

Show What You Know: How Girls' Academic Confidence Increases with Multiple and Differentiated Ways of Sharing What They Learned

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Abstract

This action research project investigated the hypothesis that when elementary school girls are able to choose from a menu of differentiated assessments their academic confidence increases and their assessment stress decreases. In this study, students in grades two, three, and four in an all-girls' independent school in the United States were given choices in the assessment process. Students used a Likert scale to rate their academic confidence in the topic of a STEAM mini-unit at the beginning and end of instruction. At the conclusion of each mini-unit, students chose their preferred method of assessment to show what they had learned—*show what you know*. The assessment choices were: creating a labeled drawing, building a model, taking a multiple choice test, recording a Flipgrid, taking a Kahoot quiz, or other (student's choice). In addition, the parents of the students provided feedback and insights on the academic confidence and the learning achieved by their daughters. The study demonstrates that providing students with “voice and choice” from a variety of assessment methods may contribute to increased academic confidence and improved learning outcomes.

Keywords: action research, STEM education, confidence, girls, differentiated assessment, feedback, parent communication, increasing academic abilities, formative assessments, summative assessments, reducing anxiety, improving academic performance

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Introduction

When girls have greater confidence in their academic abilities, they learn better (Ogange et al., 2017; Stankov et al., 2012), have less anxiety (Ogange), are more motivated (Nelms, 2002), and are often more enthusiastic about learning (Moss, 2013). Therefore, it is increasingly important for educators to help develop girls' self-awareness of their academic confidence. This research project investigated the question: Does the confidence which girls have in their academic abilities increase when they are given multiple and differentiated ways to show what they know? Through pre- and post-instruction surveys, authentic and differentiated assessments, and self-reflection opportunities, students were given opportunities to share their acquired knowledge on a specific topic and assess their confidence in their ability to share what they know. It was hypothesized that when girls are given multiple and differentiated ways to show what they know, their academic confidence increases.

This study was conducted in a group of 69 second through fourth grade students in an all-girls', suburban, independent school setting. In addition, the students' parents were given the opportunity to complete surveys about their daughters' experiences with the new assessment options and provide their perceptions of their daughters' academic confidence.

Literature Review

The educational framework called Universal Design for Learning (UDL) focuses on students having flexibility in their learning to give students with different needs, the experiences and tools they need to be successful (Morin, 2011). Research shows that by being flexible, offering choices, and incorporating students' interests in assessment options, students are less anxious during assessments and more successful in school (Morin, 2011).

In this research, I focused specifically on assessments and feedback and their connection to a student's academic confidence. Preparing differentiated assessments to benefit students with various learning styles and abilities seemed to be a natural progression from differentiated instruction. This study is based on the premise that when children are given a choice in how they represent their knowledge on a given topic, their confidence as learners increases, and in turn, they are less anxious and more motivated to engage.

Confidence

There is ample research to show that having greater confidence positively affects students' performance. Confidence has been deemed "[one of] the best known predictors of achievement" (Stankov et al., 2012, p. 747). "Confidence in one's abilities generally enhances motivation, making it a valuable asset for individuals" (Benabou & Tirole, 2002, p.871). In addition, many professionals who work with children have noted the importance of confidence for self-image, social interactions, and academics (Benabou & Tirole). It is the purpose of this study to show a connection between confidence and student performance on differentiated assessments.

Research has also found that emotions affect performance (Compte & Postlewaite, 2004; CAST, n.d.). Compte and Postlewaite note, "positive emotions can improve performance, while negative ones may diminish it" (p. 1536). For example, the fears induced by the possibility of failure may impair performance in sports, on stage, or at school. In addition, a study by Moss (2013) was conducted using multimedia as a teaching technique to improve student confidence and, therefore, students' grades. Students were surveyed to measure their confidence and enjoyment in class and video interviews

conducted to evaluate their reactions. It was determined that the use of twenty-first century teaching methods did have a positive effect on the students' confidence and led to improved grades. The research suggests, therefore, that students' emotions and learning are connected and can affect academic performance (CAST, n.d.).

Assessment and Feedback

One way to show what you know is through assessments and feedback, which were used in my research to support student's academic growth and self-confidence. In 2005, Bennie published research on the use of feedback as a type of assessment for college-age math students, which demonstrates that higher education was shifting how assessments were valued and used. In particular, Bennie noted that assessments have the potential to "promote learning" when educators provide "timely and meaningful feedback to students" (p.1).

Summative assessments evaluate the learning completed at "a certain point" (typically the completion of a unit or course), while formative assessments provide information used "to adapt the teaching and learning" going forward (Bennie, 2005, p. 1). Bennie notes further that, "a student will only review her current understanding of a concept when she is alerted to a problem in her own understanding" (p. 1). Bennie concludes that it is important for students to receive feedback throughout the learning process to appreciate their own learning.

Research has also shown the advantageous effects of a wider range of assessment types and the benefits of each type. The focus of such research has been on the purpose for each of the different types of assessments and who would be using the information from each of the assessments. For example, some assessments would be used to assign students' grades, other assessments were more of a reflection on teacher performance and accountability, while others were used to gain government funding (Bell & Cowie, 2001). Bell and Cowie note that formative assessments are used to "help the teacher understand students' learning" (p. 538). If teachers understand how students learn, they are better able to teach to their students' strengths and help to improve the students' weaknesses.

Additionally, some important assessments are informal and are not recorded or reported. For example, when a teacher sets out to teach a lesson but learns in the process that the students need more background information, the teacher then decides to change plans mid-way through the lesson to best meet students' needs and understanding. Teachers gain important information about the students and use it to adjust their teaching (Bell & Cowie, 2001).

In a separate study on the use of formative assessment for students who are learning online, formative assessments were found to be effective in influencing student engagement and learning outcomes (Ogange et al., 2017). One of the benefits of formative assessments noted by Ogange and others is that using them "provides students with prompt feedback needed to assess their learning and remedy weaknesses in instruction and their learning" (p. 29). Using formative assessments gives both the students and teachers the time they may need to make adjustments during the learning process. Furthermore, note Ogange and colleagues, formative assessments "can help reduce the level of anxiety among students before summative assessments" (p. 29). This research served as background information for my study, through which I hoped to discover the potential of my students, cultivate new ways to assess student learning, and demonstrate to other educators new and practical ways to use differentiated assessments to best meet the needs of their students.

Summary of Literature Review Findings

The goal of this study was to demonstrate that giving girls' voice and choice in assessment options would increase their confidence in their ability to show what they know. As stated in this literature review, confidence is important for students' academic success and opportunities for formative and summative assessments enhance academic confidence. This research, therefore, explored how girls' confidence is increased when they are given multiple and differentiated ways to show what they know.

Research Context

I conducted this research study in my second through fourth grade science classes at The Agnes Irwin School (AIS), from September 2020 through January 2021. I have been teaching at The Agnes Irwin School for nine years and have over 20 years of elementary teaching experience in both public and

private schools and in co-educational and single-sex settings. I earned a Bachelor's Degree in Elementary Education and a Masters of Education Degree in Science Education.

AIS is an all-girls', independent, suburban school located on Philadelphia's Main Line in Rosemont, PA, U.S.A. with an enrollment of 580 students (PreK-12). The school was founded over 150 years ago by Ms. Agnes Irwin, the great-great granddaughter of Benjamin Franklin. Students are from 85 zip codes surrounding the school, as well as seven international students from China. Twenty five percent of the students self-report as students of color. In grades 2 – 4 there are 20, 25, and 24 students respectively.

As a result of the COVID-19 pandemic, students had the option to engage in virtual learning during the 2020-2021 school year. This research was conducted with the majority of students learning in person with the teacher. Due to the nature of the pandemic, between 0-25% of students were engaged in virtual learning during part of the research period and there were two and a half weeks during which all students and teachers were in a virtual learning mode.

As an educator, I have always been passionate about meeting my students' individual needs. During my years of teaching, I recognized some emerging themes. I often noticed that there are students who are struggling in many aspects of school, yet when they are in science class they are able to shine in a way not seen in other subject areas. I recognize that most teachers have become very skilled in differentiating their instruction, but when it comes to assessments, many teachers give the same (or similar) test to all their students. One of the main reasons we, as teachers, differentiate our instruction is to meet the various learning needs of our students. This should also hold true for the assessment process. A one-size-fits-all approach to assessments does not work in today's educational framework because students have various background experiences and educational needs.

I wondered what would happen to the confidence of a student who struggled with reading, yet was asked to read a paragraph on an assessment before answering a question about a scientific process. Would that same student have less anxiety or stress if she were given a choice to explain the scientific process in

a different manner? Would her test score be the same? Would her academic confidence change by giving her choices? These are the questions I wanted to explore.

Throughout the course of this research, increasing my students' academic confidence, meeting their individual needs during assessments, and allowing the girls to have a "voice and choice" to use their strengths and their passions to show what they know became my passion.

The Action

This action research was aimed at providing differentiated assessments to understand the possible impact on girls' academic confidence. I reviewed the main topics taught in each grade and broke them into smaller units, provided the students with more feedback and increased opportunities for them to demonstrate what they knew about each smaller unit. For example, a weather unit was broken down into the mini-units of clouds, weather tools, and the water cycle and used formative and summative assessments as well as feedback throughout each of these mini-units.

Students were given a choice on how they would like to show what they know for the mini-unit assessments. The options were: creating a labeled drawing, building a model, taking a multiple-choice test, recording a Flipgrid, taking a Kahoot quiz, or other (student's choice). Students were given the expectations for their assessment, which required them to include a set number of key vocabulary words in their assessment response.

Assessment scores of different types of tests were determined using an identical rubric (see Table 1). If the expectation was to use at least three of the vocabulary words correctly, then a student who used three vocabulary words correctly scored "meets expectations." A student who used more than three vocabulary words correctly scored "exceeds expectations." If the student did not meet the expectation of using three vocabulary words correctly (or used some of the vocabulary words incorrectly), she scored "progressing towards expectations." Finally, a student who did not follow directions scored "needs improvement." This rubric created a uniform scoring system, even though students took different types of assessments.

Table 1

Assessment Grading Rubric

GRADING RUBRIC	Check Box
Exceeds expectations	
Meets expectations	
Is progressing towards expectations	
Needs improvement	

Students used our classroom website to access their assessment options, which were only made available during the end of each mini-unit. On this webpage, students found a clear expectation for the goal of the assessment, a list of the vocabulary words for that unit, directions for each of the assessment choices, links to access each assessment along with passwords if needed, and tutorial videos (see Figures 1 – 4). There were five different types of assessments listed and then a sixth choice was for the student to design her own assessment. Examples of student-created assessments included students making a test for the teacher (with an answer key), creating a PowerPoint presentation, and composing a poem using vocabulary words.

Figure 1

Example 1 of Assessment Information on Class Webpage

SHOW WHAT YOU KNOW!

4th Grade: Rock Cycle

Choose your own method to explain to me what you know about the rock cycle. Some suggestions are: a labeled drawing, building a model, multiple choice test, flipgrid recording, kahoot quiz, or your own idea.

EXPECTATIONS: Please be sure to include at least 3 of the following vocabulary words in your chosen response.

WEATHERING, SEDIMENT, PRESSURE, SEDIMENTARY ROCKS, LAYERS, HEAT, METAMORPHIC ROCK, MAGMA, IGNEOUS ROCK




Figure 2

Example 2 of Assessment Information on Class Webpage

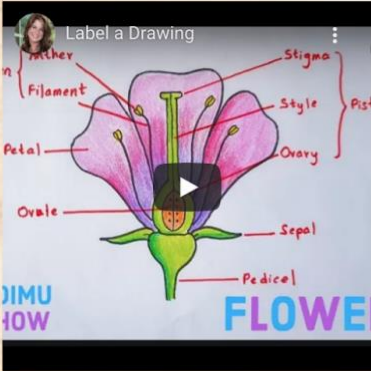
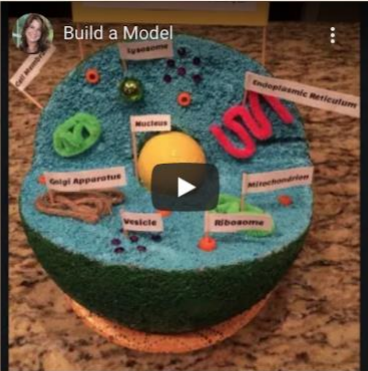
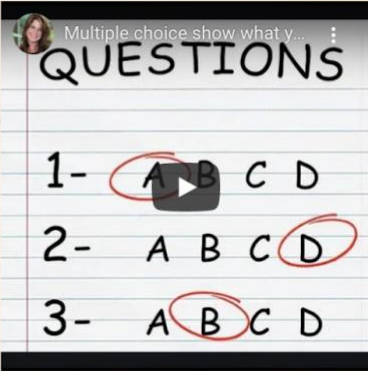
		
Label a drawing	Build a model	Multiple choice test
Watch this video, get your supplies, and get started. If you are virtual: Share your work using THIS LINK CLICK HERE for a TUTORIAL on uploading PHOTOS	Watch this video, get your supplies, and get started. If you are virtual: Share your work using THIS LINK CLICK HERE for a TUTORIAL on uploading PHOTOS	Click THIS LINK (or ask me for a printed version), answer the questions, and submit.

Figure 3

Example 3 of Assessment Information on Class Webpage

Three video thumbnails are displayed side-by-side. The first is titled 'Flip Grid show what you know' and features a green speech bubble with 'FLIPGRID' written inside. The second is titled 'Kahoot show what you know' and features the Kahoot! logo on a colorful background. The third is titled 'Your Own Plan to show what...' and features a red stamp that says 'IT'S YOUR CHOICE'. Each thumbnail has a play button icon in the center.

Flipgrid
Click [THIS LINK](#), use code **AgnesI**, record your response.

Kahoot quiz
[Click the link](#), use code **09931646**, type your full name, answer the questions.

Your other ideas...
Watch this video, get your supplies, and get started.
If you are virtual: Share your work using [THIS LINK](#)
[CLICK HERE](#) for a TUTORIAL on uploading PHOTOS

Figure 4

Assessment Grading Rubric

The figure shows a 'Grading Rubric' section with a table and a video thumbnail. The table has columns for 'NAME', 'TOPIC', and 'Check Box'. The 'TOPIC' column contains 'GRADING RUBRIC'. The 'Check Box' column has four empty boxes. The video thumbnail is titled 'Check Your Work' and shows a person wearing glasses.

Grading Rubric

Look over the grading rubric in this section to see how you will be assessed. Please be sure you have included all information you want to include.

NAME:	TOPIC:	Check Box
	GRADING RUBRIC	
	Exceeds expectations	<input type="checkbox"/>
	Meets expectations	<input type="checkbox"/>
	Is progressing towards expectations	<input type="checkbox"/>
	Needs improvement	<input type="checkbox"/>

Check Your Work

Watch this video to be sure you have followed all of the directions for the assignment.

Figures 1 – 3 show that each assessment choice had a photo of an example and a video with detailed directions about what supplies were needed and what was required to accomplish this type of

assessment. The girls were taught how to use the webpage, how to take each of the assessments, and how to access them; thus, these videos served as student accommodations.

Even with this introduction to the new assessment options, a few students needed reassurance or a refresher on directions. Due to the Covid-19 pandemic and the need for some students to learn virtually, a link was created for submitting photos of work that the virtual students completed on paper or a model they built. If they forgot how to submit the photo, there was a tutorial video linked in that section as well. Finally, there was a section on the webpage that provided the grading rubric, a written explanation of the rubric, and a video that explained the rubric orally (see Figure 4). These efforts were made to meet the different learning needs of the students and options were made available to differentiate how students processed the directions.

Data Collection

I used an action research framework for this study. In *The Journal of Teacher Action Research* (2020), teacher action research is defined as “teachers (at all levels) studying their practice and/or their students' learning in a methodical way in order to inform classroom practice” (Naizer et al., p.3). For this research project I used a mixed methods approach, collecting a combination of quantitative and qualitative data. This research was implemented with all 69 students in my second, third and fourth grade classes, however individualized data was only collected from 39 students whose families had given written consent.

Prior to beginning each of the 12 mini-units, students' confidence in the topic was surveyed using a six-point Likert scale (see Figure 5), where students responded to a version of the question, “How confident are you in your ability to explain to someone else about [the topic for instruction]?” At the conclusion of the mini-unit, the students were again asked to rate their confidence with the topic using a comparable seven-point Likert scale (see Figure 5). The additional point was added to address students who initially rated “very confident” but could subsequently indicate that they experienced growth by learning something new. On both the pre- and post-instructional confidence surveys, students were given an option to leave a comment about their confidence.







Figure 5

Pre- and Post-Instruction Confidence Surveys

How confident are you in your ability to explain to someone else about the different types of clouds?








Pre-Instruction

Name: _____ Date: _____

					
Not at all confident Worried/ Nervous	Not at all confident But I'm OK	A little bit confident but not much	Somewhat confident	Good, but could be better	Very confident
Comment: _____					

Post-Instruction

Name: _____ Date: _____

						
Not at all confident Worried/ Nervous	Not at all confident But I'm OK	A little bit confident but not much	Somewhat confident	Good, but could be better	Very confident	WOW! I learned something new I didn't expect.
Comment: _____						

2nd Grade September

For each grade (2, 3, and 4), three times throughout each unit, students were given the opportunity to “Show What They Know” by choosing from a list of five different types of assessments, and a sixth choice of deciding their own version of how they wanted to share their learning. These assessments were graded using an identical rubric to compare students' knowledge about the unit of study. Students reflected on their academic confidence and the experience of having a choice in their assessments. Their responses were coded and analyzed by identifying trends and common themes in their responses.

Towards the end of the study, I sent a survey to the parents to gather their observations about their daughter and her confidence in science class this year. I included the parents in my research so that the data could be triangulated, consisting of feedback from the student, the teacher, and the parents.

Data Analysis

A main goal of this research was to increase the students' academic confidence. I had hypothesized that when the girls were given multiple and differentiated ways to show what they know, their academic confidence would increase. My findings indicated that, as the study progressed, students' overall confidence improved. Figures 6 and 7, show two samples of students' pre-instruction confidence scores as compared to the same group of students' post-instruction confidence scores for the same mini-unit.

Figure 6

Pre- and Post-Instruction Confidence Scores: Grade 4

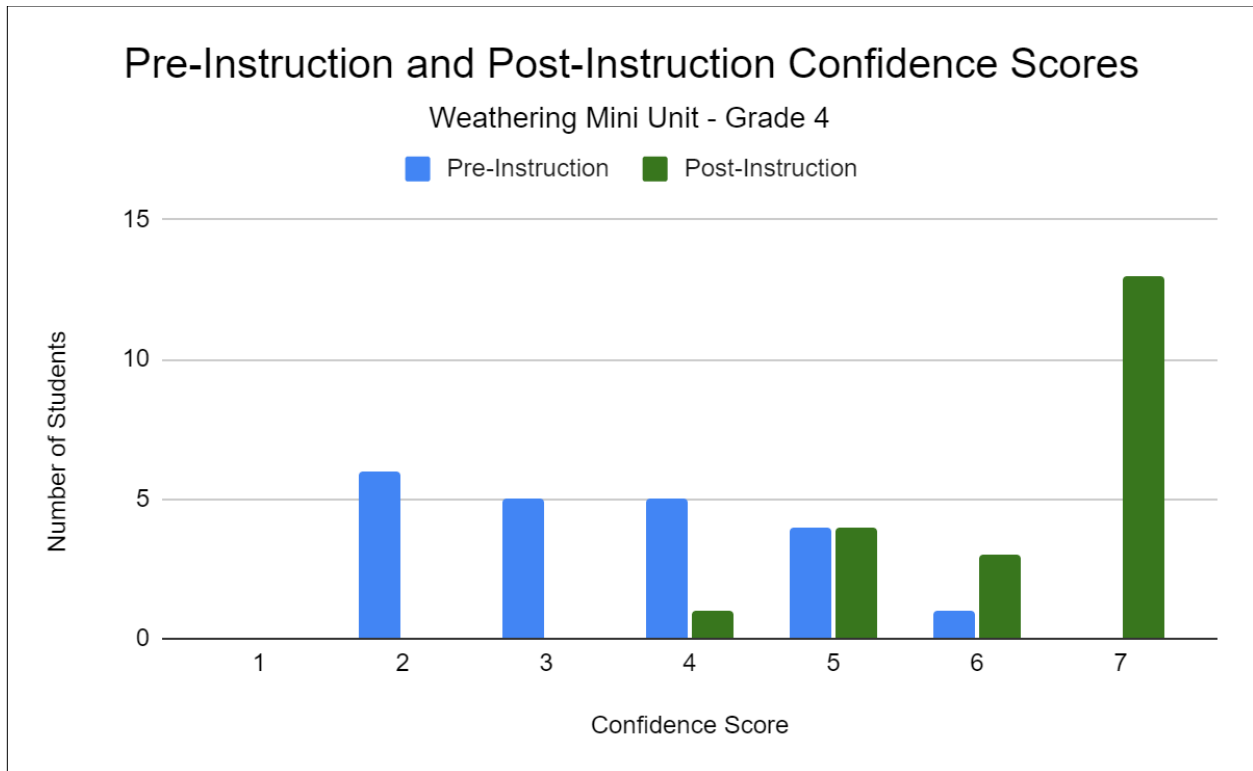
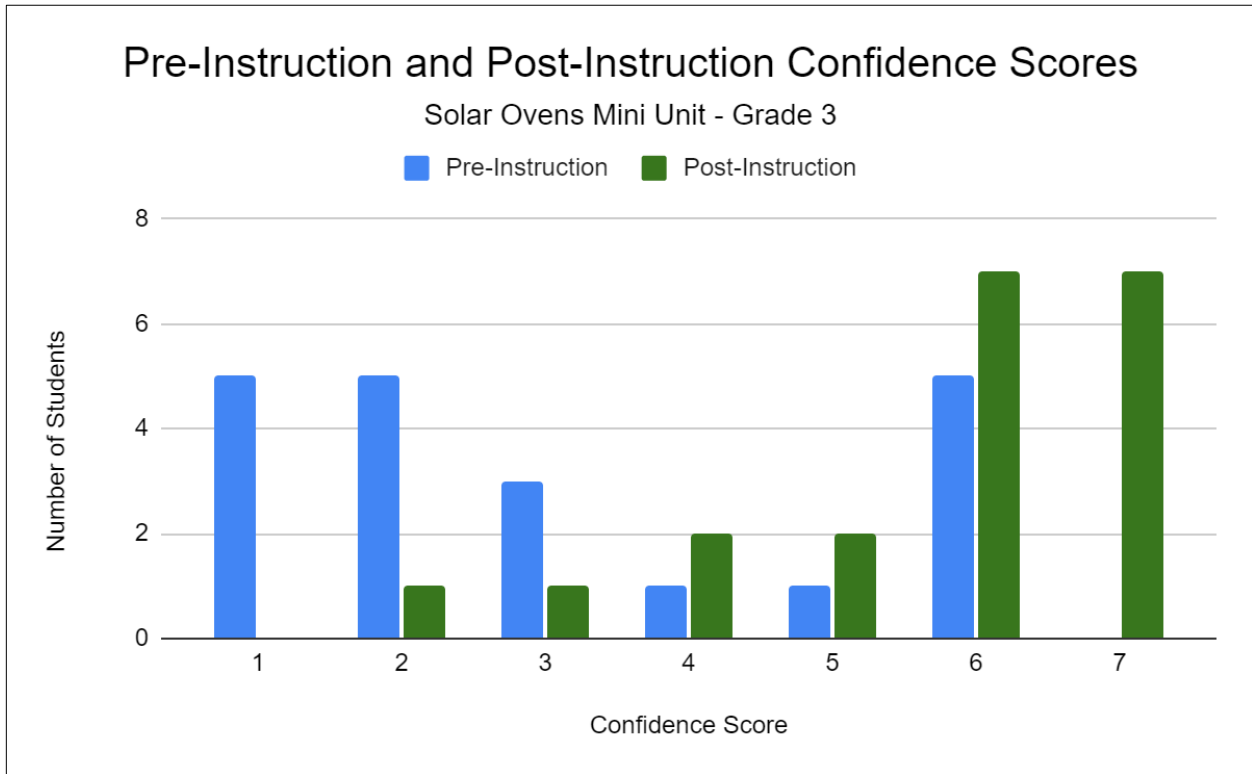


Figure 7








Pre- and Post-Instruction Confidence Scores: Grade 3



The combined data, from all units taught in grades 2 – 4 over the period of this study, show that the students' post-instruction confidence scores were higher by 2.61 intervals on average compared to the pre-instruction confidence scores (see Figure 8). Not only was I pleased to see these results on paper, but when the students were able to see their own confidence scores increase, they too were pleased and proud of themselves. One fourth grader shared, “My confidence this year has grown so much and I am so happy that we are now doing these responses.”

Figure 8

Post-Instructional Confidence Intervals

						
Not at all confident Worried/ Nervous	Not at all confident But I'm OK	A little bit confident but not much	Somewhat confident	Good, but could be better	Very confident	WOW! I learned something new I didn't expect.

Since the pre- and post-confidence scores were located on the same page, students were able to see if their confidence had progressed during this time in a side-by-side comparison. Many students made comments about how they were surprised by how they rated their confidence for the pre-instruction survey and were proud of how much they had learned. They noticed growth in themselves that otherwise could have gone unnoticed. Many students expressed that making this growth visible helped to increase their pride in their academic growth and accomplishments. There were no students who reported a lower confidence level on the post-instructional survey and 89.4% of the 123 student surveys that were submitted, reported growth in their personal confidence. Below are some comments that students wrote at the end of their post-instruction confidence assessments.

- “I didn’t know a lot about weather [at first] but I learned so much and now I feel so confident.”
- “[I am] confident because I made improvements.”
- “I am very confident. I am surprised how much I learned.”
- “I feel really confident and ready for anything.”
- “I am very confident because I learned in my lessons.”
- “I learned a lot that I didn’t expect and now I feel very confident on whatever I need to talk about it.”

- “I didn’t know [very] much [from] the start but now I know SO much!!!!”
- “I know that I can tell [someone] what we are [learning about] any day at any time! I feel better!”
- “[Now] I know a lot about it & I am very confident.”
- “I feel...really really really really really really really really really really really really really really really confident.”

The students reacted positively to being given a choice to show what they know and in the unprompted optional comment section without any guidance, 60.5% of the 43 respondents spoke about being happy to be given a choice on assessments, 28% of the 43 respondents mentioned having less stress, and other students commented on different aspects of this experience. A fourth grader reflected on this process and said, “I am really happy that we have a choice. I like that because it gives me a little bit more freedom to show my work in any way I like to and that’s how I show my best learning.”

Not every student scored herself as the most confident on the scale for the post-instruction confidence survey and some students acknowledged that they could have a better understanding of the content than they do. One student expressed confidence in her knowledge but not her ability to share her knowledge in stating, “I learned a lot so I am *very confident* but also I’m *ok, but could be better* because I would probably stumble on my words a little bit.” I think it is powerful that this student was able to differentiate her knowledge of content and her ability to deliver the message when the question was, “How confident are you in your *ability to explain* to someone else about the process of weathering?” She was not confident in her speaking ability, so when given the choice of a differentiated assessment, she was able to recognize that a multiple-choice format would best suit her strengths.

Another example is from a fourth grader that shared, “I’m kinda nervous to explain but I really like [learning].” This student did exceed the expectations on the assessment; however, she shared that she was not nervous about the assessment, but she was nervous about explaining to someone what she learned. Having the option to choose her assessment that she didn’t need to “explain” was less stressful and produced high quality work.

There were a few students who shared, at the beginning of the year, that having a lot of assessment choices was difficult for them because they didn't know what to select. In these cases, having a choice for an assessment did not decrease their anxiety. I used this information as its own type of formative assessment to lead me to make a small positive change in the educational experiences of individuals who expressed this concern. I offered to help them choose which assessment would be best for them. The process of making these choices together led these students to feel more confident in making their own choices as the year progressed.

By the end of this research project, students had the confidence to independently select an appropriate assessment and were able to make changes to best demonstrate their knowledge. One student shared, "At first I did Kahoot and my nerves built all up because I don't think I'm going to get it right and it stresses me out a lot and I can't think. So I liked being able to record myself [instead]." This led to an important learning experience for that student, and I found an opportunity to give her the feedback she needed.

In addition to increased ratings of confidence, students expressed enthusiasm for taking assessments. I never anticipated that by the end of the study, students would cheer when I told them that, "Today is a day for you to show what you know." The students were actually excited to take a test, even asking if they could take an additional test when they finished early. Below, students share their thoughts about being given choices in how they show what they know.

- "I don't always like to do a test on paper. I feel like doing Kahoot is much more relaxing and it doesn't make me stress as much."
- "You can actually have multiple choices so it's a little more challenging and I like challenging stuff."
- "I thought it was exciting to have your own choice because if you didn't want to do the thing that you had to do this was a way to express what you like to do and what works for you best."
- "It feels fun because when you get to get a choice you're not nervous you just feel what you want to do."

- "It was really fun, it wasn't as much pressure if you didn't have a choice and you could choose what you felt most comfortable with so it was really fun."
- "It makes me feel comfortable how I have a lot of choices."
- "I picked multiple choice. I was a little happy because not all teachers let us pick and sometimes if it's not multiple choice it's kind of hard [for me]. I think multiple choice helps me sometimes because I get to pick off some of the answers."
- "I love doing the show what you know after every topic because it gives me a chance to have a bit of freedom out of a test because in every other subject we have to do [the same] test after each topic and I don't like it."
- "I felt like when we were given the choice to decide what we wanted I felt kind of happy because most of the time you have to write a paragraph about it or you have to do a multiple choice. I felt kind of good because they get to see it from the student's perspective and what they wanted instead of doing it at the teacher's perspective."

Having multiple and differentiated assessments proved to be especially positive for students with learning differences. One student shared, "I liked [having a choice and] doing the test online because it's for me easier to do online because sometimes I can't really think on paper it takes me a little bit to do that. The questions [for this] are right there so I can think easier." Being given a "voice and a choice" helped students learn about their own learning process. In this format, for example, students who may have difficulty with reading, are not required to take an assessment which consists of a large number of reading passages. Students are able to limit educational barriers which may inhibit performance, pull from their strengths, incorporate their interests, and take ownership of their learning experiences to choose what is best for them (CAST n.d.). Another student shared, "I liked it because sometimes I don't like to write my things and I like to film what I'm doing and I liked it because I had a choice to do what I felt better with and I felt better explaining it." Helping these students to develop self-awareness increased their academic confidence.

The parent survey about their daughters' confidence in science used a scale of 1 to 5, with 1 being "not confident at all" and 5 being "extremely confident." All responders scored their children between 3 and 5. In addition, parents reported that their daughter's recall of factual information about a particular topic was strong, with 84.8% of the 33 responses being a 4 or 5 on a 5-point scale. Parents were also given the opportunity to provide anecdotal responses, a few of which are listed below.

- "I like using several different ways to share knowledge. I think it helps them process information in different ways and to build confidence in their skills."
- "I think it's extremely important. Every child is different, having differentiation increases growth across all learning styles."
- "Always wonderful! Allows each girl the opportunity to express herself or seek and discover in ways that are best for her."
- "Love it! Everyone learns differently and it's lovely to be in an environment where that's ok and encouraged and supported."
- "Great! All kids excel in different modes of assessment."
- "I LOVE the concept of providing differentiated ways to share knowledge. My daughter has dyslexia and is often times reticent to express herself in the written word ... but give her a chance to talk about something and you'll never get her to stop :)"
- "It allows them to discover their strengths and weaknesses and builds excitement when they complete projects in unique and creative ways. It also helps to keep them excited, engaged and fresh."
- "[Agnes] seems much more interested and engaged than at her previous school. We believe the way in which the material is presented and assessment conducted has greatly improved [Agnes'] enthusiasm and confidence in her ability to express an understanding/interpretation of concepts and subject matter."

Having some non-traditional assessments to choose from created the opportunity for students to incorporate some of their hidden strengths, personal interests, and parts of their personality that are not always visible in a school setting. One student who I have taught for three years is consistently focused, serious, and quiet in class. When given the opportunity to film herself for an assessment, her energetic, enthusiastic, and loud personality shined through in a way that I had never seen before. I had a similar experience with another student who apparently has a lot of experience making videos for her friends outside of school and excelled with recording herself on Flipgrid. I had never seen her that animated and enthusiastic. Aspects of children's personalities can emerge when students feel comfortable with the assessment formats. This, in turn, has the potential to improve student-teacher relationships and to help students feel a greater sense of belonging in the classroom.

Discussion of Results

As a result of having the opportunity to choose how to share their knowledge on a specific topic, students who participated in this research study demonstrated an increase of academic confidence. In a school year that was drastically changed by the Covid-19 pandemic (which didn't exist when this project began) and a year when teaching did not often have the same rewarding experiences that many of us as teachers truly enjoy, it was surprising that conducting a research study during this time turned out to be a source of excitement and joy for myself and my students. When I first shared the format for differentiated assessments with the students, they were actually excited about assessments, excited to get a choice, and excited to "show what they know." They learned about the way they learn best and began making choices for assessments that were best for them. On the very first mini-unit assessment day, I was so thrilled with the results that I recorded myself so that I could remember how happy I was that the work I had been doing seemed to be on the right track. In my video I said, "Today was by far the best teaching day of the year!" Seeing students invested in their learning, gaining confidence to take academic risks, learning their strengths and using them to demonstrate their knowledge in a way that was less stressful, and sharing in the joy—the actual joy of assessments—was incredibly rewarding for me as a teacher.

At the onset of this study, one of my concerns about changing the format of my assessments was the possibility (or even just the perception of others) that alternative assessments did not have the same rigor of traditional assessments. During the first round of differentiated assessments, some of the students did not receive the high-quality grades that I had expected to see. Initially, I was disappointed in this result but upon further reflection I came to understand that if all the students did exceptionally well at the onset, I too might question the rigor of such alternative assessments. I was pleased to show that students would not automatically receive a high grade in this format and that students may need practice with a new format and may even need to be taught how to make choices for which assessment type would best suit them.

I realized that I may also need to address the fixed mindset that some teachers, parents, or older students may have about what assessments “should” look like. If an assessment seemed easier for a student, that did not mean that the assessment was not an accurate measure of her understanding, but may have meant that it was easier for her to share her knowledge in this format. If a student did not know the material, she would not earn a good grade regardless of the format of the assessment. Perhaps this third grader best explained her experience: “It feels really good to get a choice of how to take a test because I [can pick] the one that feels better for me to work on.”

At first glance, it may appear that to give students multiple and differentiated ways to show what they know, would require a considerable amount of additional work on the part of the teacher. While I acknowledge the fair amount of additional work needed to design the framework of the new testing experience, once the new testing options are created, which can be done well in advance of instruction, they can be reused for each testing cycle throughout the year. For example, the directions for “label a drawing” are the same no matter if the student is drawing parts of a plant or the order of the planets in our solar system. The same is true for recording a Flipgrid, building a model, taking a multiple-choice test, etc. Setting up the framework for this testing environment is flexible to one’s teaching style and the students’ learning needs. The assessment options may look different in different classrooms and/or for different subject areas, based on the teacher's style and preferences.

Of the six types of assessments that I chose, three of the choices (label a drawing, build a model, and other) required no additional work after the initial setup. The directions were already set up and accordingly the student's work was adjusted by the unit we were studying. The Flipgrid assessment choice only requires me to open a new Flipgrid tab and paste a new link in that section; approximately ten minutes of additional work. Assuming teachers would already need to be creating one type of assessment for each assessed unit (or have one already created that they are using), at the end of each unit, they could select these five assessment choices (the prepared test, label a drawing, build a model, Flipgrid, and other) with very little additional work for each testing cycle throughout the year.

As someone with a science background, it was important for me to differentiate scientific research from action research for my study. Since an action research methodology does not use control groups, I was not able to compare the students' increased confidence with those who were not given multiple and differentiated assessments. However, this research was not intended to compare different methods of improving student confidence; rather, the focus was to determine whether a student's academic confidence is increased by providing multiple and differentiated assessments.

Implications for Practice

For alternative assessments to be successful, having clear expectations for the students on how to take the assessment is extremely important. If the expectations are not clear, then it is very difficult for students to be able to meet or exceed expectations (see Table 1). For example, if using vocabulary words as part of the expectations, it is important that students know they cannot just place the word in a sentence; the teacher needs to be sure from their use of the word that the students understand what it means and has provided examples to prove it. There were times that students used the vocabulary word I was looking for but with no connection to their knowledge and I was not able to give them credit. The students would need to clearly understand this expectation in advance of taking the assessment. The grading on the rubric may also be adjusted to different grade levels and assessment needs. For example, if a teacher's school requires more traditional grading, the rubric could be changed to A, B, C, and D with descriptions for what is expected to earn each letter grade.

It is also important to note that students should be given opportunities to experiment with all types of assessments. It is not suggested, however, that students always have a choice for an assessment or that they could potentially avoid having to ever take one type of assessment that they may not prefer. On the contrary, it is important to have multiple assessment experiences over the course of the students' education. However, when wanting to assess what students know about a topic, the method of assessment is not as important as knowing that they learned the lesson. Assessments become more reliable when students have the ability to share what they know in a way in which they are most confident.

Conclusions

My research demonstrated that when the participants were given multiple and differentiated ways to show what they know their academic confidence increased. In turn, having greater confidence positively affected their achievement, enabling them to meet and exceed expectations. I found a strong relationship between academic confidence and the girls having multiple and differentiated ways of sharing what they learned. For many years, students have benefitted from teachers' differentiated lessons and this study suggested that differentiated assessments are also beneficial. Increasing academic confidence can enhance learning for students of different learning aptitudes. Showing what you know through differentiated assessments may enable students to have more academic confidence and take more risks in an academic setting.

It was rewarding to hear a third grade student say, "When you get to have a choice you are not nervous because you get to do what you want to do," or a second grade student say, "I like how we got to choose what we wanted to do because there's different ways how we learn and we want to show it in how we learn." It is very rewarding to be making a positive difference in their academic experiences.

Some interesting directions for future research include how differentiated assessments might impact students as they progress through school. Will students experience the same success using differentiated assessments in other subject areas? Will middle school and high school students register an increase in academic confidence and improved assessment scores when they are given assessment choices? Will the outcome be similar in a boys' school setting or a coeducational setting? Does gender

play a role in increased confidence and learning due to differentiated assessment? These are directions worth exploring.

A third grade student summed up her experience by saying:

It felt good to have different choices because we are all different and we're all unique. So some people may have stage fright and want to do a multiple choice test. Or some people don't have stage fright and they want to do a Flipgrid.... Maybe these choices that we do now we don't like when we're older, but that doesn't change anything. That just means that we're different. Since we're all different we can all choose different assessments. It made me feel good and made me really remember that we're all different ... and we all think differently and that means we're all unique. And to have different choices to represent our uniqueness is actually very good.

Ultimately, I hope that with enough practice in making academic choices for themselves, girls will be empowered to have the confidence to assume more leadership roles, both within and outside academic settings. For my girls at Agnes Irwin, I hope through our work together, they have developed the confidence to strive towards our mission, “[Empowering] girls to learn, to lead, and to live a legacy.” This study reaffirmed my belief that helping girls gain confidence improves their futures, and ours.

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