

Team Bradford, Hess, Regan - Portfolio Narrative

Introduction

This narrative was written to present (1) clear and concise descriptions of how the instructional unit is represented by the treatment plans developed in an earlier project; (2) concise and detailed reflections on experiences (challenges, key decisions, what was good, bad, what more we need or wish to learn); and (3) clear and concise comparisons and contrasts resulting from the original design concept to the final instructional lesson, while including notes about those differences.

To meet this, this narrative includes (1) a short discussion of the treatment plan; (2) a short discussion on the development process the Team employed; (3) reflections on the development process; (4) a short discussion on the lesson evaluation strategy and implementation; (5) reflections on the evaluation strategy and implementation; (6) a short comparative analysis on the treatment plan to the final lesson design; and (7) the Team's conclusions regarding the project.

Treatment Plan

The design process began with a member of the Team who developed a "Treatment Plan" (alternatively described by field practitioners as a "Blueprint") that presented the structure and general direction for each lesson design section. In addition to the treatment plan, the same team member developed an Evaluation Chart to guide the development of the final lesson assessment strategy.

Treatment Plan

Within the framework of the treatment plan, lesson events, a general description of each event, a general description of the interactive elements, and the media to be used were assembled to guide lesson developers. Since the lesson design was grounded in a researched design theory, *Flexibly Adaptive Instructional Theory* by Schwartz, Lin, Brophy, and Bransford (1999), the treatment plan identified 14 specific learning events. These 14 events, in the order specified by the design theory, are:

1. Look ahead and reflect back binoculars
- Inquiry Cycle 1
2. Initial challenge
 3. Generate ideas
 4. Multiple perspectives
 5. Research and revise
 6. Test your mettle
 7. Go public
- End – Inquiry Cycle 1
- Begin – Inquiry Cycle 2
8. Final challenge
 9. Generate ideas
 10. Multiple perspectives
 11. Research and revise
 12. Test your mettle
 13. Go public
- End – Inquiry Cycle 2
14. General reflection and decisions about legacies

As previously mentioned, the treatment plan included descriptions, a general note on the type of interaction to be used, as well as notes on media to incorporate. Arguably, the treatment plan had enough detail and structure to provide an initial concept for how to proceed with developing the lesson.

Evaluation Chart

The treatment plan also included an evaluation chart to guide developers who would build the assessment pieces that should dove-tail with the lesson design (i.e., the lesson design included detailed instructional strategies; the assessment strategy was developed to assess the student's level of achievement on each instructional objective that was targeted to be measurable; and this evaluation chart was designed to provide direction for meeting those needs to measure achievement towards the objectives).

The following were the identified knowledge or skills the lesson was designed to develop for participating students:

- Develop a formative research plan
- Identify differences between traditional empirical research and formative research
- Compare two types of formative research studies (i.e., Designed Case and Naturalistic Case)
- Distinguish procedures for conducting formative research studies
- Identify the evaluation criteria associated with formative research (i.e., effectiveness, efficiency, and appeal)
- Identify and discuss methodological issues associated with formative research studies

In the evaluation chart, the team member structured the strategy by identifying the target knowledge or skill, which instructional objective targeted that knowledge or skill, and gave a general description of the assessment element that would be used to determine the degree of achievement. This evaluation chart contained enough detail and structure to provide an initial concept for how to proceed with developing the lesson.

Development Process

The task the Team was presented included (1) developing a full prototype of the lesson, (2) developing a formative evaluation strategy for the lesson prototype, (3) implementing the evaluation strategy, and (4) reporting the results, while incorporating adjustments to the design where appropriate.

The complexity of the task within the agreed upon time frame required a task analysis of work to be performed, assignment of tasks to team members, and the development of a critical timeline. Since time was of the essence, the task analysis and timeline was developed within days of the project kickoff.

To facilitate this quick start, the Team agreed upon a meeting (occurred in cyber-space), but prior to that meeting team members would need to ramp up their familiarity with the design guidelines (see "Prior to Meeting" in the outline below). Two days later, the Team met and formulated an organizational approach to fulfilling the task. The results of that meeting identified key tasks, role assignments, and a time line. The following is the outline agenda the team developed to initiate the lesson development cycle:

Prior to Meeting

1. Review Instructional Events Table and Evaluation Chart
2. Prepare suggestions for adaptation of said Treatment Plan

Decided during Meeting

1. Timeline
 - a. Development Timeline
 - i. Delivery Date: 4/13
 - ii. Adjustments complete – target date 4/13
 - iii. Evaluations complete – target date: 4/10
 - iv. Evaluations initiated – target date: 4/4
 - v. Full mock up of web site complete – target date: 4/3

- vi. Evaluation strategy, tools, instructions complete – target date: 4/3
- vii. Graphics complete – target date: 4/2
- viii. Content and references complete – target date 4/2
- ix. Narrative complete (best draft) – target date: 4/2
- x. Storyboard complete – target date: 3/27
- xi. Flowchart complete – target date: 3/24
- xii. Identify any assign content development – target date begin: 3/22
- xiii. Role signup / assignments complete – target date: 3/22
- b. Formative Evaluations Timeline
 - i. April 4 to April 13
 - ii. One-to-one without observations
 - iii. Expert review
- 2. Storyboarding
- 3. Flowcharting
- 4. Identify Specific Content & References deemed necessary
- 5. Instructional Unit Development
 - a. Multimedia (segmented video from Damon's conference?)
 - b. Graphics
 - c. Interface
 - d. Text
 - e. Assessments
 - f. Other
- 6. Formative Evaluations
 - a. Develop Evaluation Protocols
 - i. Expert Review (1-2)
 - ii. One-to-Ones (2-3)
 - b. Conduct Evaluations
 - i. Experts- ?
 - ii. One-to-Ones – Include our class for evaluation?
 - iii. Additional Options?
- 7. Assign Roles
 - a. Storyboarding – Lead: T / D / G; Support: T / D / G
 - b. Flowcharting – Lead: T / D / G; Support: T / D / G
 - c. Content and References – Lead: T / D / G; Support: T / D / G
 - d. Website – Lead: T / D / G; Support: T / D / G
 - e. Graphics – Lead: T / D / G; Support: T / D / G
 - f. Theoretic “Big Picture” – Lead: T / D / G; Support: T / D / G
 - g. Narrative – Lead: T / D / G; Support: T / D / G
 - h. Assessments – Lead: T / D / G; Support: T / D / G
 - i. Formative Evaluations – Lead: T / D / G; Support: T / D / G
 - j. Editor..... – Lead: T / D / G; Support: T / D / G

During the development process, considerable effort was made to keep to the schedule, since there were many tasks required to reach the final target delivery date. However, the schedule did allow some flexibility should there be issues with the evaluation tasks – such should be expected since this phase incorporates outside individuals who do not have the same motivation as the Team members. With some foresight, the site prototype development efforts were scheduled to be completed to allow for any unforeseen circumstances that might arise when incorporating external reviewers and still deliver the final project on-time. Of course, there were issues with the reviewers, but the schedule permitted the reviewers to deliver without impacting the Team's final delivery deadline.

Reflections on the Development Process

All projects have challenges. Project managers, lead designers, and anyone tasked with work within projects must develop an attitude to accept the inevitability that “stuff happens” and then be proactive to do something about it. This is an especially important frame of mind when working

with complex projects, difficult timelines, and/or demanding project sponsors. In the present circumstance, the nature of such challenges included those which befall development teams, as well as some fundamental challenges with the design concept.

Developmental Challenges

Teams never seem to have all the appropriate skills, knowledge, or tools – something is always missing. With the present project, skills, knowledge, and tools were all available, but not necessarily with the right person when needed. The team adjusted to these challenges by finding answers through additional research, switching initial assignments to better match assignment with a team member who either had the time available and/or the proper tools. Still, these solutions still required extended hours to compensate for the mismatch while still striving to produce a superior design.

Extensive asynchronous communications were employed to move ideas, concepts, and knowledge around until the task could be successfully completed. Emails, bulletin board posts, and a chat session were used to mitigate each challenge. Ideas on alternative approaches to satisfy technical complications with HTML coding were passed about, as well as opinions on graphical icons and site designs. To provide some perspective to the level of communications, consider that for a project that stretched three weeks in duration, and which only accounts for 1/3rd of the academic work for the Team members, 220+ messages were traded between team members. It remains clear that the success of a project is dependent upon the willingness of team members to adjust to changing situations, dealing with problems or issues, and to keep communicating until issues are resolved or consensus is reached.

Design Concept Challenges

As to be expected, the design guidelines from the treatment plan were missing levels of detail, which the Team had to work through. As mentioned in the developmental challenges, further research was necessary to fill out the lesson content. Additionally, to bring in other media forms, team members had to also conduct some research to find suitable content. But these sources also contributed to some design challenges as evaluators had both positive and negative opinions on the media materials.

Another design challenge originates from the format of the design theory. Key events use particular names that do not necessarily have positive connotations. For example, use of the word “legacy” is largely regarded by GenXers and Millennials as being “old fashioned” or “hopelessly dated.” While the Team agreed with the theory’s intent, the team considered the target audience and made some decisions. Another word, that might prove difficult for the target audience is the word “Mettle.” Similarly, the team made a decision and elected to leave this word as-is.

Probably the greatest challenge with the lesson design stems from the theory structure: the Schwartz et al. design intends to have students to navigate straight through the lesson in a completely linear fashion. This linear navigation runs counter to expectations GenXers and Millennials have with web content. As expected, this came out in the evaluation. While the team addressed some of the issue, this linear approach may prove too intractable to be useful to the younger audiences.

Lesson Evaluation Strategy & Implementation

In place of developing an additional lesson prototype, the Team elected to have the lesson prototype evaluated by outside reviewers. To fulfill this task, a complete formative evaluation strategy was developed, along with tools to capture the opinions and perspectives of the target audience, and an analysis tool to permit item and trend analysis amongst reviewers. Further, the evaluation called for two to three experienced evaluators and one expert level reviewer. A schedule was developed and evaluators were recruited.

Developing an Formative Evaluation Strategy

To best evaluate the prototype lesson, research was conducted to identify suitable approaches, as well as to develop the evaluation instruments. A short review of the literature yielded two excellent starting points that contained sufficient practical material to permit the Team to develop a strategy and tools.

From the literature, the explicit criteria approach was selected because it presented the least complex and the quickest way to achieve the targeted needs of a formative evaluation with a fast-approaching deadline. In addition, it cost nothing to produce and implement, with the exception of development and evaluator time.

Weiss (1994) developed an excellent set of tools to segment a computer application into usability components for which she also developed an explicit criteria approach with survey elements. The issue with the Weiss approach is that it does not completely fit the usability design elements found in web structures. The Team's approach resolved this issue by restructuring some of the Weiss solution, and then by adding elements to be surveyed that were missing.

Another useful resource found through team research was a report Hays (2005) completed for the U.S. government on the topic of evaluating computer and web-delivered instruction. Some of the ideas from the Hays report were added to the evaluation strategy to permit a single instrument approach to measuring both the usability of the lesson prototype, with the opinions and perspectives of the evaluators on the quality of the instructional design. These two sources, together with team-based experiences from the field of instructional design led to the final instrument design. The result was an instrument with 82 data capture points, plus seven open-ended questions.

The final element to developing an evaluation strategy was to identify suitable evaluators. The task called for two to three experienced instructional designers, but with the restriction that they had never participated in Dr. Hirumi's Advanced Instructional Design course. Further, one evaluator needed to be a recognized expert within the field of instructional technology, and someone different from the instructor of the present course Dr. Hirumi. A search was conducted, potential evaluators approached, and agreement to participate with one expert was reached. Each evaluator was provided with an expected date and deadline for completing the evaluation.

Implementing the Formative Evaluation Strategy

Implementing the evaluation strategy required completing the survey instruments into a format that would facilitate the capture of many data points from the evaluators and expedite translation into a format suitable for item and trend analysis. An analysis tool to permit large scale data processing over all the data points needed to be developed. Finally, evaluator instructions needed to be developed and then bundled with the survey instruments to the evaluators on the agreed upon date.

To be practical and effective, the survey instrument would be best if it were an online data form. This solution was pursued and a suitable technical platform was identified: Web Forms. Since UCF owns a site wide license, and the university team that manages the university account is where one of the Team works, it became a simple matter of setting up an account and procuring some design examples to help with the form building. Unfortunately, due to extraneous events outside of this project, and the time scheduled to learn and translate the survey form into Web Forms was lost. The Team identified that the critical path to completing this project that did not include learning Web Forms. Thus, the Web Forms strategy was dropped, and another strategy adopted: MS Word Forms. This requires the inclusion of MS Word interactive form objects into the survey, and then protecting the document to permit users to simply click their selection, or click to initiate filling in an open-ended response. This solution required manual translation of user responses from the completed evaluation forms into the analysis tool. This is not a good solution if there are large numbers of survey respondents.

The analysis tool needed to perform trend and item analysis on points identified by the rubric for the project task. MS Excel was selected as it is an easy tool to quickly develop such calculations. Some minor technical challenges were met and overcome. Once data from the evaluators was received, these were manually keyed into the tool, and the analysis was performed. The data along with responses in the open-ended questions was integrated, ranked, and communicated to the team member responsible for developing the online lesson. The results were formally integrated into one document for review by team members and Dr. Hirumi.

Evaluators had, as was expected, unforeseen difficulties that delayed some of the completed surveys. Because time had been allotted for such contingencies, all the data arrived within a reasonable time frame to be included and integrated with the final lesson design.

Reflections on the Evaluation Strategy & Implementation

As mentioned elsewhere within this narrative, some design issues arose that were confirmed from some of the evaluators. The two most notable issues were the linear vs. non-linear navigation structure and the complexity of the lesson topic as it applies to the overall design concept.

As mentioned earlier, GenXers and Millennials expect non-linear navigation solutions to web-based materials. In his book, *Ambiant Findability*, Morville (2005) found through analysis that web users do not typically navigate through sites from the home page to the page containing information they seek. Rather, most web users bypass home pages completely and jump around sites in ways that are not linear. The grounded design theory by Schwartz et al. requires students to pass through the lesson in a well-ordered sequence. GenXers and Millennials when faced with a web site that forces a single navigation direction face a contradiction to their expectations, which can lead to dissatisfaction. This was confirmed with the present project as one of the experienced instructional design evaluators was a Millennial, and another was a GenXer. Both commented on issues that can be attributed to this navigation requirement.

Another issue that arose through the evaluation originated from a survey item selection by the expert evaluator, and then later confirmed through direct email correspondence. This is a topic complexity issue. The nature of the lesson topic is sufficiently complex that the expert reviewer strongly agreed that emails and Blackboard type bulletin postings are insufficient to properly deal with the content and the students. The expert recommends that this lesson follow an "M" type design (alternatively called a "blended" design), so that a face-to-face session is included within the lesson framework to permit additional instructor-student interactions.

Overall, the explicit criteria approach with the survey instruments and analysis tools worked very well. A desired improvement is to repurpose the survey instrument into a web-based framework, such as Web Forms, which would permit sampling from larger populations and electronically moving the resulting data into the analysis tool.

Comparative Analysis: Treatment Plan to Final Lesson Design

Comparing and contrasting the treatment plan to the final lesson design yielded no significant, design theory differences, except for perhaps one: the treatment plan did not explicitly state the final nature of the lesson (i.e., whether it should be an "M" - blended or "W" – web only type course), but the final solution was recommended to make this lesson follow an "M" type course design. Many small adjustments that reflect corrections to usability issues were made and became differences from the specifications developed within the treatment plan. The reason no other significant differences were found is attributed to conscious decisions by the Team to not significantly change the format of the lesson at this time.

The following represents a summary of adjustments made that were a result of evaluators' commentary:

- All links within the lesson that lead to resources outside the lesson should open in a new window or tab within the web browser software.
- Regarding knowing where the student is within the scope of the entire lesson (as regards the navigation buttons): numbered labels for each step were added to indicate where the user is within the full lesson's scope.
- Regarding the comment on the risk that the students will post everything into one discussion board: this concern was addressed by adding a direction to post into a specific discussion board, which would be added later.
- Regarding the comment on where to start (i.e., from the Main page): a line of text was added in the narrative of the instruction that instructs students to proceed by clicking "Start Here" or the "Next" button in the navigation pane.
- Regarding the comment on the "Main Menu" name being misused: it was suggested that the name be changed to "Start Lesson" or something similar.

Conclusions

The grounded design theory presents some basic design concerns, but overall the evaluators perceived the design as generally favorable. Some changes were made to improve the usability of the lesson from the guidelines presented in the treatment plan. The Team faced a number of logistic challenges, but with flexible thinking, a team focus attitude, and a strong propensity to communicate, the team overcame all experienced challenges. The Team members found the project stimulating and interesting, and the experiences yielded a collection of new knowledge, skills, and specific tools, which might be leveraged in future projects.

References

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