(1) What are the most significant obstacles and challenges that confront large numbers of people working together on creative design activities? How can technologies reduce or ease these challenges?

(2) You have been hired as a consultant to a startup that is developing “tools to support group creativity.” You are asked to write a memo describing “guiding principles” to guide the design of the company’s technologies, drawing on research on collaboration and creativity. What would you write?

In your general_exam oral presentation, you referred to the ten guiding principles in the paper “Some Reflections on Designing Construction Kits for Kids”.

(1) Use these principles to critique two projects that you’ve worked on. How well did the projects align with these principles? In what ways did the projects not align with the principles?

(2) If you were to add one or two principles to the list, what would they be (and why)? If you were to eliminate (or revise) one or two principles on the list, what would they be (and why)?

(1) Discuss Papert’s concept of "powerful ideas." What makes an idea powerful? What are the advantages and limitations of focusing on “powerful ideas” in education? Include perspectives from other researchers (including your own perspective).

(2) Discuss the ways that computational tools and activities can play special/unique roles in supporting/encouraging learners to engage with powerful ideas.

In your proposal for this area of your general exam, you wrote that "a special focus will be put on collaborative constructionist learning systems." For your 24-hour exam, select three such systems (including one that you have worked on, or are working on) and analyze the effectiveness of the systems as learning tools. As part of your analysis, you should discuss how each system supports (or does not support):

* epistemological connections (engaging people in using and thinking about "powerful ideas")
* personal connections (drawing on people's intuitions and passions).

Your analysis should include some comparisons (and contrasts) among the three systems, and should make reference to relevant literature.

(1) Choose any two computer-based modeling environments, and compare/contrast them as learning tools. In particular, consider how the environments structure the ways people think about and approach problems.

(2) Imagine that you are designing a new collaborative modeling environment. Discuss a small set of "design principles" to guide the design of the environment.

(3) Discuss the dangers and pitfalls of using computer-based modeling to learn about human social systems.

(1) Critique research from the field of Artificial Intelligence from the perspective of research in "situated learning" or "situated cognition". In your analysis, include examples of specific AI research projects, both past and present.

(2) Select a piece of software/technology that was designed to support and foster collaborative learning. Critique it (based on research from CSCL and other related fields) and present suggestions on how you would improve the software/technology (based on that research).

(1) Imagine that Maria Montessori were alive today. Give an example of a "dynamic craft material" that she would design, and describe how she would use it in a classroom. Discuss the guiding principles that she would use in designing the materials and activities for the materials.

(2) The same as Question 1, but from the point of view of the founders of the Reggio Emilia schools (instead of Maria Montessori).

You are teaching at a medical school, and you've decided that you want to teach a course on "cognitive apprenticeship in health care". To get the course accepted by the "committee on curriculum" for the medical school, you need to submit:
* a description of the course
* a draft syllabus including readings and activities/projects
* an explanation of why you organized the course this way
* a discussion of why this course is important for students at the medical school