Restructuring First Grade

Part 2: the engineering ALP curriculum

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The engineering ALP will be focused on dealing with problems in building something and improving upon what was built. But one should not be confused by this. The subject matter doesn't matter really. We use building things, in this case, in order to gain the interest of the child. The specific facts they learn don't matter much. It is the honing of abilities with respect to the cognitive processes we have described in Part 1 that make up the real learning objectives.

What follows is intended as a planning document.

We will use it to help us talk about and
eventually design, the engineering ALP for five
years olds.

Here are some proposed activities:

Robot building
Airplane building
Bridge Building
Kite Flying
City Planning
Food Preparation
Map Drawing
Football, Basketball, Soccer, and Baseball
Newsletter Writing
Computer Use
Diagnosis of Illness and Treatment
Orchestra
Spanish language
Movie Making
Trip Planning

It is not my intention to propose anything more
specific than this for now. I am expecting that we
will get together a group of (possibly) first
grade teachers and others to create a specific
curriculum based upon what I have written here.
Suggestions from teachers, construction kit
builders and others, will be gladly considered.

Here are the guidelines for doing that:

  1. The first product of this exercise would be a
     list of projects, in order, that students
     would pursue throughout the year. Some
     projects and activities might be done in
     parallel and some might be ones that are done
     every day like physical activities.)

2. That list would then be turned into a web site. This web site would be for the use of the teachers not the students. While the students might use a computer in some activities, they would not be doing an on line curriculum. The teacher, on the other hand, will need to know what to do each day in detail, will need help when there are problems, and will need materials. This help would be provided on line through frequently asked questions and step by step guides, and through Instant Messaging with senior advisors to the project.

3. All projects will involve reading. Children will read about how to build what they are trying to build. In order to enable this, the first project's instructions must be written using very simple words. As this is not likely to exist anywhere, one of the first jobs the team building this curriculum will be to find projects that are simple and it write simple instructions for them so that the children can both learn to read and learn to follow simple plans at the same time.

4. Each project will build on the previous project. We are not building a "let's do anything that is interesting to me" kind of curriculum. Whatever was learned in the last project needs to be expanded upon in the next. Children's learning will be directed by well thought out plans created by people who understand how learning works. Children will not direct their own learning apart from deciding that this curriculum interests them in the first place.

5. The Engineering ALP is not really about engineering. Its goal is <u>not</u> to produce little

engineers. The goal is to produce children who can think clearly, get along with others, work in teams, produce deliverables according to a plan, and be able to plan, diagnose, and generally understand and describe the world as well as is possible at their age. They should be able to read, write, and use simple math at the end of the year. They should be able to explain what they have done and how they have done it. These are the goals. Engineering is simply a venue that is likely to interest them.

6. Each segment of the curriculum that is written on the website will consist of an end goal to be achieved by a working group of students. (Twelve students would mean 3 groups of 4.) We will determine how long it will take to achieve that goal, subgoals along the way and how long it will take to achieve them. For each project there will be a culmination event. If they have built a vehicle, it might be race of some sort. If they have done something artistic perhaps there will be a show of some sort. Culmination events might be speeches about what they have done, written descriptions of what they have done, or presentations to other kids in other places (via Skype or Facebook) who are working on the same projects.

7. The challenge to our project is in the creation of the materials. We will not easily find materials geared towards the age group we have in mind. For example, there are plenty of robot building kits but they are not meant for five year olds. Our job will be to write the materials in such a way that they do the job of teaching kids o read in the context of helping them build something.

8. All projects will have this format. There will be a goal agreed upon by the students, groups formed to work on the projects, and teachers to help advise. As an example, we intend to teach the kids Spanish one hour every day. To do this, we will not have Spanish lessons per se. One of our projects will simply be in Spanish. We will have to choose a project that can be done one hour per day for the whole year. Our task will be to create the materials for that project in Spanish and have the kids learn to speak and read Spanish the same way they are learning to read English, by needing it to figure out what they are doing. Of course, the Spanish project would have to start out quite simply. The job of the teacher in this case would be to speak to them only in Spanish. We would employ a native Spanish speaker to come in for this hour each day.