

STUDENT IMPACT PROJECT EXAMPLE - Elementary Education
Fall 2017
Option 1

*Edits have been made to this project to ensure it is an exemplar for future students.

Name _____

Science SOL 2.5 and 2.7

Directions: Please read the questions carefully and answer them with the best answer or answers.

1. Circle the **four** things that a habitat needs to be successful.

food pillows internet space

water leaves clothes shelter

2. Circle the **three** characteristics of a living organism (thing).

reproduce dry move eat dark

3. What describes a habitat?

- a. the place where the animal only sleeps
- b. the places that provide all the necessary characteristics to survive
- c. the place where the animal can go to school
- d. the place where you can buy the animal

4. List two things that are ***living***

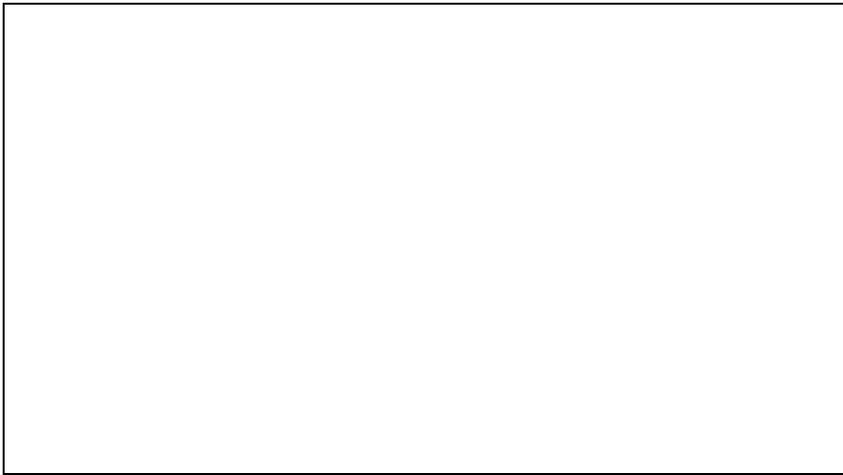
5. List two things that are ***nonliving***.

6. What season comes **after** summer?
- fall
 - winter
 - spring
 - summer
7. A tiger has stripes to help _____ itself.
- hibernate
 - camouflage
 - adapt
 - migrate
8. What does a bird do in the **winter** time?
- adapt
 - migrate
 - camouflage
 - hibernate
9. A bear and snake eat lots of food before they _____ for the winter.
- hibernate
 - camouflage
 - migrate
 - adapt
10. What describes a fossil?
- the remains of plants and animals that lived long ago
 - the cartoon picture of an animal
 - the place where an animal sleeps
 - the place where an animal eats

11. An example of a fossil would be:

- a. a bone
- b. the leaves of a plant
- c. a shell
- d. all of the above

12. Draw what an apple tree looks like in the winter.



Circle true or false for each of the following statements.

13. Water pollution can destroy an ocean habitat.

true

false

14. A tree never changes when the seasons change.

true

false

15. Scientists use the study of fossils to learn about our past.

true

false

Pre-Assessment Data

	Pre Assessment (Number inside parenthesis represents number of points available for the question)															Total Points	Grade
	Q1 (4)	Q2 (3)	Q3 (1)	Q4 (2)	Q5 (2)	Q6 (1)	Q7 (1)	Q8 (1)	Q9 (1)	Q10 (1)	Q11 (1)	Q12 (1)	Q13 (1)	Q14 (1)	Q15 (1)	Total Points	Grade
Student 1	3	1	1	2	2	1	1	0	1	1	0	1	1	1	1	17	77.27%
Student 2	4	2	1	2	0	1	1	0	1	1	0	0	0	1	0	14	63.64%
Student 3	3	3	0	2	2	1	1	0	1	1	1	0	0	1	1	17	77.27%
Student 4	3	2	1	2	2	1	1	0	1	1	0	1	1	1	1	18	81.82%
Student 5	4	3	1	2	2	1	1	1	1	1	0	0	0	1	1	19	86.36%
Student 6	3	3	1	2	0	1	1	0	1	1	0	0	1	1	1	16	72.73%
Student 7	2	3	1	2	0	1	1	1	1	1	0	1	0	0	1	15	68.18%
Student 8	3	3	1	2	0	1	1	0	1	1	0	1	1	1	1	17	77.27%
Student 9	3	3	1	2	2	1	1	1	1	1	0	1	1	1	1	20	90.91%
Student 10	3	3	1	2	0	1	0	0	1	1	1	1	1	1	0	16	72.73%
Student 11	3	3	1	1	0	1	1	0	1	1	0	1	0	1	1	15	68.18%
Student 12	4	3	1	2	0	1	1	1	1	1	1	1	1	1	1	20	90.91%
Student 13	3	1	1	2	1	1	1	1	1	1	0	0	1	1	1	16	72.73%
Student 14	4	2	0	2	2	0	0	0	1	1	0	1	0	1	1	15	68.18%
Student 15	3	1	1	2	2	1	1	0	1	1	0	0	1	1	1	16	72.73%
Student 16	3	3	1	2	1	1	1	1	1	1	0	0	1	1	1	18	81.82%
Student 17	3	2	1	2	2	1	1	0	1	1	0	0	1	1	1	17	77.27%
Student 18	3	2	1	2	1	1	1	1	1	1	0	1	1	1	0	17	77.27%
Student 19	4	3	0	2	0	1	1	0	0	1	0	0	0	1	1	14	63.64%
Averages	3.211	2.421	0.842	1.947	1	0.947	0.895	0.368	0.947	1	0.1579	0.5263	0.6316	0.9474	0.84211	16.68	75.84%

Description of Instructional Decisions

Before I began my science unit that covered the second grade SOLs 2.5 and 2.7, I gave my students a pre-assessment to test their prior knowledge. After presenting the pre-assessment to them, I took the information and gathered the results to guide my instructional decisions. I used the data to inform me of what the students already knew and what they still needed to learn. I immediately noticed that some students had better knowledge of select content. When focusing on how to present my data, I made sure to show that the assessment included fifteen questions. Each question had a different number of points possible to allow for several types of questions including multiple choice, circling more than one, and fill in the blank. The data also showed total points received and the grade received. After grading the pre-assessment, I found that the lowest score was a 63.64%, a D. I also took time to look at the average answers per question, and I noticed specifically that questions number eight and eleven had the lowest average showing that those questions were frequently missed.

This unit examined the student's knowledge and understanding of living systems, as well as earth patterns, cycles, and change. I knew that the students should have a little bit of background knowledge of life processes from first grade, which includes the needs of plants and animals. For this particular unit, the student objective was to continue to develop knowledge of where animals and plants live which places an emphasis on the world's habitats. In addition, this unit focused on the types of relationships between living organisms and their nonliving environment, as well as the needs of distinct habitats. Correspondingly, students needed to understand the relationship among earth patterns and variations that can affect living things, such as weather and seasonal changes.

From the pre-assessment data, it was evident that students had a good basis and understanding of what a habitat is and what it needs to be successful. Since this information seemed to be known across the class, I decided to minimize this content review in engaging and fun ways. I did shift my plans to allow for more instruction in other areas based on this particular data. For example, we spent a little more time on seasons and fossils which were areas of weakness presented. Since the students performed decently overall on the pre-assessment, I made sure to incorporate collaboration opportunities and higher level thinking activities to further push their knowledge and understanding of the many concepts. Throughout the unit, I also made sure to informally assess their discussions and participation. In order to do this, I used exit cards to get a glimpse of ongoing struggles, as well as mastered content.

Unit Summary

I had exactly twelve days to complete this class science unit that covered science SOLs 2.5 and 2.7. A lot of information needed to be taught in a short amount of time, so I made sure to effectively use every moment of the allocated thirty minutes each day. Although my students showed that they had a good basic understanding of a habitat, I still felt as though it was necessary to review and discuss the different kinds of habitats and the living and nonliving relationships that are interconnected. We used the first day to discuss what we already knew and what we wanted to learn. I made sure to ask questions and allow for student input and interests for the unit. We completed a KWL chart, and I showed a short video that overviewed our world's different habitats. I also read a few books to the class, and we began working on our very own habitat booklet which provided creative opportunity.

The next task was to review living and nonliving things also an area of weakness presented in the data. I decided to take the students on a habitat discovery walk, and they were asked to observe our "school habitat" to find examples of living and nonliving things. This activity was extremely interactive and effective. We discussed the importance of an outdoor classroom, and the students responded well. We also completed a living vs. nonliving sort and sang and danced to appealing movement songs.

Next, I allowed the students to work in groups for two days in a habitat collaboration project. The students were asked to work as a team to create their own habitat with an assortment of materials. This habitat needed to incorporate all concepts that we had discussed so far, and this hands-on project allowed them to think for themselves. The students presented their habitats at the conclusion of the project, and then the class voted on the best one.

In addition we spent two days focusing on the response of animals and plants to changes in seasons, as well as how weather and erosion affects habitats. For these concepts I made sure to concentrate on the idea of migration and hibernation, since some students needed instruction on these key ideas per the data. We discussed together how we as people have to change based on the seasons, and so do animals and plants. We reviewed trees and how they respond to the different seasons, and I read them a story about an apple tree that travels through the seasons. The students chose a season and completed a journal writing that displayed responses to the change in weather for animals, plants, and people.

Lastly, we learned about water pollution and erosion with a demonstration that was completed outside, and we learned about fossils by creating our own seashell fossil that the kids were allowed to take home. These were my favorite lessons, because they allowed for student participation and interaction. They were ecstatic about the opportunity to make their own fossil out of salt dough. I then took their work home to bake.

Overall, some lessons took longer than expected, and we had to continually adapt to particular students' needs. I think the entire unit went exceptionally well, because I consistently incorporated engaging, hands on activities and technology throughout all the lessons.

Post Assessment

Post Assessment (Number inside parenthesis represents number of points available for the question, Growth represents change in number of percentage points)

	Q1 (4)	Q2 (3)	Q3 (1)	Q4 (2)	Q5 (2)	Q6 (1)	Q7 (1)	Q8 (1)	Q9 (1)	Q10 (1)	Q11 (1)	Q12 (1)	Q13 (1)	Q14 (1)	Q15 (1)	Total Points	Grade	Growth
Student 1	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	22.73
Student 2	4	2	1	2	2	1	1	1	1	1	1	1	1	1	1	21	95.45%	31.82
Student 3	4	3	1	2	2	1	1	0	1	1	1	1	1	1	1	21	95.45%	18.18
Student 4	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	18.18
Student 5	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	13.64
Student 6	4	3	1	2	2	1	1	1	1	1	0	1	1	1	1	21	95.45%	22.73
Student 7	4	3	1	2	2	1	1	1	1	1	0	1	1	1	1	21	95.45%	27.27
Student 8	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	22.73
Student 9	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	9.09
Student 10	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	27.27
Student 11	4	3	1	2	1	1	1	1	1	1	1	1	1	1	1	21	95.45%	27.27
Student 12	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	9.09
Student 13	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	27.27
Student 14	4	3	0	2	2	1	1	1	1	1	1	1	1	1	1	21	95.45%	27.27
Student 15	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	27.27
Student 16	4	3	1	2	2	1	1	1	1	1	0	1	1	1	1	21	95.45%	13.64
Student 17	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	22.73
Student 18	4	3	1	2	2	1	1	1	1	1	1	1	1	1	1	22	100.00%	22.73
Student 19	4	3	1	2	2	0	1	0	1	1	0	1	1	1	1	19	86.36%	22.73
Averages	4	2.947	0.947	2	1.947	0.947	1	0.895	1	1	0.7895	1	1	1	1	21.47	97.61%	21.77
Point Avg Growth	0.789	0.526	0.105	0.053	0.947	0	0.105	0.526	0.053	0	0.6316	0.4737	0.3684	0.0526	0.1579	4.78947368	21.77%	

Post-Assessment Reflection

I used the same test for both the post-assessment and the pre-assessment to measure my students' understanding. From the post-assessment data, I was able to observe that there was growth made across the entire class. All nineteen students passed with the lowest score being an 86.36%, a B. I noticed that many students received a 100%, which was phenomenal, and I was extremely impressed that the average growth for the class was 21.77% overall. All of my students improved whether it was by a small amount or a large amount, which gave me a great sense of accomplishment with the unit. When looking at specific students, I did notice that student number nineteen was unable to perform as well as the others. He is a student that frequently struggles with behavior and defiance. I had to continually re-direct him throughout multiple lessons, so I fear that he missed valuable instructional time.

I also was aware that some of my students still missed number eleven which was a frequently missed question on the pre-assessment. I think I would consider re-wording this question seeing as though they have not experienced many "all of the above" answer choices. While taking the post-assessment, some students were confused by this choice, and explanation was needed. Overall, most students came in knowing a little bit of background knowledge containing certain parts of the unit, but I felt as though their understanding soared as I incorporated many interactive discussions and activities on their level that interested them. I believe that it was a very successful unit of study, since the students made progress in all areas especially topics that were difficult in the beginning.

When reviewing the data, I continually searched to find how I could increase the students' understanding of questions missed, and I considered the actual assessment itself. I think that next time I could possibly incorporate more challenging and thought provoking short answer

questions. I also thought about how to tweak the unit for greater success from my future students. I know that there is always room for improvement, so I decided to pull the current students aside individually after the assessment to discuss what they missed. I valued these discussions, because it gave me the opportunity to understand their thought processes, and I could help when needed. All of my students understood what they had missed, and many of them were quickly able to solidify the correct answer after my explanation. I felt like this instructional decision benefited my students and helped reinforce the skills and concepts that were taught.

Going forward, I would continue to encourage all of the students to be reflective in their learning experience. We covered many topics that required them to discuss and work as a team. I feel they have strengthened their ability to think through things, and they are much more comfortable with asking questions when they are unsure. All of this resulted from the classroom learning environment that the students created alongside me. We will continue to discuss, write, and engage in hands on activities as the year progresses. In general I am tremendously proud of how hard my students worked throughout the unit and of their success on the assessment. I can see just how imperative using data in a classroom truly is by having this experience through student teaching. I believe at the unit conclusion my students are much more aware of their earthly surroundings and have developed a love for science and our world.

Synthesis

Throughout this science unit of study, I tried my very best to incorporate multiple instructional practices to teach my students. I knew going into the unit that if I was especially excited to teach the lesson, then they would reciprocate that feeling and also be excited to learn. I spent many hours planning and thinking through how to present the material that needed to be effectively taught. I made sure to think about my students' needs and wants, as well as what motivated them most in the classroom. I felt that technology, collaboration, outside learning, and focus activities would all aid my instruction nicely as I progressed through the unit. I researched many instructional practices and looked online for tips and ideas before I taught my lessons. I also used many strategies that I have learned in Mary Baldwin's MAT program, and I felt as though the students responded well to those and to my classroom management procedures.

In the very beginning of the unit, I used a resource known as a K-W-L chart. K-W-L charts are an ideal strategy to use when a teacher wants to gauge background knowledge of certain topics from their students, and they are especially great as a focus activity. These charts work best when used at the start of a unit, because they require the students to ponder, discuss, and ask questions. Students are able to do these things through the guidance of a facilitator, which in this unit was me serving as the teacher. In a K-W-L chart, the K stands for what the students already know. The W stands for what they want to know, and the L stands for what they have learned at the conclusion of the unit. This kind of chart could be used individually or as a whole group. I decided to use it through whole group instruction on the active board in order to hear responses from the entire class. I enjoyed listening to student thoughts, and many of them seemed to feel comfortable speaking up. At the end of our unit, I allowed our class to return back to the L part of our chart, and they filled in all that they learned showcasing their mastery of the

content. It was suggested by Schwarzer and Grinberg (2017) that teachers need to place a high emphasis on allowing students to use and shape their metacognitive skills. Students need to be aware and able to monitor their learning each and every day in a way that is both beneficial and self-reflective. She shares that a K-W-L chart is a great resource to allow students to think through their ideas (p. 100).

In addition to the use of a K-W-L chart, I made the instructional decision to take a couple of our lessons to the outdoors in our schoolyard. I consider outdoor learning to be an extremely effective and useful instructional strategy. I know just how valuable it is, especially in science, for students to be able to visually see what we are learning about and experience it themselves. I wanted them to use their senses and truly connect with the world that we live in instead of completing a worksheet inside. According to Ostroff (2016), “children are intrigued by natural phenomena and the world around them, and being outdoors provides the types of sensory stimulation that our nervous systems have evolved within-light, color, sound, reflection, and motion. They need opportunities to observe closely and take action to test out their theories of how the world works.” (p. 142). In our specific unit of study, I took our students on a habitat discovery walk around the perimeter of our school which is filled with living and nonliving elements that are reviewed in our unit. The students all took clipboards with them, which allowed for both organization and structure, and they searched for real life examples of living and nonliving things. For example one student saw a hawk flying in the sky, and another student found a ketchup packet on the ground. Both of these examples were perfect for our study of living and nonliving things. The students thoroughly enjoyed being in the open air and being an active part of their learning.

I also used an instructional practice known as “cooperative group learning” for a project within the unit. I knew that I wanted my students to work together as a team in some aspect, so I put together a project that allowed them to create their very own habitat. They were required to think, share, and design ideas for their habitat before beginning the project. It was a necessity that the students allow for all members to take part in the assignment, and communication was key. According to Gregory and Chapman (2013), “when working in cooperative groups, students learn valuable social skills, use higher-order thinking, and rehearse and practice new concepts, processes, and information” (p. 93). I encouraged cooperative group learning for this assignment in particular, because I wanted them to reflect on the concepts learned and apply them to a new learning situation. I made sure to discuss provided materials and appropriate behavior before the project began. I gave clear expectations and instructions in advance, so everyone would be on the same page. Overall, the students seemed to enjoy the opportunity to work with one another, and I saw many creative ideas become a product of great communication and teamwork.

Finally, I used an ongoing assessment strategy to measure my students’ understanding as we were progressing through the unit. In order to evaluate my students quickly, I made use of exit cards. According to Tomlinson and Moon (2014), exit cards are used when, “the teacher poses one or more questions directly related to the day’s lesson, and the students provide brief responses on index cards, slips of paper, or sticky notes” (p. 68). These cards are valuable to use in the classroom, because they quickly can give insight to a teacher clarifying student lesson or topic understandings. Based on these card responses, I was able to alter my instruction and to see transitions I needed to make. I allowed students to fill out the cards at the conclusion of each lesson, and I then took time to review them in order to alter my teaching based on responses.

Technology

As technology is becoming more and more prevalent in our society, I thought it was a necessity to incorporate aspects of it into our science unit of study. I have found personally that students in this generation are extremely quick learners when it comes to technology and enjoy using it whenever possible. At our school we have many technology options available. Inside the classroom there are laptops and an active board for everyday use. Our school also has I-pads and I-pods available upon request. The students valued any opportunity to learn and experience new things with these technological devices in my class.

I particularly loved using video technology that involved singing and dancing. Most children enjoy being able to get out of their seat to move around the room and let loose of all the wiggles. Specifically I used a couple of YouTube videos that were around three to four minutes long and were related to our science standards for the unit. For example, we sang and danced along to a video that taught us all about habitats and exactly what they are. When picking videos to show to the class, it is a necessity to watch it entirely. This practice is important, because there may be something in the video that is not appropriate for our young audience. I watched them through meticulously and found a few that were very engaging and fun. They also were quite catchy and incorporated sayings that were easy for the kids to remember.

In addition to the likeable videos, I also allowed them to use technology individually to help aid them in researching for their group project. Like mentioned earlier, the students were required to work as a team to create their own habitat. I allowed the students the opportunity to research on both the I-pads and laptops that were available in our classroom on those days. The students knew that if they abused the use of our technology, then they would not be able to use it anymore for the remainder of the day. For this project in particular, the students researched

pictures of animals and additional aspects of the habitats. They shared with me that they preferred looking at the internet instead of finding items in the books that I had available. I encouraged them to use any and all resources that were accessible in our class.

I made sure to incorporate technology in assessing my students. On the last day of the unit, we reviewed for our test by using the game Kahoot. This interactive and engaging I-pad app allowed for student participation and immediate answers. I input review questions on the app, and with each question, the students were asked to respond. The app quickly showed student answers on the board, and students could review if their answer was correct or not. The students were working to gain the highest class score throughout the game. This extremely engaging app provided a fun way for students to think through the concepts one last time before taking their post-assessment. I loved providing the students with engaging opportunities to use technology all throughout our unit. We used technology multiple days, and the students responded well to it.

College and Career Readiness

SOL in unit: 2.5 The student will investigate and understand that living things are part of a system. Key concepts include a) living organisms are interdependent with their living and nonliving surroundings, b) an animal's habitat includes adequate food, water, shelter or cover, and space.

CCRI: Communicating: Collaborating: 49. Participate in, collaborate in, and report on small-group learning activities.

In order for students to work together in small group learning activities, they must be able to collaborate and communicate well with one another inside the classroom. I feel as though this CCRI English performance expectation aligns well with the second grade science SOL, 2.5. In contemplation of how students would investigate and understand living things, I knew that it was vital for them to actively participate in a cooperative learning experience where they would have the opportunity to think through their decisions, design, and implement their creation within a group. I specifically created a habitat project, which was mentioned previously, to push and encourage students to work as a team. In this project, I asked them to create their own habitat that showcased key concepts of our unit, such as living and nonliving things. It was imperative that the students come to a consensus with a common goal for their project. They were not only asked to hold one another accountable, but they were also asked to treat each other with respect. I believe that students can become amazing teachers when working with their peers and can learn much from their friends inside the classroom. They were not only required to communicate effectively when considering their habitat; they also had to be critical thinkers and researchers. Students were also given the opportunity to orally report and share their inputs and reflections at the conclusion of the assignment.

As our students continually grow and progress throughout their academic journey, they will be presented with many opportunities in which they will have to work within a group. In the future they may have to work on group presentations, debates, as well as sharing work findings. The purpose of my instructional decision to incorporate cooperative learning was to give them a glimpse of where they are heading and what will be expected of them later in life. It is imperative that students have practice with responsibility and the experience of sharing not only talents but also their interests and skills. If we are able to frequently provide engaging learning experiences that encourage cooperation and communication with others, I feel as though we will successfully prepare students to be selfless, team-oriented individuals.

SOL in unit: 2.5 The student will investigate and understand that weather and seasonal changes affect plants, animals, and their surroundings. Key concepts include a) effects of weather and seasonal changes on the growth and behavior of living things

CCRI: Writing: Composing: 22. Write clear and varied sentences, clarifying ideas with precise and relevant evidence.

For students to understand the effects of weather and seasonal changes in our science unit, I made sure to incorporate aspects of writing. In second grade, the students are continually developing and growing their knowledge and understanding of how the writing process works. For our particular students, I noticed a need for practicing punctuation, neat writing, and putting thought behind words. Throughout the year, we have been discussing different aspects of writing, and we have worked endlessly on reviewing and correcting our students' performance. I felt as though it was extremely important to somehow involve writing in my unit.

Within our SOL, the students needed to be able to distinguish earth's seasons and how weather and changes can affect living things. After reviewing seasons and taking the students through an apple tree text, we began to brainstorm ideas of how people, animals, and plants all change in response to earth's changes. The students were required to complete a journal writing in order to further practice the essence of composing. I allowed for creativity within the journal writing and asked students to think carefully about their ideas before putting them on paper. I asked them to choose a season of their choice, and they needed to discuss why they chose the season and how this season requires changes of people, animals, and plants. They could also include what they enjoy about this specific season.

Although this writing was a journal assignment, it still provided opportunities for the students to practice using clear sentences, as well as an opportunity to present their knowledge with practical supporting statements. As these students progress through each grade, they will be asked to evolve and continually develop their writing abilities. Ultimately this writing

progression will lead them to well-written papers and possibly novels or grant writings in their future careers. Being able to write and speak effectively is essential within any career choice, and I feel as though it is a required life skill to be accomplished.

References

- Gregory, G., & Chapman, C. (2013). *Differentiated instructional strategies: one size doesn't fit all*. Thousand Oaks, CA: Corwin Press
- Ostroff, W. L. (2016). *Cultivating curiosity in k-12 classrooms: How to promote and sustain deep learning*. Alexandria, VA: ASCD
- Schwarzer, D., & Grinberg, J. G. (2017). *Successful teaching: what every novice teacher needs to know*. Lanham, MD: Rowman & Littlefield.
- Tomlinson, C. A., & Moon, T. R. (2014). *Assessment and student success in a differentiated classroom*. Alexandria, VA: Hawker Brownlow Education.