

Term Project Description

05-438/05-838: The Role of Technology in Learning in the 21st Century

Milestone 3: Proposal and weekly schedule of expected milestones

Due Feb 17, 2014 (Monday) by 11:00 AM

1 point deducted if not turned in on time

Preamble

The goal of this handout is to provide some guidelines on what an appropriate term project can entail. Given that course participants have interests that are highly divergent from one another, the guidelines that we provide here are intended to provide a “basic skeleton” to help participants make timely progress. In other words, this skeleton is neither exhaustive nor entirely applicable to all projects, so you should not feel compelled to force your interests to fit this skeleton. Please do not hesitate to discuss with the instructional staff if you have ideas that do not match this skeleton.

Regardless of the exact form that your term deliverable takes, a high-quality deliverable is one that (1) a CMU student would be proud to show to a prospective employer as a portfolio piece, and (2) teaches the instructional staff something about the learning sciences and educational technology that we have never thought of. (2) is not as daunting as it sounds! By bringing your insightful responses to the pre-class reading questions and your diverse prior backgrounds into your deliverable, coupled with feedback from your buddies every step of the way, you bring a perspective to the class that differs from the instructional staff’s. As such, we look forward from learning from your original viewpoints, just as we hope you have learned something useful from our experiences by the end of the semester. (If you have other ideas for your term deliverable (e.g. a public art installation?), we encourage you to discuss with the instructional staff asap. We expect most participants to work on a design project, but are open to any possibility that has scope for demonstrating that one has learned the course material.)

Suggested Roadmap and Project Components

A semester-long design project is likely to comprise some or all of the components in the following roadmap:

- a. Unmet need – more details in the handout on milestone 2. You should be able to articulate the benefits to the learner if the need is met, and the extent of this need. Quantify these statements about benefit and extent of need by citing statistics and their sources.
- b. Learner profile – more details in the handout received in class. You should be able to articulate the prior knowledge that you expect your target learner to have as well as their background.
- c. Problem statement – more details in the handout on milestone 2. You will need to do adequate background research to explain the causes behind why the above need remains unmet. Depending on your topic, you may be able to find enough literature on the root causes behind the above unmet need, else you will need to perform some site visits and/or interviews to uncover more information (see next step).

A strong statement of need and problem is one that makes a prospective investor or funder excited about your work when you explain it to him or her in an elevator pitch.

- d. Site visit for up to a day and/or interviews with a few staff members from a local non-profit organization to understand their perspectives about the above need and problem, as well as the challenges they face in providing equitable educational opportunities. We will discuss the level of detail and the documentation that this component should produce.
- e. Solution overview. This needs to include what the technology platform is, and “a day in the life” scenarios of how the learner will use the solution to address the above need in a way that works around the above problems. One way to help you brainstorm prospective solutions is to make a list of constraints and enablers from the above research before you start brainstorming.
- f. Case for the solution. You should be able to cite precedents, usually from the literature, but sometimes from previous projects undertaken by the non-profit organization whom you interview, to argue that aspects of your solution have been successful in the past. You should also be able to make a compelling case for the technology platform that you have selected, such as in terms of its affordability and adoption. Imagine that you are trying to design a well-conceived project that you can defend, such that Kentaro Toyama would not single it out for criticism should he write a revised version of his “There are no technology shortcuts to good education” article.
- g. Competitive analysis, which describes other products that address the same need, and how your product or service is different (or superior).
- h. Educational goals, instruction, and assessment. It is crucial to think about the knowledge and skills that your educational software application will attempt to teach. This makes it possible to come up with storyboards (see next step) that concretely show how your instructional design works in the concrete context of a targeted knowledge and/or skill. As a rule of thumb, for a semester-length design project, you need to have enough curriculum for a 30-minute lesson. You can put this curriculum together by consulting existing textbooks, curriculum standards, etc. For the purpose of adoption and meeting government standards, it would be important to consider the extent to which you need to align your curriculum with a government-mandated syllabus. And then, how would you know that your learners have achieved your goals? Ideally, you should have thought about the broader learning progression that your 30-minute lesson fits into.
- i. Design and storyboards. This is where the bulk of your deliverable lies. Come up with storyboards that help a prospective user visualize what the user-experience is like when sitting in front of and using the educational software that you have designed. There will be a Kam et al. reading from the DIS 2008 conference that illustrates the level of detail about how a software works, which your storyboard and accompanying descriptions should cover. Provide plenty of rationale to explain (i) the principles from the science of learning that you are applying (e.g., motivation, knowledge organization), (ii) various ways in which you could have applied these principles, and (iii) why you have decided to apply these principles in the way that you eventually decided on in your storyboards. The ideal storyboard will apply concepts from the

course related to scaffolding, teaching for transfer, subject matter (or domain-specific) teaching, and multimedia design.

- j. Prototype a partially working software based on the above design. It could be as simple as a Powerpoint slide deck that provides a feel for how the user-interface and user-experience of your educational software looks. Or it could be an interactive prototype developed in Flash, etc.
- k. Formative assessment with one stakeholder (e.g. parent) or one representative user (e.g. high school student). You could first walk this person through your storyboard to familiarize him or her with how each screen in your instructional design works. Next, perform a “Wizard of Oz” study with a paper or Powerpoint version of your prototype, based on representative tasks that the learner is expected to perform. Obtain feedback on how intuitive, usable and engaging your design is. From experience, the most difficult part about carrying out this step is the time needed to schedule a session with a prospective user. Be sure to set aside at least two weeks to schedule this.
- l. Recommendations for redesigning your prototype so as to improve it, based on feedback obtained during formative assessment.
- m. A strong pitch for the project, based on your Wiki and demo during the last class. Part of taking an entrepreneurial approach entails that you have thought through what the strengths of your project are, and are responsible for pitching the merits of your work to an audience in a compelling manner. If you can’t articulate the value that your work brings to the customer, why would an investor or funder be able to figure this out for themselves?

Do not worry if the above list seems overwhelming. Depending on the skills and interests of your team members, as well as what is feasibly available to you, some of the above components will be emphasized while others will be de-emphasized (or dropped totally from your project).

Submitting Milestone 3

By Feb 17 (Monday) at 11:00 AM:

- On your project Wiki page, post a **proposal** and **tentative schedule** of the weekly milestones that you will submit from Week 6 (i.e. February 24) to Week 16 (i.e. May 1).
- A **proposal** would include steps (a), (b), (c), (e) and (f) from above. Please keep your description of each step short, i.e. ideally one paragraph long.
- As a team, you will be expected to upload, onto your project page, weekly milestones according to this schedule that you have spelled out. You will be expected to provide other teams with timely and constructive feedback for improving their weekly milestones, just as your buddies will give you similar feedback. You will receive a score based on the feedback that you provide, which should demonstrate your understanding of the course material. If you need to adjust your schedule as the needs of your project evolves over the semester, please: (i) update the schedule

on your Wiki project page as soon as you realize a change is necessary, and (ii) email your buddies to inform them about this change (while copying the instructional staff on your email).

- As part of your weekly schedule, choose two weeks over the course of the semester during which your team would like to meet with the instructor. Office hours on Tuesdays would be a good time for this, but other times are also available.

Here's how you can find and update your project page on Blackboard:

1. Go to Blackboard
2. Click on "Wikis" on the left sidebar
3. Find the link to the project page you are working on - click and open it. (If you don't have a project page, send an email to David to create this for you. You have to let him know who your team members are.)
4. Edit the page as you complete your weekly milestones. You may also upload attachments for other students to download, and respond to the comments.
5. Save your edits!