



Teacher reflections: The role of integrating technical and community aspects towards optimization

Ms. E. The scaffolding about the technical and social specs really helped me to unpick with Stephen the different pieces of his engineering design. And, especially how these aspects are related.

I ask him let's draw your idea because he was having some difficulty explaining what he meant. We started with drawing of a football in the middle of the page. I asked him where would the lights be because the football is a particular shape. With American football I know that the player's hands over the ball, and so we talked about how players hold the ball, and the consequences of how that would affect the lights. So, we started sketching on the ball where the lights would be. That got Stephen thinking about how many lights. He wondered if he should have one light on each end, but he was worried it would not illuminate the whole shape of the ball so they could see where to grasp in the dark. That went from singular lights to a strip of lights so that you could see the entire oval shape of the ball.

I asked him to draw where the hands would be on the diagram. This turned out to be a really good question to ask because it got him thinking about both the technical dimensions about the lights and their placement, and some of the social dimensions such as safety. So, for example, I asked him whose hands where these in the picture, and Stephan then began to talk about his cousins and friends where he lives. He talked about how it can't be dangerous to use the ball. That was a direct relation to him thinking about who the users of the ball.

Later when he was working on the ball, he was still thinking about safety and so he wanted energy efficient lights so that the little hands of cousins would not get burnt. It is interesting to me how much safety played into his later design optimizations such as using a nerf ball to make it lighter so kids would not get concussions and figuring out how light to make it so that kids would not get hit by the ball in the dark.