Flooding & Schools: Experiences from the Hull Floods of 2007

Abstract

In 2007 Hull was severely flooded with 8600 households and most of the schools affected. No studies of the impact of floods on teachers and schools in the UK appear to have been published before. The impact of the floods on Hull teachers was studied in two stages, firstly through correspondence with Hull City Council and mailed questionnaire to 91 Head teachers of primary, secondary and special schools. In the second stage, in-depth interviews were conducted with Head teachers from 6 flooded schools representing different degrees of flood experience, and 8 teachers from the same schools completed a questionnaire.

The findings show the importance and the complexity of the role of the school in the wider community at times of crisis. Respondents reported severe impacts on Head teachers, teachers and students. The study raises issues over preparedness for floods, support for schools, impact on teachers and students, including educational attainment, and flood protection for schools.

Keywords: Flooded schools, floods and teachers, flood preparedness and protection, school and community.

Introduction

The central place of schools in communities enables them to play important roles in recovery from disasters, and they are commonly designated in emergency plans as shelters / reception centres (Defra 2010: P 155). On the other hand, schools are also identified in emergency plans as places where vulnerable people are concentrated (op. cit. Pp 79, 151) and therefore merit special consideration for flood planning. There is very limited research on the impact of flooding – and disasters in general - on this particular vulnerable group and its setting, and this study aims to offer some introductory observations through examining the experiences of teachers whose schools were flooded in Hull in 2007.

The summer of 2007 brought widespread floods to England and the worst affected areas were the Midlands (Gloucestershire, Worcestershire) and Yorkshire (Humberside, East Riding). According to the Meteorological Office (no date) over three times the average June rainfall fell over much of the West Midlands, Lincolnshire, Yorkshire and Humber, and over four times the June average in some places. In Hull, June 2007 was the wettest month on record with 256.3 mm of rainfall. In these and other areas there were widespread media

reports of flooding of houses, businesses and public buildings including schools. Major flood events almost inevitably affect education, and according to the Department of Children, Schools & Families (DCSF), the floods of summer of 2007 in England affected 857 schools with 21 schools not reopening on time in September and 27 schools requiring temporary accommodation in September 2007 (DCSF News Centre 2007). Recovery was extremely costly. The overall cost to insurers was estimated at £1.5 - £3 billion; the Government offered a £14 million package, adding £4 million to this later. The model used by DCSF to allocate repair costs was based on student numbers rather than the actual costs and there was a large gap between these actual losses and the coverage from Government and insurers.The Pitt Review (2008) subsequently reported £37.76 million damage to schools across the UK as a result of the 2007 floods. However, there is also likely to be an educational cost due to the impacts of disruption and displacement on students and teachers . A study of the Carlisle floods of 2005 also identified the loss of resource material and students' school or examination work, and suggested that these floods affected students' ' examination results (Carlisle Council, 2008). Another study of the same flood event reported displaced school students being taunted in their new schools over their homeless status, and suffering a loss of confidence (Carroll et al 2006). Weems et al (2009) report negative effects on the academic performance of 9th grade students in New Orleans (see also Fothergill and Peek, 2006, Vail, 2006) after Hurricane Katrina, and Selvidge (2008), a teacher, tells the story of the 'rebirth' of her school after this event, and how it has been a stabilising force in the community. In the UK , published information on the impact on schools and teachers appears to be restricted to grey literature, schools' or councils' websites, and national and local newspapers.

The literature on the experiences of children following a disaster (e.g. Blom, 1986; McFarlane, 1987; Saylor, 1993; Vogel and Vernberg, 1993; Lonigan et al., 1994; Shelby and Tredinnick, 1995; Gibbs, 1996; Lubit et al., 2003, Weems et al., 2009) and more specifically on the way that flooding has affected children (Earls et al., 1988; Swenson et al., 1996; Saigh et al., 1998; Childs et al., 2004) focuses on children's personal experiences,. The levels of post-traumatic stress disorder (PTSD) which are common in the short term (Swenson et al 1996) and which sometimes persist following exposure to a traumatic event may be regarded as the 'normal' reactions of those people exposed to an abnormal disaster event (Alexander and Wells, 1991; Yehuda et al., 1998), but they are nonetheless significant in their potential effects on students' abilities to learn.

Despite this growing body of literature, both Anderson (2005) and Fothergill and Peek (2006) argue that important areas have been under-studied, including more nuanced research regarding the impacts of disasters on children.

Similar to Fothergill and Peak (2006), we draw on Anderson's (2005) call for more nuanced research on children and disasters, and whilst the primary focus of this paper is the

experience of teaching staff at schools affected by floods, this also throws considerable light on how the floods affected children.

In terms of emergency planning, the England Flood Emergency Framework recognises the vulnerable nature of schools, but provides only general advice (Defra 2010). In the US, more specific advice is offered to schools, but in the context of emergencies more generally (Kano & Bourque 2007, US Department of Education 2006). The US situation differs somewhat from that in the UK, with 'most schools' having 'established emergency management plans' (US Department of Education 2006 p 1), although they are 'often not comprehensive' (op cit). It further differs from the policy context in the UK where emergency planning is located firmly in the public sector. In the mixed economy of the US, schools may make choices over partners for collaboration in emergency management (Robinson 2011).

Erikson (1994) suggests that disasters create a separation between 'insiders' and 'outsiders' and that 'insiders' not only need to be listened to, but that they develop special expertise out of their experiences that is of great potential value (see also Convery et al 2008, Whittle et al, 2010).

Our approach for this paper therefore draws on the insights of phenomenology; we want to convey something of the lived experience of teaching staff who worked through the flood event and subsequent recovery period. Through these situated retellings of individual and collective flood stories, we explore the following research questions: What were the impacts of the flood on teaching staff? How did they believe the disaster affected educational provision and standards? How did they believe it affected students? Finally, we discuss the roles schools can play in disaster situations.

Hull Study

Methods

The project was divided into two stages. Stage 1 consisted of obtaining background information from Hull City Council in order to establish the parameters of this flooding event with regard to schools, and to inform our research strategy. We then devised a questionnaire which we mailed to Head teachers of all primary, secondary and special schools in Hull. Stage 2 consisted of semi structured face-to- face interviews with the Head teachers of selected schools and a questionnaire left at those schools for teachers to complete and return by mail. Since the information obtained from the Council informed the research design, a brief summary of the flood event and the way it affected schools follows.

Stage One: The flood event in Hull

The geographical position of Hull makes it susceptible to flooding. According to Hull City Council (2007), the majority of land within the council boundaries has a high risk of flooding from both rivers and the sea (approximately 90% of the city is within a flood plain). Whilst there are flood defences in place (including the Hull Tidal Surge Barrier) to counter such threats, the floods that devastated the city in 2007 came not from rivers or the sea but from an excess of rainfall (Whittle et al, 2010). The intensity of rainfall on June 15th and 25th – respectively getting over 70mm and 110mm during this period – overwhelmed Hull's drainage system and much of the city was flooded (Coulthard *et al.* 2007). An independent review of the Hull floods (Coulthard et al, 2007) reported that 8,600 households and 20,000 people were affected, 2681 households were displaced, 1400 people were living in caravans (ie static trailers) and 6300 in alternative accommodation. In January 2008 there were 1383 properties still incomplete (Johnson, 2008).

At the time of the floods there were 31,000 children and young people under the age of 18 resident in the city. In January 2008, information from schools revealed that the number of children still displaced and living in caravans or on the upstairs floors of houses was 1497 (981 in primary schools, 503 in secondary schools and 13 in special schools) (Johnson, 2008). Of the 99 schools in the city, 90 were affected by the floods, with 80 primary and secondary schools experiencing temporary closures; 38 suffering minor damage and 43 severely damaged. Around 114,000 student school days were lost (Coulthard et al, 2007).

Hull City Council divided the schools into four categories according to the amount of damage. Those that were severely damaged and not expected to reopen by September 2007 were labelled 'gold' (8 primary, 2 secondary, 1 special). Those requiring significant structural repair but were deemed likely to open in September 2007 were labelled 'silver' (11 primary, 5 secondary schools). 'Bronze' schools (20 primary, 2 secondary, 5 special schools) were those that had been damaged but could still operate, whilst the fourth category covered limited internal damage. In September 2007, 7 primary , 1 secondary and 1 special school had to be relocated and 6 nurseries remained closed (Johnson, 2008).

Stage One : questionnaire to Head Teachers

The Head teachers' questionnaire was sent to a total of 91 schools, 71 primary, 14 secondary and 6 special schools listed on the Hull CC website. It consisted of 20 open-ended topic-based questions derived from this initial information and the literature on experiences of flooding, enabling a certain amount of freedom for respondents to express themselves in writing on the topics of:- school closures; flooding; help to other schools; damage to the school; impact on the head teacher, teachers and students; temporary facilities; costs; use

of floods in the curriculum; lessons learned. The incorporation of flooding and flood experiences in the curriculum has been reported elsewhere (authors' ref). Replies were received from 58 (82%) primary schools, 9 (64%) secondary schools and 5 (83%) special schools, a total of 72 (80%). Of these, 43 were flooded schools (36 primary, 5 secondary and 2 special schools), whilst the remaining 29 schools were not flooded (22 primary, 4 secondary and 3 special schools). No replies were received from 19 schools (13 primary, 5 secondary and 1 special school).

For the stage 2 interviews, flood-affected primary and secondary schools (5 primary and 1 secondary) were purposefully selected on the basis of the extent of flood damage. Head teachers from 2 gold, 2 silver and 2 bronze schools (see Hull City Council's classification system, above) were contacted for interview. Interview questions followed the main themes of the questionnaire but allowed for more in- depth replies. All interviews were digitally recorded and transcribed and data were analysed using a constant comparison method, where each item is compared with the rest of the data to establish and refine analytical categories (Pope et al, 2000). Whilst our research approach was primarily qualitative and case-study driven, the dataset had sufficient breadth (questionnaires) and depth (interviews) for us to be confident that we have captured the range of flood experiences in Hull schools. Draft copies of the research report and this paper were also sent to the study schools as a form of verification. Responses were taken into consideration in redrafting both. In the following findings section, the quotes are from the completed questionnaires and interviews and the attribution codes refer to the interview or questionnaire number, for example 83.Q is questionnaire 83 and 62.I is interview 62. The section is structured according to 4 major themes to emerge from the data analysis: the initial flood event; damage to the school; impacts on teaching staff; impacts on students

Findings

The onset of flooding

The Head teachers and staff reported surprise at the amount of rain and the speed of the flooding in their schools. This is illustrated by two powerful accounts from Head Teachers which set the scene for the 'devastating impacts' that followed. These accounts reveal their sudden entry into a new and rapidly changing situation which brought immense pressure and the need for highly complex logistics. They had health and safety concerns about the students, for whom they had to manage a safe and swift removal from the school. They turned to the business of clearing up the school which required them to perform tasks 'outside their job description' such as clearing up resources and contaminated equipment. They had to make decisions about opening, arrangements for teaching in alternative

accommodation where appropriate, either in temporary accommodation, mobile classrooms or on different sites. The questionnaires revealed that, on the day of the floods, two schools had examinations, and another school was being inspected by Ofsted. Another school was ready to send a group of students on a residential field trip which had to be cancelled (resulting in an ongoing dispute about payment). Even schools not so badly affected had many of the same logistical issues to cope with, such as sudden closure, clearing up operations, loss of resources and reopening difficulties.

Damage to the School and its impacts

Structure & resources

Many of the head teachers' comments about the damage to the school were similar.They included damage to the boiler room, leaks from the roof and ceiling, damaged floors and floor coverings, resources and equipment, furniture, offices, play grounds (also damaged due to contractors) and playing fields. Although many schools report how quickly the contractors got to work and completed the repairs during the school summer holidays not all head teachers were happy with the work. Twenty months after the floods some schools had not been fully repaired.

> "Yes, snagging of refurb was endless, builders left before work was complete, work left undone, eg, white boards, ICT connectivity, quality of refit, eg taking out solid wood beech benches and cupboard and replacing with MDF, replaced all toilet seats because refurb type of such poor quality. All weather play surface, flooding due to relaying without drainage. Drains constantly blocked because of waste tipped down etc and so on ..." (Special school, 89.Q).

Cost

Many of the schools did not know or did not state the cost of damage. This was being handled by the Council. We were given estimates from 20 schools which ranged from the low hundreds to £5 million. Some schools reported that they were still in dispute with insurance companies, for example, one primary school was still pursuing a claim for an outstanding £7K associated with overtime, skip hire and site preparation. Surprisingly, 10 schools reported that they were not insured. Hull City Council has reported costs of over £15 million to restore flood damaged schools and that it expected to recover over £5 million from insurance and £4 million for business interruption. It also expected to bear a signficant shortfall.

Premises

Some schools (7 primary, 2 secondary and 1 special school) reported that they were forced to use temporary accommodation such as mobile classrooms, facilities in other schools and even at Hull University. This meant that students were dispersed on to more than one site, which made for logistical and educational difficulties for staff and students.

> "We used a mobile as a classroom which is normally used for community groups and put 2 classes in the hall. The HT (head teacher) and office staff worked in any available alcoves." (68.Q)

> "Two local Primaries gave up previously unused sections of their buildings from Sept. to Feb. The local secondary school provided accommodation from June until the end of the summer term." (65.Q).

> "Temporary containers for office and admin block on school car park, three different sites including one refurbished primary school with two mobiles added, one mobile placed on a special school site and one day centre vacated for our use from September to Feb/Easter 2008. Other temporary facilities provided last two weeks in July 2007." (89.Q).

Whilst some of relocation was perhaps inevitable given the scale of the flooding, it nevertheless caused disruption to students and parents and added significantly to the workload of teaching staff

Support over relocation

The willingness of schools and other institutions to cooperate and help each other with temporary facilities and resources was a notable and positive feature of the floods. The head teacher of a secondary school which housed primary school students said it was a very 'difficult time and disruptive for [their] school but it was a privilege to do so'. Such support from the wider community was most evident in the immediate aftermath. In the longer term, there were respondents who also described how there was not just damage to the structure and fabric of the school, there was also damage to its 'heart and soul' and place in the community.

> "That was then and this is now and that sense of community disappeared after a short time." (62.I)

> "The heart has gone out of this school really because it was such a lovely school. We will put it back but it is not the same." (67.I)

> "We simply believe that our school offered our children the greatest point of stability." (45.I)

This latter comment about stability shows the importance of the school in this type of disaster (see also Selvidge (2008), Convery et al (2010)). The other two responses reveal that attachment and identity bonds between the school and community had been affected, and even broken in some cases. The school is more than the sum of its buildings, staff and students, and the terms "heart and soul" reveal a further almost indefinable quality of about its character, philosophy and purpose. Schools also play a vital role in the community. There is an element here of Erikson's (1976, 1994) 'loss of communality and loss of 'navigational equipment' that may follow after the immediate crisis, and which becomes part of the 'community trauma'. Such comments echo comments regarding property and community in other floods (Carroll et al, 2009; Tapsell & Tunstall, 2008).

Impact on Head Teachers

Added responsibilities

Time had to be found for organising school closures and reopening, making arrangements for students, temporary facilities, and checking the loss and replacement of equipment and resources. All this took place at the expense of normal duties, and so there was a huge increase in workload to deal with the disruption and reorganisation. As one head teacher explains, the effects continued twenty months after the floods.

> "The affect [sic] is still tangible and I literally could not go through that again. We are still awaiting more 'drying out' work, have just had the skirtings removed and the plaster is still on an amber reading. The effect was devastating. We lost all our offices, phones, computers, files, contracts, records, everything! 4 classrooms and the staffroom had to be completely refurnished and everything in them was lost. We printed reports 1 at a time at home and worked in cupboards using laptops. We are still discovering lost items!" (68.Q)

This extra workload also extended the range of tasks required and demanded high levels of organisation and planning skills, including:- rearranging classrooms, finding and arranging alternative accommodation at other sites, making transport arrangements and managing with restricted space and loss of playground and outside facilities. An example is given by these two head teachers:

> "For 8 months the children were transported to 2 different buildings whilst admin remained [at the school]. This required significant levels of planning and organisation." (65.I)

> "There were the initial problems of opening again and then managing a school which was then a partial building site through to May 2008" (85.I).

Head teachers and other staff also had not only to deal on-site with with heating, hot water and boiler issues, sanitising the equipment, replacing equipment, working with contractors, but also off-site, due to the wider impacts of school closures,. Some head teachers were in school every day during the summer holidays, dealing with contractors, caretaker and cleaning staff (who also worked long hours). Head teachers reported themselves and other staff being under huge pressure and suffering from stress.

> "Emotionally draining, doubled workload." (66. Q)

> "Workload was increased, feeling exhausted, project managing building work for full 6 weeks holiday. Unable to take a break. Finding out missing contents, ordering new equipment time consuming". (62.Q)

> "Yes, I was between sites and in school for most of the summer holiday, co-ordinating the drying out process and building work." (60.Q)

> "It was a nightmare, and the whole of my summer was spent in the school…to be honest you lost the heart. I was personally so tired already because of the long hours I had been working over the summer with no break and then you were into the term and are still having to unpack resources. We have done it but it wasn't an easy process." (66.I)

Sickness

The comments above begin to allude to the emotional and physical effects of an exhausting regime. Respondents believed that this had led to an increase in sickness.

> "Previous head resigned, shortly after moving back in (related to stress of upheaval?). Senior Staff still on sickness absence due to stress started by the flood."(89.Q)

> "My job is to run the school, not to direct the rebuilding of the school. There was a lot of goodwill and a lot of people who lost their holidays. Teachers do need a holiday. It's no good going from one academic year straight into the next academic year. What I did find is that I was quite ill with colds and things which I am not normally, but because I have not had that break and you just can't do that. (46.I)

The head teachers were clearly carrying out work well beyond their 'job descriptions' Similarly to Whittle et al (2010), we found that the role of head teachers post-flood became

increasingly focused on managing the recovery process. They had to acquire new skills in order to manage the reconstruction of their schools and had to do this at the same time as managing everyday school life. There is evidence of impacts on their health and their ability to perform their normal functions. Our evidence suggests that the schools coped as well as they did through an enormous amount of goodwill from staff, who were frequently working holiday entitlements and long hours.

Impact on other teaching staff

Additional workloads

Head teachers referred to the "Dunkirk spirit" of staff and noted they too were doing things beyond their work terms and conditions in the interests of getting the school working again. As already discussed, teaching staff had to cope with disruption at the start of the school year, working in temporary classrooms, alternative sites, unfamiliar surroundings, with shortages of resources and without resources that had not been replaced. They suffered from extra workloads, felt stressed and their morale was affected. It should also be noted that Council managerial staff also worked additional hours.

Records and assessments

Assessment and reporting was badly affected as records had been lost.

> "All records were lost and assessment reporting was difficult, we had raw scores as data but there was no question analysis. Everyone was shattered and we all donned our wellies to put our school back together and put a 'brave face' on for the children.' (68.Q)

> "Made it extremely difficult to do curriculum work. Yes, (irreplaceable items lost) children's work assessment books, reading scheme. Felt like we have to start from scratch."(46.I)

Curriculum

As the comment above suggests, there was also disruption to the curriculum, and some subjects simply could not be taught due to lack of special resources and facilities.

> " keep things as normal as possible, keep as much of a timetable as we could. The casualty subject were things like ICT because we didn't have computers and we couldn't do art because we didn't have any water in the classrooms, so we stuck to

the core curriculum." (65.I)

Yes, as equipment was sparse, there was no interactive white board facilities and following the normal curriculum was less of a priority than a safe, structured routine." (68.Q)

'People were writing the timetable for the week and we would have to rewrite it the next week depending what was available … People doing science were told they could definitely have rooms back from Friday afternoon and Friday would come and they would be told it wasn't ready' (85.I)

Reduced contact time

Dispersion of students meant that the school day was shortened due to the requirements of travel to different sites. This too affected the way that teaching was delivered.

"Transporting the children lost 1 hour per day teaching time. Resources were limited and some parts of the curriculum could not be taught. Students suffered in this year at school. Many were also suffering disruption due to flooding of their own homes." (85.I)

"Teachers & students bussed to another school, no resources, unfamiliar surroundings." (46 Q)

Home and workplace both flooded

Some teaching staff were trying to cope with all the difficulties at school and at the same time deal with personal disruption as their own homes were flooded.

"Staff were putting up with coming in from homes where they were flooded out and having to nip back to deal with builders, and coming in to find they were in temporary (accommodation) that might be changed two weeks down the line. " (85.I).

"Devastating! Some staff were coping with homes being flooded as well. Emotionally traumatic. Caused additional work because of clean up." (63.Q).

"My own home was flooded and therefore my own life and teaching was affected due to lack of space and equipment. As I am still out of my property it is difficult to balance the task of sorting this along with my work load as a teacher." (8.Q).

Such accounts raise questions about the adequacy of support for teachers in emergency plans and over longer-term recovery.

Impact on students

Head teachers reported negative effects on children's behaviour, attitudes and attainment. Many children had to tolerate disruption at home including relocation and living in restricted space such as mobile homes, as well as disruption at school. It is therefore difficult, if not impossible, to ascertain how much each type of disruption has affected the children's behaviour, attitudes and attainment.

Attainment

The floods came in June and July 2007 so they did not affect the testing (SATS) or examination (GCSE) results for 2007, which had already been completed. However, it was believed that they affected attainment the following year.

> "The results achieved at both CSE and KS3 show very clearly that the students suffered in this year at school. We have been arguing with the Exam Board long and hard. If you get a personal thing that upsets you, for example if your hamster dies, they will give you special consideration. If your school is flooded out to a depth of 5 feet and you miss 5 weeks of lessons and all your coursework they give you nothing. The regulations don't allow it. The letters they send back are basically saying that it is up to the school to provide the right facilities. For example ICT was one of the last things we got back in May, so from June 26th in Y10 to May in year 11 didn't have full access to ICT facilities yet they were judged as if they had. The board argument is that they cannot make allowance if the school hasn't got proper facilities." (85.I)

In this case the local Member of Parliament and Government Minister was involved in the deputation to the examination board.

> "The impact on those children was reflected in their results and standards last year, and the Local Authority begrudgingly admitted that it would have had an impact. So the legacy of the floods have been that standards have fallen for those children who were most affected". (66.I.)

> "We have noticed quite a dramatic effect. The children who were in the nursery were not statutory age so we could make no provision for them ..... before the summer holidays so those children had about 10 weeks where they didn't have any schooling and that has had a dramatic effect on the speaking and listening skills of those children, which has only become apparent as it filters through the school." (46.I)

An interesting (and related) vignette is provided by an October 2008 article from a local newspaper website (This is Hull & East Riding). Entitled 'Help students hit by exam wash-out' (This is Hull & East Riding , 2008), the article reported that Sydney Smith Secondary School, one of the most badly affected schools in Hull had attained lower than predicted GCSE grades; only 23% of students gained the government benchmark of five A* to C grades, though it had been expected that this would be 30% or above. This led to the head teacher travelling to London along with a student, a parent and education officials to put the case for 'revisiting' the grades to David Bell, the then permanent secretary at the Department for Children, Schools and Families. As a result 175 exam papers were reviewed and almost 100 grades changed. A later article on the same website (This is Hull & East Riding, 2009) recounts the story of a Sydney Smith student who was forced to stay in a hotel for a month after floods wrecked her home. She lost coursework and struggled to revise, eventually ending up with a series of D grades. After the exam board reviewed her papers and acknowledged the impact of flooding on her performance, her grades were changed to Cs. Interestingly, the initial story led to a number of comments (16), some of which were supportive but a number of posts were critical, seeing this as an excuse for poor school performance.

In response to the critical comments, former students and parents posted about the impacts of the flood on education:

> I am speaking from experience as I was one of the students in that year…we all had to fit TWO years of c/w [coursework] and project building into ONE year. It was hard and my grades suffered due to the floods I was expected to get all Cs and maybe a few Bs and I didn't reach those grades but I did get enough to go to college. ... m otofm y classm a home was destryoed as well." (former student)

Behaviour and attitudes

Some Head Teachers described the way in which disrupted and changed circumstances both at school and at home seemed to have affected students' behaviour and attitudes :

> "All books, records, drawers etc from 4 classes were lost and all our literacy resources. Children who had always taken a pride in their environments stopped

being so attentive as there was a debris everywhere." (68.Q).

"All student records and personal possessions were lost. Learning opportunities and lack of resources impacted negatively and affected students' attitudes." (65.Q).

"Some children struggled with health and some with behaviour." (46.Q).

There were many comments about the difficulties of the children's home life and environment.

"Whilst we had pumps etc in school & dehumidifiers many of our families had no assistance and home visiting was one of the most humbling experiences of my life. By Friday, 4 days after the flood families were still without electricity with all their possessions piled on tables in an attempt to keep them dry." (65.I)

"Many were traumatised – especially if it rained at a later date. Some children had to move to alternative accommodation. Difficult to measure impact on work but it did have a negative impact." (63.Q).

"Some (students) had to move into hotels, temporary accommodation or in with family members coming to them. Longer day because of travel distance, unsettled children because of disruption. Occasionally late to school due to distance travelled from temporary accommodation." (58.Q)

"If theirs was a street that had been flooded they would all go to different places, so some would be in caravans in their street, some would be off with grandparents and the worst case was where father and son were with one grandma and mother and daughter were with another grandma. He found it upsetting being away from his family, but he appreciated that neither grandma had got a big enough house to take in all four. Other people would be re-sited over to East of Hull or somewhere you don't know anybody so your group of friends have all been broken up and I think it affected quite a lot." (85.I).

The wide ranging issues affecting children are also raised by Johnson (2008) who cites examples such as the lack of personal space and privacy at home to do homework, loss of possessions, lack of sleep due to crowded accommodation, stress among parents leading to arguments and depression, separated families, health issues due to cold and damp and other adverse living conditions, and the overall effects of school closures and relocation. The report also noted an increase in aggressive responses from parents and disturbed and disruptive behaviour among children.

Elsewhere (Convery et al, 2010) we have discussed in detail how schools responded to behavioural changes in students and in particular how 'circle time', an in-class discussion

approach most often linked with addressing self-esteem and the emotional and behavioural needs of children, was successfully used in some schools to create an emotionally safe space for students to explore what they thought and felt (see Lang, 1998; Miller & Moran, 2007). Similarly, Fothergill and Peek (2006) report that in New Orleans it helped children if they could talk with someone they knew and trusted. Despite some success with circle time, however, schools in Hull noted that they often lacked potentially valuable information about the living conditions and difficulties experienced by students and their families (Taylor, 2008).

Discussion

Preparedness for flooding in schools

Although the City of Hull has a high risk of flooding (Hull City Council, 2007), it appears that schools were not prepared for floods on the scale of the summer of 2007 and the most vulnerable schools did not have flood protection in place. The lack of flood preparedness may in part be due to low awareness of risk, and a lack of prior experience of flooding. Some were not insured. A top-down institutional approach, with a command and control structure unable to cope when circumstances confounded expectations also exacerbated events (Coulthard et al., 2007). We would argue that local policies have tended to underestimate the risks to public buildings such as schools and the economic and educational impact from severe flooding. Thus, neither the most vulnerable schools nor recently built schools incorporated flood protection measures, whilst some schools were underinsured and Government grants were inadequate. One of the outcomes of the floods is that that all new schools in Hull will be subject to flood risk assessment and will incorporate flood protection as appropriate. We would argue that this should be a requirement for all existing vulnerable and new schools everywhere.

As Erikson argues, those who have experienced a disaster gain valuable knowledge (Erikson 1994). The head teachers in our study were anxious to share the understandings they had gained and gave some very simple practical advice. In order to protect important resources and equipment, for example, they advise that all books and equipment where possible should be stored in waterproof containers and above potential flood levels; furniture should be made of plastic or metal; and all drains should be cleaned regularly. They also offered advice which would help the management of a flood crisis, such as having a disaster plan linked to that of the Council so work would be shared, and having a named officer to liaise with parents and community. Whilst Hull Council does have a 58 page Emergency Plan which includes lessons from the 2007 floods (Hull CC, 2008), this is a general document which covers all types of crisis and does not incorporate the practical suggestions which the

head teachers have offered in this study. We suggest that schools should draw up an action plan to cover these practical steps as pre-emergency plans and develop a full list of appropriate actions. These could be obtained through a debriefing session of all schools, organised strategically. This would have the additional merit of being an active adaptation and self-help process, which would strengthen resilience and co-operation between schools.

Length of time effects persisted

Adverse effects from the floods persisted twenty months afterwards. The legacy was apparent in the community with homes not yet fully restored and some families still in temporary accommodation. It was also apparent in schools:-school days lost through closure; schools not yet fully operating as normal; buildings still needing attention (sometimes due to poor workmanship); resources and equipment lost; and not least, in the reaction of staff and students when it rains heavily again. Not so apparent is the impact on the head teacher and teaching staff, such as their ability to carry out their jobs and function at their expected level having lost materials and records whilst also suffering from stress themselves. The longer term educational cost on the students, such as the impact on their attainment, behaviour and health is also under-reported and requires further research.

Students' attainment

Loss of equipment, teaching resources and student records also brought an inability to deliver some parts of the curriculum (ICT, PE, Art, Science were badly affected), along with school days lost to closure, time lost in travel. It is therefore not surprising that teachers believed students' attainment had suffered. The complex web of issues make this difficult to quantify and to demonstrate. However, teachers presented evidence of such effects at all stages, from speaking and listening skills to statutory tests and examinations. Furthermore this has an impact on the schools themselves since Government policies on publishing attainment levels and league tables now affects reputation and student recruitment. There is no good time for a flood but, from some points of view, the timing was fortunate in that, as it was shortly before the long summer break, there were not as many school days lost to closure and disruption as there would have been at other times of the year. The summer holidays gave some schools the opportunity to get the repairs and refurbishment completed, and gave them a longer time to catch up with test and examination work. However, staff also had to forego holidays while they prepared schools for re-opening.

The foregoing supports a case for holding tests at a time which is suitable for the students and the school rather than a stipulated time by the government. Flood situations may

strengthen the case of those teachers and trades unions who are opposed to the SATs (Standard Attainment Tests). In the case of the GCSE results the appeal of the school to take account the flood circumstances of the school met with no success, as in the case of a Carlisle school in 2005, even with backing of the Council and local MP who was a member of the Cabinet. The comment by the Head teacher that "if your hamster dies, they will give you special consideration" may be facetious, but shows the way individual special circumstances may be given consideration but not school circumstances, such as a severe flood and long term disruption. It would appear that it is now time for the Examination boards to consider revising their regulations to provide special compensation for schools and students in times of disasters.

Doubling of flood impacts

There were students who were doubly disadvantaged due to flooding at home and at school. On top of these difficulties, it was reported by schools that children suffered from psychological and physical health issues, and this is in line with Carroll et al (2006) and Tapsell & Tunstall (2008).

There were also teachers who were doubly affected, being flooded at home and at school. The potential for extreme levels of stress as a result needs to be recognised and appropriate support made available.

Personal resilience

On the surface, Head teachers' advice about maintaining a positive attitude and being prepared mentally may appear superficial and not as useful as 'putting resources in plastic containers'. But it could well have a more profound effect on the management of the floods and their impacts through people's ability to make decisions and foster resilience as indicated in other flood research on the health and social impacts of floods (Carroll et al, 2009; Tapsell & Tunstall, 2008). However, the way that such attitudes are maintained is complex; we must also bear in mind those who observe that they could not cope a second time. This issue deserves further in-depth investigation.

Community support and engagement

One of the positive findings from the Hull flood disaster was the community engagement of some schools, reflecting a construction of schools' positions at the centre of communities. There were very positive feelings reported within and between school communities, with schools extending their roles, housing other schools unable to open; sharing facilities or offering resources, equipment or labour. In line with common practice in disaster plans, schools operated specifically for relief, eg as drop-in food centres. Opening up as soon as possible in spite of difficulties was regarded as a priority (Selvidge 2008; findings from this

research reported elsewhere: authors' ref).These are also examples of the school as 'social power houses' (Coulthard, 2007) and fostering a sense of belonging and mattering, bonding and integration (McMillan & Chavis, 1986), particularly crucial at the time during a crisis, when everyday relationships, routines and normality are damaged or destroyed, and attachment bonds to the community disrupted (Carroll et al, 2009). The school reopening as soon as possible reflects its significant role in communities. It was prioritised by teaching staff in order to maintain stability, some sense of normality and security of relationships, noted also by Selvidge (2008) in New Orleans. Similarly, Fothergill and Peek (2006:105) note that '*having their children settled into a good educational setting* (in post Katrina New Orleans) *appeared to be a top priority for almost all of the parents.'* Thus schools provide some of the essential services of the normal community (Cheminais, 2007; Ball, 1998) to meet the needs of a community in crisis, helping to repair the 'loss of communality' and 'navigational equipment' (Erikson, 1976, 1994). However some schools suffered (eg 'the school lost its heart') and the re-drawing of the emotional landscapes of 'community' resulted in the sense of the school's normal community disappearing (Convery et al 2008).

Another effect of this community engagement is the impact on individual and community resilience. Resilience has multiple aspects and diverse meanings in the disaster literature and research, such as resistance, ability to absorb disturbance and recover, learning and adaptation, and continuity (Paton & Johnston, 2001; Watson et al, 2008). Teachers clearly believed in the schools' ability to function as a social support mechanism, which in turn engendered a sense of community, enhanced perceived control and empowerment and appeared to strengthen community resilience. This points the way to including community engagement policies into schools' disaster preparedness and policy plans.

Information

According to Taylor (2008), schools in Hull reported a lack of detailed information about the living conditions and difficulties experienced by students and their families, and our evidence suggests that whilst schools did gather information about the home situation of students and their families, approaches varied from school to school. There is, therefore, scope for schools to gather data in a more structured, systematic manner in order to better support students and teachers. Indeed, given the central role schools can play post-disaster, they are in an excellent position to gather data that might be shared with other agencies (not withstanding the usual caveats around data management, storage and sharing).

Conclusion

This study raises some important issues and questions concerning flooding and schools. Whittle et al (2010:6) state that flood recovery is a long and difficult process with no clear beginning or end point. Far from showing a steady process of improvement, it is punctuated by a distinct series of 'highs and lows'. This was certainly the case with the school sector in Hull, and the long and difficult recovery and reconstruction process had a significant impact on both teaching staff and students. Most teaching staff carried out work well beyond their 'job descriptions'', but this was particularly true of head teachers, who became heavily involved with managing the recovery and reconstruction process.

The flood-related impact on schools, head teachers and staff reported in this study provides evidence that schools need to be better prepared for floods, to re-evaluate their disaster plans, and the necessary support for the immediate recovery to be built into school and Local Authorities' emergency plans. This includes the need to recognise that flooding (and other disasters) is likely to affect the educational attainment of students. Schools invariably had to fight to get examination results reviewed and there was a sense that national Examination boards did not fully appreciate the situation faced by teaching staff, parents and students in preparing for the summer exams.

Where possible in disasters, the school is well placed to take a central role in community projects. But in times of crisis the boundaries of 'community' become re-drawn, and support for schools to play this role must take account of these complexities. Alongside the documented economic costs, the emotional and educational impacts outlined in the paper provide a strong case for protecting vulnerable schools from floods as part of a national and local protection and management policy.

Finally, it is clear that there is considerable scope for further research in this emerging field. The focus on a specific setting – in this case, the school – has revealed a variety of important issues, and suggests that further settings-based research would be valuable. We would also endorse the call by Fothergill and Peak (2006) for more research into the impact of disasters on children's social worlds, including their individual lives, relationships, and schooling. More specifically, research is needed on the longer term educational cost on students, such as the impact on their attainment and behaviour.

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