COLLEGE OF INFORMATION STUDIES Spring 2018

INST652: Design Thinking and Youth

INSTRUCTOR:

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ONLINE COURSE SPACE: https://myelms.umd.edu/login

COURSE DESCRIPTION

Designing with youth involves unique processes that must take into consideration aspects of who youth are (e.g., age ranges, developmental stages) and the contexts in which they interact (e.g., schools, libraries, homes, families). This course covers methods of design thinking specifically within and for youth contexts. We will cover design-thinking methods including user-centered design, understanding user needs, ideation, contextual design, participatory design, iterative prototyping, and visual design. These topics will specifically be studied in the context of designing with and for youth.

COURSE GOALS

At the end of the course, students will be able to:

- Develop an in-depth understanding of the design process.
- Develop an in-depth understanding of youth contexts that informs and guides design.
- Develop skills in brainstorming, and ideating innovative approaches and technologies for youth and with youth.
- Develop skills in iterative design of new technologies and experiences for youth and with youth.
- Execute a design project from ideation to formative testing and iteration.
- Present design results in oral and written form.

REQUIRED TEXTS

As assigned (See list at the end of this syllabus). As a courtesy, readings listed in the syllabus without a direct link are available through the *Course Reserves* link in Canvas (will be available before the course begins). If you have issues retrieving the articles via Canvas, you must procure the readings on your own. There is no required textbook for this course.

COURSE METHOD

In order to engage various learning styles in an online environment, this course will utilize various assessment methods to measure the achievement of learning objectives for each module. There will not be any mandatory synchronous meetings throughout the semester. Online synchronous office hours will be available bi-weekly for students who wish to interact with the instructor in real-time with questions. The instructor will conduct a Doodle Poll to find a date/time during the weekdays that work for most students.

It is essential that every student read the course readings, participate in asynchronous assignments/activities planned for each module, and complete all the assignments. Students must watch the recorded session and read the assigned readings before completing the assignments planned for each module. Class lectures for each module will be released at least ONE week before the actual topic discussion/activity (with the exception of the class lecture for the first module). For example, the class lecture for Feb 19 will be released on Feb 12.

Based on critical examination of course readings, each student should develop an analytical stance concerning the issues in the course. The students are expected to question, challenge, argue, and discuss issues and topics related to that module's readings.

CLASSROOM ENVIRONMENT

As a graduate seminar, the classroom environment should be professional and respectful. Discussions should be based on course readings and critical thinking. Remember—others may have different perspectives on issues than you, but they still deserve your respect.

ATTENDANCE POLICY

Regular participation in this class is the best way to grasp the concepts and principles being discussed. However, in the event that participation must be missed due to an illness, the policy in this class is as follows:

- 1. For every medically necessary delayed assignment submission, a reasonable effort should be made to notify the instructor in advance of the class. The notification (preferably in the form of a message through Canvas) must identify that the assignment will be delayed and the reason for the delay, and acknowledging that the information provided is accurate.
- 2. If a student is delayed more than TWO times consecutively, the instructor will require documentation signed by a health care professional.

EXTENSIONS

Timeliness is extremely important in graduate work, and extensions will only be available during personal emergencies. Students who need to request an extension should discuss the matter in advance with the instructor. If an extension is granted, the work must be submitted within the extension period to avoid grade penalties. Unexcused delays in submission of the assignments will result in a deduction of half a letter grade for each day the assignment is late.

STUDENTS WITH DISABILITIES

Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Disability Support Services office, and (2) discuss any necessary academic accommodation with the instructor. This should be done by the second week of class.

LEARNING ASSISTANCE

If you are experiencing difficulties in keeping up with the academic demands of this course, contact the Learning Assistance Service, 2202 Shoemaker Building, 301-314-7693. Their educational counselors can help with time management, reading, math learning skills, note taking and exam preparation skills. All their services are free to UMD students.

EMERGENCY PREPAREDNESS

Please check the University's inclement weather number (**301-405-SNOW** [**7669**]), which is used for inclement weather and other emergency situations. The University announces closings for snow early each day, not the night before. While local television and radio stations report on University closings, the information is not always correct. Information about the status of the campus is available at <u>http://www.umd.edu/emergencypreparedness/</u>. While all the course assignments will be completed asynchronously, inclement weather may affect the instructor's ability to access Canvas or e-mail or hold synchronous meetings. Information about possible rescheduling of synchronous meetings and/or assignment deadlines will be provided via Canvas once the campus has reopened.

ACADEMIC HONESTY

Work submitted in this course will be individual (unless indicated as group work) and original, in line with the University's Academic Honor Code and Honor Pledge. Engaging in any academic dishonesty will result in consequences in line with university policies. Academic dishonesty includes but is not limited to plagiarism, cheating, buying work, multiple submissions of the same paper, forging signatures, submitting fraudulent documents, and facilitating the academic dishonesty of others. When writing papers, be sure to carefully and thoroughly cite all materials you use in writing your paper and make sure all ideas and quotations are properly acknowledged.

GRADING

Students' grade will be determined through performance on module assignments (inclusive of class participation), a semester long project, and responses to presentations by other students in the class.

Module assignments (50 points/module)	300 points
Project Part 1	100 points
Project Part 2	200 points
Project Part 3	200 points
Project Part 4	100 points
Responses to presentations	100 points

Each component is expected to reflect the highest professional standards, and both substantive and technical quality will be considered in determining your grade for each. Thoroughness, accuracy, salience, and effective organization are required; correct English grammar, spelling, punctuation, and usage are expected. Adherence to University policies on matters of intellectual integrity is also imperative.

The grade range that will be used to determine the final grade for this class is:

95+ percentage	А
90-94.9	A-
85-89.9	B+
80-84.9	В
below 80	B-

COURSE SCHEDULE

Module/Dates	Topic(s)	Class Activity	Assignment	Points/Due Date
(1) Jan 24 – Feb 4	Course Overview What is Design Thinking?	Watch pre-recorded lecture on the introduction to the course. Watch pre-recorded lecture on "What is Design Thinking?"	 (1) Using VoiceThread, create an introduction of yourself using some form of media (e.g., slides, photos, video, and/or audio). Tell us: Your name Your degree program and areas of interest What inspired you to take this course? (2) CITI training – see module assignment description below Product: Your VoiceThread introduction and CITI training certificate 	50 points Class intros and CITI training certificate due: Feb 4
(2) Feb 5 – Feb 18	Knowing your design project	Watch pre-recorded lecture on "Knowing your project topic"	Create a project topic and a reading list, with one or two line description on why you choose these readings and another short paragraph on the summary of each reading - see module assignment description below. Product: Share on the discussion board and give feedback to others	50 points Posting due: Feb 12 Feedback due: Feb 18
(3) Feb 19 – Mar 4	Context, Empathize, Define	Watch pre-recorded lecture on empathizing and defining your project (the two design thinking stages)	Design and implement a contextual interview – see module assignment description below Product: Share on the discussion board and give feedback to others.	50 points Posting due: Feb 26 Feedback due: Mar 4

Module/Dates	Topic(s)	Class Activity	Assignment	Points/Due Date			
(4) Mar 5 – Mar 16	Ideation and Brainstorming with Youth	Watch pre-recorded lecture on ideation and brainstorming techniques with youth	Discuss the strengths and challenges of ideation and brainstorming with youth, as opposed to coming up with your own idea – see module assignment description below. Product: Share on the discussion board and give feedback to others.	50 points Posting due: Mar 12 Feedback due: Mar 16 *Semester long-project Part 1 due; Mar 10			
SPRING BREAK (MAR 17- MAR 25)							
(5) Mar 26 – Apr 8	Contextual Inquiry and Ideation Techniques	Watch pre-recorded lecture on contextual inquiry and ideation techniques	Design prototypes and conduct a short participatory design session with at least two youth (more is better!) Product: Share on the discussion board and	50 points Posting due: Apr 2 Feedback due: Apr 8			
			give feedback to others				
(6) Apr 9 – Apr 22	Design Iteration – Prototyping and Testing	Watch pre-recorded lecture on prototyping and testing	Design a more elaborate prototype and conduct participatory design sessions with a group of youth Product: Share on the discussion board and give feedback to others	50 points Posting due: Apr 16 Feedback due: Apr 22			
(7) Apr 23 – May 6	Project Work [Catch up with content, if needed]	Watch pre-recorded lecture on class wrap-up	You will work on finishing up the semester long project, do additional design sessions, and finish Part 2.	*Semester long-project Part 2 due: April 25			
(8) May 7 – May 10	Class Presentations		Voice Thread presentations and feedback. See semester-long project description below.	*Semester long-project Part 3 & 4 due: May 11 *Responses to presentation due: May 14			

MODULE ASSIGNMENTS

Module 1 (due Feb 4, 2018)

The University of Maryland's Institutional Review Board (IRB) requires that all researchers on campus who work with human subjects complete an ethics training course prior to their work with human subjects. All published research projects must be IRB approved and members of th research team must have IRB certification. Although you will not be required to publish the results of our work from this class, you will be working with human subjects for your project a assignments in this course. You will therefore need to complete this training.

For this assignment, you will need to complete the University of Maryland's required CITI training. You can find the link and instructions here: <u>https://research.umd.edu/irbtraining</u>. Specifically, you only need to complete the Social and Behavioral Research - Basic/Refresher course. To turn in this assignment, attach the pdf of your completion report to your submission on Canvas. Make sure that you keep this file for your own records so that you will have this if and when you begin working on research projects. If you have completed the course previously you may submit your completion report from your previous completion for this assignment.

Module 2 (first posting due Feb 12, 2018, and second posting due on Feb 18, 2018)

In the process of designing with and for youth, while we would like ideas to emerge from youtl you may have a larger programming or product ideas that you would like to focus on. Some broad ideas can include making, computational thinking, health, gaming, family learning, etc. Module 2 is the first step in defining your semester-long project topic. You should find 4-6 relevant readings that inform your understanding of the project topic (more readings are definitely encouraged!). You should choose articles that will help you to delve deeper into understanding the topic you are designing within and a topic in which you will have access to youth and youth service providers (e.g. teachers, museum professionals, librarians, technicians, health providers, etc.).

Some example topics you might consider are (and I have provided an example of an article that you may read depending on the topic that you have chosen):

- *Quantified Self:* Lee, V. R. (2013). The Quantified Self (QS) movement and some emerging opportunities for the educational technology field. *Educational Technology* (November-December 2013), 39.
- *Coding and computational thinking:* Namukasa, I. K., Kotsopoulos, D., Floyd, L., Weber, J., Kafai, Y., Khan, S., Yiu, C., Morrison, L., Somanath, S. (2016). From computational thinking to computational participation. Available at: http://researchideas.ca/coding/docs/CT-participation.pdf
- *Civic engagement:* S., Yiu, C., Morrison, L., Somanath, S. Roque, R., Dasgupta, S., Costanza-Shock, S. (2016) Children's civic engagement in the Scratch Online Community. *Social Science*. 5(4): 1-17.
- *Digital literacy*: Subramaniam, M. Taylor, N. G., St. Jean, B., Follman, R., Kodama, C., & Casciotti, D. (2015). As simple as that?: Tween credibility assessment in a complex online world. *Journal of Documentation*, *71*(3), 550-571.

- Health literacy: St. Jean, B., Subramaniam, M., Taylor, N. G, Kodama, C., & Casciotti, D. (2015). Impacts of the HackHealth After-School Program: Motivating Youth through Personal Relevance. Proceedings of the 78th Annual American Society for Information Science & Technology Conference, 52(1), 1-11
- *Social media:* Marwick, A., & Boyd, D. (2014). 'It's just drama': Teen perspectives on conflict and aggression in a networked era. *Journal of Youth Studies*, *17*(9), 1187-1204.
- *Youth as makers*: Blikstein, P. (2013). Digital Fabrication and 'Making' in Education: The Democratization of Invention. *FabLabs: Of Machines, Makers and Inventors*, 1-21.
- *Gaming*: DSalvo, B. J., Guzdial, M., Mcklin, T., Meadows, C., Perry, K., Steward, C., & Bruckman, A. (2009). Glitch game testers: African American men breaking open the console. *New Ground: Innovation in Games, Play, Practice and Theory. Proceedings of DiGRA*.
- *Families*: Saksono, H., Ranade, A., Kamarthi, G., Castaneda-Sceppa, C., Hoffman, J. A., Wirth, C., & Parker, A. G. (2015, February). Spaceship Launch: Designing a Collaborative Exergame for Families. In *Proceedings of the 18th ACM Conference on Computer Supported Cooperative Work & Social Computing* (pp. 1776-1787). ACM.

Once you have found and read the readings, you will post the list of readings, a one or two line description on why you chose these readings, and a short summary of each reading in the Module 2 discussion board as your first posting. Your second posting will be providing feedback to your peers' posting – be generous and helpful to your peers by suggesting other readings, and finding readings that can be useful for your topic that was found by others.

Module 3 (first posting due Feb 26, 2018, and second posting due on Mar 4, 2018)

Based on your narrowed project topic with respect to technology for youth, develop an interview guide for a 20-30 minute interview. Conduct two 20-30 minute interviews with youth about their experiences within your project context (e.g., if you are developing a program centered around games for learning, you would want to interview youth who are interested in gaming about their experiences gaming, which games they like, which ones they want to try, who they game with, ideas they have for a program, etc.). You may choose to do a youth-led interview, where you have youth interview one another and you report on their findings and the process of helping youth conduct their own interviews – however, this is not required. Your first posting must include the following:

- Your interview guide
- Your notes from the interview (e.g., what participants said that stood out to you)
- Reflections about interview guide and the process of conducting interviews more generally
 - What worked well?
 - What would you do differently?

Treat this as testing the playground for your semester-long project. Your second posting will be providing feedback to your peers' posting – be generous and helpful to your peers by suggesting other questions that they could have asked or sharing your thoughts on the points raised on what worked well or did not work well for your peers.

Module 4 (first posting due March 12, 2018, and second posting due on Mar 17, 2018)

In Module 3, you were able to conduct interviews with youth. As you are shaping your semesterlong project, discuss at least three strengths and three challenges of ideation and brainstorming with youth, as opposed to coming up with your own idea. How did the readings so far shape your understanding about the design thinking process with youth? Your second posting should be a substantive response to your peers' posting in the form of a critique and/or comment.

Module 5 (first posting due April 2, 2018, and second posting due on April 8, 2018)

This module assignment can be done in the context of your semester-long project. For this assignment, as you brainstorm prototypes (i.e., design ideas for learning experiences) for your project, conduct participatory design with the youth who would eventually use your design. Choose a participatory design technique we have learned about (e.g., low-tech prototyping, layered elaboration, mixing ideas, etc.) and conduct a short participatory design with at least two youth from your target population. You can also do participatory design with groups of stakeholders (e.g., groups of children, or intergenerational groups of children and adults).

Based on the technique you are using, you should come up with a plan for the session. This can be a brief plan since sessions do not need to be highly scripted (sample plan was shared in the course lecture). You should post on the discussion board:

- Your plan for the session, including:
 - The question of the day you would like to ask for your session
 - The *design technique* you will use (e.g., bags-of-stuff, layered elaboration) and why. Please also state:
 - What materials you will need for this technique
 - How you plan to carry it out (i.e., instructions you'll provide to the group).
 - How you will structure or keep track of the *big ideas*
- Describe the designs that resulted from your session. Be sure to show photos or drawings of artifacts that were created during the session. Also provide a written description of the designs.
- Describe the big ideas that you took away from the session. Big ideas are themes you observed across designs and feedback that should be labeled and described in your report.

Module 6 (first posting due April 16, 2018, and second posting due on April 22, 2018)

This module assignment can be done in the context of your semester-long project. It is time to delve deeper into the design prototypes of your proposed technology/program. For the first posting, describe how you took the big ideas that came out of Module 5, and continued with the design iteration. You should design three alternative prototypes (with sketches, mock-ups, etc.) and conduct another participatory design session with a group of youth. You should arrive at your different design specification (hopefully more refined) through participatory design methods with youth. Describe the resulting design. Be sure to show photos or drawings of artifacts that were created during the session.

SEMESTER LONG PROJECT

In your semester-long project, you will accomplish the following goals:

- Evaluate a technology-related task or problem
- Develop interface/design alternatives for a program/learning experience in your context (could be a technology product that you are trying to design for youth, a technology-infused program at a library/museum for youth, a learning environment that you are designing for learning, etc.)
- Develop a prototype of your design (e.g., activity plans, sequences, interactions, specifications of tools you will use, etc.)
- Conduct initial evaluations of your design.

This project should provide you with hands-on experience within youth contexts and the tasks that interface designers face every day. For each part of the project, you must submit a report via Canvas. As with any written report, in addition to grading the document based on content, I will also be grading based on degree of professional preparation, expressiveness, grammatical soundness, and the ease with which it can be viewed and understood. A good design effort can easily be hampered by poor communication of what was done. Make sure that you produce a report that is illustrative of your efforts and process.

This project has three parts. First, your assignment will be to narrow down a particular issue or topic with respect to the larger topic that you would like to address. You will do this through the Module 2 assignment. Next, for Project Part 1, you will use methods we discuss in class as well as relevant readings to understand the needs of youth with respect to the context of your topic. You will then (in Project Part 2) design frames for three alternative prototypes of learning experiences/program activities/technology to address the user needs you identified previously. Finally, for Project Part 3, you will further develop the design of one prototype and gather initial evaluation feedback on your technology/program design.

Project Part 1: Empathize

Due March 10th, 2018 11.59 pm ET

The key goal of this first substantive part of the project is to deeply understand the **problem space** that you are addressing, who is the "youth" and pertinent users who interact with youth in this problem space, and the issues and constraints that are involved in the problem. If the task is accomplished through an existing system or interface or program or environment, you should perform an interpretive evaluation of that "system" to help you learn more about it. The most important goal of Part 1 is to identify important characteristics of the problem that will influence your subsequent design. A major mistake that students make in Part 1 is to suggest potential solutions without first identifying the problem and its characteristics. You'll have plenty of time for designs of possible solutions in Part 2. For now, suppress the urge to problem-solve and concentrate your efforts fully on developing an in-depth understanding of the problem at hand.

In class (via readings and discussion board), we will discuss observation and interviewing techniques for acquiring this kind of information. In addition, your understanding of the problem context should be informed by readings specifically related to your topic (including, but not limited to the readings you found for Module 2). Your report and deliverable for this part should deeply examine the problem of study through reading relevant literature and through your own interviews and observations. In general you should be attempting to answer these questions:

- Who are the potential users?
- Who are the potential stakeholders?
- What are their goals? What tasks do they seek to perform?
- What functionality should any system provide to these users?
- What constraints will be placed on your eventual design?
- What criteria should be used to judge if your design is a success or not?

I recommend the following structure for your report. Remember to state how you collected your data and justify the methods that you used. If you selected one method over other possible methods, include a brief statement of why you chose not to use those other methods. Because of the nature of your project, technology may not be currently used to address the problem or issue you are investigating, but you may be interested in pursuing a technological solution. In such cases, be sure to describe the ways the current issue or problems are being addressed.

- [5 pts] An overview of the problem or opportunity and a statement of why an interface or system or a program or a learning environment is necessary or advantageous to solve it.
- [15 pts] Discuss the methods you used for collecting data about your users. Specifically state what data you collected (e.g., interviews, observations, participant observation, etc.). Discuss the details of your data collection (e.g., number of participants, length of time you did observations, etc.). Also discuss your justification for your methods (e.g., why you chose one technique over another, how you decided upon procedural details of your data collection).
- [15 pts] A description of the important characteristics of **the youth** who will use the system as well as any other adult stakeholders who will use your system. This section should be grounded in both the topic specific readings you found and the interviews/observations you did.
- [30 pts] A task analysis consisting of the following items.
 - [15] A description of important characteristics of the task environment.
 - [15] A description of **the tasks** performed by users.
- [10 pts] A description of the larger *social and technical system* in which your design will intersect. This section should also be informed by both the project specific readings you chose and the interviews and observations you did.
- [5 pts] An initial list of criteria that should be used in the eventual evaluation of your design.
- [10 pts] A discussion of the implications of what you learned above. Go beyond the usability criteria in this section. This item is critical. Don't only describe the target users, tasks, environment, etc. You must also tell us how these attributes should or will influence your eventual designs. Are there any implications to be made from the user profiles and other data you learned? I will be very careful to look for this information in your report.
- [10 pts] Grammar, typo-free, and ability to communicate your thoughts and points clearly.

Project Part 2: Design

Due April 25th, 2018 11.59 pm ET

The key goal of Part 2 of the project is to use the knowledge gained in Part 1, as well as that from class, to **develop multiple design alternatives** for your problem based on your work in Part 1 of understanding youth contexts. This is the stage of "informed brainstorming." These alternatives should explore the **design space** of the problem through designing with youth.

In this part of the project you will develop mock-ups, storyboards, and sketches of your interface designs using participatory design methods with youth (and/or other adult stakeholders). That is, you should provide pencil-and-paper or electronic images of the interface at various stages. You do not need to build a working prototype. In fact, I recommend that you do not try to develop full prototypes in this part so that you can focus your time and effort on a broad exploration of the many design possibilities that exist for your problem or task.

Although I am not looking for a full-scale prototype, your design sketches should be sufficiently detailed for a potential user to provide useful feedback about the design. Along with your design mock-ups, you should provide a brief narrative walk-through of how the proposed system will work. Perhaps most importantly, you should also include your justifications for why design decisions were made, and what you consider to be the relative strengths and weaknesses of your different designs.

The design process you follow here is important. You should arrive at your different designs through participatory design methods with youth and adult stakeholders who would interact with your system. You should seek to create some fundamentally different design ideas, i.e., concepts all over the potential design space for the problem you have chosen. The key is to push the boundaries of the space of design possibilities.

Your project report should include all the explanatory material mentioned above as well as all the design sketches, drafts, storyboards, etc., that you generated and a description of the participatory design methods and techniques you used. Make sure that your report adequately reflects the design process that you undertook. The key in this part of the project is to develop **several different** design ideas, not just a set of minute variations on some basic design. At a minimum, you must submit three different designs. It cannot be stressed enough that I seek significantly different design ideas; quality is more important than quantity. In particular, I would much rather see three very different designs described in great detail than five or six rather similar designs described in shallow detail.

Use the following structure for your report.

- [2 pts] Project Description: Write an updated **one-paragraph** description of your project. Simply re-introduce the general area of application, intended tasks it will support and the intended youth and adult stakeholders.
- [8 pts] Requirements Summary: Briefly state key requirements from your system. Again, the goal here is to re-introduce the requirements developed in Part 1, though it is OK if you introduce new or altered requirements here. Do not exceed one page in this summary.
- [10 pts] Design Methodology: Discuss your methods for designing your prototypes. Talk about how you incorporated methods or techniques we discussed in class (e.g., participatory design, action research, contextual inquiry) in your design process.

- [20 pts] Design Space: Describe the design space of the potential interfaces for your system. In particular, answer the following questions (you may use each of these questions as section sub-headings if you wish, but that is not required).
 - What requirements may be difficult to realize?
 - What are some tradeoffs that you should or did explore?
 - Which tasks will be easiest to support? Which are hardest?
- [10 pts] Design Summary: Briefly describe the design alternatives that you considered exploring, including alternatives that you did not ultimately pursue. Do not cover **every** idea that you discarded, but rather group them and discuss as a whole. Make sure to justify your choices (Why did you not pursue certain avenues? Why did you decide to pursue the designs that you actually produced?). Justifications need not be lengthy; a few sentences for each should suffice.
- [120 pts] The designs: Present each design that you created. Remember that you should present at least three designs. Cover each design in its own section by presenting the following information.
 - [6 pts/design] A brief overview of the design.
 - [14 pts/design] Illustrations of the design (sketches, storyboards, etc.).
 - [6 pts/design] At least one scenario written from a user's perspective.
 - [14 pts/design] An assessment of this design (advantages, disadvantages, and the degree to which your requirements can be met by the design). Include feedback from potential users in the assessment as well as references from the project readings. Make sure to express how you gathered this feedback.
- [20 pts] Requirements changes: You more than likely modified, added to, or removed elements of your requirements and usability criteria as a result of conducting the design process. Discuss these in this section... what were they and how did they arise? What requirements may be difficult to realize?
- [10 pts] Grammar, typo-free, and ability to communicate your thoughts and points clearly

Project Part 3: Iterate

Due May 11, 2018 11.59 pm ET

In Part 3 of the project, you will implement a detailed prototype (i.e., paper, mid-tech, or interactive) of your interface/program/environment. You can use any prototyping tools that you would like to assist this process (such as VB, Hypercard, Director, PowerPoint, web pages, clay, paper, plastic, etc.). Note that you should feel free to "mix and match" aspects of the different designs from Part 2 into the Part 3 prototype.

You must provide a set of initial usability specifications for your system and a plan for an evaluation of it. To develop usability specifications, consider the objectives of your design. For example, if you are working on a social media app for youth, you might specify time limits in which you expect a user to be able to create or comment on a post, or a maximum number of errors that you expect to occur. Basically, you should list a set of criteria by which your interface can be evaluated.

Your report write-up for this part should include a description of your "system" prototype. You can include screen shots or photographs to help explain it and text to describe how a user would interact with it. Discuss the implementation challenges you faced. Were there aspects that you wanted to build but could not? In addition to the prototype description, it is key to include a

justification of why you built your prototype. What's special about this particular design with respect to your problem? How does this design take into account the readings you have done on youth contexts? You are encouraged to include feedback from users in your justification.

You should also include an initial evaluation plan for the system. You should use some of the data gathering techniques we discussed in class (e.g., interviews, observations of participants with your prototypes), other relevant data gathering techniques we did not discuss (e.g., surveys, heuristic evaluations), and/or other design techniques for getting feedback from users (e.g., participatory design). You should show (with screenshots and descriptions) at least one iteration of your design based on this initial feedback. This does not have to be a huge change, it could be as small as one feature of your system, based on what your participants said was most important. You should also tell us about what you might do in future iterations of the design based on this feedback. Finally, you should also include reflections on your initial evaluation data gathering techniques and what you might do differently in the future.

I recommend the following structure for your report.

- [2 pts] Project Description: Write an updated **one-paragraph** description of your project. Simply re-introduce the general area of application, intended tasks it will support and the intended user population.
- [8 pts] **Requirements Summary**: Briefly state key requirements from your system. Again, the goal here is to re-introduce the requirements developed in Parts 1 and 2, though it is OK if you introduce new or altered requirements here. Do not exceed one page in this summary.
- [90 pts] Prototype Description:
 - [10 pts] An overview of the prototype that you developed.
 - [40 pts] Each piece of the prototype in more detail, using screen shots or photographs to help illustrate the design.
 - [20 pts] At least one scenario from a user's perspective.
 - [20 pts] Rationale: why did you choose this prototype? What are its advantages and disadvantages with respect to your requirements and to your ability to evaluate it?
- [80 pts] Initial Evaluation:
 - [20 pts] Discuss your initial evaluation technique(s) and procedures. Tell us why you selected those techniques.
 - [20 pts] Discuss the results of your initial evaluation, the feedback that you received from participants.
 - [20 pts] Show screenshots (with descriptions) of the changes you made to the system in your next iteration of the design based on your initial feedback.
 - [20 pts] Discuss changes you would make in the future based on your initial feedback.
- [10 pts] Grammar, typo-free, and ability to communicate your thoughts and points clearly

Project Part 4: Presentation of your "system" prototype and process

Due May 11, 2018 11.59 pm ET

Using VoiceThread you should put together a presentation of your system, and how you got there (essentially a quick summary of Part 1 through 3). Your presentation should be 15-20 minutes. It does not need to cover every section of your project report, but summarize the main steps and take-

aways from your work.

Responses to Presentations

Due May 14, 2018 11.59 pm ET

You will view **at least five** of your classmates' recorded presentations then respond in writing to specific questions about these students' presentations. The questions that will be provided will be designed to help you focus your attention on the elements of design thinking. Each student will be assigned a question to answer. You will then copy your question and response and paste that information into the Presentation Responses Assignment submission in Canvas.

READINGS – articles that do not have a direct link can be accessed through the Modules section in the course website

Module 1: What is Design?

Bauhaus. (2011, Jan 11). *What is Design* [Video file]. Available at <u>http://www.youtube.com/watch?v=6U0nklFHzQI&list=PLNpgw0zcyFDRFPvTQQ7joM</u> <u>1MTufEIS1kn&index=1 (</u>A video about what constitutes design)

Liedtka, J., & Ogilvie, T. (2011). Chapter 2: Four Questions, Ten Tools. *Designing for growth: A design thinking tool kit for managers*. Columbia University Press.

Druin, A. (2002). The role of children in the design of new technology. *Behaviour and Information Technology*, 21(1), 1-25. Available at https://wiki.inf.ed.ac.uk/pub/ECHOES/Participatory/Druin-BIT-Paper2002.pdf

Norman, D. A. (2002). *Chapter 1: The Psychopathology of Everyday Things* in *Design of Everyday Things*.. New York: Basic books, 1-36. Available at http://www.nixdell.com/classes/HCI-and-Design-Spring-2017/The-Design-of-Everyday-Things-Revised-and-Expanded-Edition.pdf

IDEO. (n.d.). Tim Brown on Change by Design [Video file]. Available at http://vimeo.com/channels/ideo#5861210

Module 2: [You will collate your own readings]

Module 3: Context, Empathize, Design

IDEO. (n.d.) Birth 2 Business [Video file]. Available at http://vimeo.com/channels/ideo#5824861

Bekker, M., Beusmans, J., Keyson, D., & Lloyd, P. (2003). KidReporter: a user requirements gathering technique for designing with children. *Interacting with Computers*, *15*(2), 187-202. Available at https://pdfs.semanticscholar.org/5c6b/cc1b9f6d71f260bebf9f351b30e404c83eca.pdf

Fails, J. A., Guha, M. L., & Druin, A. (2013). Methods and techniques for involving children in the design of new technology for children. *Foundations and Trends*® *in Human–Computer Interaction*, *6*(2), 85-166. Available at http://www.cs.umd.edu/hcil/trs/2013-23/2013-23.pdf

- Section 5.1: Fictional Inquiry (Requirements Gathering, Brainstorming)
- Section 5.9: Focus Groups (Requirements Gathering; Brainstorming; Iterating; Evaluating)

Isola, S., & Fails, J. A. (2012, June). Family and design in the IDC and CHI communities. In *Proceedings of the 11th International Conference on Interaction Design and Children* (pp. 40-49). ACM.

Ito, M., Gutierrez, K., Livingstone, S., Penuel, B., Rhodes, J., Salen, K., ... & Watkins, S. C. (2013). *Connected learning: An agenda for research and design*. Irvine, CA: Digital Media and Learning Research Hub. Available at <u>https://dmlhub.net/wp-</u>content/uploads/files/Connected Learning report.pdf

(Note: You only need to read pages 4-12 which includes the Summary, Introduction, Case Study 1 and summary charts)

Hoffman, K. M., Subramaniam, M., Kawas, S., Scaff, L., & Davis, K. (2016). *Connected libraries: Surveying the current landscape and charting a path to the future*. College Park, MD; Seattle, WA: The ConnectedLib Project. Available at <u>http://go.umd.edu/5fh</u>

Poole, E. S., & Peyton, T. (2013, June). Interaction design research with adolescents: methodological challenges and best practices. In *Proceedings of the 12th International Conference on Interaction Design and Children* (pp. 211-217). ACM.

Module 4: Ideation and Brainstorming with Youth

Beyer, H., & Holtzblatt, K. (1999). Contextual design. Interactions 6(1), 32-42.

Dalsgaard, P., & Eriksson, E. (2013, April). Large- scale participation: a case study of a participatory approach to developing a new public library. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 399-408). ACM.

Steele, K-F. (2013). "What We Think Actually Matters?" Teen Participatory Design and Action Research at the Free Library of Philadelphia. *Young Adult Library Services*, *11*(4), 12.

Walsh, G., Foss, E., Yip, J. & Druin, A. (2013). FACIT PD: Framework for Analysis and Creation of Intergenerational Techniques for Participatory Design. In *Proceedings of the 2013 SIGCHI Conference on Human Factors in Computing Systems* (CHI '13). New York, NY: ACM.

Xie, B., Druin, A., Fails, J., Massey, S., Golub, E., Franckel, S., & Schneider, K. (2012). Connecting generations: developing co-design methods for older adults and children. *Behaviour* & *Information Technology*, *31*(4), 413-423.

Yip, J., Clegg, T., Ahn, J., Uchidiuno, J., Bonsignore, E., Beck, A., Pauw, D., & Mills, K. (2016). The Evolution of Roles and Social Bonds During Child-parent Co-design. In *Proceedings of the 2016 SIGCHI Conference on Human Factors in Computing Systems (CHI '16)* (pp. 3607 - 3619). New York, NY: ACM. Available at

https://dl.acm.org/citation.cfm?id=2858380

Module 5: Contextual Inquiry and Ideation Technique

Guha, M. L., Druin, A., Chipman, G., Fails, J. A., Simms, S., & Farber, A. (2004). Mixing ideas: a new technique for working with young children as design partners. In *Proceedings of the 2004 conference on Interaction design and children: building a community* (pp. 35-42). ACM.

Reynolds, G. (2012). Chapter 4: Crafting the Story. *Presentation Zen: Simple ideas on presentation design and delivery, 2nd Edition*. Berkeley, CA: New Riders. Available at http://ptgmedia.pearsoncmg.com/images/9780321811981/samplepages/0321811984.pdf

Somerville, M. M., & Brown-Sica, M. (2011). Library space planning: a participatory action research approach. *The Electronic Library*, *29*(5), 669-681.

Holstead, J., Hightower King, M., & Miller, A. (2015). Research-Based Practices in Afterschool Programs for High School Youth. *Afterschool Matters*, *21*, 38-45. Available at https://files.eric.ed.gov/fulltext/EJ1063849.pdf

Subramaniam, M. (2016). Designing the Library of the Future for and with Teens: Librarians as the 'Connector' in Connected Learning. *Journal of Research on Libraries and Young Adults*, 7(2), 1-18.

Walsh, G., Druin, A., Guha, M. L., Foss, E., Golub, E., Hatley, L., ... & Franckel, S. (2010). Layered elaboration: a new technique for co-design with children. In *Proceedings of the 28th international conference on Human factors in computing systems* (pp. 1237-1240). ACM.

Module 6: Evaluation and Design Iteration

Barab, S., & Squire, K. (2004). Design-based research: Putting a stake in the ground. *The Journal of the Learning Sciences*, *13*(1), 1-14.

Liedtka, J., & Ogilvie, T. (2011). Chapter 12: Learning Launch. *Designing for growth: A design thinking tool kit for managers*. Columbia University Press.

National Research Council. (2009). "Chapter 3: Assessment." *Learning science in informal environments: People, places, and pursuits*. National Academies Press. Available at https://www.nap.edu/read/12190/chapter/6

Yip, J., Ahn, J., Clegg, T., Bonsignore, E., Pauw, D., & Gubbels, M. (2014). "It Helped Me Do My Science." A Case of Designing Social Media Technologies for Children in Science Learning. Paper presented at the Interaction, Design, and Children Annual Conference, Aarhus, Denmark.