

**Multiage Grouping and Student Collaboration**

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### **Abstract**

The aim of this action research project was to investigate students' social preferences and pro-social interactions in a multiage, high school classroom in order to better understand how to group students to maximize learning and collaboration. According to many educational experts and previous inquiries, mixed-age learning groups introduce numerous social, emotional, and academic benefits into the classroom setting but this research has been predominantly conducted at the primary school level. In response, the specific focus of this research project was to examine how and if mixed-age grouping in a high school classroom affects student preference for peer collaboration over independent work when given a choice, and their collaborative relationship with their peers. This research was carried out within a mixed-age social studies classroom during the spring of 2014. Data was collected qualitatively through student interviews and in-class observations. Additionally, quantitative methods was used to gather data on student social preferences and relationships within collaborative groups. Data collection methods were designed by this researcher and carried within a semi-controlled, naturalistic, class periods.

## Introduction

Currently, I teach at Wye River Upper School, a private, non-profit high school (9-12) on the Eastern Shore of Maryland. Wye River Upper School serves students with learning differences who need a greater degree of individualized differentiation, structure, support to help them succeed at academics. Wye River Upper School teaches to a wide range of learning differences including dyslexia, ADHD, ADD, and other unique learning styles. We also serve students we may be challenged by a mild neurological disorder or those who are on the autism spectrum or suffer from social anxiety. These learning differences often make it challenging for these students to maintain interpersonal relationships with their peers. Since all of the students in my classroom demonstrate one or more of the learning differences mentioned above, almost all the students benefit from a Student Development Plans (SDP's). These are very similar to Individualized Education Programs (IEP's) and they are used to identify students' needs and set learning outcomes and modifications for them based on those needs. Even though the diversity of learning differences can vary greatly in one classroom, the highly structured, differentiated, and engaging, 21<sup>st</sup> Century, skills-based curriculum at Wye River Upper School helps foster success and motivation in all our students.

Wye River Upper School is located in a rural community, however the majority of our student population travels greater than 25 miles to attend our school. Students not only come the rural eastern shore of Delmarva Peninsula, but also the Washington, D.C. metropolitan area. Wye River Upper School is comprised of a predominantly Caucasian or white students; approximately one tenth of total demographic is African American. Wye River Upper School awards over \$100,000 in financial assistance every year over the past five years, and this is largely because many students would not be able to afford private education without it. The

school itself is located within Queen Anne's County and the main industries in the county included agriculture, fishing, and construction, and most households are supported by blue collar professionals, however this is not represented in the guardians and households of our students, and many are supported by white collar professionals. Another notable trend is that around one tenth of the student population is a member a non-nuclear family unit and are raised by grandparents, adopted, or living with a single parent.

It is because of our unique population of students that the process of flexible grouping based on needs and/or strengths is extremely beneficial to student learning. However, there are many positive benefits to be gained from flexible, mixed-age grouping as well, including enhanced interpersonal communication between students, developing teamwork and collaboration skills, as well as building leadership qualities in students. My students are capable of high quality learning, but their learning differences had, in the past, disrupted not only their academic, but their social experiences in school prior to them attending Wye River Upper School. At our school we believe that students should learn not only build to foundations to the core subjects like math and language arts, but more importantly social skills and 21<sup>st</sup> Century skills, such as collaboration and communication, which are essential for success in life outside of academia.

At present, students at Wye River Upper School have access to a school counselor and many meet with her on a regular basis. During these sessions students are able to speak openly about their emotional, social, and academic needs and difficulties. There is also a secondary component to these counseling sessions in which the counselor works in small groups with the students to build interpersonal and communication skills. These intimate sessions are extremely beneficial; however, these controlled counselling sessions are not an authentic assessment of a

student's social skills. Students must be given the chance to demonstrate and apply their skills in these areas through actual group collaboration.

### **Research Focus**

Pro-social skills and behaviors are not only essential to success outside of school, but they are requisite to meaningful learning. Uniting students together over the same learning goals should foster application of their socialization while also supporting high level learning regardless of their individual readiness needs. Therefore, I chose to study mixed-age grouping in my classroom and the interactions between the students within those groups because I wanted to find out if students in mixed-age groups showed a stronger preference for collaboration or independent work. This research could be used to describe the relationship between heterogeneous-grouping and student interdependency so that I may better understand how to flexibly group students to enhance collaboration and meaningful learning. Accordingly, my guiding research questions were such: How does mixed-age grouping in a secondary social studies classroom affect student preference for collaboration, as well as their collaborative relationship with their peers?

### **Literature Review**

At the outset of this research endeavor I decided to focus my search into articles and previous studies that dealt with the relationship between mixed-age or cross-age grouping ( two terms which will henceforth be used interchangeably) in classrooms and social interaction between students. Though there are varying definitions of 'mixed-age' or "cross-age", for the purposes of this study I define mixed-age as any combination of students in which there is a difference of at least one year in age, a view accepted by most scholars. With the above

definition taken into consideration my search parameters included the terms “social interaction”, “collaboration”, “self-esteem”, “social behavior”, “communication”, and “multiage”. My searches resulted largely in articles that explored and advocated for the integration of different ages within primary school classrooms; a motivating reason to investigate if there is any such trend in secondary classrooms. These same articles cited the many benefits to mixed-age grouping, including academic benefits, cognitive benefits, and most importantly for the purposes of my research social benefits. Only one source I have cited discussed the benefits of mixed-grouping with hesitancy, due to the inconclusive results of their research.

When conducting my preliminary research three major themes revealed themselves which helped guide my own study on peer interaction within mixed-age groupings. Firstly, several scholars, through their research, had described the correlation between mixed-age grouping and an increase in pro-social behaviors, such as helping, sharing, and taking turns, and heightened social and emotional development (Pardini, 2005). The second major theme I was able to identify was the relationship between mixed-age grouping and peer interaction. Many articles I reviewed cited that students who were educated in mixed-age classrooms showed greater cooperation and interaction with their peers, during structured academic time and spontaneous play. Lastly, a significant portion of the sources I referenced described the overall positive climate found within mixed-age classrooms. Enhanced leadership skill in students, self-regulation, and greater independence are described as further benefits of mixed-age grouping. Admittedly, these findings were not unexpected, and through my research I was hoping to reaffirm these benefits as well as explore as yet unrecorded positives of cross-age grouping.

Pro-social behaviors include sharing, helping peers, taking turns; all fundamental social skills which children learn early in life. In *The Case for Mixed-Age Grouping in Early*

*Education* (1990), Lilian G. Katz explores the potential for heightened pro-social behaviors as a result of being placed in mixed-age classrooms. In this text, Katz is largely focused on cross-age integration at the preschool and kindergarten level, not unusual for many of sources I reviewed. Katz sheds light on an important aspect of mixed-age classrooms not to be duplicated in other homogenous classrooms: the ability to mirror a community social structure. Both Katz (1990) and David Marshak (1994) articulated this positive social factor. Marshak (1994) interviewed a group of teachers who taught in mixed-age classrooms and the feedback he received mirrored Katz's belief that mixed-age classrooms "resemble family and neighborhood groupings, which...provide much of children's socialization and education" (1990, p. 7). Diane McClellan and Susan Kinsey (1999), conducted research in which teachers rated students in mixed-age classrooms on different aspects regarding social behavior, and found research that support the claims made by Katz and Marshak. According to McClellan and Kinsey's study, students who had participated in mixed-age classrooms were rated as being significantly more pro-social and less aggressive. Increased pro-sociality is an outcome of cross-age grouping which cannot be overlooked during my research, but there are other positive benefits to examine.

For example, several sources I reviewed as background for my own research described how mixed-age grouping can increase general interaction among heterogeneous age groups. Once again it is Lilian Katz (1990) who describes that, especially during unstructured play, heightened participation and cooperative social play is evident. In his article on *The social and behavioral ecology of mixed-age and same-age classroom: a natural experiment* (2002), Adam Winsler and colleagues studied a school's natural transition from homogenous classrooms to mixed-age classrooms over a period of 18 months. The study looks specifically at preschool-age children, but the results from Winsler's study are compelling: a considerable amount of cross-age

interaction was observed, and “when youngsters in the MA [mixed-age] classes had a choice they spent the majority of their peer time interacting with a peer of a different age” (2002, p. 318). In a related study, but this time including children from preschool-age to third grade, Jaipaul Roopnarine and James Johnson (1983), studied playtime interaction in a controlled, mixed-age classroom for several weeks. Roopnarine and Johnson (1983), observed a similar increase in interaction between young children and school-aged children. Even though their data was less substantial, they did conclude that social behaviors could be enhanced through participation in cross-age classrooms. Alice Leeds and David Marshak (2002), through interviews with students and teachers in mixed-age classrooms, were able to more conclusively support Katz’s findings, and found that students in mixed-age classrooms had a greater desire to meet make new friends and help their peers.

Although not all studies, including a multi-year study completed in Victoria, Australia and then examined by Marion de Lemos (2001), produced results that were convincingly able to link multi-age or mixed-age grouping with positive social effects, these same studies were unable to find many negative results of mixed-age grouping. In another Australian study which surveyed the parents of composite or mixed age students, the majority of parents did not agree with their child’s placement or were not satisfied with their student’s achievement in their mixed-age classroom (Cornish, 2006). However, these studies do not reflect the general attitude towards mixed-age grouping. Most of the sources I reviewed in preparation for my research described varying examples of a positive social climate evident in mixed-age classrooms. In one of the most recent research summaries on multiage grouping I reviewed, Larry Daniel (2007) found that “multiage grouping has been linked with enhanced student self-esteem, decreased behavioral



referrals, formation of close communities, and social and academic continuity,” (Multiage Grouping). This same benefit is also cited by Song, Spradlin and Plucker (2009).

Additionally, Lilian Katz describes in more detail the “help-giving and nurturing behaviors” that can be observed taking place between younger and older students in mixed-age classrooms (1998, p. 47). In both her digest on *Nongraded and Mixed-age Grouping in Early Childhood Programs* (1992) and in *The Case for Mixed-Age Grouping in Early Education* (1990) Lilian Katz goes further and describes how children in mixed-age groups adapt and self-regulate their behavior and demonstrate and increase in accountability for classwork; both younger and older children differentiate behaviors and vary their peer expectations. Adam Winsler (2002) found through observation that children in mixed-age classrooms were less likely to be isolated. The teachers interviewed by David Marshak (1994) also reported greater acceptance among their mixed-age students. The above represents a mixed bag of positive social experiences resulting from cross-age classroom integration, and although they are secondary to my research focus, I will be recording all such related observations.

Similarly to Jaipaul Roopnarine and James Johnson’s 1983 study conducted over eight-weeks in a controlled mixed-age classroom, I will conduct naturalistic observations in my own moderately controlled classroom. While the above study worked to control the time and variables that interfered with children’s playtime, I conducted my observations during a controlled academic period during the day. With any school day it is hard to account for all of the possible variables that could influence my data collection, but since my students are familiar with me I was at least be able to eliminate the presence of an unfamiliar observer, thus enhancing the naturalistic quality of my research. Also, by controlling the time of day in which my data collection took place I was able to control the mixed-groups themselves as well as the academic

conditions placed upon the groups. Unlike the Roopnarine Johnson study (1983), I will be strictly focused peer collaboration during academic time. In addition to my observation notes, I created a social/behavioral checklist to be completed for each collaborative group during each observation period. The checklist was influenced by the one used in the Australian study described by Marion de Lemos (2001), and it included social behaviors and scales to indicate the level of that behavior. I also conducted interviews with my students and had them complete Likert scale questionnaires similar to those used in the study conducted at Westmount Community School (2002), in which students are asked to rate their experiences/relationships with their mixed-age peers. Most significantly, my study was unlike the others I have reviewed because I focused specifically on peer interaction and sociability in a secondary classroom setting.

### **Research Process**

Once I completed my literature review I was able to construct four methods of data collection to be used over the course of a semester to support my research (Appendix A). Since classes in core subjects such as English and math are comprised of homogenous grade-level groups or they are completed in a lock-step sequence, I decided to conduct my research during social studies classes since I not only teach those courses but it allows for the greatest diversity in age and flexibility in instruction. However, once my sample group was select I needed to create both qualitative and quantitative data measures to help ensure fairness and accuracy over the course of my study.

To gather qualitative data I created a set of interview questions (Appendix B) I would administer privately during a conference which each of the students near the end of the research process. These questions were designed to acquire information about students' individual

preferences for collaboration when working in a heterogamous or mixed-age classroom as well. Additionally, I collected ongoing observational and anecdotal data on a log during collaborative learning experiences so that I could more effectively identify and track any possible pro-social behaviors that may or may not occur (Appendix C). Quantitatively, I designed and administered a Likert scale survey (Appendix D) to all students during the beginning of my research to garner statistical data on student preference and perceived behavior in mixed-age collaborations. Lastly, I created a simple table (Appendix E) to track and record student choice during collaborative learning activities in order to uncover any possible correlation between age and collaborator preferences when compared against the Likert scale survey.

The above research modes were carried out over the course of the spring semester of 2014. Once I received the consent forms back from guardians of my students I first administered the survey to students and given them ample time to complete independently and at their own speed. It was important to me that I received input from students in my research, especially as this initial survey will serve a reference point. Likert scales are useful tool for collecting data on students' thoughts and preferences. Likert scales ask students to respond to statements using a standardized answering scale (strongly agree, agree, undecided, disagree, and strongly disagree). Answers then correspond to a point value. According to Mills (2014), "although these instruments provide teacher researchers with quantitative data, these data can still be considered descriptive" (p. 102). Additionally, standardization of response options and the rubric format helps keep data consistent, transferable, and accurate.

In addition to the Likert survey I decided that anecdotal/observational data would come from three set collaborative projects throughout the semester, in which student would be able to have choice not only in their project format but also in their collaborators. I would walk around

and conference with students or sit in on their groups as they collaborated on their project while adding to the log as necessary. Classroom/student observation will be the main mode of data collection for my research. However, since I am the teacher, I am an active participant. This can prove challenging since according to Mills (2014), the main goal of a participant observer is to try and see (and record) everything. I have created a student observation record that makes the task of recording “experiences” even easier as I created a checklist of the pro-social behaviors I planned to track (cooperation, sharing, helping, communication and general interaction), I did this in advance not only to keep the scope of my observation focuses but as objective as possible. This observation record is meant to capture the specificity of each observation “experience” in a user-friendly format. The checklist format is also less conspicuous to track during observations; an important factor when trying to maintain a naturalistic environment.

At the end of the semester, I met with each student individually to conduct an informal interview and recorded their responses to questions pertaining to the collaborative process. Each question was designed in such a way as to elicit specific information which will help me describe the relationship between mixed-age groups and collaboration. I have chosen to incorporate student interviews because they allow for qualitative student input. Mills (2014) suggests pairing observation and interviews provides a “valuable way to gather complementary data” (p. 88). I have limited the interview questions in number, partially because time is always limited, but also because I am seeking to elicit a very specific and focused response from students.

### **Data Analysis**

After the data collection process was complete three major trends became apparent throughout the data. After carefully examining the student Likert survey, the anecdotal observations, students’ interview responses, and the student choice table, I found that while

students were indifferent or showed no strong preference when it came to the age of their collaborator, they had very conscious and similar thoughts in regard to characteristics of preferable and inadequate collaborators. Additionally, while there did not appear to be any preference for age, student's shared similar views in the strengths and challenges of working with different-aged peers. Most significantly, I found that while pro-social behaviors are evident during collaborations, students were more likely to exaggerate their pro-social strengths when asked about them; perceived pro-social behaviors were greater than the actuality.

**Question 1: What preferences do students in a mixed-age classroom show for collaboration?**

**Data Set 1: Student Surveys**

When students were asked whether they would rather work with peers their own age or different age peers, 46% of students would chose the former, yet 54% of students would chose the latter group or marked undecided for this question. In a follow-up question on the survey students were asked whether they care a lot about the peers they choose to be in their groups, while no students reported 'undecided' for this question, responses where still split with 46% of students agreeing to this and 54% disagreeing. Other questions in the survey designed to reveal students' preferences provided further results which were distributed in such a way that no preference was clear. Quite possibly, the most telling question on the survey asked students whether they worked better with peers their own age. To this 70% of students responded in the affirmative. However, a more careful examination of these results would prove more telling.

When revisiting the question of whether students would rather work with peers of the same age I examined the responses by grouping them by like ages. When I did this I found that

62% of students aged 14-16 preferred working within their own age group. When looking at the responses from 17 to 18 year olds, I found that 75% those students either disagreed with this statement or were indifferent. However when more carefully analyzing the responses to the statement about whether they *work better* with students their own age an overwhelming 80% of students 14-16 agreed with this statement, while 75% of the older students (17-18) disagreed with this statement or were undecided, showing no real preference. However, when asked if students care about the age factor when choosing a collaborator both the 14-16 and 17-18 groups were nearly split down the middle, showing no strong preference based on age.

While there may be no strong preference toward the age of collaborators detectable in the survey results, there were other survey questions which provided very revealing insights into students' thoughts and preferences concerning collaboration. For instance, over 90% of the students surveyed enjoy collaborating with peers that share the same interests as them, by far the strongest show of any preference. Approximately 70% of students felt that they learn better when working collaboratively with others. That same percentage of students also felt that collaborative learning is fun and engaging. Over two-thirds off all the students surveyed felt said they would prefer to work in small collaborative groups over larger teams. Lastly, and perhaps most interestingly for our study of the relationship between mixed-age classrooms and pro-social collaboration, the survey revealed that 93% of students felt that working in collaborative learning activities helped them become better at working in groups.

### **Data Set 2: Student Interviews**

Near the end of the semester I sat down with students to conduct a one-on-one interview with them to gain more insight into their individual preferences for collaboration. When asked if they would (in any subject) choose to work independently or choose work collaboratively with

peers, over 75% of students said they would choose to work with others for reasons such as a shared work-load, greater propensity for creativity, and increased sociability and enjoyment coming from working with peers. When the same students were asked if this inclination towards collaboration still exists during social studies the students maintained their previously stated preferences. Interestingly, every student who preferred independent work stated that they either normally work faster than their peers, or they don't want to be 'dragged down' by others. While the predilection towards collaboration seems clear-cut based on the above results, under closer scrutiny, I found that students put much consideration into choosing the ideal collaborator.

During the interview Students were asked to identify the three most important qualities they look for in a collaborator followed by the three characteristics they look to avoid in a potential collaborator. Though the following results were not unexpected, it was interesting to see the commonalities amongst the students. When asked to identify positive or desirable attributes of collaborators many different characteristics were mentioned more than once. These characteristics were 'hardworking', 'intelligent', 'creative', 'helpful', 'attentive', 'leader', 'productive', 'smart', 'cooperative', and (interestingly enough) 'independent'. Independency came as surprise, particularly since students were asked to identify positive traits of *collaborators*. However I hesitate to call this response an anomaly, as my anecdotal data would prove otherwise. Putting that aside for the moment, there were more consistent tendencies in the results. Two characteristics were mentioned as being the most important characteristic of collaborators more than once, across more than one age group. These desirable characteristics were 'hardworking' and 'attentive'. It is interesting to note that these are work-related traits, not social or behavioral characteristics. Social characteristics, such as 'nice' and 'cooperative' were

only mentioned in the top spot once representing a small group of repeated pro-social behaviors including 'helpful' and 'cooperative', as mentioned above.

While the desirable or positive characteristics of collaborators may have varied widely among my mixed-age students, the list of qualities they wished to avoid in collaborators was much more concise. Once again there were still characteristics which were repeated more than once including, 'lazy', 'stubborn', 'bossy', 'disruptive', 'ignorant' and 'unproductive'. 'Stubborn', 'lazy', and 'disruptive' were most frequently reported in the number one avoidable spot across more than one age group. While student preference concerning positive collaborator traits did not fully concede with the definition of pro-social behaviors given in the literature above, these aforementioned avoidable traits are more closely linked to anti-social behaviors. However, even as we look to glean and more accurate insight in student preference in a mixed-age class, I asked students once again to explain their preference for working with an older or younger students and their answers showed little value in pro-social behaviors.

The responses I received during the interview were not contrary to the responses from the initial survey, but they were more specific, and indicated to a very clear preference or bias toward a certain group of students. When students were asked whether they would work with older or younger peers given the opportunity, 70% of the students optioned for older students leaving just over a quarter of the students choosing younger. This preference did not seem to be based on age, as 14-18 year olds were in the majority and 15-17 year olds were in the latter group. Even more telling is that every student who told me they would rather work with an older student cited 'more experience' and/or 'more knowledge/understanding', and 'smartness' as the reasons why they would be a better collaborator. Of those students, almost half of them cited greater maturity as an added benefit of working with older students. However it is important to



point out that over half of the students acknowledged older students are more likely to be more 'controlling' and assume too much power.

Contrastingly, but reflective of the responses above, each student who said they would rather work with a younger students preferred having more control over younger students and the projects. However, among these students there seemed to be a common perception that younger students were more compliant even if they did require some added assistance, it was also noted that they might be more 'open-minded' and 'creative'. Along those lines, over 50% of students identified younger students' 'teachability' as a positive attribute. A stark, but complimentary contrast to the students who valued older peers for their depth in understanding and wisdom.

### **Data Set 3: Student Choice Record**

Whereas the last two data sets used to understand student preference were assembled from the spoken and written views of the students, the last data tool I will briefly mention records the how these preferences were realized or not in the classroom during the three collaborative activities. When I compared the students' collaborator choices for the three collaborations with their preferences given in the interview, I found that around three-fourths of students selected a partner of an age that matched their preference given in the interview for each activity. While this is the overall compilation percentage of all three trials, there was little is any variance between the collaborative team selection from one activity to another. While this does not confirm a complete correlation between student preferences regarding age and actual teaming in a natural classroom setting, this data shows a noteworthy link between the two.

### **Conclusion**

While the data reviewed above does not allow for conclusions about whether age plays a major role in collaborative partnering in a mixed-age classroom, there are some conjectures we could make based on the student responses in the surveys and interviews, and their choices during collaborations. In general it would be astute to say that students in a mixed-age classrooms value collaboration not only because it is stimulating, but as it helps them develop interpersonal skills. This being said students are very particular in regards to the ideal collaborator. Students seemed to value strong work habits over demonstrations of pro-social behaviors. This is not to say that students did not place any value on sociability, as students cited stubbornness and inattentiveness as two of the qualities that they most wish to avoid in a potential collaborator suggesting that peers who lack social skills are less desirable. That being said a most interesting and telling deduction can be made after revising the data: students in a mixed-age classroom showed a strong preference for working with students who are in advanced age group. However, this preference was only partially based on pro-social behaviors, it was almost unanimous that older students possessed greater knowledge and understanding, thus making them superior to the younger and more subservient, and placing greater value on working skills. These conceptions, while they may not be entirely accurate, do represent insight into student preference in a mixed-age classroom.

**Question 2: How does mixed-age collaboration affect or influence pro-social interaction between peers?**

**Data Set 1: Anecdotal/observational Data**

During the course of three separate collaborative activities I used a log to keep track of pro-social behaviors that were naturally occurring over the course of the activity. Once again, pro-social behaviors are those positive actions that benefit others and motivated by empathy and

not personal gain (Flesischman, 2008). In an attempt to remain as object as possible and try to add quantitative organization to this qualitative data I attached a scale to each behavior to note whether it was demonstrated always, frequently, sometimes or never. The behaviors I was looking for and rating were *helping*, *sharing* (ideas and/or materials), *positive communication* (respectful language and etiquette), and *cooperation*. I decided to keep this checklist focused on the four behaviors above as derived from prior research done in this area, and supplement with additional notes on how the activity was progressing. What I discovered after scrutinizing this observational data, was that over the course of the semester there were many pro-social behaviors present during mixed-age collaboration, however general interaction and cooperation was minimal and utilitarian.

It is important to note that over the course of the three activities, each collaborative group observed was composed of mixed-age groups, thus echoing the trend that was made apparent while studying student preference. Also, each group was consistently made-up of two (in one case three) persons and no more. Throughout the semester there were two pro-social behaviors which were demonstrated more often than the others: helping and sharing. When I assigned a number value to the frequency of each behavior, ‘never’ would equal 0 and ‘always’ would equal 3, across the board, the collaborations I observed would have received a median score of 2 representing ‘frequent’ demonstration. Students in these mixed-age groups had no observable qualms over sharing ideas, pencils, rubrics, and other necessary elements needs to successfully complete the assignment. Nor did they hesitate to help their peers when needed, or to be more specific, *asked*. With the exception of a singular group made-up of two girls who are frequent collaborators, I observed no other group receiving un-prompted help. While one could speculate that this is the result of homogeneous gender grouping, as most groups were comprised of

homogenous genders, it is important to note that only a quarter of the school's population is comprised of females so it would be inaccurate to draw any conclusion regarding this anomaly.

This aside, there were the presence of other pro-social behaviors during the collaborative exercise. But I must first forward the rest of the results by stating that in general, cooperation and interaction within the groups varied greatly from group to group. When assigned a number on the scale, the resultant median was 1, thus signifying some, but minimal interaction and cooperation. That being said some groups showed extremely regular interaction, even if not all of the observed interaction was on-task or related to the activity. Around one-third of all the groups observed demonstrated high ('frequent' or 'always') interaction regularly, but these groups were also the groups that I consistently noted as having social conversations that were not academically focused, and they were the groups that required prompts to stay on-task.

The other two-thirds were observed as showing 'some' cooperation. These groups were focused on the activity at hand, and interaction was restricted to conversations about the task. However, these groups also seemed less *collaborative*. In many of these cases, I observed that they strictly divided up the project into parts with each teammate working on an individual aspect. Where the minority of groups may have seemed to be off-task as their social interaction was higher, it was my understanding after observing them that they were also the groups that seemed to share the responsibilities/tasks, as opposed to working independently and puzzling the pieces together at the end of the project.

While many students were observed as conducting their collaboration in a utilitarian fashion and 'dividing and conquering' the collaborative task, this does not mean that the instances of interaction that did occur were not positive. In fact, the median for positive communication fell right around 2. While there was less variance in the data, as most groups

consistently demonstrated positive interaction on a regular basis, an interesting correlation appeared between those groups who were more frequently observed cooperating/interacting and positive communication. With unwavering consistency the two-thirds of groups who were reported as having higher interaction, albeit off-task, were also observed as maintaining frequent to constant positive communication. Walking around and observing each group, I noticed that even though these groups were not having academic conversations their conversations were lighthearted and they showed a respect for one another. On the other hand, the groups who had less frequent or minimal cooperation were also more likely to have been observed have strained communication with one another. I noted that conversations in these less active groups seemed tedious to its members, most of the communication that occurred involved one peer asking another for guidance, input, or a new directive. This was the only particularly surprising correlation I noted during by observations.

### **Data Set 2: Student Surveys**

My observational data represented the reality of pro-social behaviors that occur in a cross-age classroom, I am now going to back to the data from the student surveys to further explore students' perceived pro-social behaviors that occur when they are working collaboratively. In the survey students were asked questions pertaining to their communication, cooperation, helpfulness, and sharing ability. The responses I received were overwhelmingly in the positive, however, I found very few fallacy's this time between student acuity and reality. The only notable discrepancy concerned cooperation in collaborative groups. When students were asked whether they are able to act cooperatively when collaborating with peers over 75% responded positively, when in reality, the observation data showed that around two-thirds of students had minimal cooperation and interaction. This led me to believe that students in a

mixed-age classroom have a lower expectation for actual *collaboration* during a collaborative exercise.

When students were asked to denote their response to a statement about whether they use positive communication when working in collaborative groups, just over 60% said that they do. An equivalent amount also said that they offer their help to others when working collaboratively. This may seem like a possible discrepancy when refereeing back to the anecdotal data from my observations, however it was recorded that students did help one another, but only after being asked or prompted. Further, according to the survey, 75% of students responded that they are able to share ideas and materials when working collaboratively. While none of the student responses on the survey are surprising or fantastic, it is interesting that the majority of students in my cross-age classroom seemed to suggest, through their responses, that their pro-social behaviors were strong. That being said, before I conclude the analysis of the data we will once again revisit the interview responses, in which many students did not acknowledge these social skills and strengths.

### **Data Set 3: Students Interviews**

The final questions in the interview asked students to identify their strengths that they bring to a collaborative team and the weakness that challenge them when working in a collaborative team. Once again, the responses were surprising, not because they seemed inaccurate, but because there was much emphasis on work and study skills/habits and very little placed on pro-social skills. Less than a third of all students identified a pro-social deficiency of any kind and just under 50% of all students identified a pro-social strength. The remaining students did not identify any social strength or weakness. Similarly, in the previous interview questions, when students were asked to identify the three qualities they both look for and want to

avoid in peer collaborators, students placed very little value on sociability and much more on work ability.

When students identified their strengths, there was great variance. The most frequented responses were 'creative', 'hard worker', 'intelligent', 'good writer', 'good with technology' and 'responsible'. Over 50% of the students identified themselves as 'creative' or able to produce good or new ideas, whereas no other trait had such a high recurrence. As for the identified social skills less than a quarter of the students said that a strength of theirs was 'helpfulness' or helping others. This is a curious result, as according to the survey over 60% of students said that they offer help during collaborative work. However, that is not the only fallacy I detected as only less than a quarter of students identified one of the following pro-social strengths: 'good communicator', 'leader', and 'cooperative'. These statistics continue to appear deflated when compared to their counterparts in the student survey.

The students' responses were equally as varied when asked to identify their weaknesses, but were less problematic from statistical standpoint. Students identified the following weaknesses with greatest frequency: 'easily distracted', 'lack of focus', 'challenged with writing', 'working a reduced pace', 'hard time dealing with others', and 'stubborn'. Of all the students interviewed the most common response was either 'lack of focuses or 'easily distracted'; not surprising responses from adolescents who represent a population of students with learning differences. Only 30% of students identified that one of their weaknesses was related to their interpersonal skills and reported having 'hard time' or were 'easily frustrated' when working with others. And just under one-fourth of all students also admitted to 'stubbornness' as a weakness; something not outright observed, but perhaps an attempt to label their autonomy when working on a collaborative assignment, something which was observable.

## Conclusion

When looking at student collaboration in a mixed-age high school classroom I was initially planning on collecting data that showed students working agreeably with each other to achieve a common goal. In some respects this was exactly what was taking place, but in another way my expectations fell short. While each group accomplished the collaborative tasks with reasonable skill and kindness, and they all met with slightly varying degrees of success, I did not observe a confluence of pro-social behaviors (as defined above): cooperation, sharing, helping, and positive communication. While the collaborative exercises I observed were not in any way conducted in an unfriendly manner, I was surprised by the lack of overall *collaboration* taking place. When students helped their peers, they only did so when prompted; when students communicated with peers, it was in a tedious fashion. The pro-social behaviors did not come naturally or without effort to the mixed-age students in my classroom, this could largely be attributed to the learning differences and particularly neurological disorders that challenge our students. However, even though there was a notable lack of collaboration and cooperation, the students' perceptions did not signify this dearth or sociability.

While a small group of students seemed to understand their own social strengths and skills, and some students acknowledged that they had some social-based weaknesses when interviewed, most students contradicted these claims with their responses on the survey in which most students indicated that there was the presence of pro-social behaviors. Once again, I think this obvious incongruity in the data is resultant of some learning or neurological difference. While this is not a study on how learning differences affect collaboration, it is undeniable that those with Autism spectrum disorders (ASD) are characterized by social difficulties and communication challenges. Students with ADHD also suffer from symptoms such as



hyperactivity, focusing, and communicating which can lead to social difficulties. In a school which aims to serve a population of students with the types of needs mentioned above it is not surprising that students pro-sociality would not be as intuitive as some of their peers.

### **Action Plan**

Based on the data above it is with strong recommendation that as a professional community of teachers at Wye River Upper School, we take formal steps to foster greater and more consistent pro-social behaviors and cooperation among our peers, particularly in mixed-age classrooms, but all age groups and subjects would benefit from continued professional development. Since our school's teaching mission is coupled with a 21<sup>st</sup> Century skills and values such as collaboration and communication it would be in our best interest to build our knowledge of *cooperative* learning structures so that we may not only strengthen the development of our students' social skills, but also nurture greater motivation.

According to the observational and quantitative data, the behavior of students in my mixed-age classrooms was individualistic, even when students are working on a collaborative task. Even though students understand that the task is to be completed as a team, students were observed choosing to work independently with the understanding that they would just fit all the pieces together in the end. This is not cooperative learning. Cooperative learning students understand that their success is depend on the success of their peers (Anderman, 2014, p. 103). During cooperative learning, students have to work together to ensure that their peers meet with success to be successful themselves. Cooperative learning also has many benefits in and research has shown that in addition to increased students' motivation, students are more likely to help their peers which will in turn increase not only understanding and learning, but success (Anderman, 2014, p. 104). Anderman (2014) also states that cooperative learning helps

strengthens the social relationships between students and foster social acceptance.

Kagan and Kagan (2009) also acknowledge the decline of social skills, not just in schools, but across all communities of young people. In response they advocate for cooperative learning in order to re-supplant the deteriorating pro-social behaviors, but also better prepare our students for 21<sup>st</sup> Century employability, which is demands interpersonal relationships, communication and cooperation (Kagan, 2009). Pro-social skills are not only the building blocks of success but also quintessence of a 21<sup>st</sup> Century student.

Going forward, I now understand that it is not enough set my students with a task and expect them to cooperate and communicate with their peers in order to problem solve and collaborate. These pro-social skills are not intrinsically valuable to every student, and as evidenced by the data, a significant amount of students may not always distinguish between sociable and antisocial. It is my personal mission than to work to incorporate authentic and cooperative learning into my classroom on a consistent basis. While it is impossible to master cooperative learning overnight, as there are many variations and structures, I will work to build upon my knowledge and consistently implement new variables into my instruction while always maintaining the four basic principles of cooperative learning: Positive interdependence, individual accountability, equal participation, and simultaneous interaction (PIES) (Kagan, 2009). These four characteristics are the most important elements of cooperative learning and require constant attention.

The PIES values noted above are going to be the focus of my plan to educate my colleagues during monthly all-faculty meetings in which there is always an emphasis on professional development and skill-building. While cooperative learning is a complex process it is essential to start with these fundamental ideas and build from there. Once my colleagues and I

have expanded our 'tool-kit' than we will be better prepared to support *cooperative*, collaborative learning in our classrooms. When there is a faculty-wide understanding of the PIES principles of cooperative learning, I will spend the next six sessions exploring the other keys to success during cooperative learning including structures, teams, management, and most importantly for our purposes class-building, team-building, and social skills. It is important to have a thoughtful an open conversation of these elements as a faculty so that we can build upon each other's experiences to foster school-wide growth. The last step in our school-wide improvement plan will be to spend some time during each meeting to share the successes and challenges of cooperative learning in our own classrooms. While increasing the practice of pro-social behaviors and cooperation in mixed-age classrooms is the goal, it will require the full cooperation and collaboration of staff to fully realize this goal.

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## Appendix A

**Data Collection Plan**

<b>Research Question</b>	<b>Data Collection Tool</b>	<b>Data Collection Tool</b>	<b>Data Collection Tool</b>
What preferences do students in a mixed-age classroom show for collaboration?	Student survey	Student interviews	Student choice log
How does mixed-age collaboration affect or influence pro-social interaction between peers?	Anecdotal/observational log	Student survey	Student interviews

## Appendix B

**Student Interview Questions**

**Student:**

**Age:**

**Class:**

**Date:**

**Researcher:**

1. If/When given the choice between working independently or working collaboratively with your peers what would you choose to do and why?
2. If/When given the choice between working independently or working collaboratively with your peers in THIS class what would you choose to do and why?
3. What are the three most important qualities you look for in a collaborator? Rank first to third.
4. What are the three qualities in a collaborator, which you try to avoid? Rank first to third.
5. If given the opportunity to collaborate with older peers or younger peers who would you choose?
6. Are there any specific benefits or challenges to working with younger peers?
7. Are there any specific benefits or challenges working with older peers?
8. What makes you an effective collaborator? What strengths do you bring to your collaborative team?
9. What are your weaknesses when working in a collaborative team?



Appendix C  
Student Survey

**Student:**

**Age:**

**Class:**

**Date:**

**Researcher:**

<b>You would rather let someone else take the leadership role in the group.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You would choose collaboration over independent work if given the opportunity.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You care a lot about the age of the peers you choose to be in your group.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You think collaborative learning is fun and engaging.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You work better with peers your own age.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You offer to help peers when working collaboratively.</b>	strongly disagree	disagree	undecided	agree	strongly agree

<b>You use positive communication when working collaboratively.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You share ideas and materials when working collaboratively.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You are always respectful and kind to the peers in your collaboration group.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You feel that collaborative learning activities help you become better at working in groups.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You always use appropriate language to solve problems in your group.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You work cooperatively when working in groups.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You feel the need for taking on a leadership role when working collaboratively.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You prefer working in small collaborative groups over larger teams.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You would rather work with peers your age than with those who are younger.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You are easily frustrated when working with peers.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You would rather work in a group assigned by a teacher and choose your own.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You enjoy being in groups with peers that share the same interests as you.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You learn better when working collaboratively with others.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You would prefer to work with someone at the same ability-level as yourself.</b>	strongly disagree	disagree	undecided	agree	strongly agree
<b>You have always been successful when working in collaborative groups in the past.</b>	strongly disagree	disagree	undecided	agree	strongly agree

Appendix D

Anecdotal/Observation Log

Collaborative Exercise:

Names Collaborators (with ages):

Class:

Date:

Researcher:

Brief Description of Activity:

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Pro-Social Behaviors Scale

Behavior	Never (0)	Sometimes (1)	Frequently (2)	Always (3)
Cooperation				
Communication				
Helping				
Sharing				

Additional Observation/Notes:

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