did the participants mention employing reinforcement or error correction procedures that could enhance students' likelihood of acquiring skills (Snell & F. Brown, 2011; Spooner et al., 2012).

Underutilization of environmental and presentation accommodations. There are several possible reasons that could explain why there were limited reports of environmental and presentation accommodations in this study. It could be possible that the participants tended to change what students are expected to do instead of what teachers do when responding to individual differences, and this might be because changing what students do is easier. Adaptations to classroom environments and modes of presentation often involve adjusting regular materials and devices or using alternative materials and devices (e.g., assistive technology, large print, and adding pictures or symbols to text) which likely require more teacher time, more specialized skills, and more money to prepare. By contrast, adaptations in learning objectives and tasks as reported by the participants in this study, involving simply lowering expectations or adding instructor supports, seemed to require little adjustment to materials and little planning. A similar pattern has been documented in research on instructional adaptations provided by general education teachers for students with disabilities in the U.S., which

revealed that these teachers perceived adjusting physical environments and regular materials as less desirable than other types of adaptations (Schumm & Vaughn, 1991).

Taken together, there were several underlying patterns in utilization of adaptation strategies revealed in this study. First, the participants did not seem to make a full range of adaptations, with most of adaptations focused on changing learning expectations and types and levels of instructor supports; few adaptations focused on changing classroom environments and modes of presentation to promote access. Second, the participants seemingly tended to provide adaptations that were easier to make and requiring less time to prepare. Third, the adaptation strategies described by the participants seemed to be not valid for promoting meaningful learning and participation nor based on best practice guidelines for teaching students with IDD. Reported strategies were not reflective of the specialized, intensive instruction that is recommended in the literature (e.g., use of systematic instruction and augmentative and alternative communication systems).

Limited adaptation opportunities. The study showed that in the participants' classes, most of the instructional time seemed to be occupied by whole class instruction with limited differentiation. Adaptation was mainly evident in participants' descriptions of questions asked during the whole class presentations or in tasks assigned to the students during practice or hands-on activities. Many participants specifically pointed out that time or opportunities to address the needs of students in low ability groups were limited. A pattern that is worth noting is, while many participants recognized limited adaptations provided for students in low ability groups, most of them did not seem to be concerned about whether sufficient adaptations were provided for those in medium or

high ability groups. This raises additional questions. Do teachers have different perceptions of adapting instruction for students at different ability levels? Do they perceive current practices of whole class instruction with limited adaptations as being adequate to address the needs of students who are able to “follow” the standard teaching? Has this assumption prevented teachers from providing necessary adaptations for students in medium and high ability groups? These questions warrant further research.

Summary of practices. Although all the participants reported making some efforts to respond to individual differences, these efforts were limited. Highly individualized, specially designed instruction with systematically planned adaptations focusing on each individual student’ needs was not reported. Instead, teachers’ efforts seemed to involve largely attempts to add some new practices to the traditional, standardized approaches of teaching. Strategies adopted to address individual differences were those that seemed to be familiar to teachers and required few changes to traditional teaching approaches and little time to prepare. Overall, reported instructional practices in the six schools for students with IDD involved a low degree of individualization.

In addition, the instructional strategies reported in this study, including strategies used for the whole class and adaptations made for subgroups, were more reflective of teaching for students without disabilities or those with mild disabilities and were less reflective of the specialized supports recommended by special education experts for students with moderate and severe IDD. These patterns indicated a lack of specialization in instruction provided by the participants from the six special education schools. This might be because that when these schools were first established to serve students with

mild intellectual disabilities, they replicated the structure and practices of general education schools to a large extent. It could also be because teachers in these schools were not sufficiently or specifically trained to serve students with severe disabilities.

Perceptions: Individualized Instruction is Important but Difficult to Achieve

Findings from this study revealed that the participants perceived individualizing or adapting instruction as beneficial or necessary but difficult to implement. On the one hand, most of the participants recognized the existence of a wide range of student differences, talked about the benefits of adapting instruction, or acknowledged the necessity of providing differential treatment to meet students' individual needs. On the other, in almost all the interviews, great emphasis was put on describing the difficulty of adapting instruction for individuals and/or subgroups of students with IDD.

Ding et al. (2006) surveyed 100 special education teachers in Beijing to explore their perceptions of individualized instruction. Teacher perceptions found in this study and in Ding et al.'s study were consistent in the "benefit" dimension but different in the "difficulty" dimension. Ding et al. found that the majority of teachers surveyed believed that individualized instruction would produce better education outcomes for students with disabilities, but only about 20% of them perceived individualized instruction as difficult to implement. The inconsistency might be due to differences in the research methods used in this study and in Ding et al.'s study. This study collected interview data, and Ding et al. used one questionnaire item to gauge teachers' opinions about feasibility of individualized instruction, which might have been insufficient to reveal teachers' perceptions accurately.

When comparing teacher perceptions and practices revealed in this study, it is easy to notice a discrepancy between teachers' positive views of the value of adapting instruction and their description of implementation of related practices, which appeared to be minimal. Such discrepancy is not uncommon in studies examining teacher perceptions and practices regarding instructional adaptations as well as other teaching practices (e.g., Brighton, Hertberg, Moon, Tomlinson, & Callahan, 2005; Schuman et al., 1994). Perceived ease or difficulty of implementation, or what Ajzen (2005) called perceived behavioral control might account for the discrepancy. It is hypothesized that teachers are less willing or less likely to implement a practice when they believe that they do not have the capacities and resources necessary to achieve it, despite their recognition of the merit of implementing the practice. In addition, perceived difficulty or behavioral control can reflect actual difficulty and barriers encountered and therefore directly affect the degree of implementation (Ajzen, 2005). In this study, the (perceived) difficulty in implementing individualized instruction might be caused by a mismatch between (a) the range and nature of student needs and (b) available resources and structure of current school systems, which is discussed in the next section.

Barriers and Facilitators: Student Needs Challenging the School Systems

The findings of this study revealed that in their efforts to adapt instruction, the participants experienced difficulty in: (a) creating sufficient adaptation opportunities for every student, (b) getting to know and teaching standardized academic content to students with severe disabilities, (c) collaborating with other stakeholders, and (d) planning adaptations. The participants identified a number of factors that had contributed to the

difficulty and factors that had or would have facilitated individualization of instruction (see Table 5). The barriers and facilitators could be classified into three categories: contextual factors, student characteristics, and teacher characteristics. The difficulty experienced by the participants seemed to reflect a mismatch between the range and nature of student needs in schools for students with IDD and what the schools and teachers offered to address these needs. The three types of factors are discussed below.

Table 5

Teacher Perceived Barriers and Facilitators

	Barriers	Facilitators
Contextual factors	<ul style="list-style-type: none"> • High student–adult ratios (55%) • Lack of support from parents (35%) • Whole class teaching arrangement (26%) • Requirement of curriculum standards (23%) • Heavy workloads/no time for planning (23%) • Lack of curriculum/teaching materials (19%) • Lack of support from experts/specialists (10%) • Lack of assessment tools (6%) • Limited classroom furniture and equipment (6%) 	<ul style="list-style-type: none"> • Assignment of (additional) teaching assistants (48%) • Smaller class size (35%) • Collaboration and support from parents and other stakeholders (35%) • Use of certain instructional strategies (e.g., peer support and multiple media; 26%) • One-on-one instruction outside of class time (23%) • More teaching resources and materials (16%) • Reduced workload or more planning time (13%) • Accurate assessment (6%)
Student characteristics	<ul style="list-style-type: none"> • Challenging behaviors (52%) • Low ability (48%) • Wide range of individual differences (29%) 	<ul style="list-style-type: none"> • Reducing student variance (42%) • Improving students' abilities (6%)
Teacher characteristics	<ul style="list-style-type: none"> • Teacher lack of knowledge and skills (23%) 	<ul style="list-style-type: none"> • Teacher training and improved skills (23%)

Contextual factors. Most of the participants (87%) identified one or more contextual factors as barriers to individualizing instruction. Many participants also stated that removal of one or more of these contextual impediments (e.g., having a teaching assistant and smaller class size) would help them more successfully address individual needs. The finding that the contextual factors, as a whole, were identified by the participants as a common barrier to individualization is not surprising, because these factors are often easy for teachers to identify and have been documented in existing research as factors related to the degree to which teachers individualized or adapted instruction for students with disabilities (Scott et al., 1995; Xin & Cao, 2016). What is interesting is that only a small number of the participants considered issues related to time and resources available for instructional planning as a barrier to addressing students' individual needs, which is inconsistent with the results of U.S. research (Brighton et al., 2005; Scott et al., 1995). This might be because most of the participants did not perceive instructional planning as a critical procedure in individualizing or adapting instruction. In fact, as previously discussed, adaptations reported by the participants were rarely described as based on systematic student assessment and individualized planning.

It is also noteworthy that only a small number of the participants pointed out that it was difficult to individualize or adapt instruction given the requirements to teach standardized curriculum and with the whole class arrangement. It is possible that these components of standardized approaches of teaching have long been practiced in schools for students with IDD in China and become part of organizational norms and therefore were not subject to question.

Student characteristics. Most of the participants (74%) emphasized student characteristics as factors contributing to difficulty in creating sufficient adaptation opportunities and/or teaching academic content. The characteristics included students' challenging behaviors, low abilities (e.g., low cognitive abilities and limited speech), and wide range of individual differences. Some participants considered reducing student variance (e.g., by grouping students with more similarities into a class) or improving student abilities as facilitators to individualization. Similarly, Lu (2017) examined teaching efficacy of teachers working in three types of special education schools in China and found that teachers identified student variables, such as students' challenging behaviors and increased number of students with severe disabilities, as key factors affecting their ability to teach.

This study also revealed that many participants tended to perceive student characteristics as the problem instead of questioning current classroom practices and their teaching skills and belief systems. As previously mentioned, this may be because the traditional instructional practices and teacher mindset have existed in schools for students with IDD for a long time and probably worked fine when students with mild intellectual disabilities constituted the majority of the student population. It is possible that recent increase in the number of students with severe disabilities in these schools pose challenges to the unchanged school systems and cause a tension, resulting in teachers perceiving the current range and nature of student needs as a challenge or problem.

Teacher characteristics. Only a few participants (23%) specifically pointed out their own lack of knowledge and skills as a barrier to individualization and stated that

teacher training or improved knowledge and skills would be helpful. However, as researchers (Brighton et al., 2005; Ertmer, 1999) pointed out, the level of implementation of an educational practice often has at least as much to do with teacher characteristics as external factors. In this study, three teacher characteristics appeared to pose barriers to individualizing instruction: (a) teacher beliefs related to standardized teaching approaches, (b) teacher low expectations of students with severe disabilities, and (c) teacher knowledge and skills in individualizing instruction for students with IDD.

Teacher beliefs conflicting with philosophy of individualized instruction.

Researchers have argued that teachers' belief system contains various beliefs connecting to one another, and one may hold conflicting beliefs without noticing the conflict (Pajares, 1992). In this study, in addition to perceptions of the benefits and feasibility of individualizing or adapting instruction, interview data also revealed the participants' perceptions about students with severe disabilities and whole class teaching. Many of them held the beliefs that students with the most severe disabilities lack abilities to learn academic skills and that the structure of whole class teaching needs to be maintained. These underlying beliefs, although not directly identified by the participants as a barrier to individualizing instruction, were likely to play an important role in shaping teachers' instructional decisions and practices. For example, as the participants' accounts showed, their beliefs in whole class teaching seemed to steer their decisions towards spending most instructional time on undifferentiated whole class instruction, which might have contributed to limited opportunities to address students' unique learning needs.

It was noticed that in some cases, when the commonly identified contextual

barriers were reduced or removed, the level of implementation of individualized instruction was still low, indicating that teacher characteristics might play a role. For example, many participants pointed to high student–adult ratios as a barrier to adapting instruction, and they emphasized having one or more teaching assistants or smaller class size would be of great help. However, examinations of reported instructional practices showed that teacher-directed whole class instruction was predominant in all of the cases, regardless of availability of teaching assistant support. This was reported even in classrooms with a relatively low student–adult ratio (e.g., 3:1 and lower). Teaching assistants in some cases were reported to be used to help students participate in standard instruction or to “take care of” students with challenging behaviors so that teachers could focus on providing instruction for the majority of the students.

Statements from a third-grade Chinese language arts teacher (Participant 7) illustrated how teachers’ beliefs related to traditional approaches of teaching might affect the way they used teaching assistants. This teacher indicated that she was aware that students in low ability groups would benefit from teaching assistant directed small group instruction targeting their specific needs. However, she was reluctant to have such arrangement because she was concerned that the small group instruction would interrupt classroom routines and that the teaching assistant’s talk would interfere with her teaching and the learning of the rest of the class. How prevalent this view is among teachers is unknown and is in need of further research.

Teacher beliefs described above are related to traditional school and classroom practices and similar to what some researchers called deep structure beliefs about

schooling (Brighton, 2005; Tye, 2000). According to Tye (2000), deep structure beliefs are widespread and deeply rooted in a society and therefore it is hard for teachers to realize that they are subject to question. These beliefs, however, influence instructional decisions that teachers make and act as “inhibiting forces that actively seek to prevent changes in how schools are put together and work” (p. 83). This explains, at least partially, why innovations that challenge the existing classroom structures and teachers’ traditional beliefs, like implementation of highly individualized instruction for students with IDD in special education schools in China, are difficult.

According to Stevenson and Lee (1995), whole class instruction has been “one of the hallmarks of teaching” (p. 152) in classrooms in China. The prevalence of such standardized approaches of teaching may be related to cultural values and educational philosophies rooted in Chinese society. Cheng (1998) argued that in a collectivist culture, uniformity and conformity is emphasized and more attention is paid to the whole group or the majority, instead of each individual in the group. Teachers in this study might form the belief that whole class instruction is the norm through observing their teachers and internalizing the traditional teaching models during the many years they spent as students in general education classrooms (Stuart & Thurlow, 2000). After becoming teachers in special education schools for students with IDD where whole class teaching also seemed to be a prevailing practice, teachers were likely socialized into the organizational norms and values, and the traditional teaching beliefs formed during their own schooling might be confirmed and solidified.

Teacher low expectations of students with severe disabilities. Another pattern

noticed in this study was teachers' low expectations of students with severe disabilities. Some participants reported that they spent less instructional time teaching students in low ability groups because they believed that these students would not make much progress even if they received more instruction. Low expectations were also reflected in participants' perceptions that students should acquire basic or life skills before learning academic skills. This approach is reminiscent of the normal developmental sequencing approach to the education of students, based on the notion of prerequisite skill development prior to development of more advanced skills. This approach is considered a harmful one for students with severe disabilities (F. Brown et al., 2011), given they often do not develop in the same manner as do typically developing children. In addition, some participants reported they did not have clear learning objectives and did not require responses from students with the most severe disabilities during class lessons. They seemed to not expect that these students would learn the content. Such low expectations might also serve to explain why few and low quality adaptations were provided for students with IDD.

Teacher lack of knowledge and skills. Only about one-fourth of the participants specifically pointed out that they did not have sufficient knowledge and skills to meet their students' needs. However, data from the study indicated that problems related to teacher knowledge and skills might be more prevalent than they realized or reported.

Some participants' statements revealed that they had a narrow understanding about how to best meet individual students' needs or misconceptions of the term individualized instruction. For example, over two-thirds of participants (35%) suggested

that fully addressing the individual needs of students with severe disabilities require teachers to give them one-on-one attention, and a few participants equated individualized instruction with individual instruction. Two participants stated that if they were to give one-on-one instruction to each student, they had to divide a lesson period into several sessions, with each session focusing on only one student (e.g., dividing a lesson into seven four-minute sessions if there were seven students). These narrow understandings or misconceptions seemed to contribute to some participants' perceptions of disadvantages and infeasibility of individualized instruction. For example, holding the misconception that individualized instruction requires delivery of instruction on a one-on-one basis, a few participants provided reasons for why they perceived adapting instruction for each individual as impossible. Among the reasons provided were: (a) there are not enough staff in the classroom to give students one-on-one attention; (b) it would be unfair to focus on teaching only one student and leave all other students alone if the teacher provides one-on-one instruction; and (c) dividing a lesson into several individual instruction sessions means that each student receives only a few minutes of instruction, which is not sufficient for learning to happen and also makes a lesson fragmented.

Summary of barriers and facilitators. Three types of factors were identified as barriers or facilitators to individualizing instruction in this study: contextual factors, student characteristics, and teacher characteristics. Those most frequently reported by the participants included high student–adult ratios and the range and nature of student characteristics and needs. Infrequently mentioned factors were those related to instructional planning and student assessment, traditional standardized teaching

approaches, and teacher characteristics such as their beliefs, knowledge, and skills. What is unknown from this study is the relative roles the factors play and their interrelationships, which needs further research.

Taken together, the findings of this study suggest complexities involved in the process of individualizing instruction in schools for students with IDD in China. On the one hand, teachers seemed to perceive adapting instruction to accommodate individual needs as necessary and reported using some strategies to adapt expectations and supports mainly for subgroups of students. This seems to indicate that these teachers have some positive attitudes towards individualized instruction, at least at the explicit, self-report level, instead of completely rejecting this idea. On the other hand, the study revealed that teachers also held the belief that meeting the needs of the majority of students is the priority, tended to maintain the standardized approaches of teaching, and reported addressing the needs of individual students to a very limited degree. These practices and perceptions as well as the difficulties in individualizing instruction identified in this study seemed to provide some support for Chinese scholars' concerns that cultural values, existing educational practices, and available resources may impede acceptability and feasibility of individualized instruction in Chinese schools (Ding, 2001; Ding et al., 2006; Zhao & Hua, 2006).

Given that the idea of individualizing instruction for students with disabilities has been advocated by Chinese researchers and special education teacher educators (e.g., Chen, 1994; Sheng, 2005), it is possible that teachers learned, generally, about individualized instruction through teacher training or professional development activities.

However, those programs might fail to teach specific strategies that teachers could use to effectively change traditional teaching approaches and adapt instruction for individual students, resulting in teachers' lack of knowledge and skills to do so. It is also possible that the training failed to address and change teachers' deeply held beliefs related to whole class teaching. These beliefs, as previously discussed, may be part of societal and organizational cultures and work as inhibiting forces that prevent innovations that challenge the existing school and classroom structures. Furthermore, as indicated in this study, teachers might not have the time and resources to deal with the wide range of individual differences present in students in their classroom. All these factors might work together and lead to teachers in this study taking limited measures to address their students' individual differences and not fundamentally changing traditional teaching approaches.

Limitations of the Study

The findings of this study must be interpreted with several limitations in mind. First, the findings were based on teachers' self-reports, and there may be incongruity between the information provided by teachers and teachers' actual practices. Additional research using classroom observations and other data collection methods for triangulation purposes is warranted for investigating how teachers individualize instruction. Moreover, given minimal available research examining instructional practices in special education schools for students with IDD in China to inform this study, the scope of this study was limited to collecting general, descriptive information from teachers, and the findings were intended to provide information for further studies and analysis. Consequently, although

this study provided preliminary information about how teachers perceive and implement practices related to individualized instruction, comprehensive data related to specifics of those practices were not gathered. For example, the participants described whole class instruction as their primary grouping format, but it is not known exactly what percentage of their instructional time is spent on whole class instruction (only one participant reported at least 80% of her instructional time spent on whole class instruction).

Second, the study was limited to a purposeful sample of 31 teachers. The participants were teachers teaching elementary Chinese language arts and math in six public special education schools for students with IDD in Shanghai and identified by school administrators as effective teachers. It cannot be assumed that all teachers teaching students with IDD throughout Shanghai or China would have the same practices or options.

Third, this study focused on teacher practices in Chinese language arts and math classes and did not examine individual students' complete educational programs. It is not known to what extent teachers teaching different subjects and other professionals work together to design and provide an individualized education program for each student. In-depth case study research to comprehensively examine individual students' whole educational programs is recommended.

Fourth, the interview questions focused on teachers' instructional and adaptation strategies; how teachers plan and make decisions about using these strategies were addressed with fewer questions. Additional research is needed to further investigate teachers' assessment and planning processes (e.g., how assessment data are used to adjust

instruction; the relative importance of textbooks, curriculum standards, and student characteristics in determining what to teach).

Implications for Practice and Policy

The results of the study revealed that the participants made minimal adaptations for their students and tended to maintain the structure of traditional standardized approaches of teaching. Such practices seemed to be inadequate to meet the individual needs of students with IDD. The participants were particularly challenged to create sufficient adaptation opportunities and to teach standardized academic content to students with severe disabilities. Implications of the findings for schools and teachers, teacher educators, and policy makers are discussed in this section.

For schools and teachers. Schools for students with IDD and teachers in these schools should adopt new practices to address individual differences among their students, which may require change of organizational cultures and teachers' beliefs related to traditional teaching approaches. Teachers should collaborate with researchers to explore effective and feasible ways to provide appropriate instruction for each individual student and to change traditional whole class instruction structure.

A promising practice that teachers may consider to use is flexible grouping (Flood, et al., 1992), especially flexible small group arrangements. Small group arrangements have many advantages over whole class and one-on-one instruction (Snell & F. Brown, 2011; Yu, 2014). For example, compared to whole class instruction, it is easier for teachers to pay attention to individual students in small groups, and compared to one-on-one instruction, small group instruction requires less personnel and instructional time

(Snell & F. Brown, 2011; Yu, 2014). There is clear research support for the feasibility and effectiveness of individualizing instruction for students with severe disabilities in small group arrangements in special education settings (F. Brown, Holvoet, Guess, & Mulligan, 1980; Collins, Gast, Ault, & Wolery, 1991; Kamps, Walker, Locke, Delquadri, & Hall, 1990). Another promising practice is to train students with IDD in self-management procedures and student-directed learning strategies, which may increase student independence, reduce a need for adult supports, and help to create more adaptation opportunities (Smith, Ayres, Alexander, Ledford, Shepley, & Shepley, 2016; Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000). For example, while teachers or teaching assistants conduct small group instruction with some students, the rest of the class can engage in independent learning of individualized materials.

According to Loucks-Horsley, Stiles, Mundry, Love, and Hewson (2010), although “a major focus of change initiatives is on the individuals changing,” individual changes can succeed only with “simultaneous attention to changing the system within which teachers and other educators work” (p. 77). School administrators should work to build a school culture that encourages teachers to address the needs of each individual student and provide sufficient training opportunities and resources to enable teachers to do so. For example, schools should require teachers to adapt instruction for individual students beyond or instead of dividing students into ability groups and include teacher competence in individualizing instruction into their teacher evaluation system. Existing professional learning communities and activities at the school or district levels, such as teacher lesson study and peer observation (Peng et al., 2014), can be utilized as

opportunities to discuss and explore how to implement individualized instruction more effectively and efficiently in schools for students with IDD. In addition, teachers should be provided with resources, such as sufficiently trained teaching assistants, planning time, and curriculum and teaching materials, to facilitate their implementation of these practices.

For teacher educators. Teacher preparation and professional development programs should provide training in specific competencies to ensure that teachers are able to individualize instruction to meet the needs of students with IDD, and these competencies should be included in teacher certification and evaluation requirements. Training programs need to address topics such as correct understanding about the concept and procedure of individualized instruction and appropriate assessment and adaptation strategies for students with IDD. Given the challenges that the participants reported in this study, training programs may need to place an emphasis on strategies for developing individualized learning goals for students with IDD, especially those with the most severe disabilities (Ford, Davern, & Schnorr, 2001; Hunt et al., 2012), evidence-based practices in teaching academic skills to these students (Spooner et al., 2012), and methods of creating opportunities to address individual learning needs (Downing & Eichinger, 2003).

In addition to teachers' knowledge and skills directly related to individualizing instruction for students with IDD, teacher educators may also need to consider and address preservice and inservice teachers' preexisting, fundamental beliefs about teaching and learning that may impact acceptance and implementation of new practices (e.g., beliefs about whole class teaching and low expectations of students with severe

disabilities). Considering the complexities likely involved in the process of adopting new beliefs and approaches to individualizing instruction, professional development in the form of brief one-time workshops may not be sufficient. Instead, more comprehensive and supportive approaches of professional development with such components as team building, ongoing coaching and consultation from outside experts, and establishment of a community of practice, are likely needed (Klingner, Boardman, & McMaster, 2013).

For policy makers. The Regulation on the Education of Persons with Disabilities (2017) and central government's policy documents (e.g., Ministry of Education, 2007, 2016) have supported individualizing instruction for students with disabilities. However, individualized instruction for each student with disabilities is not mandatory in China, and these documents lack specific guidelines on how to develop and implement individualized education programs.

Therefore, it is recommended that future amendments of the Regulation on the Education of Persons with Disabilities make individualizing instruction for every student with disabilities mandatory. Policy documents such as the curriculum standards for special education schools (Ministry of Education, 2016) should not only include the content that students at each grade levels are expected to learn but also provide guidelines for developing individualized learning goals. Chinese policy makers, researchers, and educators may want to examine documents such as the Massachusetts Curriculum Frameworks for Students with Disabilities (Massachusetts Department of Elementary and Secondary Education, 2017, 2018), which list academic outcomes at lower levels of complexity that are aligned with the grade-level standards, and develop similar guides.

Access to such resources may assist Chinese teachers in interpreting the curriculum standards in meaningful ways and setting appropriate learning goals for individual students with IDD.

Future Research

This study offers preliminary findings of Chinese teachers' practices and perceptions of individualizing instruction for students with IDD and adds to the literature on instructional practices in special education schools for students with IDD in China. Additional questions warrant further research.

First, additional research is needed to provide more comprehensive information regarding how teachers individualize or adapt instruction in schools for students with IDD throughout China. Case studies (Yin, 2014) using multiple sources of data (e.g., observations, interviews, artifacts, and documents) are highly recommended to substantiate and add depth to the findings from this study. For example, direct observations of classroom practices and analysis of teaching and learning materials used in classroom lessons would provide more specific information on how different types of adaptations are made, frequency of use of adaptations, and the contexts (e.g., instructional activities and grouping formats) in which adaptations are provided.

Interviews conducted after the observations, with teacher reflections and explanations of the adaptations observed in the lessons, would provide valuable information on teacher thinking and planning process, such as factors they consider when making adaptations and why or why not certain adaptation strategies are used. In addition, for such case studies, collecting information about individual students' characteristics and needs is

recommended. Furthermore, investigations of adaptations used across subject areas and throughout a school day are also recommended.

Second, additional research needs to be conducted to directly investigate (a) teachers' knowledge and skills in individualizing instruction for students with IDD; (b) their broad belief systems about teaching and learning, including beliefs related to standardized approaches of teaching and belief related to teaching students with the most severe disabilities; and (c) how teacher knowledge and broad educational beliefs affect their perceptions of individualized instruction and their practices related to addressing individual needs of students with IDD. Studies should also be conducted to investigate how to design teacher preparation and professional development programs to transform teacher beliefs and practices and promote individualization of instruction.

Third, in this study, a lack of support from other stakeholders was identified as a barrier to individualizing instruction. Therefore further research is needed to examine how stakeholders such as parents, related service providers, and school administrators perceive individualized instruction for students with IDD to facilitate their collaboration.

Fourth, there is an urgent need that intervention studies are conducted to investigate how best practices in individualizing instruction for students with IDD can be implemented in ways that promote student learning and are also feasible given (possibly limited) resources in special education schools in China. Researchers and practitioners may use existing knowledge related to educational change and implementation science (e.g., Fullan, 2001; Klingner et al., 2013) to guide the design of interventions and change efforts.

Conclusion

In this study, teachers in special education schools for students with IDD in Shanghai shared their experiences and perceptions related to adapting instruction to address individual differences among their students. The findings revealed that practices and beliefs related to one-size-fits-all approaches of teaching remained prevalent among these teachers. Holding the conflicting perceptions that instruction should be adapted to accommodate individual needs and that the structure of standardized approaches of teaching needs to be maintained, the participants adopted a fengceng instruction method to address individual differences. This method involved teachers making minor changes to traditional approaches of teaching and limited assessment and adaptation practices.

Shulman (1987) likened adapting instruction to variations among students to the process of manufacturing and tailoring a suit of clothing so that it will fit well. The general approaches that teachers in this study adopted to meet students' needs were like preparing a one-size-fits-all suit and then adjusting it for three or four small groups of students with similar sizes. This approach did not seem to fully address students' needs. New approaches to tailoring instruction and new practices in teaching students with IDD need to be explored and adopted. However, it should be anticipated that the change process might involve many challenges, including transforming teachers' deep-rooted beliefs about teaching and learning, adopting and sustaining research-based practices, and teaching a group of students with the most severe disabilities. Therefore, providing quality individualized instruction for students with IDD in China will be an ongoing task that calls for collective efforts of practitioners, researchers, and other stakeholders.

Appendix A Recruitment Letter

Dear Teacher,

My name is Shuoxi Huang and I am a doctoral student in the Special Education program at Boston University in the United States of America. I am conducting a research study investigating **instructional practices implemented by special education teachers for students with intellectual and developmental disabilities (IDD) in Shanghai and teachers' perceptions about these instructional practices** under the supervision of my advisor Dr. Lehr, an associate professor at Boston University. This study will provide information that may affect special education teacher preservice and inservice training and instructional quality for students with IDD in Shanghai.

You are nominated by your school administrator(s) to participate in the study because you meet our participant eligibility criteria—you are teachers who teach **Chinese literacy and math at the elementary level (Grades 1–6) in public special education schools for students with IDD in Shanghai**.

You participation in the study is voluntary. If you are interested, I will contact you and discuss how you would participate in the study later after your school administrator provides me with your contact information with your permission. To participate in the study, you will be asked to complete a demographic questionnaire and then interviewed about your teaching practices. **The study procedure will include:**

Questionnaire: You will be asked to first fill out a demographic questionnaire online through Sojump before the interview. The questionnaire will take about 10–15 minutes.

Interview: I will conduct a face-to-face interview with you at a time and place that are convenient to you. During the interview you will be asked questions about your practices in teaching students with IDD and your perceptions about these practices. The interview will take about 45–60 minutes.

Follow-up: After the interview, I may contact you for follow-up questions related to the interview only when it is necessary. I may also send a summary of my findings and ask you to verify if the findings accurately reflect what you have said during the interview.

You will not directly benefit from participating in this study. The risks associated with this study are minimal. You will receive a small gift worth about 15 RMB as compensation for participating in this research study after the interview.

For more information about the research study, please contact the researchers.

- Shuoxi Huang (principal investigator, doctoral student)
137-6414-3185 (China); unisusie@bu.edu,
Room 603, Building 7, 333 Hongshi Road, Shanghai, 201899
- Donna Lehr (faculty advisor, associate professor)
617-353-3240 (U.S.); dlehr@bu.edu
Boston University, School of Education, Two Silber Way, Boston, MA, 02215

Sincerely
Shuoxi Huang

Appendix B Consent Form

Boston University
School of Education
Two Silber Way
Boston, MA 02215

INFORMED CONSENT FOR NON-MEDICAL RESEARCH

Protocol Title: Special Education Teachers' Perceptions of and Practices in Individualized Instruction for Students with Intellectual and Developmental Disabilities (IDD) in China
Principal Investigator: Shuoxi Huang
Description of Subject Population: Special education teachers teaching elementary Chinese literacy and math in special education schools for students with IDD in Shanghai
Version Date: August 2015

You are invited to participate in a research study conducted by Shuoxi Huang, a doctoral student at Boston University, and her faculty advisor Donna Lehr. Your participation is voluntary. You should read the information below carefully, and ask questions at any time about anything you do not understand, before deciding whether to participate. If you decide to participate in this research study we will ask you to sign this form. We will give you a copy of the signed form.

If you have any questions or concerns about the research, please feel free to contact the researchers.

- Shuoxi Huang (doctoral student) can be reached at 137-6414-3185 (China), or unisusie@bu.edu, or Room 603, Building 7, 333 Hongshi Road, Shanghai, 201899.
- Donna Lehr (faculty advisor, associate professor) can be reached at 617-353-3240 (U.S.), or dlehr@bu.edu, or Boston University, School of Education, Two Silber Way, Boston, MA, 02215.

Why is this study being done?

The purpose of the study is to investigate instructional practices implemented by special education teachers who teach elementary Chinese literacy and math in public special education schools for students with intellectual and developmental disabilities (IDD) in Shanghai and their perceptions about these instructional practices. About 15–30 teachers will participate in this research study. Findings from this study may provide information

to affect special education teacher preservice and inservice training and instructional quality for students with IDD in Shanghai.

What will happen if I take part in this research study?

If you volunteer to participate in the study, I will ask you to fill out an online demographic questionnaire, which will take about 10–15 minutes, and then conduct a face-to-face interview with you, which will take about 45–60 minutes. You will complete the demographic questionnaire online through Sojump before we meet for the interview. The questionnaire is designed to obtain basic information about you and the classes you are teaching, such as your age, gender, educational experience, and the abilities and disabilities of students in your classes. I will then conduct a face-to-face interview with you at a time and place that are convenient for you. During the interview, I will ask you questions about your practices in teaching students with intellectual and developmental disabilities and your perceptions about these practices. After the interview, I may contact you for follow-up questions related to the interview only when it is necessary. I may also send a summary of my findings and ask you to verify if the findings accurately reflect what you have said during the interview.

Audio recoding

I would like to audio record the interview using a digital recording device during this study. If you are audio recorded, it will not be possible to identify you in the audio. I will store these audio records in a password-protected computer and only approved study staff will be able to access them. I will label these records with a code (study ID) instead of your name. The key to the code connects your other information to your audio record. I will keep the key to the code in a password-protected computer.

How will you keep my study records confidential?

We will make every effort to keep your records confidential. However, there are times when the U.S. federal or state law requires the disclosure of your records. Data will be stored in password-protected computers that are only accessible to the researchers in this study. The results of this research study may be published or used for teaching. We will not put identifiable information on data that are used for these purposes. We will label your information with a code and keep the key to the code in a password-protected computer.

Study participation and early withdrawal

Taking part in this study is your choice. You are free not to take part or to withdraw at any time for any reason. No matter what you decide, there will be no penalty or loss of benefit to which you are entitled. If you decide to withdraw from this study, the information that you have already provided will be kept confidential.

What are the risks of taking part in this research study?

You may be uncomfortable with some of the interview questions. You do not have to answer any questions that make you feel uncomfortable. Potential breach of

confidentiality is another risk.

Are there any benefits from being in this research study?

You will not directly benefit from participating in this research. Benefits for others include providing information for teacher educators and school administrators to improve special education teacher preservice and inservice training programs and instructional quality for students with IDD.

Will I get paid for taking part in this research study?

You will receive a small gift worth about 15 RMB as compensation for participating in this research study after the interview.

What will it cost me to take part in this research study?

There are no costs to you for taking part in this research study.

If I have any questions or concerns about this research study, who can I talk to?

If you have any concerns or questions, please contact Shuoxi Huang and Donna Lehr. If you have questions about your rights as a research subject or want to speak with someone independent of the research team, you may contact the Boston University IRB directly at 617-358-6115 (U.S.).

Statement of Consent

I have read the information in this consent form including risks and possible benefits. I have been given the chance to ask questions. My questions have been answered to my satisfaction, and I agree to participate in the study.

Appendix C
Teacher Demographic Questionnaire

1. What is the name of the school where you are currently teaching? _____
2. What is your gender?
A. Female B. Male
3. What is your age? _____ years
4. What is the degree(s) that you have completed and what is the corresponding major(s)?
(Check all that apply)
A. Three years specialized _____
B. Bachelor's degree, major _____
C. Master's degree, major _____
D. Doctoral degree, major _____
5. What is the area for which you have received your teaching certification?
(Check all that apply)
A. Chinese Literacy
B. Math
C. Other certification, please specify: _____
D. No certification
6. How many years have you worked as a teacher (including experience as a general education teacher and special education teacher)? _____ years
7. How many years have you taught students with intellectual and developmental disabilities in special education schools? _____ years
8. Do you have any other positions in addition to teaching in this school?
A. Yes, please specify your position _____
B. No
9. How many classes are you currently teaching? _____ Classes
10. Think about the elementary Chinese literacy and math class(es) that you are currently teaching and indicate in the following table (in dropdown menus):
(1) grade level of each class
(2) subject area you are teaching in each class
(3) approximate number of students in each class
(4) number of teaching assistants in the classroom (including teaching assistants hired by the school and students' parents, student teachers, and volunteers); put in 0 if there isn't any

Class	Grade level	Subject area	Number of students	Number of teaching assistants
Class 1				
Class 2				
Class 3				
Class 4				

11. Think about all the students that you are teaching and indicate in the following table the approximate number of students with each category of disabilities.

Disability	Number of students
A. Mild intellectual disabilities only	
B. Moderate intellectual disabilities only	
C. Severe intellectual disabilities only	
D. Autism only	
E. Multiple disabilities: Intellectual disabilities and autism	
F. Multiple disabilities: Intellectual disabilities and physical impairments	
G. Multiple disabilities: Intellectual disabilities and health impairments	
H. Multiple disabilities: Intellectual disabilities and sensory impairments	
I. Other multiple disabilities	
J. Other disabilities, please specify _____	

Teacher Demographic Questionnaire Chinese Version**教师基本情况问卷**

1. 您目前任教的学校： _____
2. 您的性别：
A.女 B.男
3. 您的年龄： _____ 岁
4. 您的教育经历：（多选，请勾选您的所有学历并填写对应的专业）
A.专科，专业： _____
B.本科，专业： _____
C.硕士，专业： _____
D.博士，专业： _____
5. 您获得的教师资格证的学科：（多选）
A.语文
B.数学
C.其他： _____
D.没有资格证
6. 您的教龄是： _____ 年（包括您在普通学校和特殊学校任教的所有经历）
7. 您在辅读学校教授发展性障碍儿童（例如智力障碍和自闭症）的教龄是：
_____ 年
8. 除了任课教师以外，您在学校中是否有其他职位？
A.有，请说明： _____
B.无
9. 您目前任教的班级数量： _____ 个
10. 想想您目前教授的班级，回答：
 - （1）各班所属年级
 - （2）您在各班教授的科目
 - （3）各班学生数
 - （4）助教和其他辅助人员的数量（包括学校和家长雇佣的助教、实习老师和志愿者）

班级	年级	科目	学生数	辅助人员数
班级 1				
班级 2				
班级 3				
班级 4				

11. 您任教的 1-6 年级语文或数学课的班级，每个障碍类别的学生大概有多少人？

障碍类别	学生数
A.单纯轻度智力障碍	
B.单纯中度智力障碍	
C.单纯重度智力障碍	
D.单纯自闭症	
E.智力障碍和自闭症的多重障碍	
F.智力障碍和肢体障碍的多重障碍	
G.智力障碍和健康损伤的多重障碍	
H.智力障碍和感官损伤的多重障碍	
I.其他多重障碍	
J.其他障碍或残疾： _____	

Appendix D Interview Protocol

Q1. Tell me about the students in your classes. (To obtain student information)

- What disabilities and special educational needs do these students have?
- What are the difficulties that students have when learning the content you teach? How about their current abilities in the subject you are teaching?
- Do any students have difficulties or impairments in domains of communication, health, vision, hearing, motor skills, or social and behavioral development? (make sure that you ask only one question/area at a time).

Q2. Tell me about how you go about teaching your students? (To obtain information on the practices or strategies that the participant uses to individualize or adapt instruction.)

- **What do you do to teach a student or a group of students who have difficulty learning when you are teaching a class?** What typically happens when a student or a group of students have difficulty during a lesson?
- **Given students' diverse abilities and needs, what do you do to teach them?**
- **Please describe a lesson you taught.** Follow-up: How did you engage students with different characteristics and needs?
- **What grouping formats do you use most often when providing instruction?**

Following Q2, different questions will be asked to obtain further information about participants' practices and perceptions related to individualizing or adapting instruction, depending on how participants respond to Q2. For participants who have indicated that they individualize or adapt instruction for their students, ask questions in Section A, and for participants who have not mentioned anything related to individualized instruction after multiple prompts, ask questions in Section B.

Section A

If the participant talks about individualizing or adapting instruction in response to Q2 but too generally (e.g. "I tailor instruction for my students"), **ask for details and examples of the practices or strategies he or she uses:**

- Can you give me some examples?

Q3. Tell me about the decision-making process or how you plan the instruction and the strategies you just talked about? (To obtain information on how teachers plan individualized instruction or instructional adaptations.)

- How do you decide when (under what circumstances or during what types of activities) to use the strategies?
- How do you decide which strategies to use with which students?

Q4. What do you think about using strategies like what you have just described to individualize or adapt instruction for students with IDD? (To further obtain

information on the participant's perceptions.)

- Why do you think so? Can you explain the reasons?

If not obtained adequate information about the participant's perceptions of the advantages and disadvantages of individualizing or adapting instruction, **ask directly about the advantages and disadvantages:**

- What do you think are the advantages of using these strategies?
- What do you think are the disadvantages of using these strategies?

If not obtained adequate information about the participant's perceptions of the barriers and facilitators to individualizing or adapting instruction, **ask directly about the barriers and facilitators:**

- What are the barriers that have impeded you from planning or implementing these strategies or individualized instruction/instructional adaptations? Or what factors have made it difficult or impossible for you to use these strategies?
- What are the factors that have facilitated the planning and implementation of these strategies or individualized instruction/instructional adaptations? Or what factors have made it easier for you to use these strategies?
- What would help you to individualize or adapt instruction more successfully?

If not obtained adequate information about the **school's policy related to individualizing or adapting instruction** for students with IDD, ask directly:

- What is your school's policy related to individualizing or adapting instruction for students with IDD?

If not obtained adequate information about the participant's training experiences related to individualizing or adapting instruction, **ask directly about their training experiences:**

- Tell me a little about your pre-service and in-service training experiences related to individualizing or adapting instruction for students with IDD.
- How has such training been helpful when you teaching your students?

Section B

If the participant does not mention anything about individualizing or adapting instruction after multiple prompts in Q2, ask about their perceptions of individualizing or adapting instruction and the barriers that have impeded them from doing so:

Q3. I know some teachers use strategies, such as assigning students different tasks, using different materials or teaching methods, to individualize or adapt instruction for students with different needs and ability levels. **What do you think about using these strategies or about individualizing or adapting instruction for students with IDD?**

- Why do you think so? Can you explain the reasons?

Q4. Have you thought about using such strategies for your students?

- Why? Or why not?
- What are the factors that have led you to not using these strategies? Or what are the barriers that have impeded you from using these strategies?
- What do you think would facilitate using these strategies or individualizing or adapting instruction for your students (if the participant indicates he or she is willing to individualize or adapt instruction)?

If not obtained adequate information about the participant's perceptions of the advantages and disadvantages of individualizing or adapting instruction, **ask directly about the advantages and disadvantages:**

- What do you think are the advantages of using such strategies or individualizing or adapting instruction?
- What do you think are the disadvantages of using such strategies or individualizing or adapting instruction?

If not obtained adequate information about the **school's policy related to individualizing or adapting instruction** for students with IDD, ask directly:

- What is your school's policy related to individualizing or adapting instruction?

If not obtained adequate information about the participant's training experiences related to tailoring instruction, **ask directly about their training experiences:**

- Tell me a little about your pre-service and in-service training experiences related to individualizing or adapting instruction for students with IDD.
- How has such training been helpful when you teaching your students?

Finally, ask all participants two multiple-choice questions about teacher training.

Q5. Did you take courses on the following topics in a teacher preparation program?

- A. Curriculum and instruction for students with IDD
- B. Assessment of students with IDD
- C. The concept of individualized instruction, differentiated instruction, or instructional adaptations
- D. The design and implementation of individualized instruction, differentiated instruction, or instructional adaptations

Q6. Did the in-service training that you received (excluding courses taken in a teacher preparation program) address the following topics?

- A. Curriculum and instruction for students with IDD
- B. Assessment of students with IDD
- C. The concept of individualized instruction, differentiated instruction, or instructional adaptations
- D. The design and implementation of individualized instruction, differentiated instruction, or instructional adaptations

Interview Protocol Chinese Version

访谈提纲

下面的问题聚焦于您教授的 1–6 年级语文或数学班级。

Q1. 请您介绍一下您班级的学生。

- 这些学生有什么残疾或特殊需要？
- 在学习您教授的学科内容时，他们有什么困难？他们语文/ 数学学科目前的能力水平如何？
- 这些学生有哪些言语语言沟通、健康、视觉、听觉、动作肢体、社交和行为方面的障碍或损伤？

Q2. 请介绍一下您平时是如何教学的。

- 当您教授一个班级时，对那些学习（您所教授的内容）有困难的一个学生或一组学生，您怎么教？
- 面对学生的不同能力和需要，您怎么教？
- 描述一节您上过的课。后续问题：不同能力和需要的学生如何参与到这节课中？
- 教学时您最常用的教学组织形式是什么？

在回答问题 2 时，如果访谈对象提及对学生进行个别化教学或教学调整，继续 A 部分问题；如果访谈对象经多次提示仍未提及个别化教学的相关措施，跳转至 B 部分问题。

A 部分

如果在回答问题 2 时，访谈对象提及对学生进行个别化教学或教学调整但描述过于空泛（如“我针对学生特点进行教学”），则向他们询问所使用的具体策略及细节和例子。

- 能举一些例子吗？

Q3. 介绍一下您是如何备课的。您如何做出使用刚才提到的策略的决定。

- 您如何决定在什么情况下、在何种活动中使用这些策略？
- 您如何决定对哪个学生使用什么策略？

Q4. 您刚才提到了一些针对学生不同特点进行教学的策略，这些策略和其他类似的策略被称为个别化教学、差异教学或教学调整。您对使用这些策略对学生的进行个别化教学或教学调整有什么想法或看法？

- 您为什么这么认为？

如果没有获得足够的有关个别化教学利弊看法的信息，直接问：

- 您认为使用这些个别化教学或教学调整的策略有什么好处？
- 使用这些策略有什么弊端？

如果没有获得足够的有关个别化教学的阻碍或促进因素的信息，直接问：

- 在您计划或实施这些策略去进行个别化教学或教学调整的过程中，有什么阻碍因素？有什么因素使得个别化教学或教学调整变得困难或不可能？
- 在您计划或实施这些策略去进行个别化教学或教学调整的过程中，有什么促进因素？有什么因素使得个别化教学或教学调整更轻松简单？
- 什么能够帮助您更好、更成功地进行个别化教学或教学调整？

如果没有获得足够的有关教师培训的信息，直接问：

- 谈一谈您接受的有关个别化教学或教学调整的职前和在职培训。
- 这些培训对您的教学有什么帮助？

如果没有获得足够的学校相关政策的信息，直接问：

- 您的学校有哪些有关个别化教学或教学调整的政策要求？

B部分

在问题 2 中，如果访谈对象经多次提示仍未提及个别化教学相关措施，询问他们对个别化教学或教学调整的看法及阻碍因素。

Q3. 我知道有一些老师会使用一些策略为不同能力水平和需要的学生提供有针对性的教学，譬如布置不同的任务、使用不同的教学材料和方法，这些策略被称为个别化教学、差异教学或教学调整。您对这些策略对辅读学校的学生进行个别化教学或教学调整有什么想法或看法？

- 您为什么这么认为？

Q4. 您有没有想过对您的学生使用类似的策略？

- 为什么有？为什么没有？
- 什么因素阻碍了您使用这些策略？
- 什么因素会促进您去使用这些策略或进行个别化教学或教学调整？（如果访谈对象表示有意愿）

如果没有获得足够的有关个别化教学利弊看法的信息，直接问：

- 您认为使用这些个别化教学或教学调整的策略可能会有什么好处？
- 使用这些策略有什么弊端？

如果没有获得足够的有关教师培训的信息，直接问：

- 谈一谈您接受的有关个别化教学或教学调整的职前和在职培训。
- 这些培训对您的教学有什么帮助？

如果没有获得足够的学校相关政策的信息，直接问：

- 您的学校有哪些有关个别化教学或教学调整的政策要求？

最后所有的访谈对象需回答以下两道多选题。

Q5. 您的职前培养课程中是否涉及以下内容？

- A 发展性障碍儿童（如智力障碍和自闭症）的课程和教学
- B 发展性障碍儿童的评估
- C 个别化教学、差异教学、教学调整的概念
- D 个别化教学、差异教学、教学调整的设计和实施

Q6. 您的在职培训课程中是否涉及以下内容？

- A 发展性障碍儿童（如智力障碍和自闭症）的课程和教学
- B 发展性障碍儿童的评估
- C 个别化教学、差异教学、教学调整的概念
- D 个别化教学、差异教学、教学调整的设计和实施

Appendix E Codes and Categories

Context of Individualized Instruction

1. Student description (structural coding)
2. Perceived necessity/benefits
 - 2.1 Important/valuable in general
 - 2.2 Positive consequences
 - 2.3 Student differences necessitating adaptation
3. Perceived disadvantages
 - 3.1 Time-consuming/more work
 - 3.2 Slowing down pace of instruction
4. Perceived challenges and barriers
 - 4.1 Difficult/inadequate in general
 - 4.2 Difficulty creating adaptation opportunities
 - 4.2.1 Students' complex and competing needs
 - 4.2.2 High student–adult ratio
 - 4.2.3 Whole class teaching arrangement (as barrier)
 - 4.3 Difficulty teaching academic content
 - 4.3.1 Students too disabled to learn
 - 4.3.2 Teacher lack of knowledge and skills
 - 4.3.3 Requirement of curriculum standards
 - 4.4 Difficult getting to know students
 - 4.5 Difficult collaborating with other stakeholders
 - 4.5.1 Lack of support from parents
 - 4.5.2 Lack of support from experts/specialists
 - 4.6 Difficulty planning adaptations
 - 4.6.1 Teacher heavy workload/no time for planning
 - 4.6.2 Lack of curriculum/teaching materials
 - 4.7 Other barriers
5. Facilitators
 - 5.1 Resources
 - 5.1.1 Assignment of teaching assistants
 - 5.1.2 Smaller class size
 - 5.1.3 Collaboration/support from parents and other stakeholders
 - 5.1.4 More teaching resources and materials
 - 5.1.5 Reduced workload/more planning time
 - 5.2 Strategies (as facilitators)
 - 5.2.1 Instructional strategies (as facilitators)

- 5.2.2 Pull-out/one-on-one instruction outside of class time (as facilitators)
- 5.3 Reduced student variance/further ability grouping
- 5.4 Teacher training and improved skills
- 5.5 Other facilitators
- 6. Whole class teaching
 - 6.1 Planning instruction for the whole class
 - 6.1.1 Predetermined content
 - 6.1.2 Considering characteristics of whole class
 - 6.2 Generic instructional strategies
 - 6.3 Grouping formats
 - 6.3.1 Whole class
 - 6.3.2 One-on-one in class
 - 6.3.3 Small group
 - 6.4 Whole class thinking

Practices of Individualized Instruction

- 7. Assessment strategies
 - 7.1 Summative-examination
 - 7.2 Teacher made formative assessment
 - 7.3 Observations/I know
 - 7.4 Asking parents and other teachers
 - 7.5 Other assessment strategies
- 8. Adaptation strategies
 - 8.1 Adaptation: non-specific
 - 8.2 Modified objectives or tasks
 - 8.3 Different types and levels of instructor supports
 - 8.3.1 Teacher
 - 8.3.2 Peer
 - 8.3.3 teaching assistants
 - 8.4 More instruction outside of class
 - 8.4.1 Teacher tutoring or one-on-one instruction outside of class
 - 8.4.2 Parents assisting with homework/tutoring at home
 - 8.5 Adapted learning environment
 - 8.6 Changed methods of presentation
 - 8.7 Other adaptations
 - 8.8 Lack of certain adaptations
 - 8.9 Adaptation decision-making
- 9. Miscellaneous
 - 9.1 School requirement
 - 9.2 Misunderstanding/narrow conception

References

- Allington, R. L. (1983). The reading instruction provided readers of differing reading abilities. *The Elementary School Journal*, 83(5), 548–559.
- Ayres, K. M., Lowrey, K. A., Douglas, K. H., & Sievers, C. (2011). I can identify Saturn but I can't brush my teeth: What happens when the curricular focus for students with severe disabilities shifts. *Education and Training in Autism and Developmental Disabilities*, 46(1), 11–21.
- Ajzen, I. (2005). *Attitudes, personality, and behavior* (2nd ed.). Berkshire, England: McGraw-Hill Education.
- Bangert, R. L., Kulik, J. A., & Kulik, C. L. C. (1983). Individualized systems of instruction in secondary schools. *Review of Educational Research*, 53(2), 143–158.
- Berry, R. (2011). Assessment trends in Hong Kong: Seeking to establish formative assessment in an examination culture. *Assessment in Education: Principles, Policy & Practice*, 18(2), 199–211.
- Bhaskar, R. (2008). *A realist theory of science*. Abingdon, England: Routledge.
- Bazeley, P. (2013). *Qualitative Data Analysis: Practical Strategies*. Thousand Oaks, CA: SAGE.
- Bishop, L. K. (1971). *Individualizing educational systems: The elementary and secondary school implications for curriculum, professional staff and students*. New York: NY: Harper & Row.

- Blake, H. E. & McPherson, A. W. (1975). Individualized Instruction—Where are we? In J. E. Duane (Ed.), *Individualized instruction—programs and materials: Selected readings and bibliography* (pp. 7–16). Englewood Cliffs: NJ: Educational Technology Publications.
- Brantlinger, E., Jimenez, R., Klingner, J., Pugach, M., & Richardson, V. (2005). Qualitative studies in special education. *Exceptional children, 71*(2), 195–207.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101.
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper (Ed.), *APA handbook of research methods in psychology* (Vol. 2, pp. 57–71). Washington, D.C.: American Psychological Association.
- Brighton, C. M., Hertberg, H. L., Moon, T. R., Tomlinson, C. A., & Callahan, C. M. (2005). The feasibility of high-end learning in a diverse middle school. Retrieved from <https://files.eric.ed.gov/fulltext/ED505377.pdf>
- Brock, M. E., & Carter, E. W. (2013). A systematic review of paraprofessional-delivered educational practices to improve outcomes for students with intellectual and developmental disabilities. *Research and Practice for Persons with Severe Disabilities, 38*(4), 211–221.
- Browder, D. M. (2012). Finding the balance: A response to Hunt and McDonnell. *Research and Practice for Persons with Severe Disabilities, 37*(3), 157–159.
- Browder, D. M., Flowers, C., Ahlgrim-DeLzell, L., Karvonen, M., Spooner, F., & Algozzine, R. (2004). The alignment of alternate assessment content with

academic and functional curricula. *The Journal of Special Education*, 37(4), 211–223.

Browder, D. M., Spooner, F., & Jimenez, B. (2011). Standard-based individualized education plans and progress monitoring. In D. M. Browder & F. Spooner (Eds.), *Teaching students with moderate and severe disabilities* (pp. 42–90). New York: NY: Guilford Press.

Brown, F., Holvoet, J., Guess, D., & Mulligan, M. (1980). The individualized curriculum sequencing model (III): Small group instruction. *Journal of the Association for the Severely Handicapped*, 5(4), 352–367.

Brown, F., Lehr, H. D. & Snell, M. E. (2011). Conducting and using student assessment. In M. E. Snell & F. Brown (Eds.), *Instruction of students with severe disabilities* (7th ed., pp. 73–121). Boston: MA: Pearson.

Brown, L., Nietupski, J., & Hamre Nietupski, S. (1976). The criterion of ultimate functioning and public school services for severely handicapped students. In M. A. Thomas (Ed.), *Hey, Don't forget about me!: Education's investment in the severely, profoundly and multiply handicapped* (pp. 2–15). Reston, VA: Council for Exceptional Children.

Burns, R. W. (1973). Methods for individualizing instruction. In J. E. Duane (Ed.), *Individualized instruction—programs and materials: Selected readings and bibliography* (pp. 25–32). Englewood Cliffs: NJ: Educational Technology Publications.

- Caelli, K., Ray, L., & Mill, J. (2003). "Clear as mud": Toward greater clarity in generic qualitative research. *International Journal of Qualitative Methods*, 2(2), 1–13.
- Carless, D. (2005). Prospects for the implementation of assessment for learning. *Assessment in Education: Principles, Policy & Practice*, 12(1), 39–54.
- Carter, E. W., & Kennedy, C. H. (2006). Promoting access to the general curriculum using peer support strategies. *Research and Practice for Persons with Severe Disabilities*, 31(4), 284–292.
- Carter, E. W., Sisco, L. G., Melekoglu, M. A., & Kurkowski, C. (2007). Peer supports as an alternative to individually assigned paraprofessionals in inclusive high school classrooms. *Research and Practice for Persons with Severe Disabilities*, 32(4), 213–227.
- Causton-Theoharis, J., Theoharis, G., Orsati, F., & Cosier, M. (2011). Does self-contained special education deliver on its promises? A critical inquiry into research and practice. *Journal of Special Education Leadership*, 24(2), 61–78.
- Chen, Y. (1994). Xuesheng de gebie chayi yu teshu jiaoyu [Individual differences among students and special education]. *Chinese Journal of Special Education*, 1994(1), 3–6.
- Cheng, K. M. (1998). Can education values be borrowed? Looking into cultural differences. *Peabody Journal of Education*, 73(2), 11–30.
- Cheung, C. K., & Rudowicz, E. (2003). Academic outcomes of ability grouping among junior high school students in Hong Kong. *The Journal of Educational Research*, 96(4), 241–254.

- Chorzempa, B. F., & Graham, S. (2006). Primary-grade teachers' use of within-class ability grouping in reading. *Journal of Educational Psychology, 98*(3), 529.
- Clark, A. M. (2008). Critical realism. In *the SAGE Encyclopedia of Qualitative Research Methods* (pp. 167–169). Thousand Oaks, CA: SAGE.
- Collins, B. C., Gast, D. L., Ault, M. J., & Wolery, M. (1991). Small group instruction: Guidelines for teachers of students with moderate to severe handicaps. *Education and Training in Mental Retardation, 26*(1), 18–32.
- Collins, B. C., Hager, K. L., & Galloway, C. C. (2011). Addition of functional content during core content instruction with students with moderate disabilities. *Education and Training in Autism and Developmental Disabilities, (46)*1, 22–39.
- Compulsory Education Law of the People's Republic of China, art. 17. (1986).
- Creswell, J. W. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches* (3rd ed.). Thousand Oaks, CA: SAGE.
- Cuban, L. (1993). *How teachers taught: Constancy and change in American classrooms, 1880–1990* (2nd ed.). New York, NY: Teachers College Press.
- Cui, T. & Zhu, J. (1995). Fenheshi ketang jiaoxue fangfa de tansuo [An exploration of the fenhe instructional methods]. *Journal of Shanghai Educational Research, 1995*(6). 33–35.
- Deng, M. & Guo, L. (2010). Reflections on the individualized Education Program in the West and its implications for the development of China's special education. *Chinese Journal of Special Education, 2010*(6), 3–7.

- Deng, M., Poon-Mcbrayer, K. F., & Farnsworth, E. B. (2001). The development of special education in China: A sociocultural review. *Remedial and Special Education, 22*(5), 288–298.
- Deno, S. L. (2003). Developments in curriculum-based measurement. *The Journal of Special Education, 37*(3), 184–192.
- Ding, X. (1997). Jinnianlai woguo gebiehua jiaoxue yanjiu shuyao [A synthesis of research on individualized instruction in our country in recent years]. *Journal of Shanghai Educational Research, 1997*(4), 12–17.
- Ding, Y. (2001). According to the comparison between China and USA, Discuss the implementation of Individualized Education Program in China. *Chinese Journal of Special Education, 2001*(4), 56–60.
- Ding, Y., Gerken, K. C., VanDyke, D. C., & Xiao, F. (2006). Parents' and special education teachers' perspectives of implementing individualized instruction in PR China—An empirical and sociocultural approach. *International Journal of Special Education, 21*(3), 138–150.
- Downing, J. (1988). Active versus passive programming: A critique of IEP objectives for students with the most severe disabilities. *Journal of the Association for Persons with Severe Handicaps, 13*(3), 197–201.
- Downing, J. E. (2005). *Teaching literacy to students with significant disabilities: Strategies for the K–12 inclusive classroom*. Thousand Oaks, CA: Corwin Press.

- Downing, J. E., & Eichinger, J. (2003). Creating learning opportunities for students with severe disabilities in inclusive classrooms. *Teaching Exceptional Children, 36*(1), 26–31.
- Downing, J. E., & Peckham-Hardin, K. D. (2007). Inclusive education: What makes it a good education for students with moderate to severe disabilities? *Research and Practice for Persons with Severe Disabilities, 32*(1), 16–30.
- Dunlap, G., & Kern, L. (1996). Modifying instructional activities to promote desirable behavior: A conceptual and practical framework. *School Psychology Quarterly, 11*(4), 297–312.
- Dunn, L. M. (1968). Special education for the mildly retarded—Is much of it justifiable? *Exceptional Children, 35*(1), 5–22.
- Dymond, S. K., & Orelove, F. P. (2001). What constitutes effective curricula for students with severe disabilities? *Exceptionality, 9*(3), 109–122.
- Ellsworth, N. J., & Zhang, C. (2007). Progress and challenges in China's special education development: Observations, reflections, and recommendations. *Remedial and Special Education, 28*(1), 58–64.
- Ertmer, P. A. (1999). Addressing first-and second-order barriers to change: Strategies for technology integration. *Educational technology research and development, 47*(4), 47–61.
- Ferro, J., Foster-Johnson, L., & Dunlap, G. (1996). Relation between curricular activities and problem behaviors of students with mental retardation. *American Journal on Mental Retardation, 101*(2), 184–194.

- Flanagan, J. C., Shanner, W. M., Brudner, H. J., & Marker, R. W. (1975). An individualized instructional system: PLAN. In H. Talmage (Ed.), *Systems of individualized education* (pp. 136–167). Berkeley, CA: McCutchan Publishing Corporation.
- Flood, J., Lapp, D., Flood, S., & Nagel, G. (1992). Am I allowed to group? Using flexible patterns for effective instruction. *The Reading Teacher*, 45(8), 608–616.
- Ford, A., Davern, L., & Schnorr, R. (2001). Learners with significant disabilities: Curricular relevance in an era of standards-based reform. *Remedial and Special Education*, 22(4), 214–222.
- Friend, M., & Bursuck, W. D. (2011). *Including students with special needs: A practical guide for classroom teachers* (6th ed.). Upper Saddle River, NJ: Pearson.
- Fuchs, L. S., & Fuchs, D. (1986). Effects of systematic formative evaluation: A meta-analysis. *Exceptional Children*, 53(3), 199–208.
- Fuchs, L. S., & Fuchs, D. (1998). General educators' instructional adaptation for students with learning disabilities. *Learning Disability Quarterly*, 21(1), 23–33.
- Fullan, M. (2001). *Leading in a culture of change*. San Francisco, CA: Jossey-Bass.
- Giangreco, M. F., Cloninger, C. J. & Iverson, V. S. (2011). *Choosing outcomes & accommodations for children* (3rd ed.). Baltimore, MD: Brookes Publishing.
- Giangreco, M. F., Suter, J. C., & Doyle, M. B. (2010). Paraprofessionals in inclusive schools: A review of recent research. *Journal of educational and psychological consultation*, 20(1), 41–57.
- Gibbons, M. (1970). What is individualized instruction? *Interchange*, 1(2), 28–52.

- Glaser, R., & Rosner, J. (1975). Adaptive environments for learning: Curriculum aspects. In H. Talmage (Ed.), *Systems of individualized instruction* (pp. 84–135). Berkeley, CA: McCutchan Publishing Corporation.
- Glaser, B. G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research*. Chicago, IL: Aldine.
- Good, T., & Stipek, D. (1983). Individual differences in the classroom: A psychological perspective. In G. Fenstermacher & J. Goodlad (Eds.), *Individual differences and the common curriculum* (82nd yearbook of the National Society for the Study of Education, Part I). Chicago: University of Chicago Press.
- Grinder, R. E. & Nelsen, E. A. (1985). Individualized instruction in American pedagogy: The saga of an educational ideology and a practice in the making. In M. C. Wang & H. Walberg (Eds.), *Adapting instruction to individual differences* (pp. 24–43). Berkeley, CA: McCutchan Publishing Corporation.
- Grittner, F. M. (1975). Individualized instruction: An historical perspective. *The Modern Language Journal*, 59(7), 323–333.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59–82.
- Hallahan, D. P., & Kauffman, J. M. (2006). *Exceptional learners: Introduction to special education* (10th ed.). Boston: MA: Pearson.
- Haller, E. J., & Davis, S. A. (1980). Does socioeconomic status bias the assignment of elementary school students to reading groups? *American Educational Research Journal*, 17(4), 409–418.

- Heathers, G. (1977). A working definition of individualized instruction. *Educational Leadership, 34*(5), 342–345. 39
- Herrick, M. J. (1973). Developing individualized instruction is the difference. *The Journal of Special Education, 7*(4), 417–421.
- Hoffman, J. (2002). Flexible grouping strategies in the multiage classroom. *Theory into Practice, 41*(1), 47–52.
- Hu, X. (1992). Guanyu “fengceng dijin jiaoxue” de shexiang [Some ideas about fengceng instruction]. *Journal of Shanghai Educational Research, 1992*(6), 1–5.
- Hunt, P., McDonnell, J., & Crockett, M. A. (2012). Reconciling an ecological curricular framework focusing on quality of life outcomes with the development and instruction of standards-based academic goals. *Research and Practice for Persons with Severe Disabilities, 37*(3), 139–152.
- Individuals with Disabilities Education Act, 20 U.S.C. §§ 1401–1414 (2004).
- Individuals with Disabilities Education Act of 2004 Regulations, 34 C.F.R. § 300 (2010).
- Janney, R. E., & Snell, M. E. (1997). How teachers include students with moderate and severe disabilities in elementary classes: The means and meaning of inclusion. *Journal of the Association for Persons with Severe Handicaps, 22*(3), 159–169.
- Janney, R. E., & Snell, M. E. (2004). *Modifying schoolwork* (2nd ed.). Baltimore, MD: Brookes Publishing.
- Janney, R. E., & Snell, M. E. (2011). Designing and implementing instruction for inclusive classes. In M. E. Snell & F. Brown (Eds.), *Instruction of Students with Severe Disabilities* (7th ed., pp. 224–256). Boston, MA: Pearson.

- Janney, R. E., & Snell, M. E. (2013). *Modifying schoolwork* (3rd ed.). Baltimore, MD: Brookes Publishing.
- Jernstedt, G. C. (1976). The relative effectiveness of individualized and traditional instruction methods. *The Journal of Educational Research*, 69(6), 211–218.
- Jeter, J. (1980a). Guiding thoughts in individualized education. In J. Jeter (Ed.), *Approaches to individualized education* (pp. 6–9). Alexandria, VA: The Association for Supervision and Curriculum Development.
- Jeter, J. (1980b). Individualized instruction programs. In J. Jeter (Ed.), *Approaches to individualized education* (pp. 29–49). Alexandria, VA: The Association for Supervision and Curriculum Development.
- Johnson, D. W., & Johnson, R. T. (1999). Making cooperative learning work. *Theory into Practice*, 38(2), 67–73.
- Kamps, D., Walker, D., Locke, P., Delquadri, J., & Hall, R. V. (1990). A comparison of instructional arrangements for children with autism served in a public school setting. *Education and Treatment of Children*, 13(3), 197–215.
- Kariya, T. (2011). Japanese solutions to the equity and efficiency dilemma? Secondary schools, inequity and the arrival of “universal” higher education. *Oxford Review of Education*, 37(2), 241–266.
- Kepler, K., & Randall, J. W. (1977). Individualization: the subversion of elementary schooling. *The Elementary School Journal*, 77(5), 358–363.

- Klausmeier, H. J. (1975). IGE: An alternative form of schooling. In H. Talmage (Ed.), *Systems of individualized instruction* (pp. 48–83). Berkeley, CA: McCutchan Publishing Corporation.
- Kliewer, C., & Landis, D. (1999). Individualizing literacy instruction for young children with moderate to severe disabilities. *Exceptional Children, 66*(1), 85–100.
- Klingner, J. K., Boardman, A. G., & McMaster, K. L. (2013). What does it take to scale up and sustain evidence-based practices?. *Exceptional Children, 79*(2), 195–211.
- Kulik, C. L. C., & Kulik, J. A. (1982). Effects of ability grouping on secondary school students: A meta-analysis of evaluation findings. *American Educational Research Journal, 19*(3), 415–428.
- Kulik, J. A. (1992). *An analysis of the research on ability grouping: Historical and contemporary perspectives*. Washington, DC: National Research Center on the Gifted and Talented.
- Kulik, J. A., & Kulik, C. L. C. (1992). Meta-analytic findings on grouping programs. *Gifted Child Quarterly, 36*(2), 73–77.
- Lai, H. (2016). Peizhi yuwen gebiehua jiaoxue shishi celue [Strategies for implementing individualized instruction for students with intellectual disabilities]. *Modern Special Education, 2016*(11), 49–51.
- Landrum, T. J., & McDuffie, K. A. (2010). Learning styles in the age of differentiated instruction. *Exceptionality, 18*(1), 6–17.
- Law of the People’s Republic of China on the Protection of Persons with Disabilities, art. 18–26. (1990).

- Lee, S. H., Wehmeyer, M. L., Soukup, J. H., & Palmer, S. B. (2010). Impact of curriculum modifications on access to the general education curriculum for students with disabilities. *Exceptional Children, 76*(2), 213–233.
- Lian, F., & Chen, S. (2015). Ideal and reality: A case study on the practice of Individualized Education Program in special schools. *Chinese Journal of Special Education, 2015*(7), 3–9.
- Liu, Y. (2004). Zhendui ruozhi ertong de gebie chayi jinxing gebiehua jiaoxue [Implementing individualized instruction based on individual differences among students with intellectual disabilities]. *Modern Special Education, 2004*(7–8), 58.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Thousand Oaks, CA: SAGE.
- Lou, Y., Abrami, P. C., Spence, J. C., Poulsen, C., Chambers, B., & d'Apollonia, S. (1996). Within-class grouping: A meta-analysis. *Review of Educational Research, 66*(4), 423–458.
- Loucks-Horsley, S., Stiles, K. E., Mundry, S., Love, N., & Hewson, P. W. (2010). *Designing professional development for teachers of science and mathematics* (3rd ed.). Thousand Oaks, CA: Corwin Press.
- Lu, M. (2017). *Teacher efficacy and related factors of special education school in China* (Doctoral dissertation). Retrieved from CNKI Thesis and Dissertation Database.
- Luwan Special School. (2005a). *Functional Chinese Language Arts* (Vols. 1–18). Shanghai, China: Shanghai Education Publishing House
- Luwan Special School. (2005b). *Functional Math* (Vols. 1–18). Shanghai, China: Shanghai Education Publishing House.

- Mao, J. (2000). Bannei fenzu fengceng jiaoxue cunzai de wenti jiqi youhua celue [Within-class grouping and fengceng instruction: Problems and strategies for improvement]. *Educational Research and Experiment*, 2000(4), 45–47.
- Marsha, A. R. (1968). *Ability grouping*. Washington, DC: National Education Association.
- Massachusetts Department of Elementary and Secondary Education (2017). Resource guide to the 2017 Massachusetts curriculum frameworks for students with disabilities: Math. Retrieved from https://www.mcas-alt.org/materials/Files/2018/MATH_2018.pdf
- Massachusetts Department of Elementary and Secondary Education (2018). Resource guide to the 2017 Massachusetts curriculum frameworks for students with disabilities: English language arts and literacy. Retrieved from https://www.mcas-alt.org/materials/Files/2019/ELA_2019.pdf
- Maxwell, J. A. (2010). Using numbers in qualitative research. *Qualitative inquiry*, 16(6), 475–482.
- Maxwell, J. A. (2013). *Qualitative research design: An interactive approach* (3rd ed.). Thousand Oaks, CA: SAGE.
- Maxwell, J. A. (2018). Collecting qualitative data: A realist approach. In U. Flick (Ed.), *The SAGE handbook of qualitative data collection* (pp. 19–32). London: England: SAGE.
- McCabe, H. (2003). The beginnings of inclusion in the People’s Republic of China. *Research and Practice for Persons with Severe Disabilities*, 28(1), 16–22.

- McDonnell, J., & Copeland, S. R. (2011). Teaching academic skills. In M. E. Snell & F. Brown (Eds.), *Instruction of Students with Severe Disabilities* (7th ed., pp. 492–528). Boston: MA: Pearson.
- McGregor, G. (2003). Standards-based reform and students with disabilities. In D. L. Ryndak & S. Alper (Eds.), *Curriculum and instruction for students with significant disabilities in inclusive setting* (2nd ed., pp. 31–50). Boston: MA: Pearson.
- Mcloughlin, C. S., Zhou, Z., & Clark, E. (2005). Reflections on the development and status of contemporary special education services in China. *Psychology in the Schools*, 42(3), 273–283.
- Merriam, S. B. (2009). *Qualitative research: A guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Miles, M. B., Huberman, A. M. & Saldaña, J. (2013). *Qualitative data analysis: A methods sourcebook* (3rd ed.). Thousand Oaks, CA: SAGE.
- Miller, R. L. (1976). Individualized instruction in mathematics: A review of research. *The Mathematics Teacher*, 69(5), 345–351.
- Ministry of Education (2007). *Curriculum schemes for compulsory education in three types of special education schools*.
http://old.moe.gov.cn/publicfiles/business/htmlfiles/moe/s3331/201112/xxgk_128271.html
- Ministry of Education (2016). *Curriculum standards for compulsory education in schools for students with intellectual disabilities*. Retrieved from

<http://www.moe.gov.cn/srcsite/A06/s3331/201612/W020180117596171784593.pdf>

Ministry of Education, National Development and Reform Commission, Ministry of Civil Affairs, Ministry of Finance, Ministry of Human Resources and Social Security, Ministry of Health, State Commission Office for Public Sector Reform, & China Disabled Persons' Federation (2009). *Suggestions for further accelerating the development of special education*. Retrieved from http://www.gov.cn/zwggk/2009-05/08/content_1308951.htm

Ministry of Education, National Development and Reform Commission, Ministry of Civil Affairs, Ministry of Finance, Ministry of Human Resources and Social Security, National Health and Family Planning Commission, & China Disabled Persons' Federation (2014). *Special education improvement plan (Year 2014–2016)*. Retrieved from http://old.moe.gov.cn/publicfiles/business/htmlfiles/moe/moe_1778/201401/162822.html

Molenda, M. (2012). Individualized instruction: A recurrent theme. *TechTrends*, 56(6), 12–14.

Moody, S. W., Schumm, J. S., Fischer, M., & Jean-Francois, B. (1999). Grouping suggestions for the classroom: What do our basal reading series tell us? *Literacy Research and Instruction*, 38(4), 319–331.

- Morse, J. M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability and validity in qualitative research. *International journal of qualitative methods*, 1(2), 13–22.
- No Child Left Behind Act of 2001, 20 U.S.C. § 6319 (2011).
- Office of Elementary and Middle School Curriculum Reform Committee of Shanghai (2009a). *Shanghai curriculum guide for functional Chinese language arts for fudu schools*. Shanghai, China: Shanghai Educational Publishing House.
- Office of Elementary and Middle School Curriculum Reform Committee of Shanghai (2009b). *Shanghai curriculum guide for functional math for fudu schools*. Shanghai, China: Shanghai Educational Publishing House.
- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307–332.
- Parsons, S. A., Vaughn, M., Scales, R. Q., Gallagher, M. A., Parsons, A. W., Davis, S. G., ... & Allen, M. (2018). Teachers' instructional adaptations: A research synthesis. *Review of Educational Research*, 88(2), 205–242.
- Patton, M. Q. (2014). *Qualitative research and evaluation methods* (4th ed.). Thousand Oaks, CA: SAGE.
- Pawson, R. (1996). Theorizing the interview. *British Journal of Sociology*, 47(2), 295–314.
- Peizhi School Textbook Development Committee (Ed.). (1992a). *Chinese language arts textbook for full-day peizhi schools* (Vols. 1–18). Beijing, China: People's Education Press.

- Peizhi School Textbook Development Committee (1992b). *Math textbooks for full-day Peizhi schools* (Vols. 1–18). Beijing, China: People's Education Press.
- Peng, W. J., McNess, E., Thomas, S., Wu, X. R., Zhang, C., Li, J. Z., & Tian, H. S. (2014). Emerging perceptions of teacher quality and teacher development in China. *International Journal of Educational Development, 34*, 77–89.
- Regulation on the Education of Persons with Disabilities (1994).
- Regulation on the Education of Persons with Disabilities, art. 24. (2017).
- Rose, D. H., & Meyer, A. (2002). *Teaching every student in the digital age: Universal design for learning*. Alexandria, VA: Association for Supervision and Curriculum Development.
- Rossman, G. B., & Rallis, S. F. (2003). *Learning in the field: An introduction to qualitative research* (2nd ed.). Thousand Oaks, CA: SAGE.
- Rothrock, D. (1982). The rise and decline of individualized instruction. *Educational Leadership, 39*(7), 528–530.
- Ryndak, D. L. (2003). The curriculum content identification process: Rationale and overview. In D. L. Ryndak & S. Alper (Eds.), *Curriculum and instruction for students with significant* (pp. 86–115). Boston, MA: Pearson.
- Saldaña, J. (2013). *The coding manual for qualitative researchers* (2nd ed.). Thousand Oaks, CA: SAGE.
- Schoen, H. L. (1976). Self-paced mathematics instruction: How effective has it been in secondary and postsecondary Schools? *The Mathematics Teacher, 69*(5), 352–357.

- Schumm, J. S., & Vaughn, S. (1991). Making adaptations for mainstreamed students: General classroom teachers' perspectives. *Remedial and Special Education, 12*(4), 18–27.
- Schumm, J. S., Vaughn, S., Gordon, J., & Rothlein, L. (1994). General education teachers' beliefs, skills, and practices in planning for mainstreamed students with learning disabilities. *Teacher Education and Special Education, 17*(1), 22–37.
- Scott, B. J., Vitale, M. R., & Masten, W. G. (1998). Implementing instructional adaptations for students with disabilities in inclusive classrooms: A literature review. *Remedial and Special Education, 19*(2), 106–119.
- Sheng, Y. (2005). In quest of “the ought” on individualized teaching conception. *Chinese Journal of Special Education, 2005*(10), 77–81.
- Sheng, Y. (2011). Individualized teaching of special schools in the US: Based on the experience of Perkins school for the blind. *Chinese Journal of Special Education, 2011*(3), 26–30.
- Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review, 57*(1), 1–23.
- Sindelar, P. T., Collins, R., & Applequist, K. F. (2008). Individualization of instruction. In *Encyclopedia of Special Education* (3rd ed., pp. 1091–1092). Hoboken, NJ: John Wiley & Sons.
- Slavin, R. E. (1987). Ability grouping and student achievement in elementary schools: A best-evidence synthesis. *Review of Educational Research, 57*(3), 293–336.

- Slavin, R. E. (1990a). Achievement effects of ability grouping in secondary schools: A best-evidence synthesis. *Review of Educational Research*, 60(3), 471–499.
- Slavin, R. E. (1990b). Research on cooperative learning: Consensus and controversy. *Educational Leadership*, 47(4), 52–54.
- Slavin, R. E. (1993). Ability grouping in the middle grades: Achievement effects and alternatives. *The Elementary School Journal*, 93(5), 535–552.
- Slavin, R. E., Leavey, M. B., & Madden, N. A. (1984). Combining cooperative learning and individualized instruction: Effects on student mathematics achievement, attitudes, and behaviors. *The Elementary School Journal*, 84(4), 409–422.
- Snell, M. E., & Brown, F. (2011). Selecting teaching strategies and arranging educational environments. In M. E. Snell & F. Brown (Eds.), *Instruction of Students with Severe Disabilities* (7th ed., pp. 122–185). Boston: MA: Pearson.
- Speece, D. L. (1990). Aptitude–treatment interactions: Bad rap or bad idea? *The Journal of Special Education*, 24(2), 139–149.
- Spooner, F., Knight, V. F., Browder, D. M., & Smith, B. R. (2012). Evidence-based practice for teaching academics to students with severe developmental disabilities. *Remedial and Special Education*, 33(6), 374–387.
- State Education Commission, & China Disabled Persons' Federation (1996). *The ninth five-year plan for implementing compulsory education for children and youths with disabilities*. Retrieved from http://www.gov.cn/ztl/61/content_627743.htm

- Stecker, P. M., Fuchs, L. S., & Fuchs, D. (2005). Using curriculum-based measurement to improve student achievement: Review of research. *Psychology in the Schools, 42*(8), 795–819.
- Steenbergen-Hu, S., Makel, M. C., & Olszewski-Kubilius, P. (2016). What one hundred years of research says about the effects of ability grouping and acceleration on K–12 students' academic achievement: Findings of two second-order meta-analyses. *Review of Educational Research, 86*(4), 849–899.
- Stevenson, H. W., & Lee, S. (1995). The East Asian version of whole-class teaching. *Educational Policy, 9*(2), 152–168.
- Stuart, C., & Thurlow, D. (2000). Making it their own: Preservice teachers' experiences, beliefs, and classroom practices. *Journal of Teacher Education, 51*(2), 113–121.
- Talmage, H. (1980). What is individualization? In J. Jeter (Ed.), *Approaches to individualized education* (pp. 10–28). Alexandria, VA: The Association for Supervision and Curriculum Development.
- Tang, Q., & He, T. (2016). The comparison of Chinese textbooks for junior class students in mental retardation schools. *Journal of Modern Special Education (Academic), 2016*(4), 41–47.
- Tieso, C. L. (2003). Ability grouping is not just tracking anymore. *Roeper Review, 26*(1), 29–36. 90
- Tomlinson, C. A. (1999). *The differentiated classroom: Responding to the needs of all learners*. Alexandria, VA: Association for Supervision and Curriculum Development.

- Tomlinson, C. A. (2001). *How to differentiate instruction in mixed-ability classrooms*. Alexandria (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.
- Tomlinson, C. A., Brighton, C., Hertberg, H., Callahan, C. M., Moon, T. R., Brimijoin, K., . . . & Reynolds, T. (2003). Differentiating instruction in response to student readiness, interest, and learning profile in academically diverse classrooms: A review of literature. *Journal for the Education of the Gifted*, 27(2–3), 119–145.
- Tye, B. B. (2000). *Hard truths: Uncovering the deep structure of schooling*. New York, NY: Teachers College Press.
- Udvari-Solner, A. (1992). Curricular adaptations: Accommodating the instructional needs of diverse learners in the context of general education. Retrieved from <https://eric.ed.gov/?id=ED354685>
- Udvari-Solner, A. (1996). Examining teacher thinking: Constructing a process to design curricular adaptations. *Remedial and special education*, 17(4), 245–254.
- Wang, M. C. (1992). *Adaptive education strategies: Building on diversity*. Baltimore, MD: Brookes Publishing.
- Wang, M. C., & Lindvall, C. M. (1984). Individual differences and school learning environments. *Review of Research in Education*, 11(1), 161–225.
- Wang, M. C., Peverly, S., & Randolph, R. (1984). An investigation of the implementation and effects of a full-time mainstreaming program. *Remedial and Special Education*, 5(6), 21–32.

- Wang, M. C. & Walberg, H. (1985). Preface. In M. C. Wang & H. Walberg (Eds.), *Adapting instruction to individual differences* (pp. xiii–xvi). Berkeley, CA: McCutchan Publishing Corporation.
- Wang, H. (2003). Analyze the cultivating aims and curriculum's problems of school for mental retardation. *Chinese Journal of Special Education*, 2003(2), 35–40.
- Wang, Y., & Mu, G. M. (2014). Revisiting the trajectories of special teacher education in China through policy and practice. *International Journal of Disability, Development and Education*, 61(4), 346–361.
- Weber, G. (1977). The cult of individualized instruction. *Educational Leadership*, 34(5), 326–329.
- Weeks, M., & Gaylord-Ross, R. (1981). Task difficulty and aberrant behavior in severely handicapped students. *Journal of Applied Behavior Analysis*, 14(4), 449–463.
- Wehmeyer, M. L., Lattin, D., & Agran, M. (2001). Achieving access to the general curriculum for students with mental retardation: A curriculum decision-making model. *Education and Training in Mental Retardation and Developmental Disabilities*, 36(4), 327–342.
- Wehmeyer, M. L., Palmer, S. B., Agran, M., Mithaug, D. E., & Martin, J. E. (2000). Promoting causal agency: The self-determined learning model of instruction. *Exceptional Children*, 66(4), 439–453.
- Whipple, G. M. (Ed.). (1925). *Adapting the schools to individual differences* (24th yearbook of the National Society for the Study of the Education, Part II). Bloomington, Illinois: Public School Publishing Company.

- Winzer, M. A. (1993). *The history of special education: From isolation to integration*. Washington, DC: Gallaudet University Press.
- Xiao, F. (2005). Some ideas about Individualized Educational Program. *Chinese Journal of Special Education*, 2005(2), 8–12.
- Xin, W. & Cao, S. (2015). Content-based analysis of the Individualized Education Program for the schools of mental retardation in Zhejiang Province. *Chinese Journal of Special Education*, 2015(7), 18–26.
- Xin, W. & Cao, S. (2016). On the formulation, implementation and difficulties of the Individualized Education Program for schools for children with intellectual disabilities—An investigation into certain schools for children with intellectual disabilities in Hangzhou. *Chinese Journal of Special Education*, 2016(4), 18–26.
- Ye, L., & Liu, W. (2010). Evolution of teaching in different levels in China. *Journal of Ningbo University (Educational Science Edition)*, 32(3), 5–8.
- Yell, M. L., & Stecker, P. M. (2003). Developing legally correct and educationally meaningful IEPs using curriculum-based measurement. *Assessment for Effective Intervention*, 28(3–4), 73–88.
- Yin, R. K. (2014). *Case study research and applications: Design and methods* (5th ed.). Thousand Oaks, CA: SAGE.
- Yin, R. K. (2016). *Qualitative research from start to finish* (2nd ed.). New York: NY: Guilford Press.

- Yu, S. (2008). The present situation and future development of the special education teacher certification system in Shanghai. *Chinese Journal of Special Education*, 2008(6), 52–57.
- Yu, S. (2011). The legislative evolution of the US Individualized Education Program. *Chinese Journal of Special Education*, 2011(2), 3–8.
- Yu, S. (2014). Small group instruction and its application in special education. *Chinese Journal of Special Education*, 2014(4), 15–20.
- Yuan, H., Zhang, Z., & Pang, Z. (2009). A practical research on Individualized Education Program of moderate and severe retarded children. *Chinese Journal of Special Education*, 2009(10), 29–34.
- Zhao, X. & Hua, G. (2006). Discussion on the application of “individualized instruction” and “differentiating instruction” in special education. *Chinese Journal of Special Education*, 2006(8), 40–45.
- Zhong, Q. (Trans.). (2010). “Fenceng jiaoxue” youxiao ma? [Is fenceng instruction effective?]. *Global Education*, 39(5), 3–7.
- Zhu, Y., & Yu, S. (2011). An Analysis of the Individualized Education Program (IEP) for the ninth-year disabled students learning in regular classes. *Chinese Journal of Special Education*, 2011(10), 14–21.

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