How One Implementation of an Educational Innovation Died

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Abstract: The problem of sustaining and spreading educational innovations is one that has vexed many researchers. The flipside of this question, equally important, is what leads to the 'death' of educational innovations? Here, to shed light on this question, we provide an autopsy on the death of one local implementation of an otherwise successful STEAM exploration program called FUSE.

The problem of sustaining and spreading educational innovations is one that has vexed many researchers. While it is important to study how educational innovations succeed and spread, it is also important to understand how educational innovations fail. One way they may fail is to become 'lethal mutations' (Brown & Campione, 1996)—modifications that so depart from the original philosophy that the innovation becomes unrecognizable. In some cases, implementations die altogether. As Cole has argued, studying how implementations die is critically important (Cole, no date). Here, we conduct, one such autopsy.

This case study is part of a larger study of the spread of a specific educational innovation called FUSE Studios, a STEAM learning environment in which students choose tangible, digital, and hybrid tangible-digital challenges based on their interests. They complete these challenges at their own pace, individually or collaboratively, supported by a website that provides many resources and allows them to track their progress. FUSE has grown from two afterschool implementations in 2012 to 200, mostly in-school implementations across the U.S. and in Helsinki, Finland. In prior work, we have shown how FUSE has spread and been adapted successfully, while maintaining integrity to its core design principles (Stevens, et al., 2018).

In framing our current investigation, we draw on Actor Network Theory (e.g., Latour, 2005). We draw two specific, framing principles from ANT: (1) as an innovation is adopted into new contexts, it undergoes translations (Callon, 1986) through which it is adapted; and (2) the persistence of an educational innovation, like all innovations, is dependent upon the strength and durability of the associations between human and non-human actors in a network (Latour, 2005).

Method

To understand how FUSE was adapted and implemented in different contexts and what types of networks led to success or failure, we drew on data from 57 schools newly implementing FUSE during the 2017-18 school year, selecting 17 cases for close analysis. We followed these cases from their initial conversations with the FUSE team in Spring 2017 through implementation during the 2017-18 and 2018-19 school years. Using broadly ethnographic methods, we collected: (1) written materials produced by the school partners; (2) video-observations of facilitator training and students doing FUSE; (3) interviews with students, teachers, and administrators; (4) emails and recordings of phone conversations with schools; and (5) social media posts. We analyzed these data using the broad frame of ANT (Latour, 2005).

Findings

Schools get FUSE in one of two ways. Either they pay for a license and yearly renewal fee or they receive a two-year grant. If granted schools wish to continue into a third year, they pay the yearly renewal fee. Of our 17 focal research cases (11 granted, 6 not), only one school decided not to continue FUSE into a third year, Shuri Middle School. We therefore characterize Shuri as a context where FUSE 'died'. When we interviewed the facilitator and administrators at Shuri about why they decided not to continue FUSE, they all cited lack of funds. However, despite expressing similar concerns, they other granted schools all found funds to continue the program in year three. In what follows, we shows that the 'death' of FUSE at Shuri was influenced by at least two other factors.

First, this facilitator interpreted and adapted FUSE in ways that were misaligned with program philosophies. For example, unlike many FUSE facilitators, the Shuri facilitator assigned students to seats, making it hard for them to move freely and collaborate with peers, a key finding about what generates learning in FUSE (Stevens, et al., 2016). Second, he significantly transformed the intended free-choice environment of FUSE by adding required, graded assignments to the experience. Most teachers overseeing successful FUSE implementation mitigate, work around, or set aside assignments and grades in order to maintain integrity to a core feature of FUSE—student choice or agency. Third, the facilitator at Shuri interpreted FUSE more as a collection

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of STEM tools and skills, rather than as a different way to organize learning and teaching (in which students learn from each other and make choices about what to work on based on their interests). We saw evidence of this when he talked about how he would teach STEM without FUSE the following year saying, "[O]bviously not having the program aspect would be a loss, but still just kind of, I guess, incorporating, because two years ago I didn't know what STEM was really…whether it's like SketchUp, and you know, 3D software there, with houses, but you could also do other things, or some coding type things…" In sum, one reason for the death of FUSE at Shuri appears to have been a 'lethal mutation' with respect to the core features of the approach, features that prior work has shown to make FUSE a successful alternative infrastructure for learning in classrooms (Stevens et al, 2016).

The second factor at Shuri that distinguished it from successful FUSE implementations was the small size and relative disconnectedness of its network of implementation, which included only the 8th grade STEM teacher with weak connections to the principal and a technology coach. In year two, even the STEM teacher was pulled partly away, because he was asked to teach more math classes and less STEM. At other schools, when one facilitator left, others were brought in, but at Shuri, this was not the case, for two reasons. First, unlike facilitators at other schools, the STEM teacher was reluctant to recruit new allies. He said he didn't talk about FUSE with other teachers, because "[they're] just not going to understand, because [they] don't have the program." Second, when he did try to recruit a new Assistant Principal (AP), she resisted. He described this saying, "When [the new AP] came in…I was excited about FUSE. I was trying to figure out how we were going to renew it, whatever. And long story short…I had a meeting with her to talk about FUSE, and I was prepared, like I had my laptop and I was prepared to show her a challenge...and the meeting lasted like 10 minutes. So I got a little discouraged."

Conclusion

Our analysis suggests that it was not just a lack of funds that led to the death of FUSE at Shuri, but also: (1) the facilitator's lack of philosophical alignment with the features that prior research has shown to be key to successful implementation, and (2) his inability to enlist other locally relevant allies. Our analysis also suggests a couple directions for practical improvements to support implementations so that they don't die. First, consistent with insights from Coburn, Penuel, & Geil (2013), our findings suggest a need to enroll more stakeholders at different organizational levels. Second, our findings suggest giving stakeholders more support to articulate what the educational innovation offers, especially if it differs substantially from traditional educational infrastructure.

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