



Article

Humane Education's Effect on Middle School Student Motivation and Standards-Based Reading Assessment

Julie O'Connor ^{1,*} and William Ellery Samuels ² ¹ School of Education, Touro College, New York, NY 10001, USA² School of Nursing, Hunter College, The City University of New York, New York, NY 10010, USA; ws1114@hunter.cuny.edu

* Correspondence: julieo898@hotmail.com

Abstract: Students educated in the juvenile justice system face acute challenges such as lack of motivation and negative attitudes toward school. Schools in the system are expected to provide rigorous, Common Core-standards-aligned instruction. Humane education—lessons that nurture kindness and empathy towards humans, animals, and the environment—has been shown to motivate students and encourage their pro-social sentiments. This randomized control trial (with constraints) study of 192 12- and 13-year-old students from New Jersey asked students to complete five standards-aligned reading passages with text-based questions. The experimental-group assessments contained humane education themes and the control-group assessments had non-animal related high interest topics. The passages were equated in reading level, word count, etc. Analyses of the results showed that not only did students who received humane education passages do better overall, but also did much better on questions addressing specific Common Core Reading for Information standards. This study can be a starting point for applying and researching the effectiveness of humane education on the juvenile justice population, specifically, because they are expected to learn standards-aligned curricula and are in particular need of academic motivation and pro-social encouragement.

Keywords: humane education; reading comprehension; standards-based assessment; reading assessment; student motivation; juvenile justice; juvenile detention; common core state standards



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1. Introduction

Every day, over 48,000 young people are held in facilities in the United States resulting from criminal or juvenile justice detention (Sawyer 2019). According to the Federal Interagency Reentry Council, approximately 6 out of 10 students who attend school in a juvenile facility will never re-enroll in school after their incarceration, and of those who do successfully re-enroll, far fewer of them will go on to graduate from high school (Federal Interagency Reentry Council 2017) than peers who were not incarcerated. The schools in juvenile facilities struggle to educate this population. These children have been found to be more disaffected and unmotivated than peers due to the profound life challenges that they face (Shader 2003). Dealing with maltreatment and abuse, they end up involved with child welfare services, and up to 29% of these children also enters the juvenile justice system (Herz et al. 2010).

Juvenile justice schools are also expected to teach to the same standards as traditional public schools. Kusurkar et al. (2012), for example, found that motivation can improve academic performance. Humane education—which integrates the teaching of animal welfare and protection, kindness towards other people, and active concern for the environment—within content area lessons, has been shown to motivate students (O'Connor 2018). Since motivated students often do better on educational evaluations, research was commenced to see if humane education could impact standards-based student academic performance. This paper analyzes the results of student assessments in order to determine if scores differed among targeted reading standards-aligned questions when comparing humane

education content to other topics. The results of this research would be of particular interest to those who plan education for students in the juvenile justice system.

1.1. Education in the Juvenile Justice System

According to the [Interstate Commission for Juveniles \(2021\)](#), ten is the minimum age for juvenile detention unless it is for a capital offense. As of 2019, more than 500 children aged 12 and younger were in juvenile justice facilities in the United States ([Sawyer 2019](#)). While 69% of those incarcerated are 16 or older ([Sawyer 2019](#)), it is important to study the impacts of beneficial educational practices before the students are upperclassmen.

The students in the correctional system have severe educational needs. A history of academic failure and poor attendance plagues upper-level students ([Leone and Weinberg 2012](#)). Between 30 to 60 percent of incarcerated youth need special education and related services ([Quinn et al. 2005](#)). Not achieving academically may be explained by environmental factors such as being raised in poorly educated and socio-economically impoverished families, many times alongside receiving poor parenting. Frequently, children who are raised in such an environment, have limited school attendance and display low academic effort to meet school demands. ([Maniadaki and Kakouros 2011](#)). These students require an education that is both meaningful and demanding, while also being individualized. According to the National Technical Assistance Center for the Education of Neglected or Delinquent Children and Youth's (NDTAC's) "Transition Toolkit", correctional facilities should "implement rigorous, relevant curricula and incorporate personalized learning opportunities that positively affect each youth's education and life outcomes" ([Griller Clark et al. 2016](#)). Additionally, in its 2016 report, the Department of Justice advised that prisons should emphasize the pursuit of the high school diploma, as opposed to a GED, and to expand high school diploma opportunities ([Federal Bureau of Prisons Education Program Assessment 2016](#)).

However, while educational delivery is expected to be rigorous in order to serve those students who are the neediest, the opposite is observed. According to the [Leone and Weinberg \(2012\)](#), correctional facilities often do not meet state standards necessary for students to function in ways that they would be expected to in public schools, leaving many children to leave school without a regular diploma or graduate without twenty-first century academic skills ([Leone and Weinberg 2012](#)). This is in spite of recognizing the necessity for standards parity between traditional public school students and those being educated in the justice system. In fact, the fourth principle of the Correctional Education Guidance Package, designed to assist states in providing education services, states that correctional education needs to provide "[r]igorous and relevant curricula aligned with State academic and career and technical education standards that utilize instructional methods, tools, materials, and practices that promote college and career readiness" ([U.S. Departments of Education and Justice 2014](#)).

While improving standards-based education for all subjects is imperative, effective standards-based literacy instruction should be of particular importance for these students. Higher levels of literacy are associated with lower rates of juvenile delinquency, re-arrest, and recidivism, and there is a strong link between marginal literacy skills and the likelihood of juvenile incarceration ([Leone et al. 2002](#)). Therefore, appropriately teaching to strong literacy standards is an essential component of education within the juvenile justice system.

1.2. Literacy Standards

The Common Core State Standards (CCSS) Initiative of 2010 set out to address the issue of nation-wide standards uniformity. It presented a set of academic standards for what every student was expected to learn by the end of the school year in each grade level, from kindergarten through high school ([National Governors Association Center for Best Practices, Council of Chief State School 2010](#)). These standards created the basis for the alignment of student instruction, classroom materials, teacher professional development, and student assessment. After No Child Left Behind (NCLB), the Every Student Succeeds

Act (ESSA) was signed into law in 2015 and it continued the NCLB's standardized testing requirements (ESSA 2015). To be in compliance with the federal education law, Common Core-aligned annual assessments were developed across the country.

The CCSS in literacy arguably receive the most attention. They were developed using the latest research available pertaining to reading and writing instruction. "According to the National Reading Panel, . . . there are five essential components of reading: phonemic awareness, phonics, fluency, vocabulary, and comprehension" (Marchitello and Wilhelm 2014, p. 9). The CCSS in literacy establish guidelines for students to build knowledge through reading across content areas, with an emphasis on nonfiction texts. By reading nonfiction texts across subjects, students build broader knowledge of the world (Key Shifts in English Language Arts Common Core State Standards Initiative 2019). The standards also stress students using analytical skills, problem-solving, and critical thinking (Marchitello and Wilhelm 2014). Behind the emphasis on nonfiction and problem-solving is the recognition that students should graduate school with greater preparation to solve the global challenges that they will encounter in the future.

Skills in inference, main idea, and summarization are assessed on CCSS-aligned exams because those skills require deeper student interaction with the text than just recalling facts or memorizing basic knowledge. This is also referenced as close reading (Partnership for Assessment of Readiness for College and Careers 2011). Children need to develop skills to comprehend fully what they are reading and apply these skills to a variety of texts. In order for students to do well on Common Core-aligned reading assessments, they need to use a great amount of concentration and higher order thinking skills (National Governors Association Center for Best Practices, Council of Chief State School 2010). The best preparation is to have students become good readers of a broad array of texts (Hirsch 2006).

1.3. Motivation and Its Effect on Student Performance

Motivation and engagement are often found to positively affect academic performance. Williams and Williams (2011) argue that the academic content is often among the most important elements for improving students' motivation to learn. In this research, we indeed focus on the academic content, exploring if manipulating certain aspects of it will cause the students to answer Common Core-aligned questions more accurately.

Intrinsically motivated students engage in a particular activity because of their own values and goals. Intrinsic motivation tends to result in greater persistence in tasks than extrinsic motivation (Ryan and Deci 2000) and can help students remain interested in academic tasks even after they leave school (Deci and Ryan 2008). Extrinsic motivation implies that the activity is undertaken in response to an external reward or demand (Bandura 1997). In order to perform well on Common Core-related tasks, students need to be either intrinsically or extrinsically motivated.

Many studies confirm the importance of motivation in learning. In a study of university students, intrinsic motivation was associated with greater academic performance. Not being motivated and engaged was associated with poor outcomes (Bailey and Phillips 2016). In a study of Chinese English learners, motivated and engaged students paid better attention to the context and practical features of languages, required for appropriate communication (Salyers et al. 2015).

1.4. Motivation for Students in Juvenile Justice System

Humans' emotions are connected to their motivation. Positive emotions enhance academic performance, while negative emotions undermine it (Mega et al. 2014). A negative attitude towards school is identified as one of the risk factors of students who are part of the juvenile justice system (Development Services Group, Inc. 2015). That negative attitude can result from years of poor school experiences, i.e., inadequately addressed learning disabilities, grade retentions, multiple suspensions, etc. (Leone and Weinberg 2012). Consequently, mitigating those negative attitudes and, thereby, improving their motivation, can be particularly beneficial for students in correctional settings. Additionally,

there are societal benefits to consider when educational leaders are able to improve juvenile justice student positive sentiment for school. Strong educational programs reduce the return of young people to criminal behavior (Lochner and Moretti 2003).

Additionally, Bassette and Taber-Doughty (2013) proposed that motivation as well as persistence may be especially vital for students with disabilities who have histories of failure or struggles with reading endeavors. Enhancing learner motivation should be a goal of educators because it will result in better learning experiences for students. To that end, curricula exist that are particularly motivating and can be tailored to address the standards set forth in Common Core.

1.5. Humane Education

The Academy of Prosocial Learning defined humane education as encouraging psychosocial growth through developing empathy as well as problem-solving skills related to people, animals, the planet and the intersectionality among them (Academy of Prosocial Learning n.d.). According to the Humane Education Coalition, humane education should empower students to develop their own prosocial and nurturing values pertaining to themselves, other humans, animals, and nature, and then engage in behaviors that align with those values (Humane Education Coalition n.d.).

It is precisely this concept of viewing issues through a broader lens of compassion that helps students simultaneously improve on the CCSS with its emphasis on higher order thinking, as well as problem solving in the larger community. Most teachers hold positive perceptions of humane education (Daly and Suggs 2010), appreciating its goal of increasing students' compassion.

Whereas humane education covers the connectedness of people, animals, and the environment, the focus of this research was the animal protection component. In humane education, a caring relationship, based on active listening, mutual trust and respect, extends to nonhuman animals (Noddings 2003). Humane education is a curriculum that has been found to motivate children because of its inclusion of animal protection in classroom lessons (O'Connor 2018).

In this study, sixth grade students were divided into two groups: one group received humane education themed, standards-aligned reading passages with accompanying questions, and the second group received reading passages that were taken from prior years' exams and test preparatory materials that were aligned to the same standards but lacked humane education themes.

2. Materials and Methods

2.1. Participants

Sixth graders ($n = 192$) aged 12–13 years in New Jersey were randomly assigned. Ninety-three students were in the control group and 99 were assigned to the experimental group. Covariates were English as a Second Language (ESL) status, special education status, gender, and grade retention status.

2.2. Materials

Both control and experimental students received CCSS-aligned nonfiction passages with text-based questions, matched for equal reading level and length. Though not noted in the results section, the passages had the same font and the same number of graphics. Even though the participants were in 6th grade, the reading levels were for 5th graders. This was done to assist in isolating the effect of the animal protection content because it minimized students struggle to read the text since it was designed for a grade level lower.

Control group passages were obtained from released or retired former CCSS-aligned state tests from New Jersey, New York, and Texas, as well as test preparation materials. They were selected for their high interest nonfiction topics. "Accidental Toy" was about toy inventions. "Bubblology" was about the science of bubbles. "High Volume" was about hearing in young people and listening to music with headphones. "The Stories

Behind “Toy Story’s Beloved Characters” is a self-explanatory title involving the movie “Toy Story”. Lastly, “Coach Motivates Her Girls” told the story of a successful high school basketball coach.

Four of the experimental group passages came from the animal protection group People for the Ethical Treatment of Animals (PETA), specifically their humane education division TeachKind. “Rescued Camels Meet Their Soulmates” was about two saved camels who lived together in a sanctuary. “Florence the Cat” was about a cat who was found in the aftermath of a hurricane. “Freddy on the Run” was about a cow who escaped going to a slaughterhouse. “Miss Willie’s Bucket List” was about the rescue of a neglected dog. The fifth passage was from a New Jersey CCSS preparation guide and it was entitled “The Amazing Penguin Rescue”. This text was about rescuing penguins from an oil spill.

Questions were text-based and the two groups’ texts were obviously different. However, experimental text-based questions were modeled after the control group questions, previously designed by CCSS test experts. They addressed the following CCSS Reading for Information (RI) standards: RI 5.1, RI 5.2, RI 5.3, RI 5.4, RI 5.5, and RI 5.8.

The assessed standards were as follows: RI 5.1 “Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.”; RI 5.2 “Determine two or more main ideas of a text and explain how they are supported by key details; summarize the text.”; RI 5.3 “Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.”; RI 5.4 “Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.”; RI 5.5 “Compare and contrast the overall structure (e.g., chronology, comparison, cause/effect, problem/solution) of events, ideas, concepts, or information in two or more texts.”; RI 5.8 “Explain how an author uses reasons and evidence to support particular points in a text, identifying which reasons and evidence support which point(s).” ([National Governors Association Center for Best Practices, Council of Chief State School 2010](#)).

2.3. Methods

This randomized control trial with constraints used five passages on each of the groups over the course of two months in the first half of a pre-COVID school year. Each of the five passages had four multiple choice questions each. The students’ sixth grade English language arts teacher administered the tests. Students had unlimited time to complete the assessment, but most were finished in under twenty minutes.

Texts were matched using their Flesch-Kincaid Grade Level (FKGL) and Lexile level. FKGL and Lexile are readability evaluations. A passage’s FKGL score aligns the text with a US grade level. The Lexile framework provides a number range for each grade level ([Literacy in Focus 2020](#)). As stated above, these metrics determined that the passages were appropriate for a 5th grade reading level. Matching the control and experimental passage pairing’s word count was also important for a valid comparison of performance.

Table 1 is a summary of the reading passages. The reading difficulty is noted by the Flesch-Kincaid grade level, Lexile level, and the word count. The parity of the difficulties of the experimental and control passages in each pairing is evident in Table 1.

Table 1. Passage Reading Difficulty.

Content Pair	Flesch-Kincaid Readability Level		Word Count		Lexile Level
	Control	Experimental	Control	Experimental	
Accidental Toy (Cntl)					
Florence Cat (Exp)	7.6	7.6	601	615	1000L–1100L
Basketball (Cntl)					
Miss Willie (Exp)	6.7	6.8	755	756	900L–1000L
Bubbology (Cntl)					
Penguin (Exp)	5.7	5.7	632	648	800L–900L
High Volume (Cntl)					
Camel (Exp)	7.3	7.3	729	740	900L–1000L
Toy Story (Cntl)					
Freddy (Exp)	5.9	6	771	760	800L–900L

“Cntl” denotes the control-group passage; “Exp” denotes the experimental-group passage.

3. Results

Table 2 presents the correlations between the measures of reading passage difficulty, computed from the values given in Table 1 except for Lexile level where the levels were transformed into simple ordering of the levels (from 1 to 3). (All correlations are thus Pearson *r*s except for those with Lexile level which are Spearman ρ s.) Neither surprisingly or unintentionally, the measures intercorrelated—especially for, e.g., the word counts for the two groups. This supports the valid measurement of these values, but also means that including all three (FKGL, word count, and Lexile level) in the same regression model would result in non-negligible multicollinearity. FKGLs and word counts did not correlate strongly (largest $r = -0.24$); Lexile level, however correlated rather strongly with the other measures (ρ s from -0.39 to 0.94). Therefore, removing Lexile level from the models while retaining both FKGL and word count allows us to include complementary, non-redundant measures of passage difficulty.

Table 2. Correlations Between Measures of Passage Difficulty.

		Flesch-Kincaid Grade Level		Word Count
		Lexile Level Group	Control Passage	Experimental Passage
Flesch-Kincaid Grade Level	Control Passage	0.944		
	Experimental Passage	0.944	0.998	
Word Count	Control Passage	−0.409	−0.240	−0.193
	Experimental Passage	−0.395	−0.210	−0.166
				0.995

Table 3 presents both the Total and standards-aligned scores for the experimental and control groups. The Total score in this table presents the mean number of all items answered correctly for the members of each group. The standards-aligned scores represent the proportion of items answered correctly (which is one item for all standards except 5.1, which is for two items). We can see from this table that members of the experimental group tended to achieve higher Total scores than members in the control group; in fact, the mean for each group is outside of the 95% confidence interval for the other group (e.g., the control group mean of 2.82 is outside of the 3.25–3.58 confidence interval for the experimental group); we thus conclude that the experimental group’s Total scores were significantly higher than those for the control group.

Table 3. Descriptive Statistics for the Outcomes by Experimental Group. *N* represents the total number of responses toward each outcome not separated out by passage.

Outcome	Group	Mean	95% CI	<i>N</i>	<i>SD</i>
Total	Control	2.82	(2.60–3.03)	93	1.06
	Experimental	3.41	(3.25–3.58)	99	0.84
RI 5.1	Control	0.68	(0.60–0.77)	93	0.42
	Experimental	0.88	(0.83–0.94)	99	0.27
RI 5.2	Control	0.78	(0.69–0.86)	92	0.42
	Experimental	0.75	(0.67–0.84)	98	0.43
RI 5.3	Control	0.69	(0.60–0.79)	92	0.46
	Experimental	0.94	(0.89–0.99)	99	0.24
RI 5.4	Control	0.53	(0.43–0.64)	92	0.50
	Experimental	0.61	(0.51–0.71)	98	0.49
RI 5.5	Control	0.61	(0.51–0.72)	83	0.49
	Experimental	0.86	(0.78–0.93)	85	0.35
RI 5.8	Control	0.61	(0.51–0.72)	85	0.49
	Experimental	0.76	(0.67–0.86)	85	0.43

Looking further at Table 3, we see that this Total score difference between the groups is largely due to significantly better performance of the experimental group on items aligned with Standards RI 5.1, RI 5.8, and especially with Standards RI 5.3 and RI 5.5. The group differences in scores for items aligned with Standards RI 5.2 and RI 5.4 were not significant.

The results of the linear/logistic regressions predicting performance on standard-aligned item scores are summarized in Table 4. To conserve space, this table only presents the regression weight and significance probability for each term in each model. For example, the two cells at the bottom of the 5.1 columns show that the regression weight for the effect of group membership was 0.51, which was significant (with $p < 0.0001$). All terms in the models were z-scores or 0/1 dummy variables, so all regression weights are β weights (i.e., transformed to the same scale as standard deviations). Scores for items aligned with Standard 5.1 were z-scores themselves, so that model did not need to have an intercept term, saving a degree of freedom for the rest of the analyses in that model.

Table 4. β -Weights for Terms in Final Models Predicting Each Reading Standard. Bold-faced, asterisked terms were significant at $\alpha = 0.05$; *t/z*, *df*, and *p* values are not reported to conserve space; cells with “NA” could not be determined.

	5.1		5.2		5.3		5.4		5.5		5.8	
	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>	β	<i>p</i>
Intercept			1.38	<0.0001	1.26	<0.0001	0.37	0.063	1.35	0.002	0.84	0.051
Gender	−0.05	0.407	0.26	0.232	−0.22	0.366	−0.05	0.799	−0.59	0.146	0.75	0.069
IEP	−0.53	<0.0001	−0.51	0.083	−0.77	0.012	−0.56	0.039	−0.77	0.128	−1.43	0.013
ESL	−0.57	0.003	−0.66	0.195	−1.47	0.011	0.12	0.815	−2.03	0.024	−1.81	0.065
Lunch Status	−0.10	0.181	−0.12	0.607	−0.12	0.626	−0.31	0.107	−0.38	0.340	−0.93	0.032
African American	−0.19	0.320	−0.74	0.183	−0.54	0.357	−0.35	0.511	0.55	0.638	0.95	0.505
Asian-American	0.35	0.027	0.00	0.996	0.72	0.231	0.07	0.870	−0.29	0.717	0.09	0.919
Latin-American	−0.13	0.070	−0.19	0.417	−0.23	0.364	0.04	0.828	−0.45	0.294	−0.09	0.817
Group	0.51	<0.0001	−0.12	0.593	2.18	<0.0001	0.30	0.107	1.62	<0.0001	0.87	0.037

Scores for standard 5.1 are z-scores, so there is need for an intercept term; all other standards-based outcome scores are dichotomous. For gender, 0 = male, 1 = female. For IEP status, 0 = no IEP, 1 = has IEP. For ESL, 0 = not ESL, 1 = is ESL student. For lunch status, 0 = not eligible, 1 = eligible for free/reduced-priced lunch. For ethnicities, 0 = is not a member of the given ethnic group, 1 = is a member of that ethnic group; European-Americans are not presented since they served as the referent group for the other ethnicities. For Group, 0 = control group, 1 = experimental group. Bold-faced *f* values are significant at $\alpha = 0.05$.

The results presented in Table 4 for Group mirror the pattern of significances detailed in Table 3: The group differences for Standards 5.1, 5.3, 5.5, and 5.8 all support significantly

better performances for students interacting with animal-content prompts than for those interacting with comparably difficult non-animal prompts. We can also see from Table 4 that students with IEPs as well as those for whom English is a second language (ESL) tended to perform significantly less well than their peers on items aligned with most standards; only in addressing Standard 5.2 did students from these two populations both not perform worse than their peers. Interestingly, poverty—operationalized as Lunch Status—was only once significant—as was membership into an ethnic category; given the larger number of significance tests, these two results pale against the rather robust effects of group membership (as well as IEP and ESL status).

4. Discussion

4.1. Humane Education Improving Motivation and Engagement

In this research, the increased performance of the experimental group may be explained by their enhanced attentiveness to stories about kindness to animals. Because the majority of children have positive feelings toward animals (HSUS 2004), students' improved motivation may have resulted in better academic performance when they are reading about animals on assessments; there is also a link between student motivation and humane education that explicitly includes animals insofar as children are interested in animals (LoBue et al. 2013). If motivation affects academic performance, the results of this experiment appear to be consistent with established research.

Further, engagement with the text could cause students to answer more of the text-based questions correctly. Behavioral indicators of engagement include effort, exertion, persistence, attention, and concentration (Skinner et al. 2009). In order for students to do well in a Common Core-aligned reading assessment, they need to utilize many or all of the above indicators to correctly answer questions. Given their higher scores, one explanation is that the students in the humane education group demonstrated more engagement with the texts they were provided.

While this study addressed middle school students and standards, educational motivation and success can be more difficult as the students get older. There is a decrease in student achievement between middle school and high school (Allensworth and Easton 2005). Unfortunately, when students have an unsuccessful transition to high school and their academic performance declines, it negatively impacts their decisions to drop out of school (Balfanz 2009). Though not directly measured, attentiveness to the reading topics of the experimental group was assumed. The humane education themes used in this research achieved a level of interest and success in the students which can be built on as they enter high school and their academic challenges increase.

4.2. Humane Education Improving Specific Reading for Information (RI) Standards

When one focuses on specific reading standards in the results, the precise areas of improvement become clearer. Experimental group students performed significantly better on Standard RI 5.1. This standard requires students to engage with the story in order to explain the story's explicit message or inference (National Governors Association Center for Best Practices, Council of Chief State School 2010). Students who performed well on questions addressing Standard RI 5.1 may have been interested because of their enhanced curiosity about animals, found in many children.

Reading interest encompasses individual interests as well as text-based interest (Springer et al. 2017). Educational research addressing the needs of unengaged students has led to an understanding that schools should revise what they are doing in order to fit the needs of the students, as opposed to the opposite (Taylor and Parsons 2011). Including more animal protection-based texts is a simple change that may result in more student engagement. This is because students remain highly interested in animal protection. In fact, in a world-wide survey of students that gauged the level of importance they placed on major world social issues, protection of animals and the environment, as well as sustainable development received the highest rating across all 12 countries (Sinclair and Phillips 2017).

Questions addressing Standard RI 5.3 had higher scores from those students who had received the humane education themed passages that included animal themes. This standard focused on explaining the relationship or interaction between events or concepts (National Governors Association Center for Best Practices, Council of Chief State School 2010). This is in line with the habits of a good reader (National Governors Association Center for Best Practices, Council of Chief State School 2010), particularly when it pertains to nonfiction text. The real animal situations that students were reading about in this study might explain their improved performance on questions about interactions and relationships in the text. Research supports this observation. In a study of student perceptions of engagement strategies used by teachers, the majority of those in the study claimed that working on real-world projects was a very beneficial technique (Martin and Bolliger 2018). Of course, both the experimental and control groups received nonfiction passages, with stories occurring in the real world. However, there was an element of assisting the animals who were in real predicaments that may have added to the experimental students' performances.

Standard RI 5.5 addresses causes and effects or problems and solutions. This is the standard requiring a student to compare and contrast (National Governors Association Center for Best Practices, Council of Chief State School 2010). Experimental group students scored significantly better on questions addressing this standard. It is illuminative that the control group, who did not receive humane education animal themed passages, did not score as well on the questions addressing cause and effect or problems and solutions. Problem solving is a cornerstone of humane education. For example, in a study of the program Transformational Humane Education (THE), after four sessions, students felt empowered to find feasible solutions for society (Mims and Waddell 2015). Humane education is intended to inspire student action and encourage solutions-oriented thinking (Weil 2004). Therefore, it is unsurprising that the standard addressing causes and effects or problems and solutions would be improved for those who received humane education passages to read.

Lastly, Standard RI 5.8 demonstrated significantly better performances for experimental group students. This standard promoted student thinking about what reasons or evidence did the author give to support his or her point (National Governors Association Center for Best Practices, Council of Chief State School 2010). Looking for this evidence in order to answer questions correctly requires students to read the text closely or deeply. Close reading involves the students repeatedly reading the text (Reutzel 2020). Perhaps, the students reading humane education themed passages were more willing to reread the text than their control group counterparts. These results are in line with a study of animal-assisted humane education in Hong Kong, in which improvement of reading skills was observed (Ngai et al. 2021). The experimental group's higher performance is not completely surprising to some educators who use animal protection themed humane education lessons in their classrooms. In fact, the results of a 2010 case study demonstrated that educators who used animal protection focused humane education in their teaching, unanimously extolled its benefits on students' intellectual development (Daly and Suggs 2010).

4.3. Humane Education and Societal Benefits

The students who received animal protection themed passages learned about many issues, including proper planning for a pet when an emergency strikes, saving an animal from the cruelty involved in the entertainment or the food industry, and addressing animals' emotional as well as physical needs when they are in a person's care. There is a societal benefit to having students learn those lessons.

Given that approximately 90% of juveniles in the justice system have experienced trauma (Sawyer 2019), it is critically important for humane education, a student empowering and pro-social teaching strategy, to be utilized with this population. Trauma negatively impacts early childhood biopsychosocial development. Affected youth have trouble with attachment bonding and are vulnerable to depression, oppositional defiance, substance

abuse and many other problems that may lead to aggression (Ford et al. 2012). Humane education aims to foster empathy, understanding, and caring about how someone else is feeling. Empathy has been found to lower aggressive behavior in schoolchildren (Castro-Sánchez et al. 2019), making it very important to encourage in the vulnerable student population in juvenile detention facilities to help guide their emotional development and interpersonal functioning.

In this study, results of assessments that contained humane education themes demonstrated improved reading comprehension scores. Other researchers have observed this benefit. Learning about animal welfare topics that impact the real world encourages both brain growth, that is the brain development that encourages more neural connections, as well as increased competencies in students' kinesthetic, spatial, artistic, and interpersonal skills (Itle-Clark 2014). Trauma has a negative impact on cognitive development (Sawyer 2019), which makes it difficult for a traumatized person to learn new things. Therefore, humane education is particularly well suited for students in juvenile facilities, in light of the fact that the overwhelming majority of them have experienced trauma which makes them more challenging to teach.

Additionally, and unsurprisingly, during incarceration, young people have to process a great amount of emotional distress. This population needs additional supports for their learning due to the trauma they have endured in the past, as well as during the time they are kept in government custody. In a study of 14–17-year-old males in a juvenile detention facility, their feelings of anger predicted their violent as well as their non-violent infractions while incarcerated. The study suggested that juvenile justice facilities should address the interaction of anger and depression that young people feel while in the system (Kelly et al. 2019). There is evidence that empathy and/or sympathy helps relationships, contributing to other-oriented prosocial behavior and inhibiting aggressive and antisocial behavior (Eisenberg et al. 2010). In other words, humane education, with its focus on empathy and compassion, might positively impact juveniles during their incarceration, in addition to helping them once they are released.

There exists a growing understanding that prejudicial attitudes that underlie being unkind to nonhuman animals, correlates to other oppressions. This supports the view that infusing humane education throughout the curriculum promotes a more just society overall. According to Caviola et al. (2019), speciesism, i.e., valuing animals less because they are members of another species, often links to other prejudicial attitudes such as racism, sexism, and homophobia. While speciesism may refer to valuing specific nonhuman species to differing degrees (i.e., a dog is valued more than a pig), Caviola et al. (2019) suggest that similar psychological constructs are associated with any type of speciesism (including valuing humans more than animals) and other well-researched forms of prejudice. When assignments and assessments are developed using the lens of humane education, positive values that include kindness to all species of animals, human and nonhuman, are encouraged. Humane education presents students with a model to interact with others more empathetically and compassionately.

In the absence of explicit humane education integration, curriculum can be infused with messaging that promotes speciesism (and perhaps racism, ableism, ageism, and genderism) or maintains a detrimental status quo. There are still many classroom examples of CCSS-aligned reading tasks that convey harmful or negative messages about how to treat animals, other people, and the earth. For example, the nonprofit organization Student Achievement Partners developed the website achievethecore.org to assist educators in preparing their students to do well within Common Core-aligned instruction (Student Achievement Partners n.d.). In a fifth-grade mini assessment supplied on the achievethecore.org website, they excerpted the popular novel *Esperanza Rising*. This line from the novel excerpt discussed animals the following way, "Carmen gave Mama two chickens in an old shopping bag that she tied with string. 'For your future', she said". (Ryan 2002). This information was presented as neutral and without comment. Yet, it sends

children a message about how to treat others who are more vulnerable. It may distress some children who are highly empathetic or vegetarian.

Another popular children's book once used as an anchor text in a unit of study in the famed Lucy Calkins Teacher's College Reading Workshop Model, *Stone Fox* (Gardiner 1980) had a plot point involving animals. The protagonist Little Willy and his dog, Searchlight, entered the National Dogsled Race because they wanted to win the prize. Dog sledding is an industry that some accuse of animal cruelty due to its many demands on the dogs. Selecting materials using a humane education lens prevents some potentially insensitive curriculum choices.

Across diverse populations, humane education is recognized for its benefits to humanity. For example, in a one-year study of humane education for grades 1 and 2 students in China, participants showed significantly greater prosocial development versus the control group who did not receive humane education (Samuels 2018). Ngai et al.'s (2021) Hong Kong study similarly found that students receiving animal-assisted humane education developed increased empathy. Even among nontraditional educators, humane education is recognized as valuable. For example, Bretzlaff-Holstein (2017) made the case that humane education should be used by social workers because it provides a link for helping them pursue justice when working with the students in their care. The overall societal benefits of humane education are becoming increasingly recognized.

It is important to challenge societally disruptive or harmful sentiments harbored by many students, including those in the juvenile justice system. One of the variables associated with juvenile delinquency is anti-social beliefs (Bobbio et al. 2020). These students are in special need of pro-social education and humane education curricula will serve that necessity. In fact, Mims and Waddell (2015) studied students who were at risk and in an alternative school setting and they were able to determine that the humane education lessons those students received helped them be problem solvers for a more just society. Perhaps, if there was more integration of humane education throughout curricula, the need for the juvenile justice system would be reduced.

5. Conclusions

This study suggests that humane education, specifically lessons that contain animal protection messaging, has a positive effect on standards-based student academic performance. It has the ability to motivate and engage students as well as promote pro-social behavior. This research provides support for the idea that the skills needed to succeed on certain reading standards-aligned questions are aided by humane education. Because students who are in the juvenile justice system, expected to learn CCSS-aligned curricula, are in particular need of being motivated academically and encouraged pro-socially, we believe that humane education and its ability to pique student interest would be particularly helpful for that population. This study can be a starting point for applying and researching the effectiveness of humane education on the juvenile justice populations specifically. Further, as an area of future study, environmental preservation and human rights, the other two pillars of humane education, can be connected with the understanding of animal protection as a social justice issue.

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