Development and Use of Curricular Adaptations for Students Receiving Special Education Services

by Jennifer A. Kurth

Lissa Keegan

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Jennifer A. Kurth, PhD
University of Kansas
Department of Special Education
JRP Room 541
Lawrence, KS 66045
jkurth@ku.edu

Lissa Keegan, MEd
Northern Arizona University
College of Education
Box 5774
Flagstaff, AZ 86011
Mjw58@nau.edu

*All correspondence should be directed to Jennifer Kurth

Abstract

The present study is a quasi-experimental descriptive design, with existing educator-made adaptations evaluated. The goals of this study were to (1) Describe how educators develop adaptations, and (2) Evaluate the effectiveness of educator-made adaptations in facilitating the learning of students with disabilities. Findings suggest that: (1) Most adaptations were made in core general education classes; (2) Experienced educators created more simplified curricular adaptations, while novice educators created more functional alternative adaptations; (3) Educators are generally satisfied with the adaptation they have created, and believe it was effective in teaching the student; (4) Educators spent on average 59.1 minutes creating the adaptation; (5) Educators in rural areas and novice educators provided adaptations that were rated lower in quality and clarity than experienced and urban educators; and (6) General education teachers provided adaptations that were of lower quality and clarity than special education teachers and paraeducators. Recommendations for practice are provided.

Introduction

The number of children with disabilities being educated in general education, or inclusive settings, has increased for the past 30 years. Research over this time has consistently supported the practice of inclusive education (e.g. McGregor & Vogelsberg, 1998). While research evidence supports inclusive practices, the implementation of inclusion remains difficult for many educators of students with disabilities. Both special and general education teachers are often unsure of how to manage the needs and supports of diverse students in general education settings (Dymond, Rengzaglia, & Chun, 2008). Yet students with disabilities are legally required to access and participate in the general education curriculum (*Individuals with Disabilities Education Improvement Act*, 2004; *No Child Left Behind Act*, 2001) as well as a specially designed education program planned to address their unique needs (*Education for All Handicapped Children Act*, 1975).

Due to these legal mandates, students receiving special education services who have individual education plans (IEPs) often have adaptations made to the general education curriculum. These adaptations allow access and participation in the core general education curriculum regardless of ability level (Browder & Spooner, 2006; Downing, 2008; Janney & Snell, 2004), and can take many forms, including: individualizing learning goals, teaching, and supports (Lee et al., 2006). For the purposes of this project, we use the umbrella term "adaptations" to describe instructional and curricular changes, with the understanding that accommodations reflect adaptations made to support student access (such as providing written materials in Braille) and that modifications reflect adaptations made to support meaning (such as adjusting the difficulty level of an assignment).

Types of Adaptations

Adaptations may be curricular, instructional, or alternative (Janney & Snell, 2004). As described by Janney and Snell (2004), curricular adaptations alter the content of *what* is taught through supplementary, simplified, and alternative adaptations. For example, an algebra lesson may be adapted by adding (supplementing) communication goals to the algebra lesson (e.g., to work with a partner and ask questions), by simplifying the lesson so that it is at a different difficulty level (e.g., focusing on adding and subtracting with a calculator rather than setting up equations), or alternative goals, such as focusing on following a task-schedule during the algebra lesson. Instructional adaptations alter *how* content is taught and/or how learning is demonstrated, and include instructional stimulus and student response adaptations. Instructional stimulus and student response adaptations change the "difficulty, amount, modality, format, and/or materials" used to teach or respond to instruction (Janney & Snell, p. 47, 2004). For example, a novel may be rewritten at a lower readability level, with more pictures added, as an instructional stimulus adaptation. Likewise, a student may create a collage of key events and characters from a novel rather than writing an essay as a student response adaptation. Lastly, alternative adaptations alter the *goal, the instruction, and the activity* and include alternative/parallel activities (e.g., a student works on appropriate behavior and social skills during group work activities, rather than the academic task), remedial instruction (e.g., a student receives direct instruction in reading during silent-reading time), and functional skill instruction (e.g., a student works at a grocery store one hour per day rather than staying at the high school for academic instruction).

Use of Adaptations

Despite the legal mandate to provide access to the general education curriculum, using adaptations if needed, it is unclear how frequently adaptations are truly used in schools. For example, special educators working in inclusive settings were found to believe that adaptations were being implemented more frequently than general education teachers (Kurth, Gross, Lovinger, & Catalano, 2012). This same study found that teachers reported using modified work for students with significant disabilities between 61-80% of the time. Observation of actual implementation to verify this, however, was not completed. Yet, Wehmeyer and colleagues (2003) reported that adapted materials were available for middle school students with intellectual disabilities during less than 3% of their observations. Others have noted that adaptations are more widely available for students with significant support needs than students with milder disabilities (Dymond & Russell, 2004). In addition to the reported variability in implementation of adaptations, it is unclear what factors teachers consider when deciding if and when to provide adaptations to students in lesson-by-lesson or day-by-day cases.

Effectiveness of Adaptations

Despite uncertainty related to their implementation, adaptations have been associated with a range of positive classroom characteristics, including: higher student engagement, fewer student competing behaviors, and less teacher time dedicated to classroom management (Lee, Wehmeyer, Soukup, & Palmer, 2010). Further, curricular adaptations have been found to improve student on-task behavior and work-production (Kern, Delaney, Clarke, Dunlap, & Childs, 2001). Additionally, many educators support the idea of adaptations (Idol, 2006). However, descriptions of characteristics of effective adaptations are limited. A method for developing adaptations that facilitates common language between

general and special educators, which includes considering the student's learning goals and IEP accommodations, individualizing teaching methods, and individualizing personal supports, has been articulated based on master-teacher input; however, this process has not been field tested (Janney & Snell, 2006). Finally, students receiving special education services often demonstrate academic underachievement (Massetti et al., 2008), and inclusive education has been associated with improved academic outcomes for students with disabilities (Dessemontet, Bless, & Morin, 2012; Kurth & Mastergeorge, 2010). Yet for inclusion to be successful, the use of adaptations is necessary to meet individual student needs (Cross, Traub, Hutter-Pishgahi, & Shelton, 2004). Therefore, understanding how adaptations are created and their effectiveness in promoting student achievement is needed.

Current Study

The present study is a quasi-experimental descriptive design, with existing educator-made adaptations evaluated. The goals of this study are to: (1) Describe how educators develop adaptations, and (2) Evaluate the effectiveness of educator-made adaptations in facilitating the learning of students with disabilities.

Method

Participants

School districts that include students with disabilities in general education classes were recruited to participate in this study. As seen in Table 1, educators participated from three primary geographic areas: An urban area in northern California (1 school district), an urban area in central/southern Arizona (1 school district), and a rural area in southern Arizona (1 school district). The district in California is in a city of approximately 100,000 with a median household income of $59, 517. Approximately 24% of the citizens live in

poverty, and approximately 27% of the residents speak a language other than English. Approximately 17% of students in this district qualify for free and reduced lunch. The urban school district in Arizona is located in a city of approximately 520,000 with a median household income of $37, 025. Approximately 21% of the citizens live in poverty, and 34% speak a language other than English in the home. The school district in this study is located in an affluent area of this city with approximately 8% of students eligible for free and reduced lunch. Lastly, the rural school in Arizona is situated in a city with a population of approximately 25,000. Approximately 87% of the city residents speak a language other than English, with 32.7% of the population living in poverty with an average income of $25,098 per household. Nearly all students in the district (98%) are eligible for free and reduced lunch (US Census Bureau, 2010).

Thirty-one educators (general education teachers, special education teachers, and paraeducators) from these three districts provided us with adaptations for the purposes of this study. These educators include general education teachers (18%), special education teachers (35%), and paraeducators (also known as paraprofessionals or instructional aides; 47%), as depicted in Table 1. All general education teachers were located in rural Arizona. These teachers were also younger and less experienced than teachers in urban Arizona and California. There were fewer participants in rural Arizona, with fewer adaptations submitted. All paraeducators were from urban Arizona and California, as were most special education teachers.

Each educator provided as few as one and as many as four adaptations, resulting in a total of 68 curricular adaptations. During recruitment two adaptations were requested of each participant; four participants provided one adaptation, twenty-two provided two adaptations,

and five provided four adaptations. Participants provided a varied number of adaptations for diverse reasons, including illness, time factors, and ease of copying and submitting adaptations. These educators represent grades kindergarten through twelfth, and instruct students with mild to significant disabilities.

<<Table 1 here >>

While students were not direct participants, educators were asked to provide basic demographic information about the student for whom the adaptation was created. This information included grade, gender, qualifying special education condition, and student support needs (Soukup, Wehmeyer, Bashinski, & Bovaird, 2007). The support needs of the student, as defined by Soukup and colleagues (2007) indicate the supports required for students: (1) Overall Support, or the supports needed for overall functioning, including independent living, self-care, community integration and (2) Learning Support, or the supports needed to learn new skills or knowledge. Participants were provided definitions from Soukup and colleagues (2007) to rate the support needs of the student for both areas, which included: no support, indirect or direct verbal prompts, gestures or modeling prompts, partial physical assistance, and full physical assistance. Adaptations for sixty-eight students were provided. As seen in Table 1, students in rural Arizona were older (high school level) and had lower overall support and learning support needs than students in urban California and Arizona (who were primarily in middle school).

Procedure

Participant Recruitment. Participants were recruited through existing relationships with school districts and teachers. Specifically, school districts that practice inclusive education were contacted via email to solicit interest. A school administrator, generally the

principal or director of special education, was first contacted and told about the study. Following his or her approval, educators were invited to provide us with a copy of an adaptation they had already made or would have made had they not participated in the study. Educators in California and Arizona were recruited.

Data Collection. Each participant signed consent to participate forms, and upon consent were provided pre-paid mailing envelopes to return copies of the adaptation and a reflection on the creation of that adaptation. Specifically, educators provided us with a photocopy or photograph of an adaptation they had already made for a student during the study time frame along with the original, "un-adapted" materials. Both the participating educator and the researchers completed reflections of each adaptation.

Educator Instrument. The educator reflection was completed by the participating educator (teacher or paraeducator) and consisted of 14-items, including: (1) A brief and anonymous description of the student whose work was adapted, including age, gender, year in school, special education qualifying condition, support needs and supports provided during use of the adaptation; (2) the standard and IEP goal being addressed in the lesson; (3) a description of what changes were made from the original lesson and why; (4) a self-rating of educator satisfaction with the use and creation of the adaptation using a 5-point rating scale (where 1 is a high score and 5 a low score) that included: (i) how easy the adaptation was to use (which included: easy to use, easy to grade, I would use this again, and how well the student completed the adaptation), (ii) how similar the adaptation was to the original lesson (which included: similar in purpose, similar in appearance, similar in time required to complete, similar in language used, similar in working arrangement, and similar in skills taught) and (iii) how well the adaptation addressed a student need (which included

sensory/biological/physical needs, appropriate difficulty level, addresses IEP goal, addresses content standard, and is age appropriate). Next, (5) educators were asked to report what adaptations and supports are generally in place for the student and which were in place for this specific lesson. Adaptations and supports included examples such as extra time, large print, visual aids, and use of different level materials. Lesson samples included worksheets, projects, assignments such as essays, and exams. Lastly, (6) the participants provided original materials before any adaptations were made; and, (7) the adapted materials to allow us to see what changes were made for the student. Neither the original materials (#6) nor the adapted materials (#7) are discussed in the results section, as these were simply copies for our review and to aid our understanding of the adaptations.

Researcher Instrument. Each author independently reviewed all original materials and their adaptations as part of the researcher reflection instrument. The researcher reflection included a description of: (1) the domain of the adaptation, such as language arts or science; (2) the skills or IEP goals addressed in the adaptation, such as math computation or reading comprehension; and (3) the type of adaptation used. The definitions for types of adaptations used were those articulated by Janney and Snell (2004) and included curricular, instructional, and alternative adaptations. The researcher reflection also included: (4) a description of what was changed from the original and what was the same; (5) a description of whether the adaptation is an example of an adaptation in teaching, assignment, or assessment and (6) a rating of the quality and clarity of use of each adaptation. Lastly, adaptations were blind-scored by independent raters (both authors) for quality and clarity using a 5-point scale where 1 was a high score and 5 a low score, using Janney and Snell's (2006) indicators of quality adaptations. These include adaptations that: (1) facilitate social and instructional

participation in general education, (2) are only as special as necessary, (3) promote student independence, and (4) are age and culturally appropriate.

Data Analysis. Data was analyzed using both quantitative and qualitative measures. Qualitative measures were utilized to evaluate written notes made by authors and educators about each adaptation. These notes described the adaptation and educator comments as to what changes were made to the original materials, and why (e.g., if a word bank was added, this was noted). Both authors analyzed each educator reflection and self-rating. To evaluate these written notes, a qualitative data analysis technique was utilized that involves highlighting and organizing themes based on grounded theory techniques (Attride-Stirling, 2001; Corbin & Strauss, 1990) using the Qualitative Data Analysis Software for Mixed Methods Research (QDA Miner) software. Initially, each author independently rated each adaptation and educator reflection. Following this, the authors discussed the coding system each had developed and agreed on a final coding system. All written notes were then re-analyzed.

Quantitative measures were used to evaluate the reflection-responses of educators and authors. Specifically, measures of inter-rater reliability regarding the similarities between the adapted and original materials in terms of content, vocabulary, and skills learned were analyzed, as well as measures of inter-rater reliability regarding the quality of the adaptations created. Additionally, descriptive statistics are reported to describe the reflection-responses for each participant along with comparisons of mean scores, calculated using independent sample t-tests and ANOVA depending on the number of variables in each sample. Average ratings of adaptation quality and clarity were reported.

Results

Educator Instrument Results

Both authors, without knowledge of from whom or where the educator reflection came,

analyzed each educator written reflection response independently. Final inter-rater reliability of these qualitative educator responses was calculated using percentage agreement using QDA Miner, with a total final agreement of 86.4%.

Description of Students. As shown in Table 1, students ranged in grade from first through twelfth, and had a range of qualifying conditions. Student support needs for overall functioning ranged from 1.71 to 3.14. Students in rural Arizona had less support needs than students in urban Arizona and California. Student support needs for learning ranged from 2.42 to 3.31; students in rural Arizona had fewer learning support needs than students in urban Arizona and California.

Standards/IEP Goals Addressed in Adaptation. Educators reported "not applicable" or "I don't know" when asked which IEP goal the adaptation was linked to in 88% of the adaptation samples provided. Similarly, 64% of educators reported, "I don't know" or "not applicable" when describing which state standard the adaptation was linked to. However, the Researcher Instrument was used to determine the broad skills addressed in the adaptations (as discussed below), despite the educators themselves being frequently unsure of the specific IEP goal or state standard the adaptation was aligned to.

What changes were made, and why? To better understand what changes educators made to the original materials and why, three open-ended questions were included in the educator reflection. These included: (1) What has changed? (2) What is the same? and (3) Why were the changes made? Responses to these questions were organized into qualitative

themes, as shown in Table 2. Identified themes for "Describe your adaptation: What has changed from the original?" include the themes of: making changes in quantity/length (e.g., "list is only 10 words, not 15"); change in level of difficulty (e.g., "instead of solving for a variable in a two-step equation, the student is replacing the variable with a number in a simple equation"); change in response format (e.g., "instead of reading about states of matter and answering questions, [student] made a poster"); adding or supplementing materials to the original (e.g., "word bank added"); and fundamental changes that included separate or different locations and concepts taught (e.g., "different worksheets were used"). As seen in Table 2, experienced educators were more likely to use adaptations that changed the difficulty level or response format, whereas novice educators were more likely to use adaptations that were fundamentally different from the original. Special education teachers were also more likely to use adaptations that were of a different (lower) difficulty level than general education teachers or paraeducators.

<<Table 2 here>>

Themes for the question, "Describe your adaptation: What is the same as the original?" included the themes: same concept, defined here as the adaptation addressing the same skill/topic area (e.g., "characters, places, plot the same"); same content, defined here as the same basic materials being used (e.g., "the use of the chapter assessment as practice for the test"); and different, defined here as essentially no content or concept the same as the original lesson (e.g., "pre-K Dolch words"). Of statistical significance, novice teachers were more likely to create adaptations that were very different from the original lesson than experienced educators.

Lastly, themes for the question, "Describe your adaptation: Why were the changes made?" included the following themes: to encourage student independence (e.g., "read it himself and do the activity with fewer prompts"); increase access to the core curriculum (e.g., "adjust the level of [student's] understanding"); to promote appropriate or on-task behavior (e.g., "to decrease frustration level to assess science knowledge"); to provide a separate or different functional curriculum (e.g., "choosing a quieter time in class to do the work at his [pull out] desk"); and lastly a theme that focused on student deficits were identified (e.g., "student is very low and is autistic [with] little speech"). As seen in Table 2, educators in California were more likely to create adaptations that focused on improving student independence. Experienced educators were more likely to create adaptations that focus on improving access and behavior, whereas novice educators were more likely to focus on student deficit when creating adaptations. Special education teachers created more adaptations that focus on improving access than general education teachers and paraeducators.

Educator Self-Rating of Effectiveness of Adaptation. Overall, our findings suggest that all educators are generally satisfied with the adaptation they have provided, with satisfaction ranging from 1.35-2.33 (where 1 is a high rating, and 5 is a low rating). We found no significant differences by area, experience, and type of educator. Analysis of Table 3 indicates that all educators appear more likely to create adaptations that are easy to make/use, followed by adaptations that address a specific student need, and lastly adaptations that are similar to the original assignment. Furthermore, educators spent on average 59.1 minutes creating the adaptation, with a range of 1-480 minutes. Inspection of Table 3 reveals that educators in California, special education teachers and paraeducators, and educators with

more experience spent more time creating the adaptation than educators in Arizona (rural and urban), novice teachers, and general education teachers. A mean response of 1.69 across all educators (where 1 is a high rating, 5 is a low rating) indicates that students were successful in learning the skill, with use of the adaptation. Educators reported that the adaptation was so successful that they would use it again (in appropriate circumstances) with a mean rating of 1.24.

<<Table 3 here>>

Adaptations used now and usually. Educators indicated specific types of adaptations used by the student as "never used" and "usually used." In general, the least used adaptations included large print ("never used" 71% of students), assistive technology ("never used" 67% of students), and checklists ("never used" 66% of students). The most frequently used included lowered reading levels ("usually used" 41% of students), reducing the length of an assignment ("usually used" 37% of students), using manipulatives or other tools ("usually used" 32% of students), adding visuals ("usually used" 27% of students), and providing extra time ("usually used" 27% of students). Several areas of statistical significance are noteworthy. First, novice educators are less likely to use reduced length/quantity of assignments, permit tools (such as calculators or computers), and visuals than experienced educators. Second, general education teachers are less likely to use reduced length/quantity as an adaptation than special education teachers. They are also less likely to use pictures as a means of student response (e.g., collage rather than an essay) than special education teachers. Last, special education teachers are less likely to use peer tutors and large print materials than general education teachers in this sample.

Researcher Instrument Results

Both authors independently reviewed all original and adapted materials when completing the researcher reflection instrument. These materials were identified only by participant number; thus, the raters were blind to the type of participant and location. Following initial review and completion of the researcher instruments, inter-rater reliability scores were calculated with a percent agreement of 88% after initial rating. The authors then met and discussed the 12% of ratings where disagreements occurred and came to a joint agreement regarding these adaptations. These final scores were used in SPSS for generating descriptive statistics.

Domain of Adaptations. Most adaptations (89%) in the present study were made in core general education classes (e.g., math, language arts, history, science) as opposed to other time periods (e.g., art, recess, music). This was true by region, experience level, and type of educator.

Skills and/or IEP Goals Domains Addressed in Adaptation. The adaptations addressed a range of IEP and skill domain areas. The most frequent domain was reading comprehension (26%). The next most frequent domain was math computation (14%); daily living skills and behavior regulation were both the primary skill domains addressed in 11% of the adaptations, respectively. Writing passages constituted 10% of adaptation skill areas. The remaining areas were less frequent: spelling (5%), math reasoning/problem solving, social skills, communication skills, and motor skills (4% each), reading decoding and "unclear" were each the primary domains of 3% of the adaptations, and 1% of the adaptations were related to organizational skills.

Curricular, Instructional, or Alternative Adaptations. Each adaptation was coded by the authors as being curricular, instructional, or alternative using the definitions

articulated by Janney and Snell (2004). In this sample, most educators across region, experience level, and position made instructional adaptations most frequently (53%), followed by curricular adaptations (31%), and alternative adaptations (16%). As depicted in Table 4, the most frequent adaptations in this sample include adaptations to the instructional stimulus, simplified adaptations, and adaptations to student response. The least used adaptations were remedial, functional, alternative, and supplementary. Of statistical significance, we found that experienced educators created more simplified curricular adaptations, while novice educators created more functional alternative adaptations.

<<Table 4 here>>

What changed and stayed the same. Main findings for changes made (and why) in adaptations are described in the educator instrument section (above). An area of interest that emerged during the researcher reflection centered on the language used by participants when discussing their reasoning for adaptations. Specifically, in the 68 responses to the question "why were changes made," 34 references included deficit-based word choices when describing the student, with words "cannot, unable, not able, and lacks ability" used repeatedly by educators. Other examples of deficit-based orientations included the sentiment, "this doubles the work output for staff" and "horrible handwriting." Less than 7% of responses used language that could be interpreted as strengths-based. The strengths-based examples primarily focused on providing opportunities for students to be independent and demonstrate ability.

Adaptations to Teaching, Assignments, or Assessments. Most adaptations in our sample were related to assignments (51%) and teaching (37%). Few adaptations were to assessments (12%). For example, an adaptation to teaching in our sample included the

elementary school novel *Island of the Blue Dolphins* rewritten at a lower readability level. An adaptation to assignments included a worksheet related to the central nervous system in a high school biology class that had been recreated using a word bank and fill-in-the blanks. For example, the worksheet stated, "The e_ _ _ c_ _ n _ system is made up of glands" (and the words "endocrine" and "nervous" appeared beside the question). Lastly, assessment adaptations in our sample included a middle school science test (on earthquakes and volcanoes) that was changed from open ended ("name and describe one type of force in the Earth") to a matching question (here, the student was provided four forces: friction, compression, tension, and shear along with four definitions. The student needed to match the term to its definition for this adapted question).

Quality and Clarity of Adaptation. Both authors scored each adaptation for quality and clarity using a five-point scale where "1" is a high rating and "5" is a low rating. A number of statistically significant results arose from this scoring, as shown in Table 3. Educators in rural Arizona provided adaptations that were rated lower in quality and clarity than urban educators in Arizona and California. Novice educators provided adaptations that were of lower quality ratings than experienced educators. Lastly, general education teachers provided adaptations that were of lower quality and clarity ratings than special education teachers and paraeducators. However, in our sample, general education teachers were primarily novice and from a rural area, so it is not certain which factor (area, experience, or type of educator) has the greatest impact on quality and clarity of adaptations.

In consideration of this, correlations were calculated for area, experience, type of educator, quality and clarity of adaptation, and student support needs, using Pearson product-moment correlation coefficient. Findings indicate that more experience is associated with

higher quality adaptations (r = -.317, p < .002). Type of educator (licensed teacher vs. paraeducator) is not associated with adaptation quality or clarity (r = .020, p < .895 and r = .035, p < .756, respectively). Furthermore, paraeducators in this sample were more likely to provide adaptations for students with greater overall and learning support needs than licensed teachers (r = .329, p < .005), suggesting that paraeducators are more likely to be working with students with greater support needs than licensed teachers. Lastly, quality and clarity ratings of adaptations are highly related (r = .720, p < .001), as are student support needs and overall learning support needs (r = .829, p < .0001).

Discussion

Limitations

Before a full discussion of the results can begin, limitations of the present design must be recognized. First, the majority of special educators and paraeducators came from urban districts and all general educators came from a rural district. It is possible that results would vary if our sample were more evenly distributed. Secondly, general educators represent only 18% of our sample, which also limits the generalizability of our findings. Future research should include a wider range of general education teachers. Lastly, the urban districts provided few adaptations for students with milder disabilities, but the rural district provided exclusively adaptations for students with learning disabilities. When recruiting participants, we had solicited inclusive districts for participation; it turned out that the urban districts included all students (with a range of disabilities), whereas the rural district maintained a separate class (which did not participate in the study as the students did not participate in general education classes) for students with more significant disabilities. As a result, only students with learning disabilities were included from the rural district.

Influences on adaptation quality

Area. A number of differences by area were identified, suggesting that resources available in different regions play a role in adaptations created by educators. Educators in urban areas of California and Arizona had more resources available, including related service providers and inclusion support personnel. Educators in rural Arizona had significantly fewer resources available, including a lack of related service providers and few resources for families or educators. A number of unique challenges exist in rural education, including difficulties recruiting teachers (Monk, 2007), and limited federal, state, and community resources (Artesani & Brown, 1998). Both of these factors were apparent in the rural school district in Arizona, and may account for the lower quality of adaptations provided in this area.

Type of educator. Both paraeducators and special education teachers created adaptations of similar quality and clarity. However, neither California nor Arizona has a licensing or training program for paraeducators, and so it would seem that on-the-job training and professional experience contribute to the creation of quality adaptations. Our findings further indicate that general education teachers made adaptations of lower quality than special education teachers and paraeducators. Together, these findings suggest that experience, rather than professional licensure or training, has a greater impact on quality adaptations. Previous examinations of teacher quality have noted that teachers with and without certification were equally effective in promoting student learning (Kane, Rockoff, & Staiger, 2008). The results of this study indicate that these findings can be extended to educators with no or limited pre-service preparation in special education (i.e., paraeducators and general education teachers) in terms of creating meaningful adaptations.

Experience level. Research in teacher quality generally confirms that educators with more years of experience are more effective than novice educators (Chingos & Peterson, 2011). In the present study, educators (general education teachers, special education teachers, and paraeducators) with more experience created higher quality adaptations than novice educators. Specifically, novice educators created adaptations that were different from the original lesson more frequently than experienced educators, focused on student-deficits (rather than support needs), took less time to create adaptations, and had overall lower quality ratings for their adaptations. Also noteworthy, novice educators were less likely to use various forms of supports (such as visuals, tools, reducing length, and assistive technology) in adaptations than experienced educators. Together, these results suggest the importance of on-the-job experience in creating quality adaptation supports for students in inclusive settings.

How do educators develop adaptations?

Generally, educators in this sample consider student need, ease of use, and the original assignment when creating adaptations. Student needs that are of importance to educators in this sample, based on qualitative analysis, include: student independence, providing access to the core curriculum, and developing means for students to regulate their behavior. Overall, educators in this sample created adaptations that were focused on accessing the core general education curriculum, with limited adaptations focused on access skills such as communication or motor skills. Lastly, as previous research has suggested, in this sample general education teachers tended to create adaptations directed toward the class as a whole with only minor or no changes for individual students (Scott, Vitale, & Masten,

1998). Special education teachers and paraeducators in this sample developed exclusively individual adaptations.

Educators were asked to report which IEP goal the adaptation was aligned with. Interestingly, educators wrote "not applicable" or "I don't know" in nearly 90% of the adaptations. In addition to indicating that IEP goals are not key considerations when developing adaptations, this finding also suggests that educators are unfamiliar with the content of student IEPs. Analysis of this data indicates that accessing the general education lesson content was of paramount concern to educators in this sample, and suggests that improved mechanisms of sharing IEP goals, along with considerations for aligning IEP goals to instruction, is needed.

Similarly, educators were frequently (64% of the time) unable to report which state standard the class lesson and thus the adaptation were aligned with. A number of possibilities exist that can explain this finding, including that paraeducators were significant contributors of adaptations and may be less informed about particular state standards than teachers. Another possibility is that teachers do not have each lesson aligned clearly to a specific standard.

Language use by educators in their descriptions of why the original materials or instruction was changed was also noteworthy. The frequent use of deficit-based language raises the question: does a focus on student deficit effect educator expectations for the student? Also, does a focus on deficits make it more difficult to integrate the student with disabilities and create adaptations that are closely aligned to the original coursework (or the creation of more "special" adaptations)?

How effectively do adaptations facilitate learning and participation?

According to Janney and Snell (2004), curricular adaptations alter the content of what is taught, instructional adaptations alter how that content is taught or how learning is demonstrated, and alternative adaptations alter the goal, the instruction, and the activity. In this sample, most educators across region, experience level, and position made instructional adaptations most frequently. These results indicate access and participation in the general education curriculum were the primary goals of adaptations, in that as a whole, the adaptations provided to students were tied to the general education activity and did not promote removal of students from that setting.

Furthermore, educators reported high success rates for the adaptations. This success was achieved with relative ease, as reported by the educators and without many fundamental changes to the content or purpose of the lesson. Of concern, however, was the amount of time educators reportedly spent creating each adaptation. The time spent ranged from 1 minute to 8 hours per adaptation, with a mean of 59 minutes. The least time intensive adaptations in this sample consisted mostly of reducing the length of an assignment (e.g., crossing off sections the student did not need to complete on a worksheet). The most time intensive adaptations involved adapting novels to a lower-readability level (e.g., re-writing *Island of the Blue Dolphins*). Given caseload size in special education and class size in general education, it would appear that this level of time commitment might not be feasible or sustainable for many educators.

Indicators of quality adaptations

Janney & Snell (2006) suggest quality adaptations are those that (1) facilitate social and instructional participation in general education, (2) are only as special as necessary, (3) promote student independence, and (4) are age and culturally appropriate. Analysis of the

results presented here support these indicators of quality, and we found many examples of these quality indicators in the adaptations we reviewed. In addition to these quality indicators, we suggest further indicators of quality. First, ease of use of the adaptation in terms of time and available resources may be considered an indicator of quality. We recognize that educators often have limited time and resources to create adaptations. Developing structures to plan general adaptations, including collaboration, may help decrease the time commitment required and allow educators time for specific adaptations. Second, creating adaptations that are high in clarity may be beneficial. That is, an adaptation that may be created by one individual with such clarity or simplicity of use that others (e.g., paraeducators or peer tutors) can efficiently and effectively implement the adaptation will be beneficial. Lastly, adaptations that focus on student support needs versus student deficits are also ideal. That is, rather than focusing on what skills a student is lacking or unprepared for, we can focus on what supports should be in place for the student to be successful (Barnes, Mercer, & Shakespeare, 1999). Future research may be directed at creating a "checklist" or other tool with these quality indicators in mind that educators may use to determine if the adaptation they are creating is of high quality.

Significance & Recommendations

Development of quality adaptations. The present study is unique in that it consists of an analysis of actual student adaptations, with educator reflections and explanations of those adaptations. This allows one to understand the factors educators consider when making adaptations and how we may better prepare educators (both licensed and paraeducators) to develop high-quality adaptations that promote student skill development, membership, and participation. Traditionally, adaptations have been viewed as very specific to the unique

needs of an individual student, and therefore it has been thought difficult, if not impossible, to describe a quality adaptation. The present study builds on Janney and Snell's suggestions for a means of defining a quality adaptation by describing the factors educators consider and how adaptations vary by geographic area, experience level, and professional background.

Utilization of resources. The present study also describes the realistic factors associated with adaptations, including the great time-demands placed upon educators in inclusive settings who create adaptations for specific students in specific activities and lessons. Caseload size, shifting to "case managers" rather than primary instructors in inclusive settings, and paperwork burdens have been identified as contributors to special education teacher burnout and attrition (Billingsley, 2004). The creation of quality adaptations requires educators to invest a great amount of time collaborating with general education teachers, securing materials, and developing adaptations—time that is not spent in direct instruction. This is an example of the shifting role of special education teachers from direct instructor to case manager and curriculum developer. In fact, special education teachers now complete a wide range of tasks beyond instruction, which includes completing IEP paperwork and goal updating, supervising paraeducators, assessing students, creating adaptations, collaborating with other educators and families, and many other roles (Vannest & Hagan-Burke, 2010). Schools may benefit from examining how special educators can accomplish these diverse and important roles in a more efficient manner. Specifically, schools and administrators may benefit from reallocating valuable educator time and perhaps shifting roles and responsibilities. For example, a paraeducator may be hired with expertise in curriculum adaptation. This person would take on the role of collaborating with general education teachers to gather information about upcoming lessons and activities, develop specific

adaptations, and share them with a special education teacher for approval and implementation.

Preparation for adaptations. Educators were found to make adaptations that they identified as successful and effective. However, experienced educators (those with 5 or more years of experience) were found to create adaptations of higher quality than novice educators. Background experience (e.g., professional licensure) was found to be of less importance than on-the-job use of and experience with adaptations. Mentoring and supervision, then, may be beneficial in preparing novice educators to identify relevant resources for making adaptations, for selecting adaptations that promote inclusion and skill development, and for evaluating the effectiveness of the adaptations. Furthermore, pre-service teacher programs should focus on preparing educators to develop meaningful, high-quality adaptations through fieldwork and assignments. Lastly, on-going professional development, such as adaptations workshops, may also be beneficial to educators. However, decontextualized professional development, such as one-time workshops with little or no follow-up, have minimal impact on practices (Guskey, 2002). Thus, professional development opportunities that are rich in feedback, assistance in implementation, and meaningful to the educators must be emphasized.

Future Directions

Additional research regarding means to objectively measure the quality of a curriculum adaptation is needed. The development of a checklist or self-rating scale may be useful in assisting educators when developing an adaptation. Similarly, understanding the thought-process educators use when creating adaptations would be useful in further

understanding the issues educators consider; a think-aloud process in which the educator "thinks aloud" while making an adaptation may provide valuable insight.

In addition to understanding how quality adaptations can be created, more information is needed on how those adaptations are implemented and how they benefit students with disabilities. Specifically, what factors are associated with correct implementation of adaptations? How are adaptations graded, and does this effect student involvement in general education? Do adaptations facilitate participation, progress, and access in general education and inclusive communities? Are adaptations effective in promoting independence? Lastly, family opinions regarding the use of, and value of, adaptations is lacking. Research suggests that families value inclusive education in general (e.g., Leyser & Kirk, 2004) but how families value specific implementation practices, such as the use of adaptations, is not well described.

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Table 1

Educator Demographics, as total number

Educator Demographic	Urban California	Urban Arizona	Rural Arizona
Number of Participants	12	12	7
Educator Type			
General Educator	0	0	5
Special Educator	8	1	2
Paraeducator	4	11	0
Gender			
Male	2	1	4
Female	10	11	3
Age			
Mean	35	30	26
Range	30-56	19-65	23-47
Years of Experience			
Mean	9.3	5.4	5.0
Range	0-18	0-17	0-18
Novice (0-5 years)	5	17	10
Experienced (6+ years)	22	10	4
Number of Adaptations	27	27	14

Table 2

Student Demographics, as total number and mean

Student Demographic	Urban California	Urban Arizona	Rural Arizona
Total Number of Students	27	27	14
Grade			
Elementary (K-5)	6	4	0
Secondary (6-12)	21	23	14
Gender			
Male	14	14	12
Female	13	13	2
Qualifying Condition			
Autism Spectrum	16	8	0
Other Health Impairment	4	2	0
Intellectual Disability	2	11	0
Orthopedic Impairment	1	0	1
Learning Disability	0	0	13
Multiple Disabilities	0	4	0
Emotional Disability	1	2	0
Speech Impairment	3	0	0
Overall Support Need			
Mean Rating	2.69	3.14	1.71*
Learning Support Need			

Mean Rating	2.85	3.31	2.42*

Support Needs: 1= No Support; 2 = Indirect or Direct Verbal Prompts; 3= Gestures or Modeling; 4= Partial Physical Prompts; 5= Full Physical Prompts

* Significant at $p < .05$

Table 3

Purpose of Adaptations Qualitative Themes, as Mean Number of Responses per Adaptation

	What changed?				What stayed the same?				Why were changes made?				
	Quantity	Level	Response	Supplement	Different	Concept	Content	Different	Independence	Access	Behavior	Different	Deficit
Area													
Urban California	0.5	1.1	0.5	0.7	0.1	0.8	0.9	0	0.4*	1.5	0.2	0.1	0.8
Urban Arizona	0.4	0.4	0.3	0.3	0.4	0.5	0.3	0.2	0.1	0.8	0.3	0.1	0.6
Rural Arizona	0.1	0.9	0	0.5	0.1	0.4	0.7	0	0	0.9	0.4	0	0.9
Experience Level													
Novice (0-5 years)	0.3	0.6	0.1	0.4	0.4*	0.5	0.6	0.1*	0.1	0.8	0.5*	0.1	0.9*
Experienced (6+ years)	0.4	1.0*	0.5*	0.5	0.1	0.7	0.6	0	0.3	1.3*	0.1	0.1	0.6
Type of Educator													
Special Education Teacher	0.5	1.2*	0.5	0.6	0.1	0.8	0.8	0.1	0.3	1.5*	0.3	0	0.6
General Education Teacher	0.1	0.8	0	0.5	0.2	0.4	0.7	0	0	0.9	0.3	0	1

Paraeducator	0.4	0.5	0.4	0.3	0.4	0.5	0.5	0.1	0.2	0.8	0.3	0.2	0.8

*Significant at $p < .05$

Table 4

Types of Adaptations as total number as total number of examples provided

	Curricular Adaptation[1]			Alternative Adaptation[1]			Instructional Adaptation[1]	
	Supplementary	Simplified	Alternative	Parallel	Remedial	Functional	Stimulus	Response
Area								
Urban California	0	8	0	1	0	0	13	5
Urban Arizona	1	6	3	5	2	3	4	3
Rural Arizona	0	4	0	0	0	0	5	5
Experience Level								
Novice (0-5 years)	1	4	0	4	2	3*	11	7
Experienced (6+ years)	0	12*	3	2	0	0	11	6
Type of Educator								
Special Education Teacher	0	5	0	0	0	0	11	6
General Education Teacher	0	2	0	0	0	0	7	3
Paraeducator	1	9	3	6	2	2	6	3

[1]Source: Janney & Snell (2000)

*Significant at $p < .05$

Table 5

Mean Use of Supports and Adaptations

	Large Print	Add Visuals	Reading Level	Color Code	Extra Time	Less Length	High-Light	Simplify
Area								
Urban California	0*	.74	.52	.44	.93	.93	.48	.30
Urban Arizona	.56	.74	.74	.52	.67	.89	.41	.52
Rural Arizona	.36	.43	.50	.43	.79	.71	.57	.43
Experience Level								
Novice (0-5 years)	.44	.63	.63	.47	.78	.75*	.44	.47
Experienced (6+ years)	.17*	.72	.58	.47	.81	.97	.50	.36
Type of Educator								
Special Education Teacher	0*	.73	.50	.41	.91	.91	.41	.32
General Education Teacher	.42	.50	.58	.50	.83	.67*	.67	.50
Paraeducator	.47	.69	.72	.50	.69	.94	.47	.47

0= Never Used with this Student, 1= Usually Used with this Student

* Significant at $p < .05$

Table 5, Continued

	Examples	Tools	Cloze, Bank	Check-list	Level	Oral	Peer	AT	Picture
Area									
Urban California	.26	.81	.41	.26	.37	.44	.49	.22	.74
Urban Arizona	.48	.63	.37	.37	.59	.44	.56	.41	.52
Rural Arizona	.50	.64	.29	.43	.29	.36	.43	.36	.29*
Experience Level									
Novice (0-5 years)	.47	.50*	.38	.41	.50	.34	.44	.28	.41*
Experienced (6+ years)	.33	.89	.36	.28	.39	.50	.33	.36	.69
Type of Educator									
Special Education Teacher	.32	.77	.45	.41	.45	.45	.14*	.27	.77
General Education Teacher	.50	.67	.25	.33	.33	.42	.50	.42	.33*
Paraeducator	.41	.69	.38	.25	.50	.41	.47	.34	.53

0= Never Used with this Student, 1= Usually Used with this Student

*Significant at $p < .05$

Table 6

Educator Self-Evaluation of the Adaptation, as averages

	Similarity to Original	Ease of Use	Addresses Student Needs	Time (in minutes to creat
Area				
Urban California	2.33	1.45	1.72	68.0*
Urban Arizona	2.00	1.46	1.70	20.2
Rural Arizona	1.55	1.40	1.70	14.1
Experience Level				
Novice (0-5 years)	1.93	1.52	1.76	26.7
Experienced (6+ years)	2.07	1.35	1.58	86.9*
Type of Educator				
Special Education Teacher	2.03	1.42	1.44	52.8
General Education Teacher	1.59	1.39	1.71	18.2*
Paraeducator	2.07	1.44	1.78	35.8

1-5 rating, where 1=high rating/high agreement; 5=low rating/low agreement

*Significant at $p < .05$

Table 7

Rating of Adaptation Quality and Clarity

Author Rating	Adaptation Clarity Mean Rating	Adaptation Quality Mean Rating
Area		
Urban California	1.31	1.91
Urban Arizona	1.24	1.91
Rural Arizona	2.39*	3.93*
Experience Level		
Novice (0-5 years)	1.52	2.72*
Experienced (6+ years)	1.50	1.97
Type of Educator		
Special Education Teacher	1.23	1.98
General Education Teacher	2.54*	3.92*
Paraeducator	1.34	2.05

1= Highest Rating, 5=Lowest Rating

*Significant at $p < .05$

Table 8

Correlations

Author Rating	Area	Experience Level	Type of Educator	Quality of Adaptation	Clarity of Adaptation
Area	--				
Experience Level	-.435**	--			
Type of Educator	.185	-.073	--		
Quality of Adaptation	.561**	-.317**	.020	--	
Clarity of Adaptation	.383**	-.009	.035	.720**	--
Student Overall Support	-.087	-.063	.329**	-.017	.041
Student Learning Support	-.004	-.111	.297*	.015	.071

*Significant at $p < .05$

** Significant at $p < .01$