

Preparing for the Next Natural Disaster: Understanding How Hurricanes Affect Educators and Schooling

Sarah R. Cannon, PhD
Independent Consultant
Washington, DC

Cassandra R. Davis, PhD
Assistant Professor
Department of Public Policy
University of North Carolina
Chapel Hill, NC

Sarah C. Fuller, PhD
Assistant Professor
Department of Public Policy
University of North Carolina
Chapel Hill, NC

Abstract

After a natural disaster hits, schools often focus on a recovery plan that meets the immediate needs of students. Unfortunately, teachers' needs are not prioritized, leaving them to address personal and professional disruptions on their own. We studied 20 school districts in North Carolina and Texas that were affected by Hurricanes Matthew and Harvey. We found that after a hurricane, teachers' experience disruptions in the form of personal damage, damages at school, disruption to the school calendar, and disruption to the class routine. We recommend supporting teachers' physical, social-emotional, and classroom needs to assist and expedite recovery.

Key words

school recovery, educator support, natural disasters, and resiliency

School leaders often face challenging problems; however, sometimes a true crisis arises that test even the most effective leadership. Considering in advance what crises may occur within a district and how school leaders would respond to these crises is a crucial part of being a prepared leader (Bishop et al., 2015; Pepper et al., 2010).

Among these reflections are natural disasters. Every area is at risk for some form of natural disaster and the number of major disasters declarations in the United States has increased since 1953 (Vroman, 2019). Although it is possible to predict the type of natural disaster most likely to affect a given community, the timing and severity of any given disaster is unpredictable. Therefore, it is important for school leadership to consider their plans for recovery after a natural disaster.

This planning should account for what we know about how disasters affect schools. Unfortunately, although the disruption following natural disasters is widespread, few research studies show how they affect schools. Some studies document negative effects on student achievement (Dogan-Ates, 2010; Lamb et al., 2013; Pane et al., 2008; Shannon et al., 1994; Vogel & Vernberg, 1993). Other studies document mental health effects, especially increases in students' symptoms of posttraumatic stress (Baggerly & Ferretti, 2008; Hansel et al., 2013; La Greca et al., 2010, 2013; Lonigan et al., 1994; Neria et al., 2008; Osofsky et al., 2009; Russoniello et al., 2002; Shannon et al., 1994). However, prior research largely focuses on the effect of disasters on students and rarely explores the effect on school personnel.

If we believe in the importance of teachers for student learning, then it is vital to consider how teachers' experiences of a disaster and the recovery mediate the effects of the storm on student learning. How are

teachers affected by a disaster in both their personal and professional life? How can recovery efforts be improved to better help teachers? In order to answer these questions, our research team interviewed teachers, principals, and district superintendents who had been affected by one of the most expensive forms of natural disaster: a hurricane.

This paper studies the impact of and recovery from Hurricane Matthew in North Carolina and Hurricane Harvey in Texas. In this paper, we first provided a brief overview of the two hurricanes and described the interview data. Next, we presented our analysis of how teachers are affected by hurricanes through four forms of disruption: personal damage, damages at school, disruption to the school calendar, and disruption to the class routine. Finally, we conclude with analysis on three areas where districts can support teachers' recovery after a hurricane: physical needs, social-emotional needs, and classroom needs.

The Storms

Hurricane Matthew

On October 8, 2016 Hurricane Matthew arrived at the North Carolina coast. Matthew affected five states, and severely impacted Haiti, the Dominica Republic, and Saint Vincent. The National Oceanic and Atmospheric Administration (NOAA, 2017) estimated that the hurricane created around \$10 billion in damage nationally, which resulted in the destruction of over 100,000 structures. Due to the destruction, the US Federal agencies evacuated approximately 3 million residents from coastal communities. Roughly 3.5 million people between Virginia and Florida were without power, while a quarter of those were located in North Carolina.

Hurricane Harvey

Hurricane Harvey made landfall in Texas on August 25, 2017 and would later severely impact seven states across the US. According

to the NOAA (2018), Hurricane Harvey estimated around \$125 billion in damage, resulting as the second costliest US tropical cyclone in history. In addition to being costly, Harvey released the most tropical cyclone rainfall in history. With at least 103 deaths, Harvey is also the deadliest storm to hit Texas since 1919. To combat the destruction of the storm, the Federal Emergency Management Agency (FEMA) constructed roughly 4,500 trailers and mobile homes, and about 700 emergency shelters to support residents impacted by the storm (FEMA, 2018).

Methods

This study uses data collected between March and October 2018 from 20 districts that were impacted by recent hurricanes. Specifically, we recruited participants from 10 districts in North Carolina that were affected by Hurricane

Matthew in October 2016, and 10 districts in Texas that were affected by Hurricane Harvey in August 2017. For each district, data was collected through one interview with a superintendent-level administrator; three interviews with principals representing the elementary, middle, and high school levels; and one to three group interviews with teachers and other school personnel (Table 1).

Two key differences in data collection between North Carolina and Texas are relevant for this study. First, North Carolina interviews were conducted 18 months after Hurricane Matthew while Texas interviews were six to 13 months after Hurricane Harvey. Second, in North Carolina each participating district had one teacher group interview while in Texas there was one teacher group interview at each participating school.

Table 1

Data Collected From 20 Districts across North Carolina and Texas

	North Carolina	Texas	Total
School personnel group interviews	10	24	34
School-level interviews	29	25	54
District-level interviews	10	10	20
State-level interviews	2	5	7
Total interviews	51	64	115

District Characteristics

Districts were recruited from areas that were heavily damaged by hurricanes, based on data about when schools reopened after the storm and FEMA estimates of damage. The research team recruited districts to represent the

demographics of those affected by the storm in each state. In North Carolina, where the hurricane primarily affected the rural coastline, all but one of the participating districts are classified as rural (Table 2). In Texas, where the hurricane affected rural areas, as well as

Houston's urban and suburban areas, the participating districts include rural, towns, and suburban areas. North Carolina generally has one school district in each county, while Texas often has multiple school districts within a county. This led to North Carolina having a greater average number of schools in each

district than Texas. In Texas, slightly less than half of the students enrolled in participating districts were classified as economically disadvantaged, while in North Carolina a majority of students were identified as economically disadvantaged.

Table 2

Descriptive Statistics on Participating North Carolina and Texas School Districts

	North Carolina	Texas
Average number of schools in district	24.5	15.3
Range of number of schools	8 to 48	2 to 69
Average number of students	13960.0	13585.1
Range of number of students	2,435 to 34,857	511 to 75,428
Average percent economically disadvantaged	82%	47%
Average percent racial/ethnic minorities	62%	51%
Average per pupil expenditure	\$9,031	\$9,649

Data Analysis

The research team coded interview transcripts for emergent themes. The initial transcripts were coded to consensus, and later transcripts were coded by individual researchers.

Hurricanes Effects on Teachers

A primary theme to emerge from interview data was that the storm disrupted life. While the literature acknowledges that students are disrupted by natural disasters, it is important to remember that teachers also experience trauma. We highlight four categories of disruptions that affected teachers: personal damage, damages at school, disruption to the school calendar, and disruption to the class routine.

The first category of disruption is personal damage. School personnel reported being personally impacted by damage to their homes, loss of personal items, and relocation from their homes. Teachers who were displaced reported being less focused on their classroom after the hurricane as compared to other years, simply because they were preoccupied with addressing personal needs at home.

The trauma from dealing with the disaster also affected mental health. Teachers and principals reported dealing with post-traumatic stress and depression after the hurricanes ravaged their communities.

A school administrator recalled the ways in which their teacher's ability to focus on work was diminished by the destruction of the storm. The administrator stated:

[Teachers are] just tired, stressed. They are trying to work with FEMA, they're trying to get contractors ... and they want their house back and that just took priority that takes priority over everything.

At school, teachers were affected by a variety of operational damages. These disruptions ranged from classrooms with minor flooding to the total loss of school buildings. Respondents reported that teachers also lost personal items stored in their classrooms, including supplies they had individually purchased for their classroom to mementos from throughout their career.

Teachers described a rush after the storm to salvage supplies from their classrooms—deciding what needed to be discarded, what could be saved in long-term storage, and what supplies were most necessary for their curriculum until they returned to their classrooms.

In addition to operational damages, teachers were affected by disruptions to the school calendar. Schools lost instructional time due to school closures, absenteeism, and tardiness. Teachers expressed having great concern for “getting back on track” with coursework. In some instances, educators recalled losing anywhere from two to three weeks of instructional time and momentum.

In areas that experienced heavy damage from the storms, schools were closed for two to six weeks until buildings could be repaired, transportation could be restored, and alternative locations were identified for students to attend classes. This loss of class time meant teachers

had less time to cover key content areas required by the state curriculum. One teacher asked:

“How are we going to compact all of that material in the time that we have left in this nine weeks to make sure that we teach everything, and cover all the standards. We can't just start where we are today?”

Another teacher stated:

[The storm] got us off our schedule and teachers like to maintain a schedule. We have a pacing guide that we follow ... so suddenly, [we] were faced with how can we compact and chunk the material that we missed because the children were out of school?

Finally, teachers were disrupted by changes to their classroom routine. Many teachers said it was essential to devote time to their students' social-emotional needs when schools reopened. One teacher specified:

I think it was difficult for the staff to be dealing with it on a personal level, but at the same time, when they walked in the door at school, everything else was checked at the door, they focused on the students.

Additionally, some schools that were not damaged by the storm had an influx of students from other schools. Teachers at these schools had to adapt to a shifting roster of students and ensure their lessons were accessible to new students with varying learning levels and unavailable academic records.

Helping Teachers Recover

The personal damages, damages to schools, disruptions to the school calendar, and disruptions to class routine affect students as well as teachers. Our interviews show that

teachers are integral to helping students recover from hurricanes. Although teachers agreed that meeting the needs of students is the first priority following the hurricane, they reported that their needs were sidelined. Respondents emphasized the importance of supporting teachers' physical, social-emotional, and classroom needs throughout their experience of the storm and its aftermath.

Respondents said that districts can provide teachers with resources to address basic physical needs during the recovery efforts. For example, some respondents valued that they continued to be paid while schools were closed immediately after the storm. This reduces worries about financial burden at a time when teachers are at a critical junction for paying bills and contractors.

Similarly, participants expressed the significance of leadership providing flexibility to address personal issues. In the months after the storm, it is important that teachers have flexible time off to address home repairs during the workday.

Respondents said that teachers need social-emotional support following a storm. Supports to address mental health concerns are necessary in the immediate aftermath of the storm and continue to be needed months into the recovery process. Educators also expressed the need to allow their teachers to grieve and mentally recover at their own pace:

I think to give the teachers a sense of security and the permission to allow themselves to go through this and have ups and downs, I think just knowing that they were supported in all that they were doing in the sacrifices they were making so that we could provide this for the kids.

Finally, respondents said that teachers need support in restructuring their curriculum

to fit the compressed instructional time following the storm. Some schools attempted to recover lost learning time—using snow days, eliminating in-service, and extending the school day.

However, teachers reported that these attempts at recovering time was not beneficial. For them, the extended time did not significantly impact their instruction and missing the necessary breaks proved to exhaust them further. Instead, teachers wanted guidance about where to resume teaching when schools reopened. Some teachers consolidated the lost learning time by looking at what was missed and skipped units by “trimming the fat” off lessons. Other teachers recalled their curriculum to be “crunched” as compared to previous years. One teacher said:

“We just had to cover [the content] quickly and not as thorough as what we’d have covered this year. We made it to the end.”

Teachers turned to peers for support in modifying lessons to address students' social-emotional needs. Multiple teachers said they had increased journal writing or other reflective writing exercises to help students' process feelings about the storm and to open lines of communication.

Some teachers recognized that students learned from their experiences in the storm and tried to relate their content to the general effects of the hurricane. Overall, participants argued that providing resources for teachers following a storm, allows them to focus on meeting the needs of their students and assist school-wide recovery.

Respondents emphasized the importance of supporting teachers' physical, social-emotional, and classroom needs

throughout their experience of the storm and its aftermath. When asked to describe what went well following the storm, an administrator described the unity and collegiality of their peers. The administrator stated:

“People came together. A lot of empathy was shown. Teachers opened up their homes for family members ... the close-knit community, the transparency of all of us working together.”

Conclusion

In this paper, we analyzed interviews from teachers, principals, and district superintendents who had been affected by hurricanes to better understand the challenges that teachers face after a disaster. We find that hurricanes have a variety of ways of disrupting teachers’ lives.

Teachers may experience destruction of property at home and at school, requiring time and finances to repair. The needs of the classroom may shift to address students’ social-emotional condition and to compress curriculum into a shortened school calendar. During recovery efforts, teachers take on additional roles as emergency responders.

During these times of crisis, district and school leaders should be prepared to support teachers. Our analysis suggests some key questions that leaders consider when creating crisis management plans:

- How can a district help address teachers’ physical needs? Are teachers paid if school is unexpectedly closed? How is this accounted for in the budget? Is there a policy for emergency leave to allow teachers to deal with personal property? When is it enacted?
- How can a district help address teachers’ social-emotional needs? What mental health professionals are able to provide services to students and teachers after a crisis? How long would they be able to provide services?
- How can a district help address teachers’ curricula needs? How would the curricula be compressed if schools are closed for an extended time? Who would lead this effort? Are there people at the state level or beyond who could advise teachers on revising pacing guides? How are teachers equipped to recognize prior gaps in student learning?
- Is there professional development to help teachers address students’ social-emotional needs after a disaster? How could the curriculum be compressed if schools are closed for an extended time? Who would lead this effort? Are there people at the state level or beyond who could advise teachers on adjusting the curriculum?

Every disaster brings unique challenges that will ultimately disrupt schooling. During the recovery process, educators make personal and professional sacrifices to ensure that schools return to normal and that students’ needs are fully met.

Although, none of the educators we interviewed disagreed with this emphasis on students, educators expressed feeling left behind in the overall recovery process. We believe that helping teachers recover from a disaster is key to facilitating school-wide recovery.

Author Biographies

Sarah Cannon is an independent consultant based out of Washington, DC with a doctorate in public policy from Northwestern University. Her research interest includes school and community relationships and mixed methods research. She also specializes in protocol development and conducting interviews with school-level personnel. E-mail cannonsr@gmail.com

Cassandra Davis is a research assistant professor of public policy at the University of North Carolina at Chapel Hill. She continues to collaborate with schools on investigating the best ways to recover from a natural disaster. Her current areas of interest include education policy, the impact of natural disaster on schools and communities, program evaluation, qualitative research methods, and the social and historical context in education. E-mail: enrichar@email.unc.edu

Sarah Fuller is a research assistant professor in the department of public policy at the University of North Carolina. She has published research on the effect of natural disasters on educational outcomes using administrative data similar to the data that is used for this project. Research interests are in education policy, early childhood development, social stratification, and quantitative research methods. E-mail: sarah.fuller@unc.edu

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