Lesson Plan Development

Radicals Lesson Plan

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SPCED 266:004

Lesson Plan

Approved By Teacher_____

Practicum Student (Lead Teacher): Hanna Rose Date Planning Session w/ Teacher: 2/25/15
Classroom (Support Teacher): Mrs. Griffis Date Prepared: 3/2/15 and 3/10/15
Subject/Topic: Adding/Subtracting Radicals Date Taught: 3/18/15
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Co-Teaching Strategy Decided upon by Student/Classroom Teacher Collaboration:
One Teach, One Assist
Practicum Student Provides Explanation of Why the Strategy Was Used to Support Learning:
In Mrs. Griffis' classroom, the students are highly familiar with having one teacher in charge of each educational hour, along with three additional teachers in the classroom who are free to assist students individually and answer questions. Using the co-teaching strategy of One Teach, One Assist, allows the students to receive instruction from one teacher whose primary responsibility is to directly educate the students. Students will also receive additional support from the other teachers assisting the students on whichever concepts require additional support. This co-teaching strategy provides time for effective behavior monitoring.

Roles/Responsibilities:
Practicum Student (Lead Teacher): It is the practicum student's responsibility to introduce the various concepts of the lesson and generate instructional strategies to direct student learning. The lead teacher must be sure to implement instructional strategies that engage all students involved, incorporate interesting yet educational activities, monitor student behavior, continuously access learning and progression, and allow for questions and clarifications. The lead teacher will also be responsible for supplying a laptop, providing technological support and allowing the student to have a visual of the content. The support teacher must approve of the practicum student's lesson, which develops in collaboration with the support teacher.

Classroom (Support Teacher): The support teacher will monitor the students' comprehension and understanding of the concept, provide additional support to students, and assist students who appear to be struggling. The support teacher will be walking around the room or sitting at her desk assisting students the entire duration of the lesson. Observations and progress monitoring may also take place as the support teacher searches for students to assist.

IN Standards and/or National Standards for the Aims of This Lesson:
1. Academic Standard:
HAS.SSE.2

Use the structure of an expression to identify ways to rewrite it.

Academic Indicator:
HAS.SSE.2

Make sense of mathematical problems and persevere in solving them.

2. Technology Indicator/Standard:
The technology included in this lesson does not align directly to any Indiana Technology Standard. The purpose of the technology in this lesson is to display a PowerPoint on a laptop computer that has pictures to spark the motivational activity and a list of the mathematical steps required to complete the addition and subtraction radical problems. The student will have the ability to refer back to the laptop in order to review the mathematical steps at all times during the lesson, except during the quiz at the end of the lesson.

Lesson Objective(s):
Academic: When presented with addition and subtraction radical expression problems, the student will accurately simplify radicals before proceeding to add or subtract 7 out of 10 problems.

Behavioral: When participating in this lesson, the student will remain on task at all times and will not acknowledge other students' attempts to create distraction. The student must behave in such a manner, with no more than one reminder from the teacher.

Special Preparation, Necessary Materials, and Technology Used to Support Student Learning Outcomes: (Examples May Include: Smart Boards, Document Cameras, Websites, iPad, etc.)

Accommodations for Special Needs/Adaptive Devises:
1. Tools/Materials/Resources: Displaying visuals on a laptop allows the student to easily review the steps necessary to solve the mathematical problems in the lesson.
Blank pieces of paper and a black marker are used to explain and provide examples of the steps necessary to complete the mathematical problems.
Printed worksheets containing example problems allow the student to practice the material and display their comprehension of the lesson.

2. Software: Laptop computer technology allows the teacher to create a PowerPoint in preparation for display during the lesson.

3. Web Sites: Teacher gathers pictures to use as an introduction to the motivational activity.
http://images.clipartpanda.com/palm-clip-art-palm-tree.svg
http://www.webweaver.nu/clipart/img/nature/planets/sun-wearing-sunglasses.png
Teacher prints off worksheets containing example problems for the student to practice the material.
http://www.mathworksheetsgo.com/sheets/algebra/radicals/adding-radicals-worksheet.php
http://www.mathaids.com/cgi/pdf_viewer_2.cgi?script_name=algebra1_radicals_addsub.pl&probtype=3&atype=2&language=0&memo=&answer=1&x=113&y=23
Teacher prepares a mini-quiz for the student to complete at the end of the lesson in order to evaluate comprehension and understanding of the lesson.
http://quizlet.com/71860769/test

Procedure for Guided Practice:
Transition: When the student enters the classroom, they head directly to the small room located in the back of the classroom. The student also sets their belongings aside in preparation for the math lesson.

Introduction: The teacher introduces the lesson by informing the student of the content related to the math lesson and asks them to explain previous knowledge they have obtained regarding the content. Because the student is already familiar with the lesson, the teacher asks the student to explain what components they struggled with during their first lesson over the content. The teacher explains to the student that the purpose of the day's lesson is to fix and gain a greater understanding of the content areas the student is struggling with.

Motivational Activity: The teacher displays a PowerPoint slide consisting of pictures on a laptop and asks the student to name the first thing that pops into their mind after seeing the pictures. The pictures are of a sun and a palm tree, which allow the teacher to start a brief conversation about spring break that occurs in one day. The top of the slide reads "You can do this, Casey!", providing last words of encouragement, for the teacher understands it is easy to want to stop working so close to break time.

Activity Development to Include a Technology Based Activity: After discussing the content areas the student struggles with on the particular lesson, and engaging in a brief motivational spring break discussion, the teacher proceeds to the last slide of the PowerPoint. The last slide contains a list of four critical steps the student must follow in order to successfully complete the addition and subtraction of radical expression problems. The teacher first reads the steps as listed, and then provides a simpler understanding of the steps by demonstrating each step on a blank piece of paper with a black marker. The teacher completes three example mathematical problems on a printed worksheet and reads the necessary steps aloud as the student simply observes and follows along. The student and teacher then work on two problems together, as the teacher continues to read the steps aloud in attempt to increase the student's memorization of the steps. The student, only asking for assistance when necessary, also successfully completes three mathematical problems on their own, and reads the steps aloud to the teacher while completing the problems. As a culminating activity, the student participates in a fun, mini-quiz on Quizlet where they have to match addition and subtraction radical expression problems to their answers.

Activity	**Purpose**
1. The student enters the classroom and heads directly to the small room located in the back of the classroom. The student also sets their belongings aside in preparation for the math lesson.	1. Transition time, student prepares for math lesson
2. The teacher states the academic objective. "The goal of today's lesson is to look at an area of math you seem to be struggling with, addition and subtraction radical expression problems, and we are going to find a way to memorize steps to correctly solve them. By the end of today's lesson, my goal for you is to be able to correctly solve 7 out of 10 addition and subtraction radical expression problems."	2. Inform student of academic objective, briefly begin to preview lesson

3. The teacher states the behavioral objective. "While working on this lesson, my goal for you is to remain on task at all times. I know the other students in the classroom may be curious about what we are doing, but I want you to try and ignore their distracting behaviors."	3. Inform student of behavioral object, prepare student for how their classmates may act and respond
4. The teacher introduces the lesson by asking the student to explain areas they struggle with for this math lesson. "Today we are going to learn a better understanding of how to add and subtract radical expression problems. I know you are familiar with this lesson, so what are some areas you struggle with?"	4. Activate prior knowledge and engage student in conversation about topic
5. The teacher further introduces the lesson by telling the student what the lesson is about and the activities involved in the lesson. "In order to better understand how to complete the math problems, we will first look at a PowerPoint slide that lists four important steps we must follow each time we complete one of these problems. I will first read them aloud, and I know that the wording may be confusing, but after reading the steps I will demonstrate each step on a piece of paper. I will do three problems while you watch, we will do two problems together, and then you will complete three problems on your own. At the end of the lesson, you will complete a mini-quiz where I ask you to tell me the four steps necessary to solve the math problems in the lesson, and also complete a ten problem matching quiz on Quizlet."	5. Explain an overview of the lesson's activities
6. The teacher displays a PowerPoint slide consisting of pictures on a laptop. "After seeing the pictures of a sun and palm tree, what were the first things that popped into your mind? These pictures are to remind you that spring break is only one day away, so we just have to push through this lesson and then you will have an entire week of no homework!"	6. Motivational activity
7. The teacher refers to the last slide of the PowerPoint for the remainder of the lesson. "On this slide you see four steps listed that we must remember to always follow when completing addition and subtraction radical expression problems." The teacher reads each step twice.	7. Inform student of critical steps, allow student to increase memorization

8. "Now that you are aware of the necessary steps, I am going to break each step down and show you an example of what it means on a blank piece of paper. The first step involves simplifying each term by breaking down the single radicals into multiple radicals. The second step is where you take the square roots of any perfect radicals you just broke down in step one, and multiply the square root by the coefficient. In step three, you combine radicals with like terms (radicands) by adding the coefficients. The fourth and final step is just to double-check your work and make sure all radical expressions are simplified."	8. Present new information with concrete examples
9. The teacher shows the student three examples by reading the steps aloud while completing the steps to solve problems. "I am going to show you three examples of how you follow the four steps to solve radical expressions."	9. Demonstrate how concepts can be applied
10. The teacher and student complete two problems together, being sure to read the steps aloud while completing them. "Now that you are beginning to understand how we can apply the steps to solve radical expressions, we are going to complete two problems together."	10. Guided practice – student and teacher work together
11. The student completes two problems independently, only asking for assistance when necessary. "You are starting to get the hang of these problems! You get a chance to see how well you understand them by completing three radical expression problems on your own. I want you to try to do them all own your own by reading the problems aloud, but you can always ask me for help if you need to."	11. Individual practice – checking for understanding by deepening knowledge of concept
12. Upon completion of the individual practice, the student prepares for the culminating activity by getting a blank piece of paper and a pencil. The teacher uses the laptop to get to the website, Quizlet.	12. Transition to next activity
13. "We are almost done! All you need to do now is take a mini-quiz and tell me the four steps necessary to solve addition and subtraction radical expression problems, and also take a ten problem matching game/quiz on Quizlet."	13. Checking for understanding – testing knowledge obtained through lesson by student demonstration

Culminating Activity:

1. Matching Quiz on Quizlet

The student uses the laptop to take a ten-problem matching game on Quizlet. The student is given an addition and subtraction radical expression problem and will independently solve the problem in order to match it with the correct answer. The student has approximately twenty

minutes to complete the matching quiz. The student's goal while taking the quiz is to successfully complete 7 out of 10 mathematical problems.

Materials – Laptop. Quizlet website matching quiz, pencil, and a piece of paper to work out problems

Scoring Guide/Rubric for Evaluation of Performance Standards:

	Excellent	**Satisfactory**	**Progressing**	**Points Earned**
Possible Points	5 points	3 points	1 points	
Ability to memorize steps necessary to solve addition and subtraction radical expression problems	Correctly memorized all 4 steps necessary to solve addition and subtraction radical expression problems	Correctly memorized 3 steps necessary to solve addition and subtraction radical expression problems	Correctly memorized 2 steps necessary to solve addition and subtraction radical expression problems	
Ability to correctly solve addition and subtraction radical expression problems	Correctly solved at least 7 out of 10 addition and subtraction radical expression problems	Correctly solved at least 6 out of 10 addition and subtraction radical expression problems	Correctly solved at least 5 out of 10 addition and subtraction radical expression problems	
Targeted behavior: Remain on task and ignore distractions	Remained on task and ignored distractions with no reminders (no checks on checklist)	Remained on task and ignored distractions with 1 reminder (1 check on checklist)	Remained on task and ignored distractions with 2 reminders (2 checks on checklist)	
Total				

Follow-up Homework Activity:

1. The student is informally assigned the task of educating another student in their classroom about the four steps necessary to correctly solve addition and subtraction radical expression problems.

Closure to Lesson:

"After breaking down the math lesson and memorizing four steps that help you solve the radical expression problems, I hope you feel more comfortable solving these types of problems. What would be even better, is if you almost become excited when you see these types of problems on the test, because I know you have perfected this lesson and will do great! What was your favorite part of the lesson? I want you to keep referring back to these steps so you do not forget them, because thinking of the steps in your head while you complete the problems will help you out tremendously for your test. It is crazy the things you will learn when you take the time to fully understand something, and also have fun while doing it!"

References

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