"Types of Transmissions DID"

So far this semester, each team has been working to close knowledge gaps (i.e. you've learned things relevant to the design). Before beginning the "types of transmission DID" you should have filled the following gaps:

- What is farming like in Uganda.
- What are the project criteria for Uganda and for Phase 1 (Phase 1 = ME328 work: proof of concept)? The Uganda criteria should include social, economic, and/or environmental factors.
- What is the motor performance for the Phase 1 motor?
- What force is required to pull a plow in the Phase 1 test facility?
- Does gear-ratio theory apply sufficiently well for Phase 1 design work? In other words, we need to develop confidence in $w_{in}/w_{out} = T_{out}/T_{in}$ – will it work sufficiently well for different gear ratios using Lego Mindstorm parts.

There remains other knowledge gaps, including understanding various types power transmissions.

- **KG: What are common types of transmissions and which would be best for the Uganda project?**

There are basic ways engineers fill knowledge gaps: gain new information through analysis and testing, and learning what is already known (literature search, discussion with colleagues, etc.). The "type of transmission DID" will require literature searches. The DID requires no specific form, but as always, the purpose/objective of the DID should be clearly stated and it should be organized to communicate effectively (if a colleague gave the DID to you, would you find it clear, helpful, self-explanatory?).

Each student shall research one type of common power transmission. At this point in the project, you do not know if you will use a transmission or not, but you should be aware of the options available should the finished design warrant one. The DID from each engineer (each student) should contain:

- Purpose of the DID
- Summary of literature search information (including citing sources). This would include a description of how the transmission functions, advantages and disadvantages, and its current common applications.
- Sketches and/or photos seem like they belong in this sort of DID (as well as other DIDs). {That's my subtle way of saying sketches and/or photos are required}.

After completing the individual DID's, the team will create a team DID. The team will meet to discuss the advantages and disadvantages of each type of transmission, and then evaluate each type to determine which would be best for the final Uganda project.

- The team shall create an Evaluation Table to make a recommendation to *Lulay Sisters* as to which type of transmission you would recommend for the Uganda project. The Evaluation Table should be similar to Table 2 in: http://faculty.up.edu/lulay/MEStudentPage/evaluatingalternatives.pdf. Compare each

alternative (each type of transmission) with the team's Uganda criteria. Also in the DID, explain why/how each type of transmission meets or fails to meet each of the criterion. If during this process, the team wants to revise its criteria, it may do so, but you must communicate the changes in the team's DID.

- Each team is to attach the DID's from each engineer to the team's DID. The team's DID should include a concise writeup discussing what type of transmission the team would recommend at this point in time for the final implementation of the Uganda project if *Lulay Sisters* were to approve it. And as always, it must be clear what the purpose of the DID is.

Transmissions to explore (the team should assign one type of transmission to each student/engineer):

- Gears
- Chain drives (like on bikes)
- Timing belts
- V, round, or flat belts

For teams with only three members, you may choose which three you wish to explore – you do not need to investigate all four.