REL MID-ATLANTIC Regional Educational Laboratory at Mathematica Policy Research

Webinar on Implementing Online Report Cards: Research-Based Practices Workshop, Design

Friday, June 15, 2018

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Webinar transcript

[Dave Moyer]: The first thing I would say is don't jump right in, it's a long process. I worked at a Department of Education before I worked at Tembo, at the state of Hawaii, and we usually jumped, we had a thing to do, we usually jumped to development. And needless to say, we didn't really know what we were building, oftentimes we knew it had to be done soon, we didn't really know who we were building it for, but we had vague senses of audience. When I started working at Tembo, I realized that there's a whole group of people who actually called designers who I hold in very high esteem now who spent more of their time actually outlining processes and trying to solve problems for users than actually drawing things, which is what I thought they did. So I would just encourage you to, you know, regardless of sort of what you're trying to do this process of going through the design thinking process applies not just to making online report cards, it probably also applies to making school walk-through videos, things like that too.

But the first key step is understand what you're trying to do, who's going to use the tool? We talk a lot about audience, so you've hopefully you started that process. What are they going to try to do with it? How did they do what they're trying to do that like, what's the difference between what you're trying to build and what they're doing right now and what's not working for them in that process? And if the answer is something like there's something that's where your tool should live, your thing should live in the place that improves upon their current experience, not necessarily reinvent it. So I'm calling the stage wireframes all I really mean is don't jump next unless you find this. Don't jump next to talking to your IT team, to your data people, to your whomever and say, "Alright, now go do it." Try to make some low fidelity version of what you want and start shopping around. Think about structure, think about content, functionality and behavior and try to just think about those things.

This stage is really this is really the sort of core to getting the information hierarchy and getting the messages right. Not the stage to really talk about what's my favorite color? What I really hate this font that we're using right now. Think about how this with broader scale pieces come together and then move on. And I just kind of want to sometimes this term wireframes with one I also didn't use a lot before I worked for a firm with designers in it one I'd never made one in my life. So this is like what our designers make they have like fancy software but this is like what I make now. And this is me drawing on a piece of paper and I literally gave this to one of our clients who is paying us quite a bit of money to make a tool for them.

And the first thing I showed them was this and the best part about this is it's really easy to change. All the time I've invested is drawing on a piece of paper. And the best part about their input is they can draw too and so they can come back to me and say, "Dave x, I don't like that one, please do this and draw" and in a one hour meeting, we can make 10 more versions of that tool. Whereas this is sort of a fancier version, we still use this quite a bit, pretty much higher fidelity but they're both fairly easy to change. And I haven't ever talked to somebody who's really expensive to hire like a developer or a like a true designer, and made them build something and then changed my mind and lost all that money. You'll still notice that even when I make a better looking high fidelity version, this is only just boxes on a page, it's only just, I want the score first, I want an explanation first, I want some explanation of scores next, I want comparisons after that and then I want this thing.

We haven't started thinking about what color should this be? Which did this chart even look like? Or what should this say? What's the final text that we're going to put in there? Not something that we're talking about yet. So make something that's easy to change first, change a lot and then invest the resources into like a true development. Now let's decide how to organize content because that's the kind of key question in a wireframe. First thing I will say is start with a headline. Steve alluded to my newspaper article kind of comment. Newspaper articles start with a headline and many of us only read those headlines. I'm certainly guilty I get an email every day from the New York Times, I read 10 headlines and maybe I click once if I have extra time sitting on a bus. That headline matters, so start there, get really clear about what you want to say in that headline.

If you don't start there, people will not actually understand what you are trying to tell them. So I hear a lot from our clients, "Well you know I don't want to be judgmental, I don't want to have an opinion I just want to share data," and I will say, "You are being judgmental by not having a headline." Headline need not be subjective, it need not be you know this school is fantastic and this school is terrible but please have a headline of some sort. Then once you have a headline think about that first paragraph of a

newspaper article. How do I contextualize that headline? How do I add a little bit of information so that people know more than the President signed a treaty or the President didn't sign a treaty? I don't want to talk about color until it's time to talk about color once it is though, let's avoid a couple simple mistakes.

One is using colors that are like right next to each other in a color wheel to illustrate things are really different. So take a look this color wheel, you've probably seen some version of this in your life things opposite one another are sort of complementary whereas things next to one another analogous. Be aware that there are some of these combinations that are really hard for people to discern who are colorblind so red and green is one of those common ones. You know, there's a measurable fraction of folks out there who can't tell the difference between red and green, I wouldn't recommend using red and green as good and bad in your visualizations. Unfortunately, blue and red is the second most common so that's pretty common in the world, though so just keep that in mind. And just think about your purpose when you're making pictures for people and think about when complementary colors when analogous colors are appropriate.

And you know, you can sort of see it I drew the same data in five different charts. The five different charts tell you like sort of emphasize really different things. This one pulls out one particular value intentionally obscures the other but gives you some context that there was one person that went way up there. These are a little easier on the eye when you're trying to compare similar things and not make any judgment about particular value. These guys are trying to accomplish this goal but probably doing it in a little bit of unhelpful way. So just the real point is you can draw the exact same picture with different colors and have a really different takeaway, so just consider your purpose as you employ color. One other little baby rule that we often follow is don't use color if you don't need to. You don't need to just make things colorful just to do it, color should have a meaning in your tools and don't over deploy it.

Another simple one is just put things on white. There's a couple tools out there that actually make visualizations where the background is by default not white, it's just objectively harder for people to see that. So just make pictures on top of white backgrounds and you'll have more luck. This is a for those not familiar this is a really fairly common statistical software the standard background for these charts whenever you make one is off white and so it's just like a little harder to read than it needs to be. The other one is just deploy charts intentionally, very often I have conversations with folks that say, "I don't want a page with all of the same chart on it. I just want it different because it's more fun, you know to be different." And often that ends up meaning that we deploy some visualization like it was just one visualization gets short changed because it has to be a pie chart or

something, because it's not, and the whole point being there is often a simple approach to how to use chart types.

And I would just start with these defaults, if you do that you will be better off. Compare using horizontal bars, people understand these really, really well. They are boring and they are really effective do not be afraid of them. If you're presenting data over time, use a line chart you don't need to use a bar chart you don't need to use any other measure just paint it as a line is also the most efficient way. I will say that the majority of our tools deploy these two chart types exclusively and we get whole accountability systems reported with just this, so don't be afraid. For more complex kind of concepts I prefer a histogram for distributions of data and for comparing two variables and measuring of correlation I like scatter plots. I will say that I almost never put these in a tool designed for the public. We just have found with our testing of our small product that people just really struggle to correctly read these two chart types. Couple of other sort of points here about just be thoughtful about how much real estate you're devoting to different items, you know, how you deploy things on the page actually really can have an impact about how people value them Steve jump in here if I'm doing disservice to this.

But you can just sort of see how we're using different amounts of screen real estate and getting different sort of impacts when you read two charts about the same thing so just be conscious of how you're using that. One common behavior is like one label is much longer than another so we make that section really big, and then the other label's really small, so we make that section really small, and it has no relationship to our actual value of those items. But we happen to think that safety, attendance and chronic absenteeism as a category is more important than the thing that has a much shorter label. Another one is just is to think about how you how you word metrics actually really matters. So we only ever use positively balanced measures in our tools so because every time a bar is longer, it is a better outcome no matter what you're looking at.

So when you think about negative measure, like the proportion of kids who were suspended, or the proportion of kids who were chronically absent, all of a sudden, you're asking users to say, "Oh, wait, okay, for this one, shorter bars are better but for the next one, longer bars are better," and people just trip up on that all the time. Much easier to just flip the definition of the metric and say, proportion of kids who were not suspended or proportion of kids who were not practically absent and just allow people to have longer, you know, one type of visualization to look at.

The last point that is also stolen from Steve's research that I get to talk about is a point about how you scale visualizations. So just think about your escape students with no suspension so positively balanced measure that has

pretty low variability for these three schools, the difference is 10 percentage points. But the difference between like a 12% suspension rate and a 2% suspension rate is very significant versus representing it like this with the variation really clearly, documented but actually sort of misleadingly represented. 88 is not this much smaller than 98 when you're thinking about the height of the bar so you're doing folks a disservice if you try to make bar charts like this. And there might be other ways to sort of if you really believe it's important to represent 88 and 98 as really far apart you might consider other visualizations to avoid this kind of a chart or represent the data as they are and use a scale that is appropriate.

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