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Engaging Multiple Teams to Design a Blended Learning Course

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ENGAGING MULTIPLE TEAMS TO DESIGN A BLENDED LEARNING COURSE

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In the following design case, a blended learning program was designed and developed for parents interested in improving their parenting skills with their children. Numerous design teams developed the program, consisting of both synchronous live events and asynchronous web-based instruction. Teams were comprised of novice students, professors, and expert designers. This design case explores the design space and design decisions made in light of varied and unique stakeholder involvement. It also illustrates the products developed.

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Tamme Quinn Grzebyk is a Ph.D. candidate in Instructional Technology in the College of Education at Wayne State University. Her research interests include designer reflection and the ways in which interdisciplinary methods can be applied to the field of instructional technology. Her instructional design and solutions design experience spans the information technology, healthcare, and consumer products industries. She has taught in higher education since 2004; some of her courses include instructional design, mobile learning, digital game design, business communications, and entrepreneurship.

INTRODUCTION

We are both interested in design and designer decision-making, the role of reflection during design, and documenting activities while designing. We began our journey on this project as associate professor and doctoral student.

We were contacted by our subject matter expert/client (SME/Client), a psychotherapist, seeking assistance in developing an instructional program for a sub-group of his clients—parents dealing with challenging behaviors from their children. Our SME/Client noted that time and again, he found his small group and private session participants facing common challenges. Because a great deal of time had been spent "teaching" parents to deal with these repetitive issues, the SME/Client was searching for a more efficient method to help more parents without greatly increasing his workload.

PROJECT OVERVIEW

This case discusses this project which consisted of four distinct phases. The first was the initial analysis portion that involved a variety of activities. This was followed by several design sessions, the inclusion of student design teams, and the project completion with two graduating Master's students. It concludes with the final submission to the SME/Client.

While we illustrate this particular path chronologically in Figure 1, as you delve deeper into the case, you'll find numerous areas where activities occurred in parallel or simultaneously. Many of these activities were often combined and reworked as well.

DESIGN PROCESS

As you move through the case, you'll notice all significant design decisions are noted with a key icon, . You may also click on each image for further related details.

Initial Analysis

Our initial analysis consisted of four activities. Rather than linear steps, the activities took place concurrently as necessary

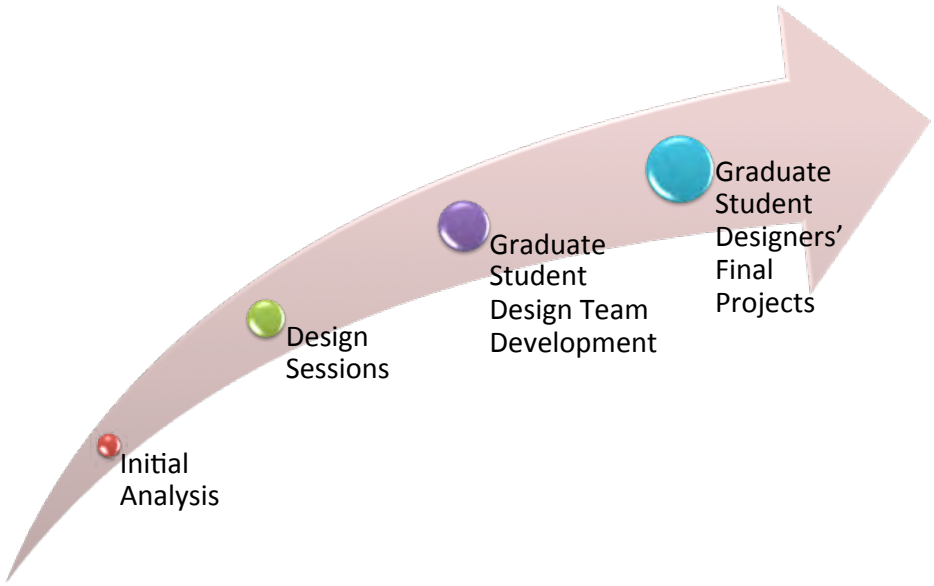


FIGURE 1. Chronological order of design events.

FIGURE 2. Concurrent steps during initial analysis and design phase.

(Figure 2). We first initiated a meeting with our SME/Client, and then conducted focus groups, met regularly with the SME/Client, reviewed numerous artifacts including books, workshop notes and articles as they were received, and met for brainstorming sessions.

Focus Groups

To better understand what format and content would be marketable and interesting to the target audience, we coordinated four focus groups across several weeks. Based on the SME/Client's wishes to reach fathers, these sessions were intended to consist of fathers who were interested in receiving help with parenting their non-adult children.

We were unable to garner attendance solely from this target audience, but during the invitation process, we found mothers, grandfathers, and stepparents that were interested in participating. We chose to conduct two focus groups with women and two focus groups with men so we could segment the findings and determine if we should add women to the target audience.

The focus groups, consisting of fathers, stepfathers and grandfathers, served as our richest environment for data collection. The participants were forthcoming in their struggles as parents and grandparents. Each member expressed a desire to have access to some type of tool to assist him with children and/or grandchildren.

The focus groups with women were also enlightening. Whereas the men in our focus group were willing to show their vulnerabilities and discuss mistakes they had made, a couple women would only discuss their opinions on what were the right and wrong ways to address certain parenting situations. This interaction seemed to limit the comfort level among the other women and may have prevented some from truly participating in the process.

We learned from our women focus groups that it would serve us well to first conduct a survey to identify the most appropriate focus group participants. This would help, especially, in light of the sensitive subject matter: parenting. We still maintain that focus groups were an effective tool to use for this type of project; we witnessed numerous incidents where a parent said something that initiated rich conversation with other members that may not have been possible in a survey. We believe, however, that an initial survey to determine who is vulnerable and open enough to share in a focus group is helpful. Ultimately, the data we collected in these focus groups revealed that parents were open to a virtual learning experience, they hoped to collaborate and share ideas with one another, they valued our SME /client's expertise, and they wanted a resource they could access when they had time.

SME/Client Meetings

Through a series of unstructured interviews with the SME/Client, we uncovered information that helped to guide our

design decision-making, even early in the initial analysis. During these SME/Client meetings, we agreed that his vast knowledge and experience guiding parents could be effectively used to design instruction.

- During these meetings we found the SME/Client consistently recommended a parenting approach that placed the father in a specific role. This led us to narrow our target from parents to fathers.

Even after our initial analysis, these meetings continued throughout the remainder of the project as a way to provide our SME/Client details of the project's status and to obtain his input when making certain project decisions. What we did not realize during this early stage was the importance our relationship was with him in terms of our commitment to the project, which grew as our relationship grew. In retrospect, we believe this may have inhibited others' best design decisions later in the project when they came on board. The additional designers did not have the opportunity to develop the relationship with the SME/Client we were able to create.

Artifact Review

During our SME/Client meetings, we discovered the SME/Client had access to a variety of reference material from the psychotherapy field that he used as the foundation for his career's teachings and therapeutic approach. These included books, workshop notes from past presentations and articles. We enlisted a graduate student in instructional design to identify themes among these artifacts that would eventually shape our design.

The graduate student, who we tasked with identifying emerging themes among the SME/Client's artifacts, had recorded her results in a Google document. We each reviewed this document prior to our first in-person design session.

Brainstorm Sessions

Our brainstorm sessions occurred informally, and often spontaneously. We met via phone, email text and in person. Sometimes, our meetings occurred after a focus group meeting, while reviewing artifacts, or in conjunction with our SME/Client meetings. The brainstorming process elicited a solid foundation for future designing.

- During the initial analysis, we had not identified a specific delivery method, but because our SME/Client wanted to offer parenting help without increasing his workload, we planned to include some sort of self- study component. Furthermore, the SME/Client noted in a meeting that he had delivered a live program to parents over the course of several weeks. He had limited success since many parents had difficulty adding another commitment to their weekly calendars. The content was also quite dense and not easily transferable via a different delivery method. Although we used it as background information, the multi-week, live workshop format was removed from consideration as a delivery method.

- The differing perspectives among the men's and women's focus groups led us to alter our target audience. We understood that the father may not be performing the father role, but rather a grandfather, stepfather or a single mother, may fill the role. It also seemed that the father figures of a household might not be effective if the mother figures weren't part of the parenting solution. Rather than focusing on fathers, the new target became the parental figures in a household.

- While conducting the focus groups, we continued to analyze the data. One important initial finding was that the most intense parental challenges seemed to be from those with children who were entering or currently in their teenage years. We saw our target audience beginning to narrow. Additional discussions with the SME/Client confirmed that his client-base largely consisted of this age group. From this information, and considering this program would be made available to learners similar to our SME/Client's typical audience, we determined the target audience would be parents aged 30-55 with children aged 10 to 16. We realized that this was a small target audience, but we believed if we started here and it proved successful, we could quickly expand to other audiences.

Design Sessions

Upon completion of our initial analysis, we were ready to begin designing the product. Based on our initial findings, we expected to design over the course of several sessions, with each session taking us a bit closer to a completed design draft (Figure 3). We discovered later that incorporating a critical specific element during the design process would increase the efficiency and effectiveness of our design sessions, resulting in a significantly richer product and rewarding activity.

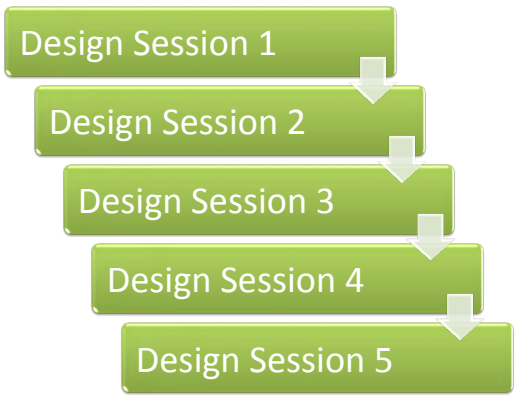


FIGURE 3. Expected design process.

In the true spirit of design, all our sessions included cycles of identifying the problems, brainstorming solutions, identifying additional problems, and brainstorming solutions. Follow each design session, described below, to see how this process occurred.

Design Session 1

We invited the graduate student, who had been tasked with identifying emerging themes in the SME/Client's artifacts, to observe the first design session. Having already reviewed the Google document containing her results, the intent of this first design session was to identify the *significant themes from the vast amount themes*.

Our initial approach was to think and design out loud by expressing our ideas verbally and then recording them on flip-chart paper. We believed this would assist the graduate student in observing the design process; we also thought the audio recording from the session could provide us richer data to review later.

As a result, we covered the walls with flipchart paper filled with a variety of ideas. Unfortunately, we found this approach to be ineffective, because in an attempt to learn from our design process, the graduate student often interjected questions, which inhibited our innovative design efforts. After this first design session concluded, we decided to conduct future design sessions with just the two of us. While the graduate student would not participate in future design sessions, she would continue to work with the content.

The graduate student reviewed all of the written materials and focus group transcripts to help identify important themes for the instruction. She identified words/phrases that emerged in numerous artifacts, the SME/Client interviews, books and the instructional materials from his previous workshop efforts. We used those words/phrases as a starting point in our design.

During this first design session, it was clear that we both had biases around the topic. We are each parents with two daughters, and we both connected with the content on deep levels. While one of us has children who haven't yet reached the age of children being addressed in these sessions, the other had already been through it. In addition, as we looked at the emerging themes, we began to relate to our own upbringing and our relationships with our parents. It wasn't long after we received the transcript for this session that we recognized these biases existed and became increasingly careful of how we addressed the content.

We also began to discuss the cost of the design solutions we were brainstorming which led us down another path, since we were unsure of what budget we were working under. While we could design based on the specifications of the content, the need to offer online tools and technology-driven solutions required future meetings with the SME/Client before we committed to a delivery method recommendation. As usual, we continued to schedule SME/Client meetings as necessary.

During this process, it is important to note that as professor and student, it was becoming increasingly difficult to collaborate as peers (Figure 4). While we weren't in an official class at the time, we would be in the future, and we had been in the past. We also had an advisor/advisee relationship. We realized in this first design session that these boundaries impaired our working relationship on this project, and we recognized we needed something to help us effectively collaborate as equals on the project.

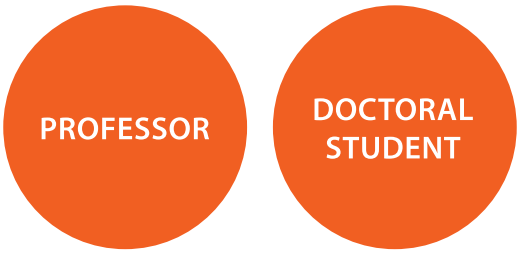


FIGURE 4. Our initially distant design relationship.

While discussing the process with a colleague who was not involved in the project, it was suggested that we create a written contract documenting the way we should work together. Between design sessions, upon this colleague's recommendation, we created a written contract

1. I will have open, honest communication with you on the status of the project, as well as any concerns I have.
2. I will have honest communication about design ideas and direction of the project.
3. I will teach you everything I can think of during our project as it relates to design, business, marketing or other applicable areas in which I have expertise.
4. I expect that you will see the project through to its completion.
5. I expect you will provide feedback about me and the project freely and without worry that it will cause any harm to the two of us.
6. If there are any concerns that I have in terms of our working relationship or where we are going on the project I will bring them to you right away. I expect that you will listen and that we can verbally work through any and all issues.
7. I will attempt to clarify all information and communication between the client and me should you not be present for any such interactions.
8. Rather than assume anything regarding our working relationship or the project, I will ask you questions and I expect that you will ask me questions to clarify information.
9. I will welcome your point of view, opinions, and ideas on the project.
10. When we are working on the project, you are not my student/professor, but my colleague.
11. I understand our roles are different in that Monica will manage the project and lead the design, while Tamme will lead business/marketing areas and act as a design apprentice.

Monica Tracey Signature

Tamme Grzebyk Signature

FIGURE 5. Agreement that the professor and student signed before continuing with project.

that served to clarify what we brought to the table and what each of our roles and responsibilities were (Figure 5). We each signed the contract and kept a copy.

This proved to be one of the most beneficial decisions in our design process (Figure 6). Since then, in every design project, whether working with each other or with different design teams, we continue to create written contracts that are agreed upon and signed by all individuals on the internal design team.

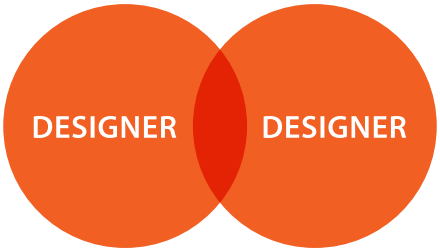


FIGURE 6. The working agreement solidified us as a design team.

Design Session 2 & SME/Client Meeting

Prior to the second design session, we both reviewed the transcript of the first session, which the Ph.D. student had transcribed and placed into a Google document. A number of themes were clearly emerging around how to approach parenting. We began to refer to these as *commandments* (Figure 7). We also started drilling down into the commandments, by revisiting our artifact review, as well as transcripts from our focus groups and SME/Client meetings.

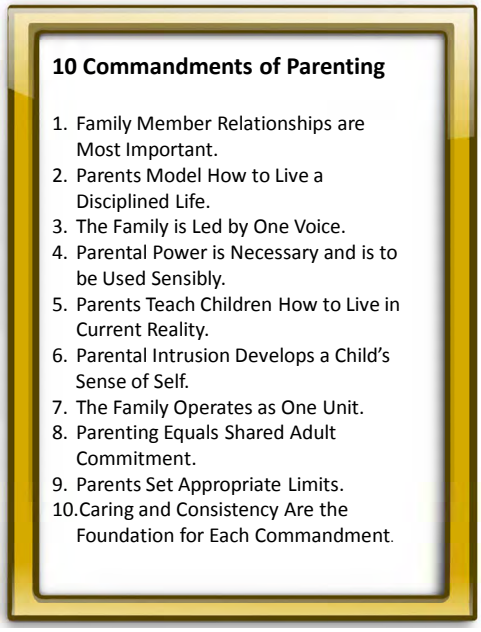


FIGURE 7. 10 Commandments of parenting.

Rather than jotting ideas on the surrounding walls using the think-and-design-aloud approach of the first design session, we found ourselves at opposite ends of the table with our laptops open, both working in the same Google document transcript which also included additional clarification from another SME/Client meeting. The combination of our design contract with the physical change of working simultaneously on the design in the same document, at the same table, enhanced our working relationship and our innovative problem/solution sessions. Interestingly, it also reduced our design session time.

The commandments were becoming a significant part of the program. Since our graduate student was familiar with the artifacts, we provided her with the commandments as topics, and asked her to identify where those topics were addressed within the book.

We also concluded during this session that our SME/Client must play an important role in the delivery of the entire program. We knew his knowledge, demeanor, and overall ability to connect with his clients were our greatest assets in the design process.

We scheduled a short session with our SME/Client to confirm our commandments were sound. We also discussed the possibility of offering a brief session for each of the commandments, but 10 sessions seemed too much for the participants. Our SME/Client was satisfied with the progress and agreed with the significance of the commandments. We were beginning to notice that he really enjoyed being part of the design process, and his input was extremely valuable. Our relationship was deepening.

Design Session 3 and SME/Client Meeting

At this point, we had developed 10 commandments of parenting. During this collaborative third design session, we were able to rework previous decisions and identify an emergence of deeper themes within our content.

Having determined in our previous SME/Client meeting that 10 sessions would be too many, we discussed ways to combine the commandments in a meaningful and manageable way. Again, we went back to our artifacts.

Rather than finding a succinct way to combine the commandments, we found another richer and more abstract set of themes emerging. We discovered there were themes that we would best describe as foundational principles of parenting. The principles seemed to revolve around four key areas. We planned to confirm with our SME/Client the importance and validity of these principles during our next meeting. With this new information in hand, we began brainstorming our program delivery format.

It was clear the more we became familiar with the content, the better questions we could ask our SME/Client. It significantly helped us assist him in identifying the most important information and the order in which to deliver it. It became clear that we were establishing a close working relationship with our SME/Client, which we believed enabled us to participate with him in the design of a better product (Figure 8).

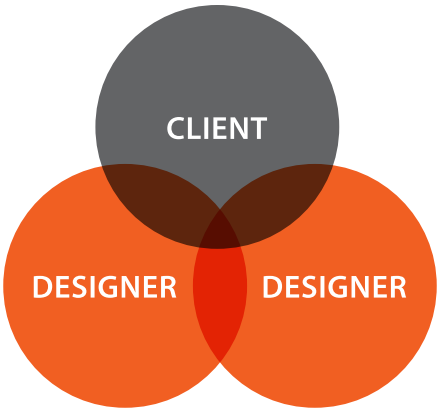


FIGURE 8. The SME/client became an integral and welcomed part of the design process.

All three of us worked together to determine the wording of the four foundational themes of the program (Figure 9). As we reviewed the 10 commandments, we recognized they would still play a role in the program, but it was possible we would assign the commandments to their appropriate principle.

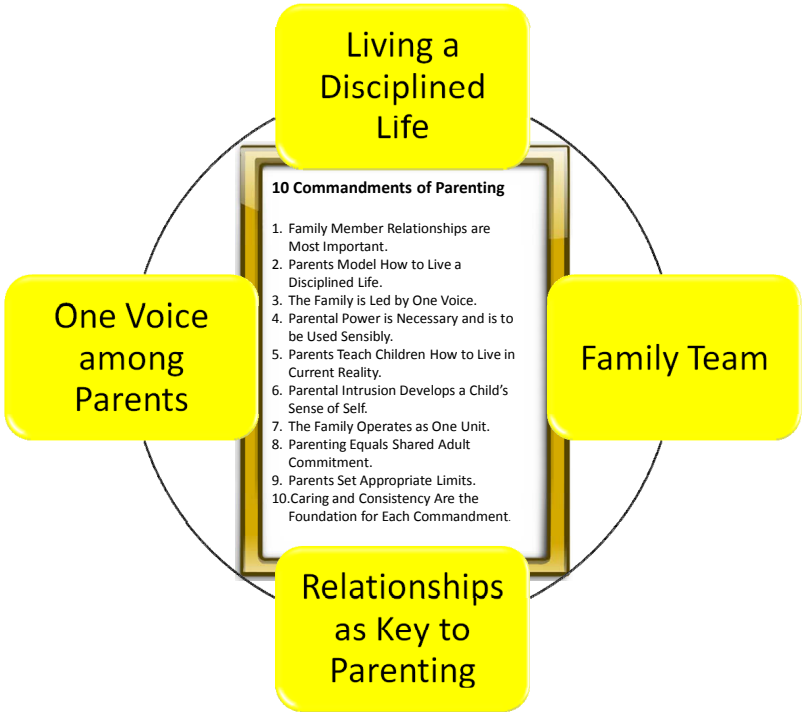


FIGURE 9. The four themes that emerged became the structure, led by the fundamental commandments.

Design Session 4 & SME/Client Meeting

Meetings with the SME/Client and with focus groups revealed that six learning sessions were the maximum participants would commit to. Four learning sessions was the amount of time the SME/Client believed the participants needed to learn the information he wanted to teach. This led us to recommend the delivery of six sessions consisting of two face-to-face sessions and four asynchronous, online learning sessions.

Because of the sensitive nature of the topic, we felt these participants would be best served if they met their peers and their facilitator (our SME/Client) in a face-to-face session first to clarify expectations. The recommended format of this session was also, in part, due to our client's warm, soothing personality. He had a strong ability to display empathy and establish trust in a very short time. We believed this initial contact with him would lay the groundwork for the other four online sessions and increase the likelihood that participants would successfully complete the program and effectively apply the techniques. This face time would also meet the needs of some focus group attendees who felt they benefited from the initial interaction.

We would follow our face-to face sessions with four consecutive sessions delivered asynchronously via the web. Our decision to offer online sessions was led by both the client and participants' needs. We referenced the original intent of this program, which was to enable the SME/Client to grow his business without too many additional face-to-face contact hours, as these intense work hours were already the foundation of his private practice. The asynchronous, self-paced learning approach would also meet the participants' need for flexibility and might minimize the demands on their time.

It made sense from a structural standpoint to bookend the asynchronous, self-paced learning with two face- to-face sessions. While the first acted as an introduction and a venue for building trust and commitment, the last session would be used for review and follow up. In this session, participants would share their lessons

learned, identify areas they still struggled, and informally evaluated for future improvements.

We recognized that online components would require development by a web professional. We discussed the general formatting ideas for the website, pulling from our previous experiences, while also considering our SME/Client and learners. We realized the development and delivery mechanism must be simple enough to both limit our SME/Client's costs and limit extraneous load on the learners. We also were aware of the cost of upkeep and wanted to provide a mechanism that required little maintenance once it was in place. While this approach would make better use of our SME/Client's time, it would require us to discuss with him additional budget goals.

During this fourth design session, it's also worth noting that we began to consolidate a variety of documented ideas for potential future parenting programs. We created a list of other sessions that could be developed depending on the success of our initial program. Some of these included how parents might handle their children's weddings, deal with children in relation to sports, and techniques to address children's dating issues.

A follow up meeting was conducted with our SME/Client to review the program delivery recommendations and resulting budgetary needs. At this point, we had an approximate cost for the development of the online program. Because our relationship as a design team had evolved, in large part due to the contract we had established at the beginning of the project, we knew each other's strengths and weaknesses. One of us was the *numbers person* and one of us wasn't, so the *numbers designer* led the meeting. This was another critical point for us in that we were effectively playing each other's strengths in all aspects of the project. The SME/Client was amendable to the price we proposed, and we continued by providing him the details of the program structure.

Our discussion of the program structure revealed a concern by our SME/Client that spoke to his commitment to his clients. While he liked the idea of the online components, he stressed the importance of giving the participants access to him in case questions or concerns surfaced during their self-paced sessions. We determined the solution to this need was to include an option that the participants could email a question or concern, and within 24 hours, someone from our SME/Client's therapeutic team would respond. An article in the New York Times reporting on the recent growth and success of online psychotherapy, pointing to a communication exchange between the practitioner and the patient (Hoffman, 2011) helped us with this design decision. While this might require additional effort from our client, we believed it would provide an even richer experience for the participants.

Design Session 5

In our last formal session, we focused on designing the face-to-face sessions and completing the general framework for the entire course. Our intent was to have enough structure in place to allow for the remaining design to be completed by a team of novice designers who were graduate students in an advanced instructional design course being delivered online. We would be intricately involved with them but it was time to include others on the project in order to see it to fruition. The difficulty with this step was that we did not want to be rigid in what the design should look like. We wanted to ensure there wasn't too much structure that might impede the students innovative design thinking (Cross, 2011).

We developed the first face-to-face session which introduced the overall program, the commandments, course structure, communication process, and the website where the additional sessions were housed. During this session, we planned for the SME/Client to work with the participants to answer initial questions, provide overall information, and begin to establish relationships with participants.

We also developed the final face-to-face session which allowed the participants to reconvene, discuss lessons learned, find ways to further synthesize the asynchronous teachings, and arrange for additional guidance if necessary. We also wanted to use this session to gain insight on what worked and what didn't work with the program so we could continuously revise the program. This session would also be led by our SME/Client with us there to collect evaluation data.

At this point, we had committed to recommending our SME/Client be involved in every session in some way. The obvious challenge was his time demands were already too great. We decided to add video components to each online session where our SME/Client would introduce and end each session. When we discussed this approach with our SME/

FIGURE 10. Program curriculum structure.

Client, while at first somewhat reluctant, he realized this was the best possible design solution. He then became invested in the scripting of the video components, and again helped to improve the design

To complete our general framework for the course, we identified from a scaffolding perspective, how to move learners from topic to topic, by identifying the most logical foundational principle/topic for each of the sessions (Figure 10). Our SME/Client was extremely helpful as we walked through the previously defined principles.

Graduate Student Design Team Development

With our face-to-face *bookend* sessions well designed and our overall structure in place, we planned for the official content sharing with our student designers who were in the advanced instructional design course. One of the requirements of the course was that students work with a client to design and develop a course. We were providing the student designers with the content, basic structure, guidelines, and our constant coaching. The student designers were free to design their session using their knowledge and skill.

We realized this approach might result in four very different prototypes, but for us, that was a gift in that we could use the one that we along with the SME/Client agreed was the best fit for him and his clients.

The advanced instructional design course was led by the professor. She solicited instructional design coaching assistance from the doctoral student active as a designer throughout this case, as well as another doctoral student who had transcribed all focus group and design sessions (Figure 11). This ensured that both design coaches were intimately familiar with the content, design approach, the client, and the goals of the program. Both design coaches had more than five years of design experience, had previously completed this course, and were active designers. They were capable of mentoring their peers and coaching on instructional design.

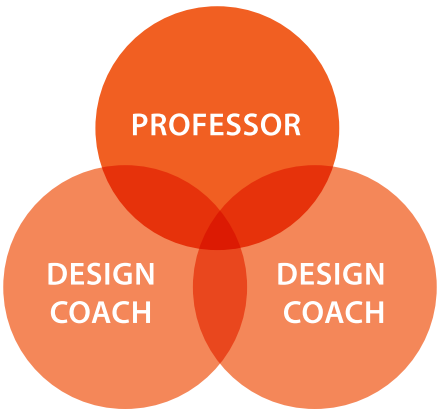


FIGURE 11. Relationship of the design coaches and professor.

Team Creation and Coach Assignment

We initially struggled with determining how to divide the work among these students. With four online courses to develop, it would be feasible to break the class into four teams, but how? We could let them create their own teams, assign them randomly, or assign them using specific criteria. Considering both of our previous experiences working on teams and facilitating student teams, the professor decided to define the teams based on their previous design work (Tracey & Boling, 2014).

With only a couple of weeks to identify student strengths, the professor reviewed the individual work submitted by students, and divided them into four design teams. Those more capable were teamed together; those who needed more assistance and instruction were teamed together. This would allow the coaches and professor to dedicate coaching and support to the more experienced students and deeper instruction and guidance to those with less experience. She knew that the last two teams would need more remediation and coaching, but in fact, that would improve their overall learning experience regardless of the final product they produced.

With this structure, we knew we ran the risk of having at least one team not able to complete the design task to the level we needed for our SME/Client. On the other hand, we concluded that if we divided the most capable students evenly among the teams, we ran the risk of stronger students being stifled by those who lacked the design experience.

The professor then assigned each design coach an experienced team, as well as one that would likely need additional guidance.

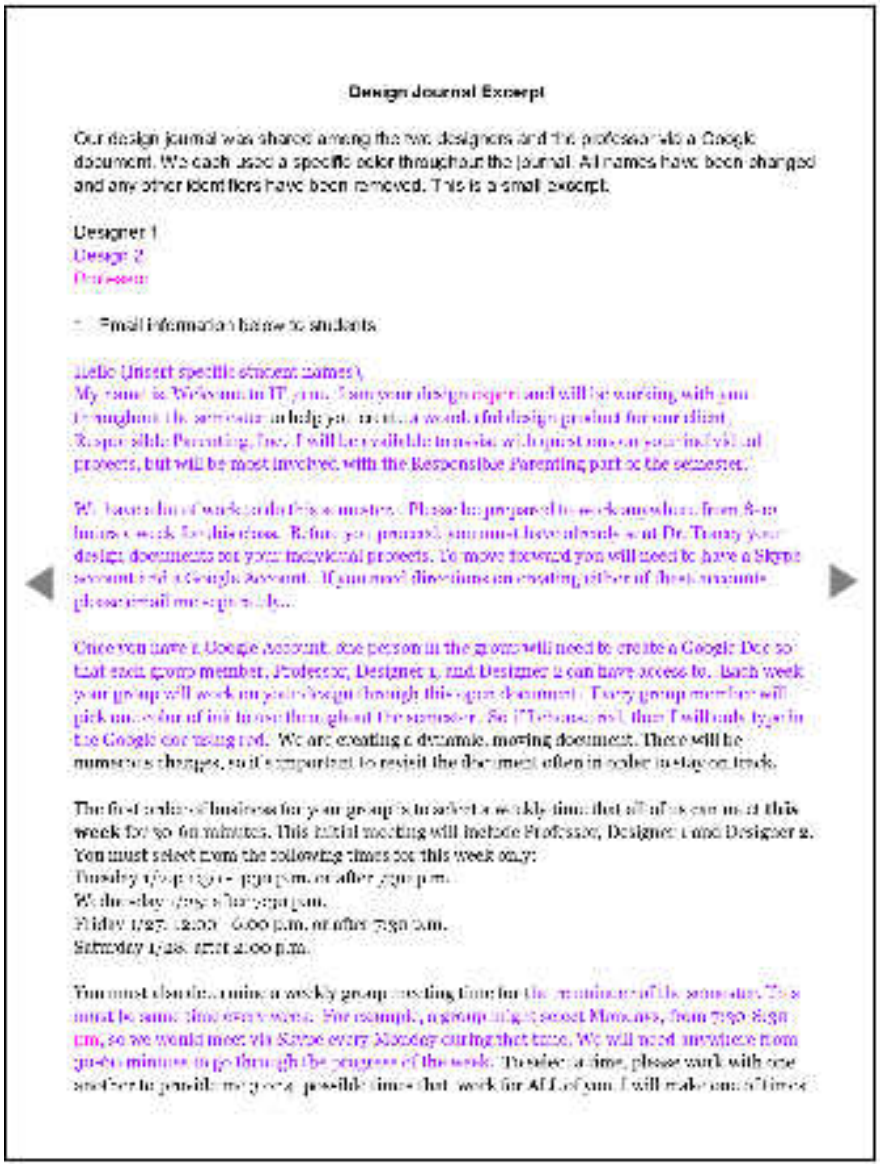
Communication Structure between Professor and Design Coaches

Considering the advanced instructional design course was delivered online and there were many dynamic elements to be developed, it was important that the professor and design coaches were continuously well informed of each other's work with the students (Figure 12). This was also important because all of the teams were designing a part of the same SME/Client's program. We realized that we were now engaging multiple teams to design our blended instruction. We also expected that while the design coaches were there to provide guidance in design, they would likely be asked course administration questions that may need the professor's feedback. Lastly, in order to take advantage of best practices, we would all share with one another our lessons learned, questions asked, et cetera.

To maintain consistent communication, the design coaches kept journals, met regularly and remotely with the professor, and contacted one another as necessary (Figure 13). Their shared journal was maintained via Google documents where

MON	TUE	WED	THU	FRI
Student Design Team		Design Coaches	Design Coach and Design Team	
Student Design Team		Design Coaches Design Coaches with Professor	Design Coach and Design Team	
Student Design Team		Design Coaches	Design Coach and Design Team	
Student Design Team		Design Coaches Design Coaches with Professor	Design Coaches, Design Team & Professor	

FIGURE 12. Schedule of design coach, design team, and professor interactions.



Design Journal Excerpt

Our design journal was shared among the two designers and the professor via a Google document. We each used a specific color throughout the journal. All names have been changed and any other identifiers have been removed. This is a small excerpt.

Designer 1
Design 2
Professor

- Email information below to students

Hello (insert specific student names),
My name is Professor in IT 3700. I am your design expert and will be working with you throughout the semester to help you create a wonderful design product for our client, Responsible Parenting, Inc. I will be available to assist with questions on your individual projects, but will be most involved with the Responsible Parenting part of the semester.

We have lots of work to do this semester. Please be prepared to work anywhere from 8-10 hours a week for this class. Before you proceed, you must have already met Dr. Tracy your design documents for your individual projects. To move forward you will need to have a Skype account and a Google Account. If you need directions on creating either of these accounts please email me right away.

Once you have a Google Account, one person in the group will need to create a Google Doc so that each group member, Professor, Designer 1, and Designer 2 can have access to. Each week your group will work on your design through this one document. Every group member will pick one color of ink to use throughout the semester. So if Professor uses blue, I will only type in the Google document red. We are creating a dynamic, moving document. There will be numerous changes, so it's important to revisit the document often in order to stay on track.

The first order of business for your group is to select a weekly time that all of us can meet this week for 30-60 minutes. This initial meeting will include Professor, Designer 1 and Designer 2. You must select from the following times for this week only:
Tuesday 1/29: 12:00 - 5:00 p.m. or after 7:30 p.m.
Wednesday 1/30: 3:30 p.m.
Friday 1/27: 12:00 - 6:00 p.m. or after 7:30 p.m.
Saturday 1/28: after 2:00 p.m.

You must also determine a weekly group meeting time for the remainder of the semester. This must be same time every week. For example, a group might select Mondays, from 7:30-8:30 pm, so we would meet via Skype every Monday during that time. We will need anywhere from 30-60 minutes to go through the progress of the week. To select a time, please work with one another to provide me a few possible times that work for ALL of you. I will make one of those

FIGURE 13. Design journal example that includes dialogue and brainstorming among designers and professor.

all three could review design coaches' notes, questions, and overall reflection of the process. Every other week, the design coaches would meet with one another online, via Skype, to share their team's progress and work out issues. This meeting would follow with a report out session to the professor, where important items could be discussed and resolved. Finally, when ad hoc issues needed to be addressed, the design coaches would text or call one another to solve the issue. All of this communication was documented and applied to continuously improve the design teams and their final product.

Communication with Students

During the semester, the professor provided students with online instruction for their individual and team assignments. Students would also attend synchronous one-on-one meetings with the professor for their individual projects.

The design teams stayed in close communication both asynchronously, and through synchronous meetings. Maintaining team Google documents allowed them to brainstorm and design their sessions. Their design coaches also provided written feedback in the documents. The expectation was that the design teams hold synchronous meetings each week. They were also expected to solicit assistance from their design coaches when needed and when deliverables were due. This evolved into weekly meetings. When design coaches were asked to attend team meetings, they allowed the teams to drive the meetings' topics, but they often found the teams relied on them to assist them through the feelings of ambiguity and uncertainty (Tracey & Hutchinson, 2013). In addition to the weekly design team meetings, with and without the

design coach, the teams also met with the professor once per month to review status and progress.

Each design coach conducted an initial meeting with her respective design teams, which was observed by the other design coach. The purpose was to provide a full introduction to the design goal and process, which was to develop a prototype session for one of the four principles previously defined. The design coaches discussed their role in the design process, clarified the SME/Client's goals, and reviewed work that had been completed thus far, discussed the intended structure of the program, and provided general guidelines. They also discussed the design team structure, and encouraged each team to develop a contract similar to the one created by the lead designers earlier in this project.

The design coaches shared all necessary information to help the teams get started. They provided the original artifacts and the general themes previously documented by the graduate student. They discussed the four foundational principles and the intent to develop a session for each. They were also provided a list of the 10 commandments. Rather than assigning each of the 10 commandments to a principle, they instead asked the teams to incorporate any commandments they thought applied to the principles they were assigned.

While the content and documentation provided to the student teams covered all four principles, each team was assigned a specific session which would address one principle. They were aware of what principles came before and after their session, and they had all documentation necessary to understand what those principles entailed; however, their goal was to design a session based on their assigned principle.

Design Team Process and Results

The design process continued throughout the semester, and while the design coaches were able to review all four designs, the design teams could only see their own. This ensured they were bringing their most innovative ideas to the project.

Throughout the semester, the design coaches found that the communication process helped them to identify and address numerous issues. In one case, however, the problem was the result of previously unknown student designer characteristics. During the journaling process, one design coach documented her concern for dysfunctional behaviors on her strong team. After further discussion, the design coaches discovered that while the team consisted of students with strong design precedent, not all members were willing to collaborate. While the design coaches had originally encouraged student designers to discuss their strengths and weaknesses among their teams and agree in a contract on how to work effectively together, they couldn't have predicted this level of dysfunction. And while the teams were divided based on experience, it became clear that other characteristics were just as important. In fact, the results later showed that one of the less experienced design teams created a better prototype than this more experienced team. We believe this was greatly affected by the team dysfunction and indicates that while measuring experience is important, it's not the only variable when creating effective teams. In retrospect, we realized that attempting to identify student strengths in three weeks as a result of work submitted was not enough to assemble functional working teams. This is an issue we are continuing to address. The course team dynamic and design process is too large to attempt to address in this article but is the topic of a future publication. The teams did submit four final projects, however, meeting the requirement of the course.

Once the teams submitted their final work, the four prototypes were reviewed. All student designers were permitted to view the work of other teams at this time. Of the four prototypes that were developed, the professor and design coaches determined that one was worthy of review by the SME/Client. While it covered only one of the four sessions, it offered a clear layout and structure that could be used across the remaining sessions. The student design team for that session delivered a formal presentation of the final prototype, and the SME/Client was very pleased with the result.

It is important to note that while the other three prototypes were not accepted for their overall layout and structure, there were valuable elements. Designers rarely use everything they've designed and this was no exception. It was expected that many elements from the sessions would be incorporated across the others. This would ensure the most creative and effective elements were used. It would also help to create consistency across the sessions.

Graduate Student Final Projects

The design team presented the one design product we believed was worthy to present to the SME/Client (Figure 14). It was interesting to see this team the night of the presentation as they physically met for the first time that evening. The relationship the team had built was done through online meetings, so they were not only excited to meet the client and see his reaction to their work, but were also excited to meet each other. The presentation was extremely well received by the SME/Client, who spent several hours with the design team, asking questions and providing feedback. The team then went out together for a celebratory dinner. Two students from this design team followed up with the professor expressing interest in continuing to design the remaining sessions. They were heavily invested in the project, and since both were graduating soon after this project, they wanted to use this design for their Master's Final Project, a requirement of the Masters in Instructional Technology program They

FIGURE 14. Design prototype that was accepted by client and used as template for entire course.

wanted to see this work to fruition and we wonder how much of this was a carry over of that night when they met with the client and physically with their teammates.

The design coach who had worked with their team agreed to continue on and provide them the necessary guidance to complete the project. By this time, the two student designers were very familiar with the entire project and comfortable with one another's strengths. They made great progress during this time, and required limited assistance from the design coach. The SME/Client had already accepted their entire layout, they were each lead designers from earlier in the project, and they had content and some design from the three other prototype designs that they could utilize.

The designers completed the three other sessions and reworked a bit of the original approved session. All elements were tied together so that a participant could move seamlessly from one session to the next.

Interestingly, as the deadlines for the project and graduation grew near, we noticed a slight twist in commitment. While they both completed the requirements for their Master's final project, the project wasn't completely finished, due to SME/Client comments. While one student was clearly finished working on the project once she received her final grade, the other student was committed to seeing the project through. Had we pushed the students too far for too long? This is another concern we continue to revisit.

After all sessions were complete, the lead designers—design coach and professor—presented the sessions to the SME/Client (Figure 15). After a few small modifications, the SME/Client approved the program to be fully developed by a web designer.

CONCLUSIONS

This design case involved numerous designers in differing roles throughout the design. A committed SME/Client and the two original designers motivated the original design. The relationship built with these three individuals made the design personal and the commitment so deep that through all of the challenges involved with working with numerous

FIGURE 15. Example of the Final Product for one online session.

designers, the project was going to be the best design possible.

Although the two original designers and the third doctoral student who had transcribed all of the assessment data gathering sessions were extremely committed, the student design teams showed a range of commitment. With all of the support given and the constant coaching, some of the designers could not settle into the uncertainty and discomfort that is inherent in designing. Those students begged for black and white directions, specifics that would inhibit the design process and as a result, at least in part, we believe this uncertainty led to limited success.

One of the most useful discoveries in this case for us was the creation of the design contract. We now use contracts for all of our design projects with other designers. This one decision altered the entire design space and the final outcome. This was an unexpected experience that proved to be one of the most successful components of this project. Upon reflection, additional keys to this design were the communication and relationship we developed with the SME/Client. Because of his commitment, time invested, and general personality, we learned from him and he learned from us. He became an important part of the design and the final design product, something we had not intended on happening in the beginning. We continuously allowed ourselves to be in this fluid and uncertain design state, and as a result these unexpected twists and turns greatly improved our design.

The use of documented reflection from all of the designers was another critical element in the design. Written real-time reflection helped us identify issues and ideas, thus reducing our design time considerably. The continuous meetings, texting, and reviewing of documents were all important communication tools in this project.

When we reflect on our failures, they include, in part, the student design teams. Initially we thought it was because the teams were invested in the project for a grade in the class, but upon further reflection we believe it is much more than that. We became continuously invested in this project because of the relationship we had with each other and more importantly with the client. The more we interacted

with him, the more we wanted to design an innovative product. We took ownership of this project in large part because of the ongoing relationship we had to each other and to the client. How much of a relationship could be developed with student teams in 15 weeks who do not meet the client at all? In retrospect, we tried to develop team relationships quickly, but with the design task at hand, the team development was limited. A question for us to consider for the future is how can we develop team relationships with each other and with the client in a short window of time to help them become invested in the project increasing internal motivation in addition to the external motivation of the grade? This is something we believe is worth investigating. We also attribute some of this to our own failings to prepare them in earlier courses about the uncertainty of design and how to live in it, NOT resolve it in order to produce innovative designs. This has been addressed in our curriculum but it is a continuous struggle. How do we guide but not inhibit designers through design? How do we teach them to handle the psychological issues of fear and uncertainty inherent in designing anything new and use those feelings for innovation? We struggle with this in our preparation of designers.

We ultimately made the decision to put our students in an uncertain design situation, providing them with all of the content, the initial design, and the coaching and mentoring we could provide. We had lived with the SME/Client and the content for months creating a foundation we believed advanced design students could build on. We discovered some could and some could not. The ultimate goal of a finished product was met; we did learn many things along the way that we have since implemented in our courses and in our individual design work.

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