85-738 / 85-438 Educational Goals, Instruction, and Assessment
Core Course 2 for the Program in Interdisciplinary Educational Research (PIER)
Facilitated by Dr. Sharon M. Carver

Course Project Assignment for Fall 2007

Goals: This assignment provides an extended opportunity for each student to progressively develop a learner model and set of educational goals based on a detailed task analysis of the knowledge, skills, and dispositions required for mastery of a specific curriculum unit, together with aligning an instructional program and its valid assessment to learners and goals. Learners will provide the rationale for their design decisions based on course readings and discussions, as well as independent reading, and will be able to refine their design based on feedback from the instructor. To encourage a broader perspective on the design, students will also provide peer review for each other. Finally, each designer will supplement the proposal by briefly outlining a research program to test key components of the design and will practice presentation of the project in class and public venues.

Project Timeline:

• **Project Step 1: Context & Initial Resources**	Thursday, September 6
• **Project Step 2: Anticipated Learner Profile**	Thursday, September 20
• **Project Step 3: Learning Goal Specification**	Thursday, October 4
• **Project Step 4: Assessment Design**	Thursday, October 18
• **Project Step 5: Instructional Design**	Thursday, November 1
• **Project Step 6: Research Design**	Thursday, November 15
• **Class Presentations**	Thursday, November 29 Tuesday, December 4
• **Public Poster Session**	Tuesday, December 11
• **Final Project Submission**	Friday, December 14

Note that the timeline is designed to allow one week for instructor feedback and one week for project revision and development between each step. Staying in synchrony with this schedule will help me utilize your project topic and progress to formulate each week's lessons, which will maximize the learning for you. Also, following the timeline has the benefit of allowing significant time for thoughtful refinement of the project and preparation of presentations during the final weeks of the term.

• **Project Step 1: Context & Initial Resources** Thursday, September 6

The first step of the project involves answering the basic Who? What? Why? Where? and When? questions regarding the educational design that interests you, as well as beginning to brainstorm the resources that you already have available to help in the design process.

Context for your Educational Design:

Who will you teach? Age range? Experience level? Relationship to you?

What will you teach them? Knowledge? Skills? Dispositions?

Why is it important for them to learn what you plan to teach?

Where will you teach them? In school or another learning environment? In what subject area within school?

When will you teach them? Time of year? Anticipated length of instructional sequence? Estimated total time of lessons?

Don't worry if you feel like you're just making your best guesses when answering many of these questions at Step 1. You'll have plenty of time to refine. Reviewing your best guesses will help me understand where you are in the learning process, so that I can help you formulate the context for a manageable project.

Initial Resources Available:

How much experience do you have in the project domain? As a student? As a teacher? How much reading have you done about education in this area? List a few of the best articles.

Do you know how this domain fits with the educational standards specified for the learners you intend to teach? If so, briefly describe them.

Are you aware of any educational materials (instruction and/or assessment) that have already been designed to teach this domain? List them here, along with your opinion of their quality.

Don't worry if you are choosing a domain where you haven't already done a lot of reading or design. What's most important is that it's a domain that you enjoy and one that you see value in teaching others. Having a good sense of the domain, even if you're not an expert, is also helpful.

• **Project Step 2: Anticipated Learner Profile** Thursday, September 20

The second step of the project involves more fully describing the learner characteristics prior to the educational experiences you are designing. Prior to beginning this step, be sure you address any issues raised in your reflections or feedback re: Step 1. Often this might involve clarifying the project focus or scope. You may also find it helpful to work on Step 3 somewhat simultaneously with Step 2. As you wish.

Initial Expectations:

Developmental Level = learner characteristics based primarily on age / maturity
Consider learning predispositions, processing capacity, metacognitive abilities …
Consider physical and social development, as well as cognitive

Knowledge Base = learner characteristics based primarily on experience
Pre-existing knowledge, skills, and dispositions related to the domain
Consider both helpful foundations and possible misconceptions
Consider the impact of cultural and social norms as well as specific experiences

Individual Differences = learner characteristics based primarily on stable, individual properties more than age or experience
Consider interest, abilities (e.g., multiple intelligences, neurodevelopmental profiles), and temperament (e.g., EQi)

Expectations for Change:

If your educational design will be implemented for an extended period of time or at a crucial developmental juncture, list any ways that you expect maturation to influence the learners' progress.

Knowledge Base is typically the primary focus for change, and your goals for specific knowledge, skills, and dispositions at the cognitive and metacognitive level will be detailed in Step 3. Provide just an overview here, perhaps using a table similar to the one we drew in class.

GOALS	Cognitive	Metacognitive
Knowledge		
Skills		
Dispositions		

If there are particular individuals that you expect to progress differently, specify what you anticipate and why. Be sure that your goals, assessment and instruction in Steps 3-5, include any related differences designed to meet the needs of individual learners.

Reflect once again on your design for Step 1. Make any revisions necessitated by the decisions you made during Step 2. If you are working on Steps 2 & 3 simultaneously, make sure that they align.

• **Project Step 3: Learning Goal Specification** Thursday, October 4

The third step of the project is pivotal because your task analysis and resulting model of cognition and learning for your project domain provides the unifying framework for the rest of the design.

Primary Specification:

Feel free to use whatever format works for your style and domain, but be sure to include all six of the components in the table below.

GOALS	Cognitive	Metacognitive
Knowledge (Declarative)		
Skills (Procedural)		
Dispositions / Attitudes		

In addition, be sure to focus on representing your goals in ways that research has shown to be central to the acquisition of expertise. For example, identify key features and meaningful patterns for the declarative information and emphasize deep understanding of concepts, rather than just listing facts. Be sure to specify the conditions for applying the skills you list, so that you will remember to focus both instruction and assessment on useful application rather than rote algorithms.

You may also find it helpful to separate domain general from domain specific goals.

In addition, note that this task will be much easier for well-defined than for ill-defined domains. If your project involves the latter, you may want to focus first on developing some boundaries for your domain, choose to limit your project to the most important or central aspects, etc. Feel free to meet with me to work on this aspect individually.

Compatibility Check:

If applicable, specify how your goal specification aligns with the relevant educational standards you have identified.

In what ways are your goals compatible with other aspects of the course or program into which your design will be integrated? What incompatibilities may arise?

How can you maximize the continuity between your goals and the learners' goals (a la Bain's "promises" so that you can tap their natural motivation?

Reflect once again on your design for Steps 1 & 2. Make any revisions necessitated by the decisions you made during Step 3, as well as responding to the feedback you have received.

• **Project Step 4: Assessment Design** Thursday, October 18

In Step 4, provide a general description of your assessment approach, with justification based on scientific principles. Then offer more detail re: specific assessments for the core goals you are targeting, together with their sequence and timing.

General Description:

Describe the focus of your assessment efforts in the context of your complete goal specification. What will be the primary focus vs. secondary and tertiary coverage?

Note the purpose(s) of your assessment. Which are formative vs. summative? Student vs. Program focused?

Justify your approach using the assessment principles from our readings, together with any other project related references you have collected.

Specific Assessments:

For each assessment, be sure to specify all three parts of the assessment triangle.

- Cognition (Content) – What goals are the target of the assessment?

- Observation (Format) - What will students do, say, and/or create? Is the assessment context natural or structured? What recording techniques will be used?

- Interpretation (Scoring, Reporting & Use of Results) – How will the observation data be scored in qualitative and/or quantitative ways? What comparisons will you report to whom? How will the results impact the varied audiences?

Also, for each one, discuss the features that meet key design standards such as validity, reliability, equity, etc.

Save for Step 6 the possible research designs that could be used to test specific hypotheses related to student progress toward the goals, instructional contrasts or assessment techniques.

Reflect once again on your design for Steps 1 through 3. Make any revisions necessitated by the decisions you made during Step 4, as well as responding to the feedback you have received. Please submit all four steps together so that I can give input on the design as a whole.

• **Project Step 5: Instructional Design** Thursday, November 1

In Step 5, provide a general description of your instructional approach, with justification based on scientific principles. Then offer more detail re: specific activities that are key to the approach, together with their sequence and timing. Note that many of the articles we have read follow a similar pattern for describing their instructional design.

General Description:

Be sure to consider 1) general teaching approaches, 2) the learning environment, 3) overall routines, and 4) the actual curriculum content, activities & sequence.

Document the alignment between your goals (both cognitive and metacognitive) and instruction to ensure that you have planned to cover everything you have targeted. For the core goals that are the target of your Tier 1 assessments, note how they fit within the instructional sequence / plan.

Justify your approach using the instructional principles from our readings, together with any other project related references you have collected. Be sure that your instruction is based on "big ideas" / "key principles" set you are developing. For example, it …

- builds on prior knowledge (including addressing preconceptions, misconceptions, etc.),
- focuses explicitly on your target goals (especially on sense-making and strategies),
- emphasizes links within / between concepts and between principles / processes and the contexts of their use,
- provides sufficient practice using diverse representations and examples with timely feedback and reflection,
- expects and is responsive to individual variability in learning style, path, etc., and
- is sensitive to the sociology of learning, including motivation, community, etc.

Specific Activities:

For each key type of activity in the instructional sequence, provide a detailed example of the context, direction given, representations used, available resources, student actions & interactions, guidance provided, intermediate and final products, etc. so that both your goals and your methods for facilitating their acquisition will be clear. Again, use the papers we have read recently as a model for the necessary level of detail.

Reflect once again on your design for Steps 1 through 4. Make any revisions necessitated by the decisions you made during Step 5, as well as responding to the feedback you have received. Please submit all five steps together so that I can give input on the design as a whole.

• **Project Step 6: Research Design** Thursday, November 15

In Step 6, present the design of the first scientific research investigation that you would propose if you were submitting a grant proposal to IES (i.e., an agency with a focus on scientific research in education). When considering options, consider the more and less effective examples that we've read this semester (e.g., Rummel's work closely aligns with the course approach). Assume that you have done enough basic pilot testing to eliminate major glitches in the design.

Basic Research Outline (standard research proposal format, but with no need to repeat detailed descriptions that are elsewhere in your project):

Research Question(s)

Experimental Design
(experimental and control groups, independent and dependent variables …)

Method (subjects, procedure, materials)

Data Collection & Scoring

Hypotheses and Related Predictions

Assessment of Design Quality
(sampling, validity, reliability, triangulation, possible confounds …)

Reflect once again on your design for Steps 1 through 5. Make any revisions necessitated by the decisions you made during Step 6, as well as responding to the feedback you have received. You might also want to do a self-assessment using the table we discussed in class. Please submit all six steps together so that I can give input on the design as a whole. Then begin considering how you will present the key points of your project to the group to get input from others involved in a similar process. The poster session will then give you an additional opportunity for feedback from a broader audience before you finalize everything.

Project Conclusion (Add during your final iteration on the project):
Finish Step 6 by adding a conclusion that summarizes your project and includes your self-evaluation of it. In what ways does it exemplify course principles? What challenges did you face? How did you overcome them and/or why do some remain? What are your next steps, either with respect to this project if you plan to continue it, or with respect to other projects that could benefit from this approach? The next time you have an opportunity to begin a new project, how do you plan to proceed differently than you have in the past? You will have other opportunities to reflect on the course and the course project process, so keep this conclusion focused on you and your project.