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Collaborative Learning and Group Behaviors During Library Projects: An Action Research Project

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Abstract

This study looked at the role of group dynamics and behaviors when wanting to promote collaboration and content learning in library projects. The following five positive group behaviors was used to teach and then assess students for better collaboration: listening to others, providing reasons or evidence, sharing responsibilities equally, contributing to the project, and staying on task. Students were assessed on their content learning as well as on their improvement on those five positive group behaviors using a variety of methods including: teacher (librarian and library intern) observations, student surveys, student interviews, a project rubric, and tests on the content knowledge. The results were mostly inconclusive due to minor changes in scores and observation. But those changes were largely positive with more positive responses from students toward doing group work and more instances of positive behaviors observed by both the librarian and library intern observations and the student surveys. Some problems with off task behavior and students not knowing how to get past disagreements still remained. Changes discussed for future collaborative work projects included planning extra time for the project, explicitly modeling the positive group behaviors and conflict resolution skills, and allowing student choice in forming groups with approval of the librarian and library intern.

SECTION I

A. Introduction

Meadowmere Elementary School is a culturally diverse mostly low income school in Grandview, Missouri. Students visit the school library once a week for a forty minute period. The librarian intern wanted to focus on increasing student creativity and collaboration during library instructional time. This study took a look at how this creativity and collaboration can be incorporated into the projects students work on and the products they created.

The library intern had previously observed students working on assignments on their own after whole group instruction. These previous library projects had students able to choose to work together or not on individual assignments. Many of the students showed an interest in working with others, but no structure was put in place for the students to work effectively with each other. The *AASL Standards Framework for Learners* identifies collaboration as one of the shared foundations in school libraries. It identifies collaboration as promoting diversity of thought, broader understanding, and group informed problem solving (AASL, 2018, p. 4). With further exploration on group dynamics and behaviors in the literature review below, this project had a specific focus on students creating a product together through collaborative research and product creation.

A third grade class was chosen to work collaboratively in groups on a project to create their own new animals using animal research of adaptations to survive in a given habitat (ex: rainforest, desert, or arctic). The library intern provided short whole group instruction on different types of animal adaptations while the students conducted research using library books

in their groups on their given animal habitats. The students used knowledge gained of habitats, animal adaptations, and how animals have adapted to specific habitats to design and create their own new animals for their habitats. The student first designed their new animals and then created them for their habitats using recycled materials available in the library. They had to present their animals and argue why they would survive well in their habitats.

The library intern surveyed student's attitudes toward group work, good group behaviors demonstrated, and their understanding of the content. This was done through student surveys and interviews, teacher (librarian and library intern) observations, pre- and post-tests, and a project rubric. The library intern also continually looked at ways in which to promote better student collaboration with their group members and ways to improve student research.

B. Area of Focus Statement

The problem addressed with this action research plan was promoting collaboration and content learning with student products using research. Students mainly worked on individual research and assignments. So the question was asked: how can library instructors use research and product creation to promote collaboration and content learning in student assignments? This project looked at ways students can work together in groups to create innovative projects and products within class time and how the library intern can facilitate their collaboration and content learning.

C. Research Question

1. How can library instructors use research activities and product creation to promote collaboration and content learning in student assignments?

D. Literature Review

As part of the research for starting this project, related literature was consulted and compiled to look at four important variables for this study: collaborative learning, group behavior, teaching methods, and elementary school students (see Appendix A). The most important of these variables in relation to this study were identified as group behavior, collaborative learning, and teaching methods. These studies looked at group dynamics in collaborative groups and environments and discussed the behaviors of both the students and teachers to promote positive interdependence and collaborative learning.

Ellison, Boykin, Tyler, and Dillihunt's (2005) study looked at African American and Caucasian students, including both boys and girls, from low income backgrounds to determine what their learning preferences were in terms of individual or cooperative study. The results showed that while all students showed a learning preference for cooperative learning, African American students showed a higher preference than Caucasian students for cooperative learning (p. 705). The study also showed that while Caucasian students showed high preference for individualism and competitiveness in learning African American students showed lower preference (p. 705). As this study stated though, further research is still needed into cultural influences on learning preferences. Still one can take away from this research that cooperative

learning, at least among lower income students, is a learning preference among many students and should be taken into consideration, as well as cultural differences, when conducting instructional design.

The article "Teamwork Isn't Torture" by Andrea Bennett (2015) discusses how she taught cooperative learning and group behaviors as a 5e (engage, explore, explain, extend, evaluate) lesson. Behaviors that she had previously observed that she wished to address during this lesson were "arguing, unwillingness to compromise, failure to contribute, assigning blame, and shutting down" (p. 11). During the explore part of the lesson group behaviors that the students identified as beneficial included "talk to one another, listen, don't argue, communicate, work together, share materials, and help each other" (p. 11). After the lesson was complete, Bennett identified areas of further instruction including "Subsequent lessons included respecting others, disagreeing politely, maintaining self-control, negotiating and compromising, offering and accepting constructive criticism, and defending ideas with scientific evidence" (p. 12). This study gave great ideas for a teacher to teach collaborative learning and effective group behaviors in his or her own classroom. It also points out teacher identified behaviors that should be avoided and student identified behaviors that would work to benefit collaborative learning.

In Frykedal and Chiriac's (2018) study they looked at the inclusive and collaborative processes in group work. A main focus of their study was on the Social Interdependence theory that lists five elements of collaborative groups: positive interdependence, individual accountability, face-to-face promotive interaction, interpersonal and small group skills, and group processing (p. 185-186). A major takeaway from this study was the role of the teacher in

promoting group collaboration. The teacher needed to take a facilitator rather than authoritative role and promote group members asking questions and resolving issues that arose among themselves creating a better group interdependence and group collaboration.

Gu, Chen, Zhu, & Lin 's (2015) study designed an intervention framework in order to promote the development of collaborative learning skills in elementary school students. Two classes were used one with the training and one as a control. They created a list of eight rules for their framework: (1) Sharing information or knowledge with a group member; (2) Asking everyone to express his/her viewpoint; (3) Listening to everyone's opinion; (4) Providing feedback on each other's ideas; (5) Providing reasons and evidence for what we say; (6) Working together to determine the solution; (7) Negotiating to deal with disagreements; and (8) Implementing the solution when all members agree" (pp. 146-147). These rules for taught and modeled by the teachers to promote and test student's collaborative learning skills. The findings of the study showed that the intervention group improved in their abilities to group communication following the rules and using question prompts to aid in problem solving. However, the intervention was less effective for the skills of providing reasons for what they say and for implementing solutions the group agrees upon and showed little to no differentiation among the rest of the skills (pp. 155-156). Teacher scaffolding, modeling, and discussion prompts were shown as effective strategies for teaching the identified skills, however further study was needed for effectively teaching the rest of the skills that were identified as not having as much of a change (p. 156). This demonstrated the importance of identifying rules of good group behaviors in promoting collaborative learning and scaffolding the problem solving process to teach and promote those group behaviors.

A useful resource for establishing collaborative groups in the classroom is the

guidebook: "GETTING STARTED: A Guide to Collaboration in the Classroom" by Kathleen O.

Kane and Joan Harms (n.d.). Their collaboration rubric lists: listening to others, values

comments of others, shares equally in work, and contributes information on a four point scale

from beginning to exemplary (p. 62). Though established for university level students the

collaboration rubric is useful for establishing a rubric for this study and adjusting for the

elementary level collaboration skills discussed in the aforementioned studies.

E. Description of Intervention or Innovation

After looking at the literature relating to group dynamics and behaviors, the library intern

scaffolded the identified group norms present in much of the literature for working with their

group members and continually observed and promoted the utilization of those norms. The

first lesson of the project was devoted to teaching these norms with an anchor chart being

created with the students to identify what these norms looked like and sounded like. The

norms as well as the anchor chart were referred to at the beginning of each subsequent lesson.

Those selected norms included: friendly and constructive communication, staying on task,

providing reasons for what they say, and contributing and participating in their respective

group roles (recorder, designer, and focuser/presenter). The rubric for positive group behaviors

used for evaluation by the library intern (Appendix E) included: listening to others, providing

reasons or evidence, sharing responsibilities equally, contributing to the project, and staying on

task. These positive group behaviors have been taken into account for most of the data

collection including the surveys, interviews, and observations conducted by the library intern. The results of this data collected and evaluated to promote better group collaboration for future collaborative projects. The content learning was determined by the group project rubric (Appendix G) and the Animal Adaptations Test (Appendix H) based on the group's research of their habitat and animal adaptations, their animal's adaptation relevancy, and their reasoning for the adaptations. The results of this data used to determine if group collaboration had a positive impact on student learning of the content.

SECTION II

A. Data Collection Strategies Overview

Data from the study was collected using a variety of qualitative and quantitative measures. The three main data sources for collecting information on student attitudes toward group work and group behaviors exhibited by the students are as follows: student surveys, student interviews, and teacher (library intern and librarian) observations of the group work. Data was also collected on student understanding of the content using pre- and post-tests and a project rubric.

To avoid bias and ensure valid data results and analysis three strategies were put in place. A third party coded the surveys, interviews, and observations and the results were compared to the library intern's own coding of the assessments. The positive group behaviors described above in the related literature acted as a guide to create a consensus on what is coded for on the surveys, observations, and interviews toward effective group behaviors

exhibited by the students. The librarian intern created grade level pre- and post-tests as well as a rubric that was used to show evidence of learning.

B. Data Sources

These were the major sources of data for this study to address the three issues pertaining to the study about attitudes toward group work, group behaviors, and content learning (see Appendix B):

1. **Student Surveys** – given both before and after the project that asked students questions pertaining to their attitudes toward group work and behaviors exhibited by themselves and their group members (see Appendix D).

2. **Teacher Observations** – notes taken by the library intern and librarian over the duration of the project over the student's attitudes toward group work and the behaviors exhibited during the project.

3. **Student Interviews** – students were recorded answering questions asked by the library intern about their attitudes toward group work and behaviors exhibited by themselves and their group members during the project.

4. **Grade Level Tests** - a pre-test and a post-test was given to the students to assess their learning of the grade level content from beginning to end of the project.

5. **Project Rubric** – a rubric was used to grade the students on their research, animal adaptation relevancy, and reasoning on a three point scale.

C. Data Analysis Plan

The following is the data analysis plan (see Appendix C) for the data collection instruments identified above. The data was analyzed qualitatively and quantitatively looking for mean scores, trends, and common themes toward group attitudes, group behaviors, and content learning.

The student surveys were analyzed by finding the means from the Likert scale for items pertaining to both attitudes toward group work and group behaviors. Items with mean scores above 3 and below 3 were grouped to determine areas of satisfaction and dissatisfaction. Open ended questions were coded for trends of similar themes. The teacher (library intern and librarian) observation notes were compiled to identify the five identified positive group behaviors. The mean number of identified group behaviors exhibited by all groups were calculated. Other notes were compiled and coded to look for common themes. The data from the student interviews were compiled and organized to look for common themes. The various responses were coded to find patterns. The mean score from the project rubric was compiled for the class. Trends on low scored items on the rubric were identified.

SECTION III

The library intern was involved in planning the project for the third grade students. Other than the typical submission of lesson plans to the school librarian no other permission or negotiations was needed to be made to go ahead with this project.

The project was conducted during 40 minute weekly library lessons for the duration of six weeks. Another week was allotted for analyzing and interpreting the data for each classroom's data by the library intern, the librarian, and a librarian from another school in the district for the data set. Discussion of the recommended actions for future collaborative projects for the library occurred during this final week as well.

The strategies for implementing any recommended actions was based off the school librarian's recommendations. The library intern and librarian evaluated overall themes and identified behaviors to improve that aided with better group collaboration and content learning and changed those that hindered or harmed. An obstacle that might inhibit possible recommended actions for the future is the limit of weekly classes in the library. Also, supplies beyond typical library materials such as books had to come from the library budget spent at the beginning of the year. Any further school-wide or community involvement of future projects will require permission from the building principal and/or parents.

The process for ongoing monitoring involved informal and formal observations and surveying of collaborative group work. Positive attitudes and group behaviors were discussed, encouraged, and identified during group work. Data was periodically discussed and interpreted by the librarian and library intern and further recommended actions were discussed by the librarian and intern based off the results.

SECTION IV

A. Changes in Implementation

Due to unforeseen circumstances, a few changes had been made during the process of the action research implementation. Scheduling conflicts between the classroom teacher, testing, and schoolwide events led to changes in the plans for the lessons, the days on which they would be implemented, and even the order the lessons were conducted. The first being that rather than a once a week lesson some of the lessons had to be moved to two weeks later. Also, testing after the project needed to be done earlier, so the students had to take their post-tests and surveys before they completed the building part of the project. But as this portion of the project was done after the research process and after giving the students plenty of time to work with their groups and use the group norms taught by the library intern, it should not have affected the results of the post-tests and student surveys and interviews. The students were still able to give their presentations using the designs and were able to explain their adaptations, relevancy, and reasoning. The students were able to finish building their projects later, after the testing.

B. Results and Data Analysis

a. Before the Project

The results of the pre-testing data gave a starting point for the following lessons in the project letting the library intern and librarian know what content knowledge needed to be

worked on and where the students attitudes about group worked started. The two data collection sources prior to the start of the project were the pre-test on content knowledge and the student surveys on attitudes toward group work and group behaviors.

The pre-test (Appendix H) was conducted with a class of 16 students. The test contained ten questions, eight multiple choice and two short answer. The mean score of all the students who took the pre-test was 6.69 correct answers out of 10. The range of scores was from 4 to 10. The mode of the scores was 8. Commonly missed questions were noted for more focused teaching including both the short answer questions and questions 3 and 4.

The student surveys (Appendix D) asked students questions about their attitudes toward group work and group behaviors they have seen exhibited in prior group activities. The first two sections asked students to rate statements on a Likert scale. The answers on the scale were assigned a number value based on the highest agreed getting the most points and the lowest agreed getting the least points (SA=5, A=4, U=3, D=2, SD=1). The results showed that overall students stuck to the middle "undecided" range for nearly all the statements. No statements received a mean score of below 3. The only statement that received a mean score of over 3 was "I prefer working in groups than alone" with a mean score of 4.5.

The open-ended questions on the student surveys gave a little more in depth data about the students' attitudes on group work. The written responses were compiled and organized to look for common trends and themes. For the question "What did you like best about working in a group?" the most common answers discussing working together and helping others. For the question "What did you like least about working in a group?" the most common answers

discussed other students being off task, arguing, not being able to work with their friends, and not wanting to work with others. For the final question, "What could be changed to make the group work better?" answers were quite varied but the common answer among them was generally working together.

b. During the Project

During the project, both the library intern and the librarian filled out observation forms for each group on each day of the project when the students were working together to research or to design their animals (Appendix E). The observation form used a Likert scale for the librarian or intern to note the five positive group behaviors students exhibited during the researching and designing processes of the project. The scale included a numerical value much the same as the student survey (SA=5, A=4, U=3, D=2, SD=1). The mean score of each of the behaviors were noted. During the research day, the mean score was around undecided (3) between 3.25-3.67 for all the group behaviors. During the designing day, the mean score was still largely around the undecided (3) range, but much higher, between 3.75-3.83. However the group behavior of listening to others was noticeably higher at 4.33. The change in mean score for the positive group behaviors between these two weeks showed a small rise in these behaviors. The only noticeable change in behavior was listening to others.

Library intern and librarian notes on the observation forms were compiled to look for common themes and trends, specifically toward the group behaviors. The notes showed more of a difference between the two weeks. The first week showed the following trends in the observation notes: not on task, not contributing, struggling to focus, and working well together.

The second week showed the following trends in the observation notes: not on tasks, not contributing, working well together, contributing, and listening well. Not only were there more positive behaviors noted in the second week but there were also more instances of positive behaviors.

C. Conclusion of the Project

At the conclusion of the project, three data sources were given to collect data on students attitudes toward group work, positive group behaviors exhibited, and content learning. These data sources were a group project rubric, a post-test on the content, student surveys, and a few student interviews.

The group project rubric (Appendix G) was used to determine content learning based on the group's research of their habitat and animal adaptations, their animal's adaptation relevancy, and their reasoning for the adaptations. The rubric gave scores for each of these three criteria on a three point scale (accomplished=3, developing=2, beginning=1). Both the library intern and librarian scored each group. The groups did overwhelming well on their project rubrics. They all received an accomplished (3) for their research. For relevancy and reasoning, all but one group received an accomplished (3). That group received a 2 on relevancy from the librarian and a 2 from the library intern. They received a 3 on reasoning from the librarian and a 2 from the library intern. No groups received a beginning (1) for any of the criteria on the rubric.

The post-test (Appendix H) on the content knowledge was the same as the pre-test given at the beginning of the lesson. Fourteen students took the post-test. The mean score of

all the students who took the post-test was 7.79. This was an overall increase of 1.1 between

the two mean scores. The range of scores was 5 to 10, an increase of 1. The mode of the scores

was 10, an increase of 2. The most commonly missed questions were again 3, 4, and 9. But

question 10 had great improvement.

Student Surveys (Point Values on the Likert Scale)		
Question:	Pre-Test	Post-Test
Attitudes		
I prefer working in groups than alone	4.5	4.14
Group Members always to their parts	3.81	3.64
I always do my part in groups	3.43	4
Working with others helps with my work	3.81	3.9
Group Work Behaviors		
Does everyone listen to others' ideas?	3.31	4.07
Did everyone provide reasons for what they said?	3.43	3.9
Did everyone share responsibilities equally?	3.62	3.77
Did everyone contribute to the project?	3.43	4.23
Did everyone stay on task?	3.5	3.67

The student survey (Appendix D) was also the same one given at the beginning of the project. The statements for the first two questions were graded on the same Likert scale. Again only fourteen students took this survey compared to the sixteen before the project. The majority of the students' answers about the statements on attitudes toward group work showed near the "agree" (4) range, between 3.9 and 4.14. The lowest score was 3.64 to the statement "Group members always do their parts". Comparing the original mean scores to the post-project scores, "I prefer working in groups than alone" went down from 4.5 to 4.14, "Group members always do their parts" went down from 3.81 to 3.64 while "I always do my part in groups" went up from 3.43 to 4 and "Working with others helps with my work" went up from 3.81 to 3.9. The majority of students' answers about the statements on group work behaviors were near the "agree" (4) range, from 3.67 to 4.23. All the behaviors gained in their mean score. "Does everyone listen to others' ideas?" went up from 3.31 to 4.07, "Did everyone provide reasons for what they said?" went up from 3.43 to 3.9, "Did everyone share responsibilities equally?" went up from 3.62 to 3.77, "Did everyone contribute to the project?" went up from 3.43 to 4.23 (the biggest change), and "Did everyone stay on task?" which went up from 3.5 to 3.67.

The same as before the project, the student constructed responses to open-ended questions provided more data on the changes in attitudes toward group work and toward group behaviors. Once again the written responses were compiled and organized to look for common themes and trends. Common answers for the question "What did you like best about working in a group?" were working with others, helping people, and helping them learn. The common answers for the question "What did you like least about working in a group?" were

people not on task and disagreements. Finally, the common answers for the question "What could be changed to make the group work better?" were help each other, stay on task, and less disagreements.

The student interviews were not given to every student in the class but to six individual students in randomly selected groups and were not to be representative of the class as a whole but to go a bit more in depth into the questions. They were asked the same open-ended questions from the surveys but were asked to go more into detail and asked follow-up questions by the library intern. The common answer to the question "What did you like best about working in a group?" was that they liked collaborating with other students. The common answers to the question "What did you like least about working in a group?" was that group mates were not always on task and that there were disagreements. The common answer to the question "What could be changed to make the group work better?" was that they wanted to work either with friends or with group members with shared interests.

Common themes from the student observations, surveys, and interviews point to areas that worked well with the project and areas that needed improvement or changes. Students indicated that they enjoyed working with groups and liked collaborating and helping each other. The positive group behaviors that showed the most gains, most notably according to the library intern and librarian observations and the difference between the students' survey answers pre- and post-project, were listening to others and contributing to the project. The areas that were shown to need the most improvement were students staying on task, each group member doing their part, and more positive communication rather than arguing. Students' concerns expressed in the written survey responses and student interviews indicated

that they had problems with not knowing how to address disagreements and effectively communicate problems with their groupmates.

B. Discussion

Collaboration and being able to work positively in a group setting is becoming an increasingly more common skill that is needed in schools and beyond. Norms and behaviors for better collaboration with group members are skills students need to have for the classroom, the library, and many other places in their lives. Looking at the literature relating to group dynamics and behaviors in a group setting, they point to a set of norms that are important to promoting better group collaboration on group assignments and projects. Those norms include: friendly and constructive communication, staying on task, providing reasons for what they say, and contributing and participating in their respective group roles. While the data was a bit inconclusive in this project when it comes to the intervention of teaching these norms to the students, it did show slight gains in the students' attitudes toward group work, positive changes in group behavior, and content learning. I believe that with the action plans I have suggested taking in the section below, especially in regards to the time constraints, that more and better gains will be evident in future library group projects.

SECTION V

A. Action Plan

Based on the results of the data collected from this project, the library intern planned to make some changes in the future when it comes to group projects in the library setting. Considerations for time was a major problem that needed to be addressed for this project. The concerns that students addressed about what did not work well in their groups also needs to be addressed. Finally, a suggestions was made by students that I would like to take into consideration when creating groups that would work best together.

First, there were a few concerns towards time management that need to be changed for future projects. Due to scheduling conflicts the library intern will make sure to include an extra week or two into the plans for unexpected conflicts and to give students more time to work on their research. More time might also be added to model and explicitly teach the positive group behaviors so that they are more prevalent in the students' minds as they are working on their projects. Also, an entire class period would need to be set aside for presentations so that students not only have time to share their animals and adaptations but also their complete research. So that all the students are able to get a more thorough understanding of all the habitats and what types of adaptations would be beneficial for each habitat.

The students also showed concern for arguments and off task behavior with their classmates. They expressed not knowing how to get past disagreements with their group mates. So modeling how to address disagreements with group members and what positive

communication would look like will need to be added to the teaching plans. Off task behavior and off task discussions will need to be better monitored as well.

There was a suggestions made by a few students when asked what they would change that would be beneficial to improving future library projects. Students expressed that they would prefer working with friends or people with which they have something in common. They could be allowed to choose their own groups as long as they get the library intern and the librarian's approval. This would allow them to practice the positive group behaviors in a more relaxed and welcoming group. Then when they have better mastered these behaviors and norms, they can practice them in more heterogeneous groups with students they do not know as well.

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Appendix A

Literature Matrix

Author/s	Year	Variables Considered in the Study			
		Collaborative Learning	Group Behavior	Teaching Methods	Elementary School Students
Frykedal K. F. & Chiriac, E. H.	2018	X	X	X	X
Kane. K. O. & Harms, J.	n.d.	X	X	X	
Ellison, Boykin, Tyler, and Dillihunt's (2005)	2005	X			X
Bennett	2015	X	X	X	X
Gu, Chen, Zhu, & Lin 's	2015	X	X	X	X

Appendix B

Data Collection Matrix

Research Questions	Data Source		
	1	2	3
1. Attitudes toward group work?	Student Surveys (Pre and Post-Project)	Observation Forms	Student Interviews
2. Exhibiting Good Group Behaviors?	Student Surveys (Pre and Post-Project)	Observation Forms	Student Interviews
3. Content Learning?	Pre-Test	Post-Test	Project Rubric

Appendix C

Data Collection Technique	Data Analysis Strategy		
	1	**2**	**3**
1. **Student Surveys on Attitudes to Group Work (Pre and Post)**	Compile means of attitude toward group work questions from Likert Scale.	Group items with mean scores over 3 and mean scores under 3 to identify areas of satisfaction and dissatisfaction	Compile and organize open ended questions and look for trends.
2. **Student Surveys on Good Group Behaviors (Pre and Post)**	Compile means of group behaviors questions from Likert Scale.	Group items with mean scores over 3 and mean scores under 3 to identify areas of satisfaction and dissatisfaction	Compile and organize open ended questions and look for trends.
3. **Observation Forms**	Compile instructor notes of observations of 5 identified group behaviors of each group.	Find the mean number of identified group behaviors exhibited by all groups.	Compile and organize all notes to look for common themes.
4. **Student Interviews**	Compile and organize interview answers to look for common themes.	Code various responses to find patterns.	
5. **Grade Level Pre- and Post-tests**	Compile mean score for all students for both pre- and post-tests.	Find the average increase (or decrease) in score for the class	Look for trends on incorrect answers on the tests.

		between the pre- and post-test.	
6. **Project Rubric**	Compile mean score for all groups.	Look for trends on low scored items on the rubric.	

Appendix D

Student Group Work Survey

1. Attitudes Toward Group Work

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
I prefer working in groups than alone.					
I always do my part in groups.					
Group members always do their parts.					
Working with others helps with my work.					

2. Group Work Behaviors

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Does everyone listen to others ideas?					
Did everyone provide reasons for what they said?					
Did everyone share responsibilities equally?					
Did everyone contribute to the project?					
Did everyone stay on task?					

3. What did you like best about working in a group?

4. What did you like least about working in a group?

5. What could be changed to make the group work better?

Link to Original Survey:

https://www.surveymonkey.com/r/NFC2GQK

Appendix E

Teacher Observation Form

Group: _____

	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
Listen to Others					
Provide Reasons for What They Say					
Share Responsibilities Equally					
Contribute Equally					
Stay on Task					

Notes:

_____

_____

_____

_____

Appendix F

Student Interview Questions

1. What did you like best about working in a group?

2. What did you like least about working in a group?

3. What could be changed to make the group work better?

Appendix G

Project Rubric

Group: _____

	Accomplished 3	Developing 2	Beginning 1
Research	The group provides research that correctly identifies their habitat, at least 3 animals from their habitat, and at least 3 adaptations for their habitat.	The group provides research that correctly identifies their habitat, at least 2 animals from their habitat, and at least 2 adaptations for their habitat.	The group's research does not correctly identify their habitat. They provide 1 or less correct animals for their habitat and 1 or less adaptations for their habitat.
Animal Adaptation Relevancy	All the adaptations for their created animal are relevant and beneficial for survival in their habitat.	Some of the adaptations for their created animal are relevant and beneficial for survival in their habitat.	None of the adaptations for their created animal are relevant and beneficial for survival in their habitat.
Reasoning	Students are able to identify why the all of their adaptations for their created animal is beneficial for survival in their habitat.	Students are able to identify why some of the adaptations for their created animal is beneficial for survival in their habitat.	Students are not able to identify why the adaptations for their created animal is beneficial for survival in their habitat.

Appendix H

Name: _____ Date: _____

Animal Adaptations Test

3.LS3.C.1 Construct an argument with evidence that in a particular ecosystem some organisms – based on structural adaptations or behaviors -- can survive well, some survive less well, and some cannot.

1) Which of the following adaptations might a wolf develop to survive in a cold habitat?

   a) big ears

   b) thick fur

   c) sharp claws

   d) long tail

2) Which of the following adaptations might a fish develop to breathe underwater?

   a) fins

   b) scales

   c) gills

   d) feet

3) Which of the following adaptations might a coyote develop to survive a hot, dry habitat?

   a) Nocturnal activity

   b) Claws

   c) Wings

   d) Beak

4) Which of the following adaptations might an animal living high on a mountain develop to survive?

   a) Scales

   b) Claws

   c) Nocturnal

   d) Larger heart and lungs

5) Which of these animals would survive in the ocean?

   a) Goat

   b) Cow

   c) Hawk

   d) Shark

7) Which of these animals would survive in the desert?

   a) Panda

   b) Camel

   c) Monkey

   d) Penguin

6) Which of these animals would survive in the rain forest?

   a) Parrot

   b) Polar bear

   c) Whale

   d) Camel

8) Which of these animals would survive in the arctic tundra?

   a) Lizard

   b) Fish

   c) Seal

   d) Beaver

9) How are camels well adapted to survive in the desert?

10) Why would a lizard not be adapted to survive in the arctic tundra?