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CEP 805
Unit 5

Initial Information:

- 220lb payload
- Box weighs 10lbs
- 35hp engine
- 5 gal fuel tank
- $2\text{gal}=30\text{mi}/1\text{gal}=15\text{mi}$
- $1\text{mi}/2\text{min.}=30\text{mi}/1\text{hr}$
- Eagle weighs 15lbs.
- Cumberland to Meadow is 65mi
- By road 60 miles to Hilda's
- 15 miles to Meadow
- Larry weighs 180lbs.
- Full gas = 30lbs. = 5gal.
- Driving Speed 60mi/hour
- Plane 250lbs
- Each stop is 5 min
- 1 full tank of fuel goes 75 miles

Options:

1. Fly to the meadow and back to Cumberland.
 - a. Could only do if Emily flies. If Larry flies we end up with 180lbs of his weight, 10lbs of the cargo box, 30lbs of fuel. This would give us a total payload of exactly 220lbs, but not enough fuel to get to the meadow and then to Hilda's. We see on the clip that Emily weighs less than Larry. We don't see how much, but do see that it is about straight up so I would guess about 130-140. This would give us enough payload to carry extra fuel, and the time would be 260 minutes for flying and 5 minutes for the stop, for a total of 4 hours and 15 minutes.
2. Fly to meadow, Fly to Hilda's, Drive back to Cumberland.
 - a. This again could only happen if Emily flies because her weight would allow for an extra fuel can because without it we can't travel the 80 miles to the meadow and then to Hilda's. With this scenario we would fly 80 miles total to go to the meadow and then to Hilda's which

would take 160 minutes + 10 minutes for two stops + 60 minutes to drive back. This would be a total of 3 hours and 50 minutes.

3. Fly to meadow, fly to Hilda's to refuel, fly back to Cumberland.
 - a. This could not work because the payload would be exceeded with Larry. With Emily again, this would be possible, but it would be 125 miles of flying which is 250 minutes + 10 minutes for stops which would be hours 4 hours and 20 minutes.

Given all of these possible options, I believe it is clear that option 2 is the best choice to get the eagle back to Cumberland as quickly as possible with a total time of 3 hours and 50 minutes.

How do we take a concept that we are teaching in a classroom setting and make it real? How do we make it natural and at the same time be sure that we meet all of the curriculum standards that are found to be essential to our student's learning? One very good way to do this is by using The Adventures of Jasper Woodbury, better known as the Jasper Series. While The Jasper Series is a great way to overcome these, it is not the only way; how we resolve these problems are insignificant, that we do in some way is. We do our students a disservice if we don't.

The Jasper Series is a set of twelve video adventures that take a concept that might be presented in a simple, traditional lecture style and transform it into a believable story (not one that is contrived in which the student don't or can't relate to) with interesting characters (take Larry, who comes for the "dense side of the family" as an example) and an intricate, significant challenge. At the same time, the Jasper Series also connects mathematical concepts and skills with real-live problem solving that relates to a variety of other content areas. Beyond that, the students are required to differentiate between what information is essential and what is extraneous. This technique is called "embedded data design" by the developers of the Jasper Series. With this I found that the most influencing element of the Jasper Series was not the solution, but the learning taking place getting to your solution.

So how, with "embedded data design" can we be sure that our students are learning the many elements of the curriculum that we as teachers focus on for objectives of our lessons? Well, this form of technological presentation hits a standard that is so hard to be sure is being covered in our standard classroom instruction: open-ended problem solving, communication and reasoning, connection with math to other subjects and the "real"

world. The NCTM states that “mathematics curriculum should engage students in some problems that demand an extended effort to solve. Some might be group projects that require students to use available technology and to engage in cooperative problem solving and discussion.” Jasper meets all of these and allows for a solution to be found with or without technology beyond the ability to view the video. A high level of technology would allow students to design intricate visual aids when considering paths and options, but are not necessary. Students in districts with limited technology could also meet the NCTM standards by viewing the video and finding a solution with pencil and paper.

The Jasper Series is an exceptional way to meet these high standards for learning, but are not the only way. With only twelve videos, it is obvious that the vast list of standards cannot all be covered. We can however use the Jasper Series as an example to expand on. We can create our own stories, or better yet have our students develop stories that would cover concepts that have been taught (possibly in a more traditional manner) to make the concepts and learning more authentic. With the use of video cameras (and our schools video production students) these new stories could be recorded and inherited by future classes. This to me seems like a great way to display and encourage student learning.

The bottom line is finding a way to make the learning authentic and engaging. By doing this, we can take a concept that we are teaching in a classroom setting and make it real and natural while making sure that we meet all of the curriculum standards that are found to be essential to our student’s learning. The Jasper Series is one very good way for us as teachers to encourage learning using technology, but it is not the only way. It is

up to us to make that determination while considering our students and our available technologies.