

DEVELOPMENT OF AN
ALGEBRA 1A CORE CURRICULUM REFERENCE MANUAL
BY A COLLABORATIVE TEAM

by Diane Hamilton

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Abstract

Math disabilities have been the focus of less systematic study than have reading disabilities (Ginsburg, 1997; Miller & Mercer, 1997). Much of the literature and focus is on basic math skills and strategies for teaching these skills. While basic math skills will always be needed, special educators have had to shift their focus to make sure students are being taught state math core objectives. Special educators who teach higher level math face the challenge of teaching difficult concepts when they lack the content knowledge of the state core curriculum. Regular educators are faced with the challenge of teaching these concepts to lower achievers when they lack the knowledge of how to adapt math curriculum to these students learning styles. The current state core curriculum lists general objectives without providing operational examples or strategies for teaching these objectives. Having a math core curriculum that is written without concrete examples has created confusion about what math operations fit under the current objectives. Collaboration between special educators and general educators would clarify what the objectives in the core really mean and can bridge the gap between content knowledge and instructional strategies to help struggling students. The purpose of this project is to create a core curriculum reference manual for the Algebra 1A curriculum by a collaborative team of special and general educators.

Introduction and Literature Review

Math instruction in special education has gone through significant changes the past few years, mostly related to the implementation of No Child Left Behind (NCLB). NCLB has required special educators to move away from the drill and practice of basic math facts to the rigors of advanced math concepts. With the passage of NCLB, expectations and accountability have been redefined (McLeod, D’Amico, & Protheroe, 2003). Previously, focusing on a “life-skills” model, teachers helped special education students prepare for day to day math, or applied math they might find in the workplace. Now, we must prepare students to pass high stakes testing or face the possibility of our special education students graduating from high school with diplomas that indicate they failed government-mandated testing. These high stakes tests also affect the general education population. General educators are faced with students who do not qualify for special education services, but still struggle in mathematics. Schools are looking for solutions to help these low achievers be successful and acquire the knowledge they need to pass these tests. Special education and regular education teachers can help each other overcome these challenges by working collaboratively.

Special Education

The main challenge that special education teachers face is that they do not have sufficient knowledge about math curriculum (Maccini & Gagon, 2002). Special educators must still focus on how to best meet individual needs, but there is also an increasing demand for content expertise in math curriculum (Salyer, Curran, & Thyfault, 2002) as evidenced by the statement by the National Council of Teachers of Mathematics that “teachers must know and understand deeply the mathematics they are teaching” (NCTM,

2000). When special educators lack content knowledge it undermines their ability to provide support to students with disabilities (Maccini & Gagon, 2002).

One study was conducted with a group of 11 special education teachers during a week long training called “Teaching Pre-Algebra to Special Education Kids” (Hadley, 2009). The focus of the training was to teach the core content to the special education teachers. The teachers were first given an assessment about their anxiety levels. The results of the data indicated that “when teachers have math anxiety, they are also likely to be anxious about teaching math in the classroom” (Hadley, 2009). The teachers who were assigned the more advanced mathematics had the greatest anxiety. Also, the study looked at the improvement the special education teachers made in content knowledge after spending a week receiving instruction. The result was an average math content knowledge increase of 17% after only one week of instruction. Hadley concludes that “it would be essential for special educators assigned to teach secondary math topics to seek out opportunities to develop greater content and pedagogical understanding of mathematics” (Hadley, 2009).

Several studies were done that looked at how to effectively teach standards to teachers and then observe how their teaching improved. Teacher educators must provide student teachers with explicit instruction and practice in effective teaching strategies (Paulson, 2005). One study in particular focused on a math intervention developed around five standards needed to be an effective math teacher of students with disabilities (Paulsen, 2005). The five standards were (a) modeling good mathematics teaching, (b) knowledge of mathematics, (c) knowing students as learners of mathematics, (d) knowing mathematics pedagogy, and (e) developing as a teacher of mathematics. These standards

along with validated teaching practices were used as a framework to create an intervention. The math intervention was a series of scripted lesson plans designed for first graders and to be given by university students learning to become teachers.

The intervention was taught to nine master's level students and two project staff. After they were taught the interventions they practiced teaching each other before teaching the small groups of students. To determine who would receive the intervention, a group of 444 first graders were tested in math and reading, from which a subset of 130 were identified as being at risk. This subset received small group instruction 3 times a week for 20 weeks. The master's level students and two project staff were taught the five standards as they learned how to implement the intervention. As they used the intervention on the at-risk students, the university students also received feedback on their performance. The purpose of the study was two-fold. First, to create and use an intervention based on validated teaching practices. The results of the intervention showed that at-risk students who received the small group instruction did better on computation and concept subtests than those who did not receive the intervention (Paulson, 2005). The second purpose was to teach university students explicitly and provide feedback that they need to become effective teachers (Paulson, 2005). The results given in the study were vague, but indicated that university students felt the intervention was successful and that they had improved their teaching abilities.

While there were numerous studies done on teaching teacher effective teaching practices and interventions, there was little to no real research about actually teaching teacher's content knowledge. The assumption maybe that teachers have the content knowledge, but lack the teaching skills to teach what they know. Special educators face a

unique challenge because traditionally, teachers in special education do not have a math degree. They do not receive the intense math training in the university programs that the regular education teachers do. Providing opportunities for special education teachers to learn and become familiar with the math core curriculum will increase their confidence, hopefully translate into more effective teaching, and ultimately into student achievement.

Regular education

Regular education teachers face the challenge of working with low achieving math students in their classes. “Teachers who do accept the challenge of educating lower achievers are often frustrated due to their students’ inability to immediately grasp learning concepts. In addition, these teachers often lack the essential resources and/or time necessary to address the educational needs of this population”(DeNoble, DeNoble, Fleres, & McCabe, 2007).

According to the 2009 National Assessment of Educational Progress (NAEP), 73% of eighth graders scored at or above the basic level while only 34% performed at or above the proficient level (The Nations Report Card, 2009). To address the need for improving student proficiency, districts need to look at interventions to help these struggling students.

One study focused on the effect of two separate interventions given to low performing student in a growing district in Pacific Northwest. The first intervention called *Knowing Math* (Ma & Kessel, 2003) was a program that focused on daily practice of basic math principles. The second intervention called *Extended Core* was developed by classroom teachers and the research team. *Extended Core* focused on expanding the

regular math lesson with more explicit instructional practices and recapping the material covered in the core that particular school day.

Participants were determined in the fall of 2004 when students were given a grade-level, district wide, mathematics test and a state wide test. Students were randomly selected from the bottom 40th percentile to participate in the study. The students were then divided into three groups. The first group of 17 received the Knowing Math intervention and the second group of 27 students was assigned the Extended Core intervention. A control group of 8 was also established that did not receive any interventions.

The two interventions were taught to two separate groups of teachers and monitored by the researchers. The interventions were performed 4 days a week for 30 to 45 minutes per day after school for 16 to 20 weeks. Then, the students were given a parallel form of the district and state tests. The results showed that the students in the treatment and control groups did not show any significant differences in the mean scores. However, the effect sizes indicated important differences between the treatment and control groups. These results suggest the interventions may provide the instructional supports for struggle in the domain (Ketterlin-Geller, L.R., Chard, D.J., & Hank, F. 2008).

In the past year, the state of Utah has implemented an intervention for students who are struggling with Algebra 1. This change in how algebra is taught to regular education students who are struggling has created regular education classes that resemble resource classrooms. Previously ninth graders could re-take pre-algebra if they failed the course or if the pre-algebra teacher determined the student was not prepared to move on

to Algebra 1. Last year, Utah created what they called “Stretch Algebra” for ninth graders who were not ready for Algebra 1. Essentially, the state split the curriculum so Algebra 1 is taught over two years. Algebra 1A is taught in ninth grade and Algebra 1B in tenth grade. The challenge this creates for general educators is a class of low achieving math students who need more effective instructional strategies to be successful. Though the regular education teachers who teach this new course have the content knowledge in math, they often lack the training to adapt and develop materials that match the learning needs of struggling students.

Collaboration

Dr. Richard DuFour is an educational consultant who authored several books and articles on professional learning communities. In the article, “What is a Professional Learning Community,” he presents three big ideas. One of the ideas is to create a culture of collaboration. Dr. Dufour asserts that even though working collaboratively is best practice, teachers still continue to work mostly in isolation (DuFour, 2004). Creating a culture of collaboration requires a systematic approach. Collaborative teams need to establish norms, clarify expectations regarding roles and responsibilities, and engage in a cycle of ongoing questions (DuFour, 2004).

Often the difficulty in finding time is used as an excuse to avoid collaboration. Schools can break down this barrier by giving teachers the time to analyze and discuss state and district curriculum (DeFour, 2004). Regardless, teachers should seek opportunities to work together because their ultimate goal is to improve student learning. Finally, Dufour states, “A group of staff members who are determined to work together will find a way.”

Denver Public Schools made it a priority to set aside time for special education and general education teachers to collaborate. They piloted a two year program for math educators to collaborate with the “two-fold goal to support mathematics and special education teachers to improve their use of differentiated instruction in mathematics, and to provide students in special education an enriched mathematics curriculum and the opportunity to learn meaningful mathematics” (Paek, 2008). Using resources from the Educational Development Center (EDC), the district developed a collaboration model. Every six weeks, after school, regular and special education math teachers met in pairs. First, they chose sample students and discussed their strengths and weaknesses. Then, they discussed accommodations and how to implement them. In developing accommodations, the goal was “not to alter the mathematics concepts but rather support students reaching the mathematical “big idea” of the lesson” (Paek, 2008).

Collaboration sessions concluded with reflection on how they collaborated, what was successful and what was not, what their next steps would be, and keeping track of their most successful interventions. The district used the end of level math testing over a three year period to gage the effect that collaboration had on student achievement. The results are listed in the Table below:

Percentage of Students Scoring At or Above the Proficient Level on the Mathematics Portion of the Colorado Student Assessment Program, by Special Education Classification

Academic Year	Classification	Grade 6	Grade 7	Grade 8	Grade 9	Grade 10
2003-2004	Special Education	4	3	3	2	3
	Non-Special Education	29	20	17	12	10
2004-2005	Special Education	7	4	4	2	2
	Non-Special Education	34	24	19	14	14
2005-2006	Special Education	10	5	4	3	3
	Non-Special Education	38	23	24	19	16

The results showed the greatest improvement with the 6th graders in both the special education and general education student populations. The data also showed that the students in the upper grades were not as successful on the end of level testing. Denver has not collected a formal set of information to show evidence of the effect of the collaborative model on instructional practice or student performance (Paek, 2008). They also chose not to continue the collaboration between regular and special educators even though the feedback from the teachers expressed a desire to continue.

Collaboration is an effective way to bridge the gap between the issue of special educators lacking content knowledge and regular educators needing help with interventions for struggling students. Special education teachers can provide task analysis and curriculum adaptation while general educators can provide content knowledge (Ripley, 1997).

District wide we have not been collaborating for very long. The special education department at our school has used that time to collaborate about how to help specific resource students. This year we have been doing more collaboration with other resource teachers on math core content. Recently, I collaborated for the first time with the regular education math teachers about math content. During our collaboration time I had a question about some of the math core objectives. I have always struggled with understanding the core because the objective are written out without examples. When I read the objectives I am never quite sure what math operations fit that objective. The regular math teachers were very helpful in clarifying my questions, but they also expressed their wish that the state core contained math examples. Then, they expressed their frustration about teaching the Algebra 1A course and how they felt like they didn't

know how to reach these low achievers. In fact, when they had approached the principal for ideas on how to structure the course so the students could be successful his response was, “just teach the material slower.”

By the end of our collaboration meeting, I knew I would benefit from their knowledge of the content and they would benefit from my knowledge of how to modify content so struggling students could access the curriculum. That meeting made me eager to work with my fellow educators to develop an Algebra 1A core curriculum manual that teachers could use as a resource that included concrete math examples and instructional strategies to help teachers reach struggling students.

Project Objective

The purpose of this project is to create a core curriculum manual (see Appendix L) for the Algebra 1A state core by bringing special education teachers and regular education teachers together to collaborate on the manual. The objectives of the manual are to provide clarity to the current state core curriculum by listing (a) pre-requisite knowledge for core concepts, (b) math operation examples for each objective, (c) math application problems for each operation, and (d) possible strategies and ideas for teaching the objectives. Collaboration sessions will provide opportunities for the regular education teachers to clarify curriculum questions and for special education teachers to provide insights into how material could be presented to struggling students. When resources are combined they can strengthen teaching and learning opportunities, methods, and effectiveness (Ripley, 1997).

Ultimately, this manual will be a tool for teachers to use when preparing lessons because it will provide information about the pre-requisite knowledge that students need

to be successful, the math operations for each objective, math application problems, and lesson ideas and instructional strategies. In order for students with disabilities to do better in math, teachers have to make it more accessible and meaningful to them (Cawley, 2002). Working together, we can make math more accessible and meaningful for all students. Below is an example of what the manual might look like along with explanations for each section:

Table 1
Manual example with explanations

Prerequisite Knowledge (language/symbols)	Math Operations	Math Reasoning/Application	Lesson Ideas/Strategies
<p><u>Symbols</u> + , x</p> <p><u>Vocabulay</u> Mean : average</p> <p><u>Pre-requisite Math Skills</u> Addition and multiplication</p>	<p>Find the mean of the following set of numbers: 40, 18, 7, 33, and 12</p>	<p>Sarah scored a 96, 84, 88, 100, and 77 on her spelling tests. What is her mean test score?</p> <p>Have students get into groups of 5 and ask these questions :</p> <ol style="list-style-type: none"> 1. How much time do you spend watching TV? 2. How much time do you spend on the computer? 3. How many slices of pizza can you eat? 4. How many hours did you sleep last night? <p>As a group, determine the mean of each question.</p>	<p>Mean is a concept that seems simple, but when presented with the word "mean" students often go blank. Since mean is often taught in conjunction with median and mode, I use a simple strategy that seems to work : Everyday at the beginning of class I have EVERY student do choral responding several times with this information :</p> <p>Mean : Average Median: Middle Mode: Most</p> <p>Remember – struggling students need to hear information more than once!</p>

<p><u>Explanation :</u></p> <p>This section contains symbols, vocabulary, and prerequisite knowledge the student needs to be successful in mastering the objective.</p>	<p><u>Explanation :</u></p> <p>This section contains math calculation problems aligned with the objectives. It is the intent of the manual to include a scope of examples in a "leveled" order to help teachers determine the most effective order to teach the concept</p>	<p><u>Explanation :</u></p> <p>This section contains word problems aligned with the objectives. It is the intent of the manual to help teachers teach real world connections to the math concepts they are teaching.</p>	<p><u>Explanation :</u></p> <p>This section contains a strategy bank to help teachers with their lesson plans. It is not the intent to make this section complete at this time. This will be a "living" section with ideas added throughout the year and beyond 😊!</p>
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Method

Participants

The main collaboration team will consist of two special education teachers and two regular education teachers. The first team member is a regular education teacher who has her bachelors degree in math from Brigham Young University and a Master's of Education Degree from Southern Utah State University in Math Education. She has been teaching at Springville Junior High for three years. She is currently the department head and teaches two Algebra 1A courses and five Geometry courses. The second team member is also a regular education teacher who has been teaching at Mapleton Junior High for three years. She has a bachelor's degree in statistics and business from Brigham Young University and finished her teaching certificate through Alternative Routes to Licensing this year. She is currently on the "Pyramid of Interventions" team and teaches two Algebra 1A courses. The third team member is a special education teacher who has her bachelor's degree in Elementary Education with a Special Education Licensure and Reading Endorsement from Brigham Young University. She also obtained a Mentor Teacher Certificate through the Utah Personnel Development Center and is currently completing her masters in Special Education at BYU. She is the special education

department head and has been teaching resource math for seven years. The fourth team member is a special education teacher who has her bachelor's degree in special education from Brigham Young University and is currently pursuing a master's degree in special education from Utah State University. She has been teaching at Springville Junior High for twelve years and is currently the department head and teaches two resource Pre-Algebra courses and two resource Algebra 1A courses.

There will also be an auxiliary team that will come during the collaboration days to review what has been done and give their input. The first auxiliary team member is the district secondary curriculum specialist will be a part of the evaluations and will be updated on the progress of the manual. She will most likely not attend any of the collaboration meetings. The second auxiliary team member also as a district curriculum specialist and will monitor our progress and report back to the district on our work. He will also attend some of the collaboration meetings. The third auxiliary team member is the special education district liaison and will provide guidance and feedback during the collaboration process as well as attend some collaboration meetings. The final auxiliary team member, who previously taught math, is the vice-principal at Springville Junior High and will also monitor progress, provide suggestions and feedback, and attend part of the collaboration meetings.

The final group of participants will be four independent evaluators. This group of evaluators will consist of two regular education teachers and two special education teachers who teach Algebra 1A. They will fill out a formative evaluation (see Appendix I) in the summer, use the manual to create lesson plans in the fall, and fill out a final evaluation (see Appendix J) of the manual in use. These independent evaluators will not

be a part of the collaboration meetings, but their feedback will be considered when making adjustments to the manual.

Setting

The collaboration days will be scheduled at Springville Junior High in Nebo School district. We will meet in the conference room on May 7, 2010 for our collaboration preparation meeting. We will be working in the school library as a team to create the manual on June 2, June 9, and Jun 23.

The four collaboration team members and the four independent evaluators will then use the manual individually in their classrooms as a guide to prepare lesson plans starting in August 2010. The collaboration team will meet September 24 in at Springville Junior High to review lesson plans created by the teachers, discuss the effectiveness of the manual, and make any needed corrections. A final meeting with the collaboration team, the auxiliary team, and the independent evaluators will occur on October 22 at Springville Junior High.

Materials

Currently the state has provided a pacing guide and a list of standards and objectives for the Algebra 1A curriculum (see Appendix A). We will use this pacing guide as a jumping off point for the manual. We will also be using the Algebra 1A core curriculum, Algebra 1A pacing guide, Prentice-Hall Algebra 1 Math Textbook and Workbook (Bellman, Bragg, Charles, Hall, Handlin, & Kennedy,2007), and any materials that team members bring that could aide in the creation of the manual.

Procedures

It is important the collaboration days are well organized and efficient. This section outlines the steps in the process of planning the collaboration days, the collaboration days, the preparation in-between the days, and the plan for follow-up meetings. I will prepare for the collaboration preparation meeting by putting together a packet for each team member that includes:

- Calendar of dates and times of our meetings
- Contact list with all the team members names, e-mail, and phone numbers
- Copies of all the agendas for our meetings
- A copy of the collaboration review, reflection, and planning form
- A copy of skeleton manual
- A copy of the Evaluation Rubric

This project can be divided into three distinct phases. The first phase is the development of the materials. The second phase is the district and peer review of the manual. The final phase is the implementation of the manual, follow-up meetings, the final evaluation of the manual in use, and an evaluation of the collaborative meetings. Because of the number of individuals involved, it is important to be prepared and organized for each step of the project. Below is a timeline of the phases, dates and activities followed by a detailed description of the phases.

Table 2
Timeline for project phases

Phase 1 : Development of the Materials	
May 7	1. Collaboration Preparation Meeting with Collaboration Team
May 8 – June 1	2. Preparation for Collaboration Day One
June 2	3. Collaboration Day One
June 3 – June 8	4. Preparation for Collaboration Day Two

June 9	5. Collaboration Day Two
June 10 – June 22	6. Preparation for Collaboration Day Three
June 23	7. Collaboration Day Three
June 24 – July 5	8. Update All Changes
Phase 2 : District and Peer Review/Evaluation (Revisions as needed)	
July 7	1. District and peer evaluations sent
July – August	2. Adjustments made, final manual copied, bound, and sent
Phase 3 : Evaluation in Use and Revisions (Revisions as needed)	
August – October	1. Manual Implemented
September 24	2. Follow-up Day 1
September 25 -28	3. Make any adjustments to the manual and send copies to the team
October 22	4. Follow-up Day 2

Phase 1: Development of the Materials

1. Collaboration preparation meeting with collaboration team. To ensure that time is not wasted, the first step will be to prepare for the first collaboration day by conducting a preparation meeting with the collaboration team members. This will be done with the main collaborative team. An auxiliary team member will attend the last hour of the meeting to review the progress that was made and make suggestions. The following materials will be used at this meeting: Algebra 1A core curriculum, Algebra 1A pacing guide, Prentice-Hall Algebra 1 Math Textbook, Prentice-Hall Algebra 1 Math Workbook, and any materials that team members bring that could aid in the creation of the manual. The agenda (see Appendix B) for this meeting will include several objectives. First, we will outline the projected outcomes and objectives of our collaboration meetings and how we will evaluate when these objectives have been met. We will go through the packet of materials that I put together and discuss the feasibility

of accomplishing these tasks and make adjustments to the agendas as needed. Second, we will determine who will be the time keeper, recorder, and observer and discuss the responsibilities associated with those roles. I will take the facilitator role for all meetings and we will determine if the other three roles will be rotated each time. Third, we will spend the majority of the time reviewing current materials and identifying what concepts fit under the core objectives. Lastly, we will review all the objectives that we achieved and evaluate the progress we made. We will review the agenda and discuss assignments and materials that should be brought by each team member.

2. *Preparation for collaboration day one.* After pre-conferencing with the team I will prepare for our first collaboration day. I will put together the “skeleton” manual for each person on the team to use during our collaboration meetings. Along with manuals for the team members, I will create a few extra manuals to have available for any auxiliary team members when they come by. I will also make any changes to the agenda per our pre-conference meeting and e-mail the agenda to each person on the team for approval. Finally, I will collect any additional materials the team felt we needed for our first collaboration day. One week prior to our first collaboration day I will e-mail the team members with a reminder of their assignments along with any information they may need to be prepared for a productive collaboration day.

3. *Collaboration day one.* The first collaboration day will include the four core team members, with an auxiliary member attending for part of the day. We will begin by reviewing the agenda (see Appendix C) and going over the objectives for the day. The focus of day one will be to fill in the Prerequisite Knowledge and Math Operations columns in the skeleton manual. We will use the Algebra 1 textbooks that we previously

marked with the standards along with any other assigned materials determined in our pre-conference meeting.

At the end of our day we will review the objectives that we achieved for the day, fill out the objectives form (see Appendix H) and tie up loose ends. We will also evaluate our progress with the auxiliary team members and discuss any questions or concerns. We will review the agenda for the next meeting and make any necessary adjustments. Assignments will be made and a list of needed materials will be created. Each team member should come prepared next collaboration day to share resources and ideas to include in the manual and more specifically in the application and lessons/strategies columns.

4. Preparation for collaboration day two. I will prepare for day two by typing the information that we gathered into the manual and then making copies for the team members. I will also E-mail all the team members to see how they are progressing on their assignments. Two days before our meeting I will send another e-mail to remind them about our meeting, make sure they will be ready with their assignments, and ask if they need me to bring any specific materials.

5. Collaboration day two. Collaboration day two will begin much the same as the first day. We will review the objectives, agenda (see Appendix D), the roles on the team, and review the assignments that were given. The main focus of this day will be to fill the math application and lesson ideas/strategies column of the manual. We will review the materials and strategies brought by all the team members and determine what ideas will be the most effective.

At the end of the day we will review the objectives, fill out the review form (see Appendix H), and evaluate the progress we made with the auxiliary team member in attendance that day. We will also review the agenda for our final collaboration day and make any adjustments. Assignments will be made and a list of needed materials will be created.

6. *Preparation for collaboration day three.* In preparation for the final collaboration day, I will make changes to the manual and set up a time to meet with at least one auxiliary member to review the manual. One week before our meeting, I will e-mail a copy of the updated manual to all the team members to review and note areas of correction or concern. Two days before our meeting, I will send another e-mail to remind them about our meeting, make sure they will be ready with their assignments, and ask if they need me to bring any specific materials.

7. *Collaboration day three.* We will begin the final collaboration day by reviewing the objectives and agenda (Appendix E). The main focus of this collaboration will be to review and revise what has been done, sequence math concepts, and tie up any loose ends. We will discuss what will happen between now and September when we meet for our first follow-up day. At the end of the day each team member will fill out the manual evaluation form (see Appendix I) and return the form to me.

Phase 2: District and Peer Review/Evaluation Schedule

1. *District and peer evaluation schedule.* On July 7, 2010, I will send a manual and an evaluation form (Appendix I) to the four auxiliary team members and the four independent teacher evaluators. I will e-mail them two weeks prior to that date so they will be aware that the manuals will be arriving in the mail. I will include a stamped and

addressed envelope to return the evaluation and manual to me when they have completed the evaluation.

2. Adjustments made, final manual copied, bound, and sent. After receiving the evaluations and suggestions, I will e-mail the team members with the suggestions and determine if we need to meet to review any major changes. All changes will be approved by the team members before becoming final. After all changes have been made, I will copy and bind the manual then send them to all team members and the four independent teacher evaluators.

Phase 3: Evaluation in Use and Revisions as Appropriate

1. Manual implemented. From the beginning of school until our first follow-up day, the collaborative team members and the four independent teacher evaluators will use the manual as a guide for lesson planning. As they use the manual they will take notes on how they used the manual to plan and align their teaching with the core standards. Team members will also use this time to identify ways to add to the lesson plan and strategies section as well as make note of ways to improve the manual. Every two weeks team members will send their notes to me. I will use the notes to compile a list of ideas, suggestions, and areas to discuss at our first follow-up day on September 24.

2. Follow-up Day 1. On September 24, 2010 we will have the first of two follow-up days. We will begin this follow-up meeting by reviewing the objectives and the agenda (see Appendix F). Then, we will take time for each team member to share their experiences with using the manual and creating lesson plans. After taking care of manual revisions we will add additional lesson plan ideas and strategies. We will conclude the

collaboration by reviewing our objectives, filling out the review form (see Appendix H) and making assignments for the final follow-up day.

3. *Make any adjustments to the manual and send copies to the team.* After our meeting I will make any revisions to the manual and send copies out to the team and the four independent teacher evaluators. I will also e-mail team members to remind them of any assignments or materials they will need for the final follow-up meeting.

4. *Follow-up Day 2.* On October 22, 2010 we will meet for our final follow-up day. During this meeting we will review the objectives and the agenda (see Appendix G) and then share our experiences with using the manual. After adding more lesson plan ideas and strategies we will tie up any loose ends. The end of the day will be used to fill out the manual in use evaluation (see Appendix J) the collaboration evaluation (see Appendix K) and meet with auxiliary members to report on the outcome of the manual.

Evaluation

The project evaluation will be performed in three steps. There will be a formative evaluation (see Appendix I) of the manual conducted after the collaboration team finishes the manual, an evaluation of the manual in use (see Appendix J), and an evaluation of the collaboration meetings (see Appendix K).

Formative Evaluation

The first step will be to evaluate the manual before it is implemented. The evaluation will be done by: (a) the auxiliary team members, (b) the four collaborative team members and, (c) four independent evaluators. Evaluators will receive the manual, an evaluation form (see Appendix I), and envelopes to send back the evaluation and manual to me. After receiving the information from this evaluation, we will determine if

the changes that need to be made can be done by me, or if we need to meet as a team again before the start of the school year. All changes will be approved by the team before they are made. The collaborative team will fill out the evaluation form on the third collaboration day.

Evaluation in Use

The second evaluation (see Appendix J) will be conducted the final follow-up day after the four collaborative team members and the four independent evaluators have been using the manual as a lesson-planning guide. The team members will complete a scoring rubric and answer open-ended questions about the manual's effect on their lesson planning. The four independent evaluators will receive an evaluation form at the end of October.

Collaboration Evaluation

The collaboration evaluation (see Appendix K) will also be performed on the last follow-up collaboration day. This evaluation will be completed by the main collaboration team and the auxiliary team members. The evaluation consists of a scoring rubric and open-ended question about their experience with the collaboration meetings.

Results

The results will be separated into the three evaluation steps 1) the formative evaluation, 2) the evaluation in use and 3) the collaboration evaluation. Each evaluation results summary will contain graphs of the scores from each set of rubric questions and a selection of responses from the open-ended questions. I will also include how the problems were addressed in the formative evaluations.

	2													
	1													
		Pre-requisite Knowledge Are sufficient examples given for pre-requisite math skills for the new concept?	Math Operations Are there enough math examples to provide an adequate scope of the concept?	Math Operations Is the sequence of problems listed in a way that they are building on previous knowledge?	Math Reasoning Do the application problems represent the concept being taught?	Math Reasoning Do the application problems help students make real world connections to the concept?	Lesson Plans/Ideas Do the lesson plans and ideas align with the standard?	Lesson Plans/Ideas Would the ideas be helpful in planning lessons?						

Summary of comments made by evaluators

Summary of how problems were addressed

Table 7
 Results for Evaluating the Content of the Manual: Standard 4

Standard 4 : Apply concepts of Algebra to Geometry																
		YES	NO		YES	NO		YES	NO		YES	NO		YES	NO	
Number of Responses	8															
	7															
	6															
	5															
	4															
	3															
	2															
	1															
			Pre-requisite Knowledge Are sufficient examples given for pre-requisite math skills for the new concept?	Math Operations Are there enough math examples to provide an adequate scope of the concept?	Math Operations Is the sequence of problems listed in a way that they are building on previous knowledge?	Math Reasoning Do the application problems represent the concept being taught?	Math Reasoning Do the application problems help students make real world connections to the concept?	Lesson Plans/Ideas Do the lesson plans and ideas align with the standard?	Lesson Plans/Ideas Would the ideas be helpful in planning lessons?							

Summary of comments made by evaluators

Summary of how problems were addressed

Table 8
 Results for Manual Effectiveness

	1 No	2 Maybe, A little	3 Probably	4 Yes, somewhat	5 Definitely, a lot
Will this manual help special education teachers teach math to struggling students?					

Will this manual help general education teachers teach math to struggling students?					
Summary of comments made by evaluators					
Summary of how problems were addressed					

Evaluation 2: Evaluation in Use

The evaluation in use (see Appendix J) will be performed by the four main collaboration team members and the four independent teacher evaluators. After receiving their responses, I will compile the results in two ways. First, I will average their rubric scores and chart them. Then, I will create a summary of the comments made and their responses to the open-ended questions. The format for the results summary is listed below in Tables 9 and 10.

Table 9
Results for Manual Format Evaluation Summary

	1 Poor	2 Fair	3 Good	4 Excellent
Table of Contents Information is accurate and page numbers are correct				
Headings Headings support the content and give a clear idea about the section				
Captions and Labels Captions and labels are accurate and informative				
Organization Information is organized in a clear and logical way				
Format Pages are visually appealing without being overwhelming				
Readability/Font Font used is readable and correctly sized/ Line spacing is acceptable				
Clarity in Writing Writing is clear and understandable				
Grammar and Punctuation Correct grammar and punctuation are used				
Math Symbols				

Correct math symbols are used in the problems				
Usability The manual is easy to use and aided in guiding lesson preparation				
Summary of comments made by evaluators				

Table 10
Results for Manual Use Evaluation Summary

	1 No	2 Maybe, A little	3 Probably	4 Yes, somewhat	5 Definitely, a lot
Did you incorporate the "prerequisite knowledge" into your lesson planning?					
Did the manual provide enough math operation examples to help guide your planning?					
Did you use the math reasoning/application problems in your lesson plans?					
Did the manual provide you with useable lesson ideas or strategies?					
Did you use the lesson ideas or strategies?					
Did the manual help clarify questions you may have had about the core curriculum?					
Did the manual help you think of math strategies to include in your lessons?					
Did the manual help you develop effective lesson plans?					
Summary of comments made by evaluators					

Evaluation 3: Collaborative Evaluation

The collaborative evaluation (see Appendix K) will be done performed by the four main collaboration team members and the special education liaison. After receiving their responses, I will compile the results in two ways. First, I will average their rubric scores and chart them. Then, I will create a summary of the comments made. The format for the results summary is listed below in Table 11.

Table 11
Results for Collaborative Evaluation Summary

	1 Poor	2 Fair	3 Good	4 Excellent
Meetings began and ended on time				
There was an updated agenda at every meeting				
Agendas were followed with little deviation				
Objectives for the meetings were clear and understandable				
Assignments given were clear and understandable				
Team Members knew their roles				
Team Members functioned well in their roles				
Team members stayed focused on objectives				
Team members followed through on their assignments				
Team facilitator reminded members of their assignments				
Team members were respectful of each other's ideas				
Team members were respectful of each other's roles on the team				
Summary of comments made by evaluators				

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Appendix A

Utah Core Pacing Guide: Algebra 1A

Utah Core Suggested Pacing Guide: Algebra A

		Mid-year											
Standard I: Expand number sense to use real numbers.	Obj. 1	Represent real numbers as points on the number line and distinguish rational from irrational numbers											
	Obj. 2	Compute fluently and make estimates with rational numbers											
Standard II: Expand proportions to represent and analyze linear functions.	Obj. 1	Represent the slope of a line											
	Obj. 2	Model and interpret problems having a constant rate of change using linear functions											
	Obj. 3	Represent and analyze linear relationships using algebraic equations, expressions, and graphs											
Standard III: Develop fluency with the lang. and operations of algebra.	Obj. 1	Simplify monomials and the quotient of monomials											
	Obj. 2	Solve and interpret linear equations and inequalities											
Standard IV: Apply concepts of Algebra to Geometry.	Obj. 1	Solve real-life application problems involving measurement											
	Obj. 2	Use proportional reasoning to solve geometry problems											

Appendix B

Agenda: Collaboration Planning Day

- Objectives**
- 1. Review and correct any material in the team packets
 - 2. Establish roles on the collaborative team
 - 3. Review current materials
 - 4. Identify Standards in the current materials
 - 5. Determine additional resources and materials to use
 - 6. Evaluate our progress and make assignments
 - 7. Make any adjustments to the agenda for collaboration day 1
 - 8. Make assignments for collaboration day 1

Schedule

8:00 – 9:00 Team Business

Introduction of Team Members

Review Objectives

Review Items in the Packets

- Calendar of dates and times of our meetings
- Contact list with all the team members names, e-mail, and phone numbers
- Copies of all the agendas for our meetings
- A copy of the collaboration review, reflection, and planning form
- A copy of skeleton manual
- A copy of the Evaluation Rubric

Determine Roles on the Collaborative Team

Facilitator: Diane Hamilton

Time Keeper: _____

Recorder: _____

Observer: _____

9:00 – 11:30 Review Current Materials and Identify Standards

There are four standards in the core, we will use this planning day going through the textbook and identifying which concepts fit which standards. Some concepts will cover more than one standard and if needed we will tag that page with more than one color of post-it. I think we will break into pairs and split the book in half so we can do this more efficiently.

- a. Standard 1 : yellow
- b. Standard 2 : blue
- c. Standard 3: pink
- d. Standard 4 : green

11:30 – 12:15 Lunch

12:15 – 1:00 Other Materials and Resources

Discuss and determine other resources and materials that would aide in creating the manual. How will we determine effective strategies?

1:00 – 1:30 Reflection and Planning

- Review the objectives that we achieved, fill out the form for the day and tie up loose ends.
- Evaluate our progress and discuss any questions or concerns.
- Discuss agenda planning for the next meeting.
- What materials will we need?
- Make assignments for the next meeting.
- Each team member should come prepared to share resources and ideas to include in the manual and more specifically in the application, lessons, and strategies columns.

1:30 – 2:30 Meeting with Auxiliary Team Members

Seth Sorensen and Tara Lundell will be in attendance to review what we accomplished for the day. We will record their suggestions and I will also provide them with a team packet.

Appendix C

Agenda: Collaboration Day 1

- Objectives**
- 1. Review roles on the collaborative team
 - 2. Fill out Standard 1 & 2: Prerequisite Knowledge and Math Operations
 - 3. Fill out Standard 3 & 4: Prerequisite Knowledge and Math Operations
 - 4. Determine additional resources and materials to use
 - 5. Evaluate our progress
 - 6. Make any adjustments to the agenda for collaboration day 2
 - 7. Make assignments for collaboration day 2

Schedule

8:00 – 8:15 Team Business

Review Objectives

Review Agenda

Review Roles

*At least one auxiliary team member will be attending part of the day to check on progress

8:15 – 11:15 Review Standard 1 and 2 : Prerequisite Knowledge and Math Operations

Fill out the scope and sequence chart columns for the first two standards, focusing only on the **first two** columns in the chart. Use the textbooks that we marked on the pre-conference day and any other materials to fill out the columns.

11:15 – 12:00 Lunch

12:00 – 2:00 Standard 3 and 4: Prerequisite Knowledge and Math Operations

Fill out the scope and sequence chart columns for the first two standards, focusing only on the **first two** columns in the chart. Use the textbooks that we marked on the pre-conference day and any other materials to fill out the columns.

2:00 – 3:00 Reflection and Planning

- Review the objectives that we achieved, fill out the form for the day and tie up loose ends.
- Evaluate our progress and discuss any questions or concerns.
- Discuss agenda planning for the next meeting.
- What materials will we need?
- Make assignments for the next meeting.
- Each team member should come prepared next time to share resources and ideas to include in the manual and more specifically in the application, lessons, and strategies columns.

Appendix D

Agenda: Collaboration Day 2

- Objectives**
- 1. Review roles on the collaborative team
 - 2. Fill out Standard 1 & 2: Math Applications and Lesson Ideas/Strategies
 - 3. Fill out Standard 3 & 4: Math Applications and Lesson Ideas/Strategies
 - 4. Determine additional resources and materials to use
 - 5. Evaluate our progress
 - 6. Make any adjustments to the agenda for collaboration day 3
 - 7. Make assignments for collaboration day 3

Schedule

8:00 – 8:15 Team Business

Review Objectives
 Review Agenda
 Review Roles
 Review Assignments

*At least one auxiliary team member will be attending part of the day to check on progress

8:15 – 11:15 Review Standard 1 and 2 : Math Applications and Lesson Ideas/Strategies

Fill out the scope and sequence chart columns for the first two standards, focusing only on the **last two** columns in the chart. Use the textbooks that we marked on the pre-conference day and any other materials to fill out the columns.

11:15 – 12:00 Lunch

12:00 – 2:00 Standard 3 and 4 : Math Applications and Lesson Ideas/Strategies

Fill out the scope and sequence chart columns for the first two standards, focusing only on the **last two** columns in the chart. Use the textbooks that we marked on the pre-conference day and any other materials to fill out the columns.

2:00 – 3:00 Reflection and Planning

- Review the objectives that we achieved, fill out the form for the day and tie up loose ends.
- Evaluate our progress and discuss any questions or concerns.
- Discuss agenda planning for the next meeting.
- What materials will we need?
- Make assignments for the next meeting.
- Team members will be given a copy of the manual one week prior to the final collaboration day. They will read through, edit, and come prepared to share their suggestions

Appendix E

Agenda: Collaboration Day 3

- Objectives**
- 1. Manual review and make revisions
 - 2. Sequence the math concepts that haven't been done yet
 - 4. Determine additional resources and materials to use
 - 5. Evaluate our progress and make assignments
 - 6. Discuss calendar items and planning
 - 7. Fill out the evaluation form

Schedule

8:00 – 8:15 Team Business

Review Objectives
 Review Agenda
 Review Roles
 Review Assignments

*At least one auxiliary team member will be attending part of the day to check on progress

8:15 – 9:15 Manual Review and Revisions

Go through the manual page by page making any corrections and additions. What errors did team members notice when they went through on their own?

9:15 – 12:00 Sequencing of Math Concepts

Now that the manual is complete, go through the concepts and order/group together a logical sequence for lesson planning. What concepts could be strengthened by being taught in a hierarchical order?

12:00 – 12:45 Lunch

12:45 – 2:00 Wrap-up any unfinished items

12:45 – 3:00 Reflection and Planning

- Review the objectives that we achieved, fill out the form for the day.
- Evaluate our progress and discuss any questions or concerns.
- Make assignments
- Discuss calendar issues and the next steps
- FILL OUT THE EVALUATION FORM

Appendix F

Agenda: Follow-up Day 1

- Objectives**
- 1. Share experiences from using the manual
 - 2. Manual review and make revisions
 - 4. Add Lesson Plans and Strategies
 - 5. Evaluate our progress
 - 6. Make any adjustments to the agenda for follow-up day 2
 - 7. Make assignments for follow-up day 2

Schedule

8:00 – 8:15 Team Business

Review Objectives

Review Agenda

Review Roles

Review Assignments

*At least one auxiliary team member will be attending part of the day to check on progress

8:15 – 9:15 Sharing Experiences

Now that we have all had the opportunity to use the manual, we each take 10-15 minutes to share the lesson plans we created and our experience with using the manual. How is this affecting our teaching? Students? Outcomes?

9:15 – 10:00 Manual Review and Revisions

Go through the manual page by page making any corrections and additions. What errors did team members notice when they were using the manual?

10:00 – 11:30 Additions of Lesson Plans and Strategies

Using the information everyone brought to the meeting, what are some ideas and strategies we could add.

11:30 – 12:15 Lunch

12:15 -2:00 Additions of Lesson Plans and Strategies (continued)

Using the information everyone brought to the meeting, what are some ideas and strategies we could add.

2:00 – 3:00 Wrap-up, Reflection and Planning

- Review the objectives that we achieved, fill out the form for the day and tie up loose ends.
- Evaluate our progress and discuss any questions or concerns.
- Make assignments
- Discuss calendar issues and the final steps
- Diane will make revisions and send them to your schools.

Appendix G

Agenda: Follow-up Day 2

- Objectives**
- 1. Share experiences from using the manual
 - 2. Manual review and make revisions
 - 4. Add Lesson Plans and Strategies
 - 5. Evaluate our progress
 - 6. Fill out final evaluation and reflections form

Schedule

8:00 – 8:15 Team Business

Review Objectives

Review Agenda

Review Roles

Review Assignments

*At least one auxiliary team member will be attending part of the day to check on progress

8:15 – 9:15 Sharing Experiences

We will each take 10-15 minutes to share the lesson plans we created and our experience with using the manual. How is this affecting our teaching? Students? Outcomes? Have things improved since our first follow-up meeting?

9:15 – 10:00 Manual Review and Revisions

Go through the manual page by page making any corrections and additions. What errors did team members notice when they were using the manual?

10:00 – 11:30 Additions of Lesson Plans and Strategies

Using the information everyone brought to the meeting, what are some ideas and strategies we could add.

11:30 – 12:30 Lunch

12:30 – 2:00 Wrap up and Reflection

- Review the objectives that we achieved, fill out the form for the day and tie up loose ends.
- Evaluate our progress and discuss any questions or concerns.
- Fill out the final evaluation and reflections form
- Meet with auxiliary team members to review and reflect

Appendix H

Collaboration Review, Reflection, and Planning Form

Date ____/____/____

Objective	Was the Objective Met?	Notes/ Reflection
1	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partly	What needs to be finished? <hr/> <hr/>
2	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partly	What needs to be finished? <hr/> <hr/>
3	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partly	What needs to be finished? <hr/> <hr/>
4	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partly	What needs to be finished? <hr/> <hr/>
5	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partly	What needs to be finished? <hr/> <hr/>
6	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partly	What needs to be finished? <hr/> <hr/>
7	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partly	What needs to be finished? <hr/> <hr/>
8	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Partly	What needs to be finished? <hr/> <hr/>

Assignments/Materials for the Next Meeting *Diane will e-mail reminders three days before the meeting*

Name	Assignment/Materials to Bring
Diane	
Corrin	
Stephanie	
Megan	

Appendix I

Formative Evaluation: Manual Evaluation

This **Algebra 1A Core Curriculum Reference Manual** has been divided into the four standards provided by the Utah State Office of Education curriculum guide. Each standard has also been broken down into its individual objectives. The purpose of this manual is to provide teachers with a scope of the standards and objectives of Algebra 1A. The manual format and objectives for each section are below:

Prerequisite Knowledge (language/symbols)	Math Operations	Math Reasoning/Application	Lesson Ideas/Strategies
This section contains symbols, vocabulary, and prerequisite knowledge the student needs to be successful in mastering the objective.	This section contains math calculations problems aligned with the objectives. It is the intent of the manual to include a scope of examples in a "leveled" order to help teachers determine the most effective order in teaching the concept	This section contains word problems aligned with the objectives. It is the intent of the manual to help teachers teach real world connections to the math concepts they are teaching.	This section contains a strategy bank to help teachers with their lesson plans. It is not the intent to make this section complete at this time. It will be a "living" section with ideas added throughout the year and beyond 😊!

Thank you for your participation in this evaluation. Your input is invaluable as we strive to create more useful tools help teachers prepare lessons and meet the challenges of helping students achieve in math. This manual evaluation is divided into four parts:

1. Evaluator Information
2. Evaluation of the Overall Manual Format
3. Rubric for Evaluating the Content of the Manual (4 pages)
4. Manual Effectiveness Feedback and Suggestions

Please complete each section fully and return the evaluation, along with the manual, to Diane Hamilton. Please feel free to write in the manual, i.e., questions for clarification or editing marks. A stamped and addressed envelope has been provided for your convenience. If you have any questions, please feel free to contact me at your convenience via e-mail or telephone.

Thanks again,

Diane Hamilton
 (801)885-7754
diane.hamilton@nebo.edu

Part 1: Evaluator Information

Name: _____

Title/Position: _____ Years in Education: _____

Part 2: Rubric for Evaluation of the Overall Manual Formatting

Directions: Please rate the categories below by checking the box on the left with the corresponding evaluation number

	1 Poor	2 Fair	3 Good	4 Excellent	Please list any problems, comments, or suggestions below
Table of Contents Information is accurate and page numbers are correct					_____ _____ _____
Headings Headings support the content and give a clear idea about the section					_____ _____ _____
Captions and Labels Captions and labels are accurate and informative					_____ _____ _____
Organization Information is organized in a clear and logical way					_____ _____ _____
Format Pages are visually appealing without being overwhelming					_____ _____ _____
Readability/Font Font used is readable and correctly sized/ Line spacing is acceptable					_____ _____ _____
Clarity in Writing Writing is clear and understandable					_____ _____ _____
Grammar and Punctuation Correct grammar and punctuation are used					_____ _____ _____
Math Symbols Correct math symbols are used in the problems					_____ _____ _____

Part 3: Rubric for Evaluating the Content of the Manual

Standard 1 : Expand number sense to use real numbers		
Question	Response	IF NO, what should be included or removed?
Core Alignment Is the content in alignment with the core?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Pre-requisite Knowledge Are all the correct symbols and language listed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Pre-requisite Knowledge Are sufficient examples given for pre-requisite math skills for the new concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Operations Are there enough math examples to provide an adequate scope of the concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Operations Is the sequence of problems listed in a way that they are building on previous knowledge?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Reasoning/Application Do the application problems represent the concept being taught?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Reasoning/Application Do the application problems help students make real world connections to the concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Lesson Plans/Ideas** Do the lesson plans and ideas align with the standard?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Lesson Plans/Ideas** Would the ideas be helpful in planning lessons?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>

****The Lesson Plans and Ideas section is a work in progress and will be updated as work on this manual continues. It is not intended to be a complete or exhaustive section at this time.**

Standard 2 : Expand proportions to represent and analyze linear functions		
Question	Response	IF NO, what should be included or removed?
Core Alignment Is the content in alignment with the core?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Pre-requisite Knowledge Are all the correct symbols and language listed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Pre-requisite Knowledge Are sufficient examples given for pre-requisite math skills for the new concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Operations Are there enough math examples to provide an adequate scope of the concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Operations Is the sequence of problems listed in a way that they are building on previous knowledge?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Reasoning/Application Do the application problems represent the concept being taught?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Reasoning/Application Do the application problems help students make real world connections to the concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Lesson Plans/Ideas** Do the lesson plans and ideas align with the standard?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Lesson Plans/Ideas** Would the ideas be helpful in planning lessons?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>

****The Lesson Plans and Ideas section is a work in progress and will be updated as work on this manual continues. It is not intended to be a complete or exhaustive section at this time.**

Standard 3 : Develop fluency with the language and operations of Algebra		
Question	Response	IF NO, what should be included or removed?
Core Alignment Is the content in alignment with the core?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Pre-requisite Knowledge Are all the correct symbols and language listed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Pre-requisite Knowledge Are sufficient examples given for pre-requisite math skills for the new concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Operations Are there enough math examples to provide an adequate scope of the concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Operations Is the sequence of problems listed in a way that they are building on previous knowledge?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Reasoning/Application Do the application problems represent the concept being taught?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Math Reasoning/Application Do the application problems help students make real world connections to the concept?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Lesson Plans/Ideas** Do the lesson plans and ideas align with the standard?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
Lesson Plans/Ideas** Would the ideas be helpful in planning lessons?	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>

****The Lesson Plans and Ideas section is a work in progress and will be updated as work on this manual continues. It is not intended to be a complete or exhaustive section at this time.**

Standard 4 : Apply concepts of Algebra to Geometry		
Question	Response	IF NO, what should be included or removed?
<p>Core Alignment Is the content in alignment with the core?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
<p>Pre-requisite Knowledge Are all the correct symbols and language listed?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
<p>Pre-requisite Knowledge Are sufficient examples given for pre-requisite math skills for the new concept?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
<p>Math Operations Are there enough math examples to provide an adequate scope of the concept?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
<p>Math Operations Is the sequence of problems listed in a way that they are building on previous knowledge?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
<p>Math Reasoning/Application Do the application problems represent the concept being taught?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
<p>Math Reasoning/Application Do the application problems help students make real world connections to the concept?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
<p>Lesson Plans/Ideas** Do the lesson plans and ideas align with the standard?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>
<p>Lesson Plans/Ideas** Would the ideas be helpful in planning lessons?</p>	<input type="checkbox"/> Yes <input type="checkbox"/> No	<hr/> <hr/> <hr/>

****The Lesson Plans and Ideas section is a work in progress and will be updated as work on this manual continues. It is not intended to be a complete or exhaustive section at this time.**

Part 4 : Manual Effectiveness Feedback and Suggestions

Directions: Please rate the following categories below by checking the box on the left with the corresponding evaluation number

	1 No	2 Maybe, A little	3 Probably	4 Yes, somewhat	5 Definitely, a lot
Will this manual help special education teachers teach math to struggling students?					
Will this manual help general education teachers teach math to struggling students?					

1. What do you think are the strengths of this manual?	
2. What do you think could be improved? How?	
3. How does this manual compare to the current curriculum material available?	
4. How do you think this manual will help teachers prepare more effective lessons?	
5. Please provide any other feedback or ideas you have for this manual 😊!	

Appendix J
Manual in Use Evaluation Form

Name: _____ Title/Position: _____

Part 1: Manual Format Rubric

Directions: Please rate the following categories below by checking the box on the left with the corresponding evaluation number

	1 Poor	2 Fair	3 Good	4 Excellent
Table of Contents Information is accurate and page numbers are correct				
Headings Headings support the content and give a clear idea about the section				
Captions and Labels Captions and labels are accurate and informative				
Organization Information is organized in a clear and logical way				
Format Pages are visually appealing without being overwhelming				
Readability/Font Font used is readable and correctly sized/ Line spacing is acceptable				
Clarity in Writing Writing is clear and understandable				
Grammar and Punctuation Correct grammar and punctuation are used				
Math Symbols Correct math symbols are used in the problems				
Usability The manual is easy to use and aided in guiding lesson preparation				

Comments and Suggestions:

Part 3: Manual Use Questions

1. How did you use the manual to prepare your lessons?

2. What was the most effective part of the manual for you? Least effective?

3. How did the pre-requisite knowledge section help you in preparing your lessons?

4. How did the math calculations section help you in preparing your lessons?

5. How did the math applications section help you in preparing your lessons?

6. How did the lesson ideas and strategies section help you in preparing your lessons?

7. Do you think this would be useful for other teachers? Why?

Appendix K

Collaboration Team Evaluation Rubric and Reflection Form

Name: _____ Title/Position: _____

Directions: Please rate the following categories below by checking the box on the left with the corresponding evaluation number

	1 Poor	2 Fair	3 Good	4 Excellent
Meetings began and ended on time				
There was an updated agenda at every meeting				
Agendas were followed with little deviation				
Objectives for the meetings were clear and understandable				
Assignments given were clear and understandable				
Team Members knew their roles				
Team Members functioned well in their roles				
Team members stayed focused on objectives				
Team members followed through on their assignments				
Team facilitator reminded members of their assignments				
Team members were respectful of each others ideas				
Team members were respectful of each others roles on the team				

1. What was your experience like working in a collaborative team of regular educators, special educators, and auxiliary team members?

2. What worked well and what could have been improved?
