DGMD E-598 Digital Media Design Capstone Tutorial
Final Proposal Template - Summer 2019
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1. Project Scope

1.1 Project Title
Studio in a Box – Teaching Fellow Edition
A Cheap, Easy to Use, Mobile, Short-Form Educational Video Production Studio with a Workflow that Incentivizes Strong Pedagogy.

Instructional Design Track

1.2. Project Goal

General Context
There has never been a time that an educated, informed, and civically engaged society is as crucial as today. At the same time, the nature of higher education has changed, and while there are certainly opportunities, there are also formidable challenges. First, the body of scientific knowledge that exists is exploding, and educators and students alike are confronting new disciplines and new interdisciplinary areas of knowledge for which no pedagogical roadmap exists. Second, there is a paradigm shift in the contemporary student body, which now extends well beyond those in formal school. Educators are facing learners with more diverse backgrounds, different baseline levels of knowledge and skills, and a variety of learning styles. As institutions of higher education try to extend their reach, they are increasingly investing in online learning; how to create the most effective digital learning pathways and multimedia materials is a critically important question. Third, models of education – in particular higher education - are transforming. The "concept" of a classroom is far more nuanced today, as lines blur between physical and digital learning spaces, even within the walls of a brick and mortar university. Finally, and of particular relevance to educational multimedia, the availability of new technologies has outpaced the evidence guiding how to best use them.

While there is a need for multiple strategies in a variety of domains to address the challenges laid out above, **this project aims to address those that are most relevant to instructional design applied to producing need-based, short-form educational multimedia.**

In the next section I will expand upon the need, significance and potential users for this project from an aspirational perspective. However, I recognize that for my capstone, I will need to narrow the scope of the project down to a feasible size and scale. Therefore, my proposal for the capstone will ultimately focus on:

   (1) one selected user group of educators (graduate student teaching fellows),
   (2) one basic studio prototype specialized for the user group,

(3) a quick-start guide for how to use the studio for the specified use case, and
(4) one specialty instructional design guide on pedagogical best practices for analog capture educational production.

Need, Significance, Estimated Number of Users of Proposed Project

While the toolbox of digital technology has expanded, history has shown us repeatedly that simply substituting the "old" for the "new" is rarely the answer. No technology is inherently good or bad for education – but it should be used in conjunction with how our student's think and learn. The more we know about cognition and learning, how different mediums work, and how we respond to different stimuli, the more we can leverage that knowledge to innovate and design new models of instruction and create new tools for learning. But here is the dilemma. Those most comfortable with digital technologies and with the most expertise in educational multimedia are generally not the same as those with content expertise. Consider a typical university as an example: the _online learning staff_ are the most familiar with the tools and technologies; the _professors_ are the most equipped in terms of content expertise; and the _cognitive scientists and educational researchers_ possess the cutting-edge knowledge about cognition and learning. New innovation in educational multimedia should consider input from each of these distinct communities and apply that input in an interdisciplinary fashion through the production process.

Particularly relevant to my focus on media production-efficiency, there is another pragmatic set of considerations that presents a challenge. Educators are often operating in the context of limited resources– whether the constraints are limited time, funding, staff, or technology. For some faculty, there will not even be the option for creating and incorporating multimedia in lesson plans due to a lack of the tools and technologies. However, even for those with access to digital technology, they often have a limited amount of "taping time" or "studio slot" where they essentially give their lecture to a camera in an empty room. This is not only the least effective route to a high-quality multimedia learning product, it represents an enormous opportunity cost. The act of figuring out how to teach something is a complicated process that is consistently changing as the content gets updated, as the student pool changes, and as the instructor iteratively incorporates teaching experiences, learner outcomes, and student feedback. Pedagogic potential is highest at this moment, when the teacher is deciding how to teach a lesson in the planning and/or revising phase. Additionally, this point in the process is also where an instructor who is trying to innovate will be at their greatest vulnerability - taking risks and trying out new ways of teaching inevitably involves cycles of trial and error. Teaching staff need a low-risk environment and the ability to experiment, prototype, and create small media products that support their lessons when the need calls for it.

Based on the points made above, coupled with what I have experienced in my work with the faculty, teaching fellows and students in the CHDS Media Hub, the ability to experiment, prototype, and pilot in a low-stakes digital environment, in collaboration with an instructional designer versed in multimedia, can be a game changer. Faculty at CHDS have reported far more comfort with navigating between physical and digital spaces, drawing on a broad range of modalities in their lesson plans, and experimenting, failing, and iterating

in general. Moreover, above and beyond creating multimedia educational products, nearly all report the acquisition of new pedagogical approaches and teaching skills.

Motivated by this observation, I hypothesize that educators with access to a portable modular "low-stakes" studio (herein referred to as "*mobile media laboratory*"), inclusive of instructional guidebooks, will more actively engage in "disrupting" the traditional architecture of conventional lesson plans – in other words, they will be more likely to:

(1) Take risks with their pedagogical approach;
(2) Add new kinds of material to lessons, for example, contemporary news and current events;
(3) Respond in temporal proximity to points of student confusion by providing students with access to quickly produced and relevant mini-video lessons;
(4) Create rapid prototypes, which they can pilot and iteratively improve upon, ultimately creating more effective educational materials methods.

An additional institutional gain will be that teaching staff will build and strengthen their own multimedia literacies, allowing for more effective communication and collaboration with online instructional design staff. Ultimately, I believe the *mobile media laboratory* will prove to be an accessible, efficient and cost-effective method to support faculty innovation in education at the institutional level.

Proposed Solution or Novel Product and Estimated Users

The product I am proposing is a **mobile media laboratory**, a **basic workflow manual**, and a **specialty guide** that focuses on producing educational media through an **analog capture** method. One can think of the aspirational product as a mobile lab for experimentation and a low-stakes hub to prototype high value educational products and facilitate professional development.

This proposed product (described below) for my capstone is a potential first step in what is a broader vision to enable and enhance innovation in instructional design through experimentation, collaboration, and low-risk prototyping. Ultimately, the success of this initial prototype would provide the foundation for a flexible **studio-in-a-box library** with modular components that would be tailored to different user objectives coupled with a community generated, and free-to-access library of specialty guidebooks and video lessons.

As mentioned above, I will need to narrow the scope of the project down to a feasible size and scale. My proposal for a pragmatic capstone project will therefore focus on

(1) one selected group of educators (graduate student level teaching fellows),
(2) one basic studio prototype and use manual,
(3) one specialty guide for analog capture-based pedagogy design.

1.3. Learning Goals
Piloting and product testing

For my learning goals, I'd like to develop the knowledge and skills to extend my recent experience in creating prototypes, to actually formally piloting a product, and then incorporating that feedback into an iterative design process which leads to improvement. Learning how to select the appropriate metrics, synthesize the information that I obtain, and interpret the results properly will be integral to my future goals. It will strengthen my ability to test and evaluate my own educational products in the future, as well as improve my skills to give productive feedback to others.

I think that the process of influencing the products that educators create through a crafted workflow that passively incentivizes strong pedagogy, will prove to be a challenging undertaking. I will invest the time during this capstone to examine, reflect and learn from this process as well.

Ultimately, more effective educational materials are only as valuable as the results that help to achieve. Improved teaching and learning.

Improved teaching: At least from my initial experiences, faculty at CHDS who have worked in the media space in the manner that the mobile studio will provide have reported far more comfort with navigating between physical and digital spaces, drawing on a broad range of modalities in their lesson plans, and experimenting, failing, and iterating in general. They also all report the acquisition of new pedagogical approaches and teaching skills. My hypothesis is that the teaching fellow educators will have this experience as well, and moreover, their enhanced ability to experiment with the flexible and accessible approach will magnify the professional development gains. I am eager to learn the best approaches to conducting focus groups and surveys with pilot users about the metrics that we might use to gauge this outcome. This too will be a learning a goal.

Improved learning. I am hoping that learners will acquire an improved understanding of material and improved motivation and engagement, through the extra support that the mobile media lab will provide. This will be difficult to measure but some proxy metrics I might consider would include an increase in questions, persistence with engaging with the media material, better assessment scores, and higher teacher ratings by the end of the semester. I am eager to learn more about how one might consider measuring longer term outcomes.

1.4. Target Audience

The potential "users" of this adaptive technology toolkit would be educators interested and motivated to experiment, prototype, and pilot multimedia educational products (e.g., for online classes, hybrid classes or to augment traditional brick and mortar classes).

The initial candidates for this project would be the teaching staff on courses in higher education institutions, providing Teaching Fellows the ability to experiment, iterate, and produce quality educational media to support their students and course.

Secondary candidate settings, in a second pilot pending the success of this project, would include (a) departments and centers in schools and universities with interested faculty but without access to "low-stakes" experimental multimedia spaces (this would be the vast majority of departments in all of Harvard's professional schools, as well as school-wide and university-wide centers); (b) community colleges and private/charter/public high schools with interested faculty/teaching staff without access to "low-stakes" experimental multimedia spaces and/or the ability to create multimedia educational products; (c) individual faculty with exposure and experience to the design and development of multimedia educational products, but wanting to do periodically engage in experimentation and prototyping as they design a new course, or embark on a new educational initiative; (d) A student-centric project creation environment, that would facilitate assignments and learning through iterative prototyping. These secondary "use cases" are based on discussions with faculty at the Center for Health Decision Science, as well as workshops and faculty residencies held at the CHDS media hub, and the Global Health Education and Learning Incubator.

The potential user profile might, in the end, be much larger. For example, the adaptive technology toolkit could be (1) scaled "up" to a *greater number* of users (e.g., students, fellows, etc.) and (2) scaled "out" to a *more diverse* group of users (e.g., museums, non-profits, higher education institutions in middle-income countries, etc.). In addition, the "library" of specialty guides for different multimedia/multi-modal skills and interest areas would be enriched and populated by core media hubs (e.g., CHDS media hub, GHELI incubator, etc.) and through contributions of the community of users. This would result in a virtual community with exchange of ideas and shared learning.

Target educators:
Teaching fellows at the graduate student level. Based on the advice from faculty mentors, graduate student teaching fellows reside in the space between students and professors with both learning and teaching roles. They tend to be comfortable with the digital world so will be more likely to serve as a good pilot group, removing the challenge of establishing "technology comfort" that I would need to address with a broader target educator group at more senior levels.

This user group is also most likely to be comfortable with trying out different ideas using the prototype. In addition, I have access to two large classes - one class of undergraduate students at Harvard College in the Gen Ed curriculum taking global health, and one class of graduate students in the School of Public Health taking an online course in public health decision making and decision analysis. Between these two classes, for which I have permission of the instructor to become involved and conduct a pilot, I would have access to more than one dozen teaching fellows with varied areas of disciplinary background – likely

representing three or four Harvard schools. (Historically, the teaching fellows in these courses have spanned at least four schools) I am hoping that this will expand my sample size, and increase the diversity of my pilot testing.

Finally, teaching fellows are often close to acquiring their doctoral degrees and will be entering the job market – as they are gaining teaching experience and presumably learning new teaching skills, they are likely to be a motivated target group. My faculty advisors in my current job have also emphasized to me that the often the best educational innovation ideas can start with teaching fellows, and if successful, their senior faculty supervisors will be more likely to gain interest themselves.

Section 1 Persona - Teaching Fellows
Section 2 Persona - Community College Teachers, Junior Faculty Aspiring Educators, Senior Faculty Innovators

Section 1 Persona - Teaching Fellows				
	Jane	Joe	Jack	Jill
Personal				
Age	25	27	34	29
Gender	F	M	M	F
Education Level	Graduate School	Graduate School	Graduate School	Graduate School
Degree Program	Masters	Doctoral, Year 4	Doctoral, Year 2	Doctoral, Year 2
Professional School	Public Policy and Government (HKS) Prior MS	Environmental Health School of Public Health Prior BS	Global Health/Population School of Public Health Prior MD	PhD Program in Health Policy (FAS) Prior MS
Professional				
Teaching Fellow (TF) Experience	New Teaching Fellow, prior teacher in high school setting	Teaching Fellow *6 Has been head teaching fellow twice at graduate school level	Teaching Fellow *3, Taught previous courses in Nigeria at graduate school level	Teaching Fellow *1, no other experience
Disciplinary Background/Area Study	Public Policy and Civic Engagement, Domestic	Environment and Climate, Global Focus	Maternal-Child Health and Disaster Response	Mathematical Modeling in Infectious Diseases

Why will they want Studio in Box? (Users needs, interests, goals)	Accepted TF position for interdisciplinary Gen Ed course in global health, brick and mortar	Accepted TF position for interdisciplinary Gen Ed course on globalization, hybrid	Accepted TF position for interdisciplinary Gen Ed course on global health, brick and mortar	Accepted TF position for graduate level course in decision analysis, online learning
	New course with commitment to "innovative pedagogy" and multimodal literacy	New course with commitment to "innovative pedagogy" and multimodal literacy	New course with commitment to "innovative pedagogy" and multimodal literacy	New course with commitment to "innovative pedagogy" and multimodal literacy
	Responsible to design and create prototype lessons to (a) clarify muddy areas in class, (b) leverage current events, (c) extend learning.	Responsible to design and create prototype lessons to (a) clarify muddy areas in class, (b) leverage current events, (c) extend learning.	Responsible to design and create prototype lessons to (a) clarify muddy areas in class, (b) leverage current events, (c) extend learning.	Responsible to design and create prototype lessons to (a) clarify muddy areas in class, (b) leverage current events, (c) extend learning.
	Responsible to design student assignments that are multimodal	Responsible to design student assignments that are multimodal	Responsible to design student assignments that are multimodal	Responsible to design student assignments that are multimodal
What are other tools they will have access to? Where do they look?	Traditional support through resources on campus or school-based, existing teaching fellow workshops at Bok center, existing public access software	Traditional support through resources on campus or school-based, existing teaching fellow workshops at Bok center, existing public access software	Traditional support through resources on campus or school-based, existing teaching fellow workshops at Bok center, existing public access software (e.g., Educreations)	Traditional support through resources on campus or school-based, existing teaching fellow workshops at Bok center,

	(e.g., Educreations)	(e.g., Educreations)		existing public access software (e.g., Educreations)
When and where will they use it? (User environment and context)	Assigned 12-16 students * 4 months, meet physically weekly, plus engagement 2-3 times per week online	Assigned 12-16 students * 4 months, meet physically weekly, plus engagement 2-3 times per week online	Assigned 12-16 students * 4 months, meet physically weekly, plus engagement 2-3 times per week online	Assigned 12-16 students * 4 months, meet physically weekly, plus engagement 2-3 times per week online
Technical				
What digital technology does the person use on a regular basis	Computer, smart phone	Computer, smart phone	Computer, smart phone	Computer, smart phone
What software/applications does the person use on a regular basis	Microsoft Word	Microsoft Word	Microsoft Word	SAS, excel, Visual Basic, C++
Through what technological device does your user primarily access the web for information?	Computer	Tablet	Phone	Computer
User Motivation				
Why is your person motivated to create new educational prototypes and products?	New course with commitment to "innovative pedagogy" and multimodal literacy	New course with commitment to "innovative pedagogy" and multimodal literacy	New course with commitment to "innovative pedagogy" and multimodal literacy	New course with commitment to "innovative pedagogy" and multimodal literacy
What is your person looking to do, what do they need to do?	Responsible to design and create prototype lessons to (a) clarify muddy areas in class, (b) leverage	Responsible to design and create prototype lessons to (a) clarify muddy areas in class, (b) leverage current events,	Responsible to design and create prototype lessons to (a) clarify muddy areas in class, (b) leverage current events, (c) extend learning.	Responsible to design and create prototype lessons to (a) clarify muddy areas in class, (b) leverage

	current events, (c) extend learning.	(c) extend learning.		current events, (c) extend learning.
	Responsible to design student assignments that are multimodal	Responsible to design student assignments that are multimodal	Responsible to design student assignments that are multimodal	Responsible to design student assignments that are multimodal
What are they looking for?	Need tools and techniques that allow for relatively rapid prototypes and products, that make it easier for them to create these and that contribute to their professional development as an educator and communicator	Need tools and techniques that allow for relatively rapid prototypes and products, that make it easier for them to create these and that contribute to their professional development as an educator and communicator	Need tools and techniques that allow for relatively rapid prototypes and products, that make it easier for them to create these and that contribute to their professional development as an educator and communicator	Need tools and techniques that allow for relatively rapid prototypes and products, that make it easier for them to create these and that contribute to their professional development as an educator and communicator
What are his needs	Comfortable with digital tools but no experience with creating digital media products	Not comfortable with digital tools and no experience with creating digital media products	Comfortable with digital tools and some limited experience with creating digital media products	Comfortable with digital tools but no experience with creating digital media products

Section 2 Persona - Community College Teachers, Junior Faculty Aspiring Educators, Senior Faculty Innovators			
	TS	MH	SG
Personal			
Age	57	45	59
Gender	M	F	F
Education Level	MS	PhD	MD, MPH, PhD
Professional	Community College Professor	Associate Professor	Professor, Director
Professional			
Teaching Experience	Teaches three semester long courses in General Education, two are hybrid and one is online asynchronous	Teaches two semester long courses, one quantitative and advanced policy analysis and one qualitative on value-based decision making, mainly graduate students	Teaches three semester-long courses and multiple short modules, online and brick and mortar, actively pilots new pedagogy, undergraduates, graduates and professionals
Disciplinary Background	Art and Philosophy	Applied Mathematics and Public Health	Global Health, Public Policy, Population Health, Mathematical Modeling
Why will they want Studio in Box? (Users needs, interests, goals)	Interested in creating new types of multimedia and multi-modal instructional materials after workshops on innovative pedagogy at Harvard	Interested in having her teaching fellows create applied modules to show students different applications of mathematical techniques. Wants innovative multimodal approach after experiencing residency at Harvard and exposure to pedagogical methods.	Leadership roles in education and routinely pilot testing and prototyping. Travels, works in low-income countries, wants a way to create low cost but personal educational materials in the field.
What are other tools they will have access	Free software through web	Traditional support through	Traditional support through resources on campus and

to? Where do they look?	and low cost tools (e.g., Educreations)	resources on campus	access to physical multimedia studio
When and where will they use it? (User environment and context)			
Technical			
What digital technology does the person use on a regular basis	Mac, flip phone	PC, smart phone	PC, Mac and smart phone
What software/applications does the person use on a regular basis	Word processor	Microsoft Office	Microsoft Office
Through what technological device does your user primarily access the web for information?	Tablet	Computer	Computer, Tablet

User Motivation			
Why is your person motivated to create new educational prototypes and products?	Invested in "innovative pedagogy" and multimodal literacy	Invested in "innovative pedagogy" and multimodal literacy	Invested in "innovative pedagogy" and multimodal literacy
What is your person looking to do, what do they need to do?	Wants to design and create prototype lessons on analysis of artistic pieces and design and produce new kinds of student assignments	Wants to design and create multimodal lessons to walk students through tough math concepts and applications, and provide real world policy examples of applied mathematics	Is actively piloting new pedagogy and creating multimedia and multi-modal materials but wants to be free of constraints of physical studio in fixed location dependent on staff; wants to create commentaries for students in near-real time.

What are they looking for?	Need tools and techniques that allow for relatively rapid prototypes and products, that make it easier for them to create these and that contribute to their professional development as an educator and communicator	Need tools and techniques that allow for relatively rapid prototypes and products, that make it easier for them to create these and that contribute to their professional development as an educator and communicator	Need tools and techniques that allow for relatively rapid prototypes and products, that make it easier for them to create these and that contribute to their professional development as an educator and communicator
What are his needs	Comfortable with digital tools but no experience with creating digital media products	Not comfortable with digital tools and no experience with creating digital media products	Comfortable with digital tools and some limited experience with creating digital media products

1.5. Elevator Pitch

The Studio in a Box – TF edition is meant to fill a facilitatory hole in the educational production process. Often, learner needs are "anticipated" in the curriculum development phase as the course is developed – this is obviously a necessary reality for logistical reasons. That being said, enhancing the ability to have a more responsive lesson to student needs as they surface in class, will make the learning experience more "learner-centered". With the Studio in a Box – TF edition, we add on a reactionary production process to the already present preparation-centered production process. Not only will this allow unanticipated gaps to be filled, it will incentivize the integration of current events with the ability to rapidly create products (which helps learners relate and connect the content in a meaningful way), it will allow for real time clarification to "confusing moments and topical areas", and it allows educators to apply what they are learning about their students as they teach to the "next lesson, thereby creating a more nimble and iterative curriculum development process.

1.6. Metrics

Fall 2019 Pilot Period:

Over the course of the next three months, from September through December, I will be running the initial pilot programs for this project- this will include two applications of Teaching Fellow piloting:

Global Health Education and Learning Incubator – Learning Lab Group
The GHELI Learning Lab Group is a group of young professionals in academia and working in education. Much of the group is comprised of Master's and Doctoral candidates meeting to discuss teaching and learning methods and practices once a week, as well as to take workshops together. Most of the group is consistently TF'ing a course at either the College, the School of Public Health, the Medical School, or the Kennedy School.

After discussing it with the group leadership, the TF's from this group will use the Studio in a Box in a pilot program this fall, and agreed to undergo survey and other feedback mechanisms.

Harvard College Writing Program Class – Dr. Eve Wittenberg
Dr. Eve Wittenberg's class is a class I have facilitated before over the past two years, and was one of the impetus' for the idea of Studio in a Box. Dr. Wittenberg has expressed enthusiasm for using the Studio in a Box to facilitate her class. There will be a pilot period that runs for the first half of her semester long course (September through Early November) that will facilitate production of materials.

Spring 2020 Pilot Program:

Over the course of the Spring, I have set up (as I have mentioned previously) a handful of classes that I will be able to run a second set of Pilots on, after I have incorporated the feedback from my initial run of pilots in Fall 2019.

RDS 202 – HSPH Online Class on Health Decision Science
A course I was and am the instructional designer on, I have already gained permission to run a pilot program with the TF team on this course next Spring. I will also be on hand to work personally with this team to troubleshoot any problems that come up- This will be the first pilot where the Studio-in-a-Box is used for the entirety of the class, as well as the first time it will be used with an Asynchronous Online Course.

SW-24 – Harvard College
A course taught at the college about the fundamentals of Global Health that generally has a large group of TFs. This is a brick and mortar course with a large online element to it, and sometimes is used as a distance learning course by the extension school- therefore this pilot will be something of an

"in-between" scenario of the other two pilot programs happening with the Writing Program and RDS 202.

Metrics and Measurement

Over the course of the aforementioned pilot periods in the Fall of 2019 and Spring of 2020, we will be attempting to be measuring two "avenues" of data- personal experience measurement, and experience-divorced measurement.

Personal Experience Data

We will be collecting data about two groups of user's experience with the product and workflow: The Learners, and the Producers. The learners in this scenario are the end-consumers of the media, while the Producers are the Teaching Fellow's creating the media product with the *mobile media laboratory.*

I will be issuing specific surveys to each group. These surveys will be given out three times during the course of the pilot period-

1. The first survey will take place at the beginning of the pilot and will only be given to the Producers.
   a. This will give us a baseline for how our group feels about the upcoming pilot, as well as about the class and material.
2. The second survey will take place just after the use-phase of produced product and will be delivered to both the Learners and the Producers. This survey will be given to the Learners after they watch the media product.
   a. The survey given to the Learners should give us data about how they felt about the product immediately after they consume it. This should tell us a bit about how they felt it answered their specific questions, as well as the production quality of the product.
   b. The survey given to the Producers should ascertain how they feel about the immediate pre, pro, and post-production process that they just went through.
3. The third survey will take place at the end of the unit the Studio in a Box was used in. This survey will go to both the Learners and the Producers.
   a. The Learner survey will give us data about how they feel about the video produced and learning experience associated now that time has grown between the experience.
   b. The Producer survey will give us data about how they thought the Studio in a Box served them in hindsight.

Experience-Divorced Data

In addition to the survey data described above, I wish to also collect impartial data about how the Studio in a Box is used. While the Learner and Producer personal experience data is very valuable, this data will be used for different purposes, and provide a different perspective into how the product worked, and was used.

I will be collecting data on the time it takes for the Producers to create the product, how long each "phase" of production takes, what the vital statistics of the product are (how long is the video? Etc.) Other data points that I consider important (and this list will grow as we develop our surveys and measurement tools), include how many questions are asked by the students, how many applications do the TF's try to use the Studio in a Box for? What are the amount of comments on the discussion before and after the media product is delivered to the class?

Rubric

Below you'll find a rubric of my initial expectations of what might indicate a successful pilot, and what data points would indicate a sub-optimal pilot.

Category or Feature	(1) TIN	(2) BRONZE	(3) SILVER	(4) GOLD	(5) PLATINUM
Production Time	>5 hours	4-5 hours	3 -4 hours	1-2 hours	0-1 hour
Length of Product	>20	15-20	10-15	5-10	0-5
Share of Learners Using Product (Uptake)	<10%	10-25%	25-50%	50-75%	>75%
TF Group Survey					
TF Group Survey on ease of use (Likert scale, 1-5)	1	2	3	4	5
TF Group Survey on usefulness to teaching goals (Likert scale, 1-5)	1	2	3	4	5
TF Group Survey on "enhanced my ability to teach the topic" (Likert scale, 1-5)	1	2	3	4	5
TF Group Survey on "makes me more willing to try new approaches in my teaching" (Likert scale, 1-5)	1	2	3	4	5
TF Group Survey on "improved my ability to teach generally" (Likert scale, 1-5)	1	2	3	4	5
Learner Group Survey					
Learner Group Survey on usefulness to my learning goals (Likert scale, 1-5)	1	2	3	4	5
Learner Group Survey on "enhanced my understanding" of course material (Likert scale, 1-5)	1	2	3	4	5
Learner Group Survey on "made me more enthusiastic about the topic" (Likert scale, 1-5)	1	2	3	4	5

1.7. Life of the project beyond capstone

As mentioned above, this project has a large life ahead of it, both expanding in user scope and position, as well as use-case. I have outlined this section at the initial part of my proposal to lay the groundwork for understanding the choices I have made to create a pragmatic initial phase.

For the near term, however, I have a flexible plan to begin institutionalizing the Studio-in-a-Box program in a few programs:

Moving Forward:

After the Spring 2020 Pilot program finishes, I will incorporate feedback and begin securing partners to "stock" a library of Studio-in-a-Box's for the TF application. I see a university wide pedagogy experimentation center, such as the Global Health Education and Learning Incubator, as a prime example of a promising initial location to partner and make these mobile media laboratories available to as many innovating teachers (and by the same coin, gain feedback from the use-cases and further improve or create new versions of the Studio-in-a-Box)

Eventually, I'd like to see a Studio-in-a-Box program that could not only facilitate learning at the higher education level for both Learners and Teachers, but also as a cheap production tool for small-scale production in the developing world. All of these aspirational applications of the program, however, rely on it's success in a well-funded and resourced location, such as here at Harvard University.

2. Competitor review

Studio in a Box is a novel product, and there is no direct equivalent in the marketplace, or present institutionally, that one could point to. However, there are products out there that mimic some of Studio-in-a-Box's utility.

First off, let's take a look at the **Swivl**

The Swivl is a small mechanized dock that can house a smart phone, and using a Bluetooth necklace that the teacher wears, the Swivl will rotate to follow the speaker. This video is meant to facilitate live lectures, and does not adapt to different subjects well that require more support, such as heavily quanititative subjects.

Advantages: Quick and easy, uses a smartphone (accessible), easy to use smartphone video ecosystem.

Disadvantages: The Swivl often doesn't follow the necklace well, and is meant to watch a teacher- This means it's meant to facilitate a "lecture" style, where the learner watches a teacher teach. Pedagogically, the Swivl then adds no value to the products it creates, it only increases access to the material. Also has a very short range.

Next, we can take a look at the **Educreations/Explain Everything**

Explain Everything and Educreations are iPad applications that can be used to create Khan-style videos by recording the input on a screen in the program (i.e., you draw 2x2, it records the penstrokes as video frames and enables you to play them back as a video file.

Advantages: Simple to use, incentivises strong pedagogy by stripping away fat from the lesson (i.e., low-value modalities)

Disadvantages: Both of these softwares feed their videos into their own libraries, so you can't upload them to youtube, or Canvas, etc. It also means that all of the students must be signed up for it (in addition to their canvas page, Yellowdig, etc.). This limits the access students have to the program, and forces the producer to create a product within an already existing type, limiting the producer's creative freedom. The tools are quite limited on both of these programs, even going as far to limit you to a few colors in Educreations, which hampers the pedagogic value (i.e., You can't label a 4 variable graph with color anymore).

Finally, let's take a look at a larger scale operation that is representative of institutional studios that a professor might be able to access at an institution like Harvard. **So let's take a look at EdX.**

EdX is both a production house for educational video, and a library that is fed new full length courses by its production subsidiaries (i.e., HarvardX, etc.). The platform is generally used for full length courses, all of which are made available for free to anyone with an internet connection. On the whole, these are equivalent to a 16-week semester long online course.

Advantages: EdX greatly increases access to large amounts of knowledge in guided formats, and the fact that it is free is such an enormous value to the learners who use it. Most of these courses are equivalent, and considered equivalent, to their sister courses that are taking place at the college of origin (i.e., CS50 on HarvardX is also happening and comparable to CS50 at Harvard.)

Disadvantages: The format is pre-baked- professors have very limited opportunity to put their own spin on how the course looks. This ecosystem is meant to provide access to knowledge, but not necessarily to facilitate that transfer of knowledge. EdX's goals are generally to get courses up and available, as opposed to building scaffolding around already existing courses. If a TF ever wanted to assist a student with something that goes beyond what is already produced for the course, they would be turned away. By making cookie cutter courses, they eliminate the opportunity to create unique courses with unique supports. Changing what should be a case-by-case analysis to a cookie-cutter scenario.

It is also not accessible for the teacher, or a TF to come in and change anything after it is finished.

As you can see, none of these competitors fulfill what Studio in a Box promises to fulfill. Below, you can find a matrix comparing the different products on what Studio in a Box delivers. As you can see, no other competitor supplies easy access for both the producers and the learners, makes multiple modalities and mediums available to the producer, as well as incentivizing strong pedagogy.

Competitors	EdX	Educreations	Swivl	Studio-in-a-Box
Multimodal?	X			X
Accessible for Producers		X	X	X
Accessible to Learners	X	X		X
Incentivizes strong pedagogy.	X	X	X	X
Easy Production Period		X	X	X
Fast Turnaround on Production			X	X
Incorporates Professional Development				X
Cheap		X		X
Mobile		X		X
OS Flexibility (Can you use any device with it)				X

3. Technology requirements

All projects: - **related courses or professional experience:** While the courses I took in digital media never really covered using mobile phones for a production, I'm drawing on a

lot of background knowledge from all of the Video production classes for workflow thinking:

Lighting/Video for Postproduction (DGMD E-38)

Video Field Production (DGMD E-30)

Video Editing (DGMD E-35)

Producing Educational Video (DGMD E-40)

Multimedia Communication (EXPO E-48)

I also am using Instructional Design knowledge to influence the workflow, and provide guiding documents. The associated courses are listed below:

Designing Educational Media (DGMD E-55)

Visual Communication Design (DGMD E-50)

Producing Educational Video (DGMD E-40)

Applied Online Course Design (DGMD E-60)

Technology: The technologies used by my competitors, as mentioned above, are either somewhat similar in nature, or far more expansive and bulky. Divided up into these two categories, they are as follows:

Similar: Products like EduCreations and Explain Everything use an iPad/tablet as a medium, and have a cloud storage system that is similar to the idea I'll be transplanting onto the iCloud environment. In a certain sense, I'm creating a cheaper, more mobile, generic, create-your-own version of their workflow, with an ability to export, and use more tools- my product is stronger, however, primarily because of the strong pedagogy baked into the workflow, something their products lack.

More Expansive: Other educational media production systems are bulky, expensive, and provide far more quality than what is necessary for the purposes of this project. Things like institutional film studios and contracted media producers operate at too large a scale to provide the on-demand nature of the services Studio in a Box provides. The technology used by these studios looks more like a movie set.

- **reason for selecting this technology vs. its alternatives:** Things like institutional film studios and contracted media producers operate at too large a scale to provide the on-demand nature of the services Studio in a Box provides.

- **how it will be used in your project:** As a housing for the stripped down production workflow. I will use the Apple photo ecosystem to create an easy-to-use production workflow that incentivizes strong pedagogy.

Film: Because this is partially a film project, here are some notes on the film aspects:

I will be using iPhone cameras, and equivalent forms of media capture. The recording quality doesn't need to be strong, as it is a static shot that will be uploaded as a clip to an online lesson. In fact, because we are putting the pressure on the performance to ease the labor in the edit (i.e., nail the take so we don't have to fix it in post-production), I am prioritizing smaller size files over video quality, partially because video quality doesn't matter, and moreso so that the TFs have the ability to do as many takes as possible without filling their phone's memory.

Instructional design:

Studio in a Box will be a simple set-up, and rely primarily on the Apple ecosystem for the rapid creation of teaching resources for active TFs. The software I will use will include the Camera app, Photos, and iCloud.

Over time, the media laboratory will have the functionality to facilitate production with other OS ecosystems, such as Android. For the purposes of this limited pilot period, however, I will be isolating functionality to the Apple ecosystem to narrow focus and reduce my workload.

Workflow

When the teaching fellow begins the project, the physical multimedia laboratory will be set-up and have a mobile device inserted into its clamp. For the purposes of the Fall pilot period, this will have to be an Apple device (i.e., and iPhone, iPad, etc.).

They will begin by playing with just paper and markers to plan out their lesson. Once they have developed the short-video, they will turn to the Apple camera application to take a video. This video will then be sent to the iMovie application on the mobile device (a free application available to all mac users).

Guidance will be issued on how to quickly plan production so as to reduce labor in the edit.

Once they have exported their video, that video clip will be sent to the LMS or video hosting service that they are using in their class. It will also be optional to upload it to a central library of videos in the cloud. This will either be hosted on S3, or in an Apple Cloud folder for the duration of the Fall 2019 pilot period.

4. Visuals describing how your product will be used

Workflow
There are three stages to the use of the Studio-in-a-Box, for the time being (these terms will be different for the users), we will refer to these three stages as "Preproduction" "Production", and "Postproduction".

1. Preproduction
    a. The Teaching Fellows (TF) identify a common misunderstanding or difficulty among learners in their class. During their TF meeting, two TFs volunteer to use the Studio-in-a-Box to create a short teaching video to explain the concept that is giving the learners difficulty.
    b. The two TFs go through a storyboarding activity that involves chunking down their lesson as well as identifying the bounds of what they are explaining, and minimizing the scope of each lesson to only the germane material. They come out of this with a storyboard, or an audio/visual script that they can use to refer to during filming.
    c. This should all take no more than an hour- Solo TFs can still utilize the Studio-in-a-Box following a streamlined workflow.
2. Production

    a. The TFs setup the Studio-in-a-Box (Pictured Left) at their working table and place a mobile phone with a camera (or an institutional iPad, etc.). This is set up over a drawing pad and in a format similar to Khan academy.
    b. The TFs, using Apple Camera, film their <3 minute explainer video, attempting to get the entire length of the video in one take. If there are two TFs present, they use the "scenario" of teaching to the other TF and referring to the storyboard to facilitate performance.
3. Postproduction
    a. In the "Photos" app in iOS, TFs will trim the clip and send it off to their lead TF for dissemination.
    b. Video is uploaded

please note that these are prototypes from quite early in the design process, this is liable to change.

This is a view of the table clamp, this is where the Studio-in-a-Box attaches to the table securely.

The Phone clamp- this is where the iPhone would attach. For larger or smaller phones/tablets, there would be alternate attachments

5. Work plan and milestones

Milestones

1. **A completed functional *mobile media lab* prototype.**
    a. The prototype would physically consist of one mobile camera "stand", that would attach to a table and have multiple adapters for holding common smartphones, tablets, etc.
    b. A production workflow manual that would incentivize strong pedagogy while guiding the users in the creation of their media products.
    c. The prototype will be developed with a use-case scenario of Teaching Fellows, as described above, therefore it will be 'friendly' to that population.
    d. The prototype will be pilot tested in at least two settings (right now, this looks to be to Harvard classes, one at the College, the other at the Chan school.

2. **A completed "special interest guidebook".**
    a. One specialty guidebook will be completed. As described above, candidate specialty guides will include a guide on how to think about producing analog capture pedagogy-driven media products.

3. **Report on the outcomes of pilot testing.** In addition, this report will include the design plan for necessary modifications and roll out.

Tentative Schedule

Milestone #1: Pilot and Partner Acquisiton
Date: August 21, 2019
Description: Pilot and Partner Acquisition should be completed by the third week of August, so that we can smoothly move into the testing phase later on in the Fall.

Milestone #2: Settle on Prototype Design
Date: August 20, 2019
Description: Creating a prototype that will allow for small-scale production and development will require a few different attempts, and a testing run of each. Finishing this is integral to completing the instructional design guides and test-running the workflow, so this must be done somewhat quickly.

Milestone #3: Media Creation Workflow Created
Date: September 1, 2019
Description: If the ***mobile media lab*** prototype is going to be able to be used by non-media professionals to create useable media, the workflow will need

to be extremely streamlined and easy-to-use. By this date there should be a workflow for semi-automating the editing process.

Milestone #4: Basic Instructional Design Guide/Specialty Guide Created
Date: October 1, 2019
Description: The instructional design guide, that will guide users of rules of thumb to using the *mobile media lab* prototype with pedagogical best-practices (and guide them in exploring outside of the box on this front), while the media design guide will be a quick-start guide to actually creating useable media.

Milestone #5: Pilot Testing
Date: November 1, 2019
Description: Pilot testing as described above.

6. References
Include all references in the following format:

Cambridge Handbook of Multimedia Learning
Richard Mayer
https://www.amazon.com/Cambridge-Handbook-Multimedia-Handbooks-Psychology/dp/1107610311/ref=asc_df_1107610311/?tag=hyprod-20&linkCode=df0&hvadid=312130957577&hvpos=1o1&hvnetw=g&hvrand=4105850506770614828&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9002000&hvtargid=aud-801381245258:pla-451886865342&psc=1
A collection of multimedia pedagogy research that has influenced an enormous amount of teaching. I am using this research to influence how TFs will go about creating their media products so that they do so in a pedagogically strong way.

Frames of Mind
Howard Gardner
https://www.amazon.com/Frames-Mind-Theory-Multiple-Intelligences/dp/0465024335/ref=asc_df_0465024335/?tag=hyprod-20&linkCode=df0&hvadid=312021238077&hvpos=1o1&hvnetw=g&hvrand=16646819948174604730&hvpone=&hvptwo=&hvqmt=&hvdev=c&hvdvcmdl=&hvlocint=&hvlocphy=9002000&hvtargid=aud-801381245258:pla-432330388706&psc=1
A book on the theory of Multiple Intelligences, which is influencing how I am incorporating pedagogy and communication theory into the workflow.