

Counter-storytelling in science: authoring a place in the worlds of science and community

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Angela Calabrese Barton and Tara O'Neill document how young people from a deprived inner-city school construct their own stories of science by making a video, transforming substantive school science into a medium that promotes active dialogue between them and their schoolfriends. Three themes emerge from this analysis: the importance of place, cross-cultural fusion or 'hybridity', and renegotiation of authority. This analysis shows that in making science come alive for the participants the students created novel contexts for science and citizenship.

In this chapter we explore the experiences of five middle-school young people from a low-income community and their 20-minute video about 'life and science' in the inner city they produced as part of a voluntary after-school programme. We view the video project as an example of the students' efforts to tell their 'counter-stories' of middle-school science. We develop three themes around counter-storytelling in science: sense of place, hybridity and reconstructing authority. We use these findings to challenge standard notions of achievement in science, which is especially relevant given that the young people in this chapter attend a 'failing school'. We conclude with a discussion of the ways in which this video project might advance our understandings of the relationship between teaching and learning science, and citizenship.

Introduction

In the closing four minutes and 15 seconds of *What We Bring to Science*,¹ a 20-minute video about what five sixth-grade (11 and 12 years old) students know about science and want others to understand, the song 'The World's Greatest', sung by R Kelly, plays prominently in the background. Timed with the lyrics, 37 scenes fade in and out, each one blended into the next, and each lasting between four and eight seconds. The scenes, some of which are still photos, some of which are video, move rhythmically between images of the neighbourhood, the school, the science classroom and the schoolyard. In each of the images the young people are always positioned in-action, talking and/or doing science in ways that deeply reflect their lives inside and outside of school.

The combination of images and song express the emotion of these young people that they are more than children who live in a dangerous neighbourhood and attend a failing school. They are the hope of their neighbourhood and the school. They are students who strive to blend their sense of place with their science knowledge in order to better everyone's understanding of themselves and their neighbourhood. In this final scene we are immediately struck by the juxtaposition of young people enacting a sense of place and importance in the worlds of school and science, and images of a school and neighbourhood known throughout the city as a place of despair – of students failing school, of schools failing communities, of too many lives ended too soon.

Yet a frame-by-frame analysis of the final scene reveals stubborn young people, physically and artistically positioning themselves as powerful, dominant and positive members of their neighbourhood and their school community. These scenes, serving as a final storyline, recap the earlier episodes presented in the video. In nearly all of the scenes, young people loom in the foreground of their pictures, with blurred activity happening behind them. Ten scenes show young people doing science in out-of-school settings in ways that combine their activity and knowledge of how the world works, such as the scenes where young people are running, dancing, planting flowers or playing basketball (see figure 1).

Six scenes highlight young people's accomplishments in school science through the presentation of student work and showing images of students participating in school science classes and after-school programmes (see figure 2). Six more scenes show images of young people debating scientific ideas in a variety of contexts (see figure 3).

As the montage's still photos and video clips fade in and out in time to the music, one gets the sense that the young people are seeking to position themselves with epistemic authority, on equal



Above, from top to bottom:
Figure 1: planting flowers behind the school.

Figure 2: holding up science poster from school science.

Figure 3: debating 'who knows science' in the district science lab classroom.

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footing with their teachers and other school leaders. As the scenes flash from school to neighbourhood, one also gets the sense that the young people who made this movie make claim to their city and their place within it. For example, nine scenes show neighbourhood hotspots, young people hanging out, or issues of concern such as the trash piles or a street known for gang fights. The despair that often dominates the talk about this and similar neighbourhoods in popular media and research is conspicuously absent from this closing scene, replaced by a message of what these young people indeed do bring to science – intellectually, materially and culturally.

We begin with this overview of the final scene of *What We Bring to Science* because in our work with urban young people growing up in economically impoverished communities we witness time and time again the myriad of creative and artistic ways they seek to author spaces for participation in science and in their worlds (Calabrese Barton, 1998; Rahm, 2002). If one were to view the video production *What We Bring to Science* with only the knowledge that it was generated by sixth-grade students in a voluntary programme, we predict that not many would guess the video was produced by a group of young people who attend school in the poorest community in New York City with the lowest city test scores. The combination of who the young people are, where they come from and the story they want to tell is what brings power to their message.

School science typically emphasises the importance of developing conceptual understandings of scientific phenomena, with little attention given to how or why students might use scientific ideas or thinking in their engagement with life outside of schools. In the remainder of this chapter we unpack the video production, *What We Bring to Science*, in order to demonstrate the problem of just *how* it is we come to know young people and how this frames what we expect of them as science learners and members of a larger global

society. Their constructions in the video project are an example of their efforts to create spaces for ‘counter-stories’ of middle-school science. We develop three themes around counter-storytelling in science: sense of place, hybridity and reconstructing authority. Our discussion of the young people’s role in the video will challenge standard notions of achievement in science, which is especially relevant given that the young people in this chapter attend a ‘failing school’. We conclude with a discussion of the ways in which this video project might advance our understandings of the relationship between science and citizenship.

Counter-storytelling and urban young people

The discourse surrounding urban science education in the USA has tended to focus on the problems or challenges faced primarily by young people from low-income and African-American and Latina/o backgrounds. By and large, students from these demographic groups are lagging behind their peers in school success as evidenced by high-stakes achievement scores, grades and admission to selective high schools and colleges. At the same time, they often attend schools that are vastly under-resourced in terms of curricular materials, laboratory equipment, course offerings, and experienced and qualified teachers. While this discourse captures a dimension of life in urban schooling that is real and problematic, it offers a very narrow depiction of what it means to be urban, African-American, Latina/o, or low-income. It “essentializes and wipes out the complexities and richness of a group’s cultural life” (Montecinos, 1995, p. 293) and limits the education community’s abilities to respond to the needs and development of such young people.

Scholars from critical race theory have argued that it is important to move outside of discourses of problem, failure and deficit to understand and act upon the experiences of marginalised individuals (Delgado and Stefanic, 2001). They argue that we need to find ways to understand how issues of race and ethnicity

intersect with class and gender to frame not only the experiences individuals have but also how those experiences are understood and taken up by others – for example, the need to uncover how institutional stories, like those about school failure and achievement, the authority of science, and who can participate in science, are not neutral or objective. Further, these scholars argue about the need of marginalised students to tell of new ways of understanding the challenges and possibilities of urban education. It is from this standpoint that we believe counter-storytelling to be vitally important.

Counter-storytelling has been defined by Delgado (1995) as the telling of stories of and by people whose experiences are not often told, such as low-income African-American and Latina/o young people in urban schools. Counter-storytelling can serve as a tool for exposing, analysing and challenging the stories of those in power, which are often a part of dominant discourse. Counter-storytelling can build community among those at the margins, challenge the perceived wisdom of those at society's centre by providing a context to transform established belief systems, and show new and different possibilities by combining elements of the story and the current reality.

Urban young people engage in counter-storytelling all of the time, whether or not the story is recognised by those in schools or by dominant society at large. Indeed, storytelling has a rich and continuing tradition in African-American and Latina/o communities. We believe that counter-storytelling is an especially important way to understand how urban young people choose to engage with science and how they seek to use science to establish their participation in society. While the counter-stories of urban young people take many forms – from their everyday recounting of personal experience in the classroom to the co-construction of narratives in after-school banter – we have become particularly interested in how a group of five young people constructed a more

formal counter-story about science and their lives through digital storytelling.

Urban young people telling counter-stories

The Fabulous Five

What We Bring to Science was made by a group of five sixth-grade students (Star, Melanie, Jose, Jasmine and Adel)² as part of a voluntary after-school and lunchtime science–technology club. The students named their production group Fabulous Five because there were five of them and they thought they were “fabulous”. The Fabulous Five investigated, wrote and produced the movie with the support of their club teacher (Tara O’Neill), with the goal of presenting a completed movie to the entire sixth-grade community – about 180 students. The theme of the movie focused on what they felt they brought to science and how they would use it to teach others science. As Adel explains (see figure 4):

The main focus of this video is to make people that do not know, people that know very little, very little about science, for them to understand. Instead of giving them the science textbook, which would take years for them to finally understand it, we are taking the textbook, breaking it down into pieces for them and then when they see our video they will understand it easier.

The students in the Fabulous Five attended a large streamed or settled ‘failing’ neighbourhood middle school that serves a predominantly low-income and African-American and Hispanic population. The members of the Fabulous Five reflected the ethnic, social and economic make-up of the school: two of the students were Puerto Rican, one was Dominican, one was first-generation American with both parents from Ghana, and one was African-American. All of the students qualified for free school meals. The school structured its classes around a tracking system consisting of honours, moderate and lower-level classes. One of



Above:
Figure 4: Adel explaining
the purpose of the movie.
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the students was in the honors class while the other four were in the lower-level class.

To understand the intentions of the Fabulous Five as they set out to tell their science counter-story it is important to understand how the video project and the Fabulous Five came into existence. The Fabulous Five was initially started when one of the students, Star, asked Tara if he could help her edit some video footage Tara had taken during a science and literacy project that she, Angie³ and the teachers had conducted at their school. Tara agreed and suggested that Star invite a group of friends. The group expanded beyond Star's friends as two other students who had heard about the project joined in. At the third meeting of the club the students collectively informed Tara they wanted to make “[their] own movie about science,” implying that the video footage of their classroom lives did not capture what they wanted others to ‘learn’ about them. They had told us that they did not find the video of their classrooms very interesting and that they wanted to use the cameras to film things about science they cared about. They were clear that they were less interested in watching their teachers talk than in having the opportunity to capture themselves and their peers on film talking and doing science. While the narrative of *What We Bring to Science* unfolded over time as students moved through the various phases of production, the conversation at this third meeting brought to the surface the young people’s desires to use film to ‘give voice in science’ to themselves and their peers.

Tara and Angie agreed, and the group settled upon making a movie about how they viewed and used science in their everyday lives. The group first generated a storyboard for their movie, deciding upon both the content storyline and how to generate the information needed for the movie. They decided that they would: (a) interview their classmates to determine what they cared about with respect to science, and that they would use these ideas as the key themes of their movie; (b) collect much of their video footage

outside of their school in order to explain how their lives mattered in science; and (c) not have adults, such as teachers or parents, appear as the science experts. They wanted the movie to be about what they brought to science, and believed that they were the experts on this topic.

The Fabulous Five's counter-storytelling

The video opens with ominous music playing in the background and a clap of thunder as “presented by... The Fabulous Five” runs across the screen in red text set against a black background. The video then shifts immediately in tone and feel by presenting a view of the front of the school, with Adel standing in front. Star narrates: “This is our school. This is where we do all our work. And whoever is seeing this video, I hope they like it. This is our territory,” (see figure 5). As the camera pans away from the school and into the neighbourhood a steady urban music beat fades in. The next minute and a half provide moving images of the neighbourhood as the young people move around the sidewalk perimeter of their school, filming as they go. Cars and buses ride by the front of the school. Elevated subway trains move back and forth, with their rumble overpowering the young people’s talk. The camera glides by trash piles on the sidewalks, and presents an image of a five-storey school building taken from behind the metal fence that bounds and separates the school from its neighbourhood (see figure 6). The tour is highlighted by a close-up of a street locally referred to as ‘Broken Hill’ because of the almost gravel-like consistency of the pavement and a guided walk down another local street on the opposite end of the school block called ‘Snake Hill’ (see figure 7). The students explain that “we named it Snake Hill” because it winds around like a snake. Melanie explains that her father says Snake Hill “reminds him of the Dominican Republic where he grew up”.

The images are then disrupted by the title frame, which, like the beginning frame, presents red text with a black backdrop. Six-and-a-half minutes are then taken up by a series of scenes that involve



Above, from top to bottom:
Figure 5: Star in the opening scene.

Figure 6: Fabulous Five's school.

Figure 7: Snake Hill.

Figure 8: skin debate.

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young people talking about science. The major thrust of the talk is about 'knowing science'. While Adel leads most of these short scenes by playing the role of reporter and asking her peers what they think about science, some of these scenes involve young people debating ideas that they want others to know something about. For example, in one scene, Adel, Melanie and Jose are in the school science laboratory discussing with each other why they all have a slightly different skin colour from each other (see figure 8). Jose argues that skin colour is due to the sun, but is interrupted by Melanie explaining that "skin has melanin and darker skin has more melanin than lighter skin". Adel then turns to the camera and offers an explanation that is a compromise of sorts. She explains:

You turn darker by a sun tan. [Pointing to Jose, a lighter-skinned student] He has less melanin, so he has the ability, if he goes out into the sun, he will turn darker faster than me. He will turn darker quicker than I will turn darker. It will take him approximately to my calculations five minutes and me ten minutes [to turn the same amount of darkness]. (8'07–8'27)

These formal scenes of young people talking science are divided by short, poignant clips, which call into question exactly how science is being defined or taken up in the video. Clearly, in the scene above, how young people think about and present the challenge of talking science centres on their lived experiences in a racialised world. Whether it actually takes Adel an extra five minutes in the sun to become as dark as Jose is not really as central as how the young people raise the problem of understanding and explaining skin pigmentation.

In another scene, a student is standing in the science lab describing how everyone knows science: "I think everyone knows science. You do science every day. If you recycle, that's science." The image cuts quickly to a cat walking under a car carrying a dead rat in its mouth and Star reporting: "That's how life is. People eat people. Animals

eat animals.” Again, we see the urban experiences of the young people framing how they ‘know science’. The Fabulous Five were excited to include the cat scene because they believed it reflected how life is in the inner city. At the same time it conjured up an example of a standard middle-school science topic – the food chain. Another example involves a clip of a young boy asking the question: “Are y’all doing that science thing?” This clip is repeated six times during the video, and is repeatedly used to challenge the viewer to consider ‘what is that science thing?’

While many of the scenes show young people talking about science in the classroom setting, the focus of their talk is often more personal than a classroom setting conveys. For example, Adel interviews a fellow sixth-grader, Rita, who states that “science to me is very important because you learn what you got inside of you. And what nutrients you need. The reason why I mostly like science is that I want to be a doctor when I grow up.” This interview and two others similar to it are sandwiched with close-up views of a student’s eyes and mouth, a boy dancing, and the “Are y’all doing that science thing?” clip. Many of the examples used by the students to talk about science in their lives also connect deeply to the kinds of activities that young people are typically engaged in but are not often talked about as science, like dance or cats eating rats. As Adel says, “I wasn’t going to consider dancing part of science, but then when you just said it, I was like oh yeah dancing, when you move you use up energy and sweat, so that is a form of science.”

The next four-and-a-half minutes shifts focus from talking about and doing science in school to the neighbourhood and the young people’s roles and lives in that setting. The mood shifts as the song ‘That’s Just the Way it is’ (by Bruce Hornsby) comes into the background. Star opens the transition by stating: “This is our neighbourhood. There is not much to know other than it is dangerous. I be here most of the time.” Vivid images and stories of



Above, from top to bottom:
Figure 9: backside view of the school.

Figure 10: graffiti in school yard.

Figure 11: Jason dancing.

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the neighbourhood are presented. The school is again viewed through the metal bars that separate it from the neighbourhood (see figure 9). The young people pan in on a detailed graffiti illustration at the back end of the schoolyard and different streets running to and from the schoolyard (figure 10). At one point, the students co-narrate a description of Snake Hill, a residential neighbourhood setting directly behind the school:

Star: We walking through Snake Hill. We named it as Snake Hill. Not us –

Melanie: My father says it reminds him of [the Dominican Republic] because it turns, its like it goes from there.

Star: It's not just us in particular. It's not just us in particular.

As the students lead the viewer to the bottom of Snake Hill the viewer is taken just outside of the far end of the schoolyard and across the street from the beginning of Davidson Avenue, where the young people explain:

Star: See this is the most dangerous street of all. There be shootouts over here. I wouldn't like to be here.

Melanie: It be crazy. That's why I go up this way. You saw my mother [walking up the hill and around to avoid this street], we don't walk here. I would not like to be here. That's why I go this way [pointing back up Snake Hill].

Star: Davidson, there be shootouts and everything.

Melanie: Yea, slicin' people. It be crazy.

Star: I don't want to be on this street.

Ironically (or perhaps not so ironically), as the students narrate this story in real time, a police siren can be heard blazing, adding both a sense of urgency and depth to their story. Yet the scene easily fades into the next, showing a group of girls, then two of the Fabulous Five dancing with verve and youthful optimism (figure 11):

Melanie: Go ahead keep on dancin’.

Adel and Star dance their way towards the camera. As they approach, Melanie begins to direct their dancing.

Melanie: Star, shake.

As Star is shaking to the beat, he takes off his hat to put it on in dance step. However, his hat comes over his eyes and he states:

Star: That was not supposed to happen.

Melanie: But it did.

While the tone of this second section is heavy at times, the young people reflect resilience to their situation, reminding the viewer that “that’s just the way it is” and despite the challenges they “keep on dancin’”. This last scene bleeds into the final scene discussed at the beginning of the chapter.

Making sense of the Fabulous Five’s counter-story: valuing place, hybridity and authority

There are many things we, as teachers and researchers, have learned about what the Fabulous Five bring to science, including a deep interest in understanding how their bodies work, a desire to make science accessible to younger people, and a strong sense of pride in identifying themselves as people who know and do science. Cutting across these themes are vibrant messages of the role of place in science learning, the importance of hybridity and reconstructions of authority.

Valuing place

A sense of place, or a living ecological dialectic relationship between a person and a place, plays a vital role in how individuals and communities make meaning in the world (Gruenwald, 2003). Yet, in an age in US education politics when an ‘anywhere and

anytime' approach to establishing national standards and assessments dominates, seeing place in students' constructions of their worlds is often given short shrift. Place, however, foregrounds what the Fabulous Five bring to science. The theme of what the young people know about science is driven by their place-based experiences of playing basketball, dancing, graffiti art, skin colour and test-driven school practices. Their talk about the science in these experiences is drawn from several sources, blending more subjective talk of their feelings and experiences with more objective, science-like talk. For example, in the movie (3'55–8'31), the Fabulous Five first interview students to find out what they think science is. Interviews with several students reveal a common theme to be understanding our bodies: "When it comes to science I am learning about myself. I am learning about what I got inside of me," (Star, 5'56–6'03). Interspersing these interviews are short scenes where members of the Fabulous Five can be seen discussing or debating with their peers ideas about how the body works, such as why we sweat, and why different colours of skin tan at different rates. Peppered throughout their talk are references to family experiences, textbook ideas, knowledge gained from reading product labels, and personal feelings and opinions, such as when Melanie describes her experiences on the playground and at the store: "Let's say if you want to buy Clorox. So then, it says [on the bottle] how the Clorox was made. What's the ingredients. What it does. What does it do if you have it on your hand."

'Place' is a complex term, involving not just the physical location in which something takes place, but also the social, cultural, political and historical dimensions. Young people's talk about and knowledge of science throughout the movie is operationalised along many dimensions of place, including history, geography, culture, and biology. For example, in the scene where they capture the close-up image of the cat walking under the car with a rat in its mouth (see figure 12), the students seamlessly move between talk about the food chain and cultural politics: "That's how life is.

People eat people. Animals eat animals,” (Star, 3’41–3’49). In the two scenes prior to the cat scene, there is a clip where three students are discussing how Native Americans’ knowledge of how plants grow is related to science (figure 13). As explained by two of the three students being interviewed:

Student 1: You know how, like a lot time ago, like the Native Americans, they live in the wilderness and they would get everything they need from the wilderness.

Student 2: Oh, yeah they know science!

Student 1: Yeah, they have to know science because that’s basically the way they lived.

Student 2: They won’t survive, they survived by growing stuff so...

Student 1: Yeah, so they have like a knowledge of science.

Thus it is not just ‘who’ knows science that is framed interdimensionally, but also ‘what’ it means to know science.

Hybridity

Young people draw upon their sense of place to produce new, heterogeneous, hybrid knowledge and identities that characterise their engagement with science. *What We Bring to Science* offers a glimpse into how young people take up knowledge, resources and identities in novel ways that often go unsanctioned by school science. For example, the perspectives of members of the Fabulous Five and their viewers are those of particular kinds of learners in science with an access to science not always explicitly granted in science class. Melanie explained a third of the way into the movie:

We are making this so we could be able to teach younger students what we have learned with our teachers and about like let’s say somebody in our class. I think it was Natalie or Raquel asked how come when you go in the water your fingers get wrinkly. Well, we don’t have an answer for that yet but we’ll find



Above, from top to bottom:
Figure 12: cat under car.

Figure 13: students discussing how Native Americans know science.

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out. Just like the eighth-graders get science and they probably know about that. So they could probably make a video so they could show it to younger students like we're doing. So we could show it to the fifth-graders, fourth-graders, and the third-graders. (8'32-9'06)

We see hybridity in the choices the Fabulous Five make in their video presentation. The blending of music selections with scientific talk, of dancing and hanging out with school work, of neighbourhood scenes with school scenes, and of social status with epistemic status reveals just how dynamic their efforts to foster hybridity are. A good example is the final scene referenced at the beginning of this chapter. In three minutes, 37 scenes are shown where young people are positioned in-action, talking about or doing science that is culturally relevant. Of the 37 scenes, over half take place outside of school with young people blending talk of neighbourhoods with talk of science. As explained by members of the Fabulous Five to their audience at a pre-conference session of the 2003 annual meeting of the National Association for Research in Science Teaching:

Adel: At the beginning of the movie we figured that all we're going to do is listen to Mr M, our science teacher last year, listen to him for a change so we could put it in the movie, and we could put it in the movie in a fun way. Then when we saw that, um, the things that we're learning...was outside [in the neighbourhood].

Audience: How did you decide what to put in the movie?

Star: We decided to put in the movie whatever concerned science like whatever we were trying to say. We decided that everything we showed we were going to write it on the bottom of the screen like say the ball was bouncing we going to say that's this is gravity and running it's like energy. We didn't have a chance

to do that so we just explained it in less words.
Jose: We showed them [younger students] what life science is. We talked about the melanin. We showed the cat eating the rat, and all that.

Thus, in the video we can see how young people orient themselves in ways different from what is usual in their school setting. The young people used science content from their school science classes and experiential knowledge from their neighbourhood to create a new means of participating in and a new conceptual understanding of science. In creating these hybrid moments, the Fabulous Five were able to claim authority in a context (school science) where such power had often been denied.

Reconstructing authority

The students used the video project as a way of participating and expressing epistemic authority in science. The Fabulous Five used two tools to gain epistemic authority. First, the students centred their discussions of science content in the movie on information that had been taught in their sixth-grade science class. They then purposefully shifted the focus of this content away from school science by basing the explanation of the content in the real-life context of their lives and the community. They also used interviews with students and student explanations of science concepts to make the point that this is not just a movie about young people, but about science. Like the melanin example described earlier, students weigh in as experts on how “sweat helps a runner” and why it is that Native Americans knew science because they grew food and needed to use science to survive.

Secondly, the students’ narrative was marked by the absence of teachers or other adult voices. Many of the students in the video project described feeling that they were not an important part of their science class because their ideas were always less important than those presented by their teachers or their science texts. In the

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video project, the students had both time and space to voice their ideas and experiences in ways that aligned with the practice of school science as well as challenging the traditional practice of school science. For example, students often dutifully worked on tasks assigned by us such as the preparation of the storyboards or in selecting and researching topics that are traditional school science topics (such as the role of melanin in skin colour). Yet students also transformed these activities in order to make their experiences a part of them (for instance, when they use their understanding of melanin and skin colour to make numerical estimates of how long it would take for a person of a particular skin type to tan).

By being able to express their ideas, the students were able to demonstrate science capabilities that they felt were not valued in their school science classes and explain to others what they (as opposed to their teachers or a textbook) felt science was:

- Tara: So, looking back on it are you glad you did it?
If so, why?
- Star: Yeah, because it was fun. It was a different experience than a regular project.
- Tara: Why was it a different experience than a regular project?
- Star: Because we had science and the real world out there and we had to put it together. We looked at everything and then we had to relate it to science.
- Tara: So, what was different about that?
- Star: You never see a teacher do a project like that. They don't assign projects like that.

In the end, what is made purposefully clear in the video as well as by Star in the quote above is that the Fabulous Five did not want to be excluded from science. To the contrary, this sense of exclusion in school science seemed to power their drive to produce a movie about the parts of themselves and science that they felt school science had missed. The Fabulous Five seized the opportunity of the video project to show others (their teachers, their peers and the greater community) that they could participate in science in ways that went above and beyond what had been expected of them. Instead of being excluded from science, the Fabulous Five used the video project to actively create their own narrative in science. By focusing all of their examples of science around topics and activities they had done (or could do) themselves, the Fabulous Five indicated that science was not just something done by other people in other places.

Conclusions

Producing *What We Bring to Science* generated the voice of young people in science, to explore what they cared about and to ‘prove’ their value in science and in their school community. As Star explains:

- Star: Our whole argument was all about that we wanted to be professionals. We wanted to be professionals. We wanted to make a movie where people would be like, wow.
- Tara: But, why did it matter that it was perfect?
- Star: From my point of view, I guess we wanted to show what we were made of. To show other people that even though we were young or despite whatever grade we were in, that we were still smart and we were capable of doing whatever they did. If they did it we could do it too. We’re not less than them.

Engaging counter-storytelling in science education we believe helps not only to dismantle stereotypes of who low-income urban young people are and what they bring to science, but also to challenge and expand the role of science education in fostering citizenship. It has often been written in the USA that students need to acquire a knowledge base and set of skills in order to participate in society as thoughtful, contributing members. Yet the Fabulous Five's counter-story reveals that the relationship between science and citizenship is much more complex, and involves the ongoing interactions young people have in society.

We acknowledge and place value on the ways in which young people's engagement in science in everyday life is intertwined with economics, politics, power and values, and has to do with their immediate rather than future lives. While the young people were not engaged in a community-wide problem, such as their community's enduring struggles with air quality and quality healthcare, they were immersed in their own equally valuable problem: how to raise the question of who can do science and what that looks like.

The Fabulous Five's production of *What We Bring to Science* is a story that counters the popular media picture of urban young people as disengaged, inexperienced and unaccomplished science students. Members of the group expressed frustration with school science because they felt that it was fundamentally about the ideas of the teacher and the science text. That they attended a school on the state's failing list and were submitted to page-a-day curriculum reform that often took the form of test preparation and basic skills development demonstrates that they placed as central their desire to educate others in ways that involve the learner. According to the Fabulous Five (FF), during a pre-session presentation at the 2003 annual meeting of the National Association for Research in Science Teaching, their mission was successful.

Jose: To me the whole movie was worth it because I left the school knowing that I got to show little kids what science really is in a better way than just in the classroom teaching them.

Audience: So would you say that teaching this way of you guys doing projects is better than the normal classroom way?

FF: Yeah!

Audience: Have you shown this to the teachers at your school?

FF: Yes.

Audience: Did it change any of their ways of teaching?

Star: Yeah.

Jasmine: Some of them.

Audience: Some of them. You're not going to get everybody right?

Star: Mostly science teachers.

Audience: So you got a few of them to change their style?

Star: Yeah, like Ms A. Sometimes she don't teach with textbooks no more.

Jose: We used to read out of a boring textbook, that's all we used to do.

Tara: Do you think that's a direct relation to seeing this movie?

Adel: Yeah, like Mr M. Last year he would just get on the projector and write like three pages of notes and put it and he'd say copy them, and he'd go sit down and when we leave class we're like uh what just happened and nobody will go back into their notes to read all that. So after he saw the movie it changed his way of teaching a lot.

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- 1 See <http://getcity.org/counterstory.html> to watch the video.
- 2 All names used in the text are pseudonyms.
- 3 One of the authors.

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