Collaborative Analysis of Tablet Computer Hardware

ID Project 2

Students will be able to collaboratively analyze computer hardware data using google docs and make recommendations on which tablet device to buy on a budget of $500 for their use in computer science classes.

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Instructional Design
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Instructional Design process is like carefully planning and preparing a meal for an occasion. Both involve the basic stages of analysis, strategy development, design, implementation and evaluation.

In order to get a delicious spread on the table we have to pay as much attention to planning the meal as we do to the preparation and final display. When we plan the meal we have to take into consideration who our guests are and where is the dinner going to be served. This is the same as analyzing the learners and the learning environment in instruction design (ID). For instance we have to find out the eating habits of our guests, if they are vegetarians, vegans or do they have a special preference for some kind of food. We then, have to start planning the menu by carefully picking the recipe for the various dishes on the menu. Then individually list the ingredients for each of the recipe and make sure it is available by buying them from the store in advance. This is comparable to the learning task analysis in ID. It is also important to know if the meal is being served at home or in a community hall booked for this purpose, in order to plan for transportation and serving of the prepared food in a timely manner. All these compare with the analysis phase of designing instruction. Smith & Ragan’s model suggests analyzing the learner, the learning environment and the learning task as the first three steps in the framework of the ID process.

Once we have planned the meal, procured all the ingredients and have the recipe then we start devising the strategy for cooking, deciding whether the dish needs to be boiled, baked, fried etc and then proceed to preparing the meal. This compares to the next three steps in Smith & Ragan Model of ID process framework of writing test items, instructional strategies and then producing instruction.

Finally when the meal is ready we taste it to see if it has the right amount of salt & spices or get another expert to taste it to let us know if it is fine and, depending on the feedback
we top it off to finalize the cooking and then start planning for the final display of the prepared food to the targeted audience. This compares with the last two steps in the Smith & Ragan framework of conducting the formative evaluation and revision of the instruction before taking it to its final form as evaluating instruction is critical to its success.

**REFLECTION ON THINGS LEARNED & APPLICATION TO FUTURE PRACTICE**

This semester we learnt to co-relate theory and research to our practice in designing instruction. Up until now, though we had little chunks of information about learning theories and educational technology, they seemed to be fragmented. By working on the semester long instruction design project we got to merge theory and practice by actually working hands-on and completing a 3 hour module of instruction. The focus each week was on the preparation and execution of a procedure after thoroughly understanding the theoretical base.

For instance in ID project 1 we had to conduct the analysis for the instruction design. When I started doing the analysis it dawned on me that I was lacking the skills to determine the course expectations for my students. I didn’t know where to begin! It was only after learning about ID models (Smith and Ragan) that I came to know that there are specific steps to follow in the analysis stage. Now at least I had an idea where to begin and started focusing on clearly defining the purpose of the analysis, analyzing the learning context breaking it further down into determining the needs assessment and describing the learning environment, analyzing the learners & the learning task.

Similarly when we had to perform the goal and task analysis for the instruction Smith & Ragan (2005) came to my rescue. It helped me accurately identify the learning goal as intellectual skills and not declarative knowledge or cognitive strategy or attitudes and further narrow it down to identify it as concrete concepts and procedures.
Once the learning goal was identified it was easy to assign tasks to bring about the
desired outcomes. Finally writing the learning objectives, though initially appeared
daunting was again made easy because of the explanation provided by Smith & Ragan
(p.97) in using three component objectives (Robert Mager, 1962)
a. A description of the terminal behavior or actions that will demonstrate learning
b. A description of the conditions of demonstration of that action
c. A description of the standard or criterion

Another thing I learned while doing the ID project1 was how to assess our learners. The
assessment procedures made me realize the importance of the alignment between the
learning objectives and the assessment of the learning outcomes. In this module we had
to specifically evaluate whether learners can demonstrate the learning described in the
objectives after the instruction. Smith & Ragan (p.112-117) was a great resource to learn
“Format for Assessment” and “Assessment Item Specifications”. We also used resources
on Bloom’s Taxonomy of Learning Objectives to complete the Task Objective
Assessment Blueprint.

ID project 2 allowed us to actually design the instruction putting theory to practice and
bringing it to completion. John Keller’s ARCS model for motivation offered some
guiding questions that helped integrate the motivation aspect of the design & Smith &
Ragan Framework guided the instructional design strategy.

Finally, the formative evaluation in the ID project 2 taught us how to plan for the review
of the design of the instructional materials and look for their strength and weaknesses and
revise them accordingly. The valuable skills gained in planning for formative evaluation
by identifying the stages, methods and tools is going to definitely help me in my future
ventures in instruction design. I will use the progressive stages of formative evaluation
(Smith & Ragan), namely expert reviews, one-to-one evaluation, small group evaluation
and field trial and methods like testing, surveys, expert and end-user reviews
appropriately to evaluate my future Instruction Design.
In summary the design process I learnt in this semester has really taught me to be structured in my approach to designing instruction. I feel more confident now, that I know to apply ID models firmly grounded in learning theories following a framework of steps listed by experts. This is the most valuable skill I am going to carry with me in my future endeavors.

References:


**PART 1: TOPIC**

**1A. LEARNING GOAL**

Learners will use google docs to collaboratively gather and analyze data and present a paper to support their decisions on which tablet computer to buy within a budget of $500.

**1B. AUDIENCE**

The target audience comprises of post higher secondary students who are in the workforce. They are enrolled in computer science classes in the career college to gain 21st century skills which they can use in their current workplace or prospective promotional postings.

**1C. RATIONALE**

Recently the school has seen a change in the composition of the learner population. Many students who are enrolling in computer classes are honorably discharged veterans who have come back from their deployment abroad. Since the college has been designated as a "Military Friendly School" by GI Jobs Magazine and is among the top 15% of all schools in the U.S. to achieve this designation based on their efforts to provide the best possible service to military students, it is a popular choice for this demographics of students. Most students are tech savvy and have basic knowledge of computers and keyboarding. In order to make instruction engaging and motivational to this group of students, the college is stepping up its efforts and exploring new methods of instruction, incorporating more collaborative learning techniques (PBL using web 2.0 tools) to equip them with 21st century skills.
This project idea ‘after 3 hours of instruction students will be able to collaboratively analyze computer hardware data using google docs and make recommendations on which tablet device to buy on a budget of $500 for their use in computer science classes.’ falls in line with the college’s mission of not only making each individual proficient in the disciplines necessary for his or her success but also providing them with the background necessary to be successful in the future workforce by expanding their intellectual horizons and collaborative skills.

After conducting an informal instructional needs assessment following the steps given below it was determined the best strategy for instruction would be a combination of generative and supplantive strategies and instruction will be developed adopting the innovation-based model (Smith & Ragan) after identifying the type of learning as intellectual skills, concrete concepts & problem solving (R. Gagne, 1985).

### NEED

The following two needs have been identified, both of which may have the same instructional solution.

1. Since most learners have full time jobs it is difficult for them to find time to meet face-to-face to do group project work. New ways have to be explored to facilitate asynchronous group activity in computer hardware class.

2. In order to equip learners with 21st century skills and make instruction engaging and motivational newer methods are being explored incorporating more collaborative learning techniques (PBL using web 2.0 tools).
STRATEGY & WHY THIS STRATEGY?

A combination of supplantive and generative strategies will be used for the instruction leaning more towards the supplantive strategies of expository approach as instructional time is limited and also the educational agency has a high level of accountability. (Smith & Ragan, P145).

Supplantive strategies in instruction will include steps to create google accounts and join as a collaborator in google docs, steps to optimize search and scaffolding will be provided by means of prompts of pre filled data in the google spreadsheet.

Considering this demographic of individuals whose conceptual knowledge of computer hardware components is high, the generative strategies which will keep them interested and motivated include brainstorming and analyzing the hardware data of the different tablet computers and then evaluating the tablet computer for the best ROI.

TYPE OF LEARNING

Students apply concrete concepts of hardware components to collect & classify data and place them in the correct cells in the spreadsheet. The type of learning as defined by Smith & Ragan falls under the intellectual skills, concrete concepts. Their ability to analyze the data collaboratively using google docs and evaluate the best tablet computer for the given budget falls under intellectual skills, problem solving. Intellectual skills are analogous to Bloom et al.’s (1956) levels of application, analysis, synthesis, and evaluation.
There is a need for learners to effectively gain the skills of collaboration in the cloud so they can work from anywhere and at anytime. The need for instruction to equip the students with 21st century skills was identified based on the innovation model (Smith & Ragan) in section 1C above. In order to determine if the learning goals are appropriate for this particular demographics of students a survey was administered and data analyzed. The following questions were considered while doing the needs assessment. The college’s mission statement was also studied to see if the goals were appropriate and worthy of being prioritized.

How will the innovation affect what is expected in learners’ achievement?

They will be better equipped for the 21st century workplace where most data is moving away from the personal computer and into the cloud.

Do the students have to go through a steep learning curve?

As the lone instructor /designer for this class it is already known, by observation that the students are familiar with modern technology tools and are comfortable working with computers. They have also passed the pre-requisite of introduction to computers course before enrolling in this class. Further survey results also reiterate the fact that all learners have basic computing and browsing skills.

Can these new understandings, knowledge, or actions be taught?

It has been determined that this instruction can be taught.

Hence the goal statement is written as
After 3 hours of instruction students will be able to collaboratively analyze computer hardware data using google docs and make recommendations on which tablet device to buy on a budget of $500 for their use in computer science classes.

NEEDS ASSESSMENT SURVEY

The survey was administered online (A copy of survey questions is available in Appendix B. click here for online survey 1, online survey 2) through surveymonkey to a group of 12 students to determine

1. If students are technologically ready for learning with web 2.0 tools:
   The survey comprised of questions which asked them if they browsed the internet, sent email, used social networking sites etc.

2. Their affective and social characteristics which are essential for collaborative learning:
   In particular the survey questions covered their attitude to working in a group, interests, motivation to use technology, attitude to participatory learning, tendency towards social media as an educational medium and inclination to use cloud based tools.
NEEDS ASSESSMENT DATA REPORT

Since most learners are in the workforce and work different shifts, they cannot find the time to meet to do group projects. This fact was confirmed by analysis of the data shown in the graph below. When asked if they preferred to work alone or in a group, 58.33% confirmed they preferred to work alone vs. only 41.67% who preferred to work in a group. Hence it was identified that there is a need for implementation of instructional method in group activity that uses asynchronous time to encourage more collaboration. This can be done by using google docs. So students can work whenever they find time from where ever they choose.

The analysis of the data showed that students are technologically ready to explore instruction through web 2.0 tools. Most students were comfortable with using the computer. 83.3% said they could identify computer hardware (chart1), 92% of the students sent email (chart 2). All 100% of the students browsed the internet and spent time on social networking sites like Facebook, LinkedIn or Instagram as shown in the charts below (charts 3 & 4).
2B. DESCRIPTION OF THE LEARNING CONTEXT

The instruction will be conducted in a classroom/computer lab setting for students in the post higher secondary vocational stream. Most of them have work related technical experience. Class sizes in computer hardware technology are small. Each class comprises of 15 to 20 students. The classrooms are equipped with computers which are networked together and have internet access. They are fitted with smart boards and projectors.

LEARNING CONTEXT

The College of Technology has three labs to accommodate twenty individuals at a time. Equipment and materials are updated on a five year cycle. Since they were recently updated each lab has computers with windows7 operating systems, 4 GB RAM, 32 GB of storage connected to the internet 24/7. Reasonable broadband speeds and Wi-Fi access is available in all labs. All computers are loaded with the complete Microsoft office suite of products and Instructors are free to use these computers during non class time to develop course materials. Files can be stored in a separate folder on the network drive in the intranet. Since google apps for education is free no additional cost has to be incurred and no new resources are required to implement collaborative activity based instruction.

TRANSFER CONTEXT

Learners will be able to apply the concrete concepts of computer hardware in their work settings to perform their job better. They will also be able to transfer their effective collaboration skills to real world situations not necessarily connected with cloud computers and their subject. Effective collaboration skills will help them present themselves well in any online dialogue. As they gain confidence they will be more motivated to engage in meaningful dialogue in their community. On a broader scale it will make them better digital citizens.
2C. DESCRIPTION OF THE LEARNERS

Learners are male and female students above the age of 18. Most students are in the workforce and are enrolled in day or evening classes to accommodate their work schedule. At the minimum level they have a high school diploma or GED. They have basic keyboarding and computer skills. They have passed an introduction to computer hardware course and have conceptual knowledge of computer hardware components. A survey was conducted to assess the entry level skills of the students in their knowledge of computer hardware. 10 out of 12 students were confident of identifying computer hardware as shown in the chart 1 above. A refresher course will be provided for the 16% of students who have some doubts in identifying hardware components in order to bring them on par with entry level skills required for this instruction.

The attitude to using technology for learning was also positive. 100% of the students said they have a positive attitude to the learning experience when they use technology and understand the concepts better (charts 5 & 8). 8 out of 10 students said social media sites can have educational value and again 100% of the students were ready for participatory learning as they had already watched videos on you tube to learn something. These results are in the charts below (chart 6). When asked if they would like to do a group project from home 7 said yes, two were not sure and 1 of them still preferred the face to face setting. (Chart 7)
2D. TASK ANALYSIS FLOW CHART

INFORMATION PROCESSING ANALYSIS

Module 1: Getting Started
- Students will log into their Google accounts and gain access to spreadsheets and collaborate with a colleague.

Module 2: Search and Enter Data
- Students will perform effective search to find relevant information and populate it in the Google spreadsheet.

Module 3: Analyze & Present
- Students will compare, contrast, analyze, and discuss the facts from the data collected and make an informed decision, and then present their findings in a Google doc.

TASK ANALYSIS FLOW CHART
PART 3: PLANNING

3A. LEARNING OBJECTIVES LIST

1.0 Given a computer with Internet access Students will be able to become a collaborator in google docs.
   1.1 Given a computer with Internet access Students will be able to log into their google+ accounts and
      1.1.1 Students will be able to sign up for a google+ account
      1.1.2 Students will be able to connect to the internet.
      1.1.3 Students will be able to launch the browser.
      1.1.4 Students will be able to type the URL in the adressbar.
      1.1.5 Students will be able to enter username.
      1.1.6 Students will be able to enter password.
   1.2 Given a computer with Internet access Students will be able to log into their gmail accounts and send messages to the instructor.
   1.3 Given a computer with Internet access students will be able to browse their gmail inbox and locate the hyperlink to join as a collaborator in google docs.

2.0 Given a computer with Internet access students will be able to search and select quality microcomputers and constituent components based on performance and cost.
   2.1 Given a computer with Internet access students will be able to open the browser and type the URL of the search engine in the address bar.
   2.2 Given a computer with Internet access students will be able to conduct search in an optimum way to find hardware specifications quickly.
      2.2.1 Given a computer with Internet access students will be able to conduct effective search by narrowing down search terms
      2.2.2 Given a computer with Internet access students will be able to conduct effective search by using exact phrase.
      2.2.3 Given a computer with Internet access students will be able to conduct effective search by trimming down the URL
      2.2.4 Given a computer with Internet access students will be able to conduct effective search by using ‘similar to’ feature.
   2.3 Given the google spreadsheet students will be able to identify the correct cells and make accurate data entry.
2.3.1 Given results of search data students will be able to select tablet computer specifications.
2.3.2 Given tablet computer specifications students will be able to identify individual components.
2.3.3 Given a spreadsheet students will be able to transcribe specification data into corresponding cells.

3.0 Given a computer with Internet access students will be able to collaborate online to discuss the functions and interactions of all microcomputer components.

3.1 Given a spreadsheet with microcomputer hardware specifications students will be able to compare data.

3.2 Given a spreadsheet with microcomputer hardware specifications data students will be able to identify problems.

3.2.1 Given a spreadsheet with data students will be able to locate the problem cell.
3.2.2 Given a spreadsheet with data students will be able to enter comments in the cell.

3.3 Given the google spreadsheet students will be able to collaborate together and post comments.
3.4 Given the google spreadsheet students will be able to collaborate together and summarize the points from the comments.
3.5 Given the google document students will be able to write a report taking the gist from the summary in the spreadsheet.
<table>
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<th>Bloom’s Taxonomy Classification (b)</th>
<th>Format of Assessment (c)</th>
<th>Description of test form (d)</th>
<th>Sample items(e)</th>
</tr>
</thead>
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<td>1.0</td>
<td>Application</td>
<td>Performance</td>
<td>Observation of menu in google docs</td>
<td>Create a google+ account, log into your email, browse inbox for instructor email and click on the hyperlink to join the shared doc as a collaborator.</td>
</tr>
<tr>
<td>1.1</td>
<td>Application</td>
<td>Performance</td>
<td>Observation</td>
<td>Complete data entry in the fields by entering username &amp; Password in <a href="https://plus.google.com/">https://plus.google.com/</a></td>
</tr>
<tr>
<td>1.1.1</td>
<td>Application</td>
<td>Performance</td>
<td>Observation</td>
<td>Complete entry in address bar by typing <a href="https://accounts.google.com/">https://accounts.google.com/</a> and click sign up in top right corner</td>
</tr>
<tr>
<td>1.1.2</td>
<td>Application</td>
<td>Performance</td>
<td>Observation</td>
<td>Operate mouse click on network and sharing center in task bar to see if network connection is connected</td>
</tr>
<tr>
<td>1.1.3</td>
<td>Application</td>
<td>Performance</td>
<td>Observation</td>
<td>Operate mouse click on the icon for internet explorer, mozilla firefox or google chrome to launch the browser.</td>
</tr>
<tr>
<td>1.1.4</td>
<td>Application</td>
<td>Performance</td>
<td>Observation</td>
<td>Complete entry in address bar by typing <a href="https://plus.google.com/">https://plus.google.com/</a></td>
</tr>
<tr>
<td>1.1.5</td>
<td>Application</td>
<td>Performance</td>
<td>Observation</td>
<td>Operate mouse click in the blank field below username and type the chosen username.</td>
</tr>
<tr>
<td>1.1.6</td>
<td>Application</td>
<td>Performance</td>
<td>Observation</td>
<td>Operate mouse click in the blank field below password and type the chosen password.</td>
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<tr>
<td></td>
<td>Application</td>
<td>Performance</td>
<td>Observation</td>
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<tr>
<td>1.2</td>
<td></td>
<td></td>
<td>In gmail operate mouse click on compose message and send test email to instructor</td>
<td></td>
</tr>
<tr>
<td>1.3</td>
<td></td>
<td></td>
<td>Browse gmail inbox for email from instructor. Operate mouse click on the invite to join as a collaborator in google docs hyperlink.</td>
<td></td>
</tr>
<tr>
<td>2.0</td>
<td>Knowledge</td>
<td>Paper-and-Pencil</td>
<td>Record data obtained from hardware component search results in corresponding cells in the spreadsheet</td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td></td>
<td></td>
<td>Complete entry in address bar by typing <a href="http://www.google.com/advanced_search">http://www.google.com/advanced_search</a></td>
<td></td>
</tr>
<tr>
<td>2.2</td>
<td>Analysis &amp; Application</td>
<td>Performance</td>
<td>Examine search results and utilize strategy 2.2.1, 2.2.2, 2.2.3 or 2.2.4 to optimize results.</td>
<td></td>
</tr>
<tr>
<td>2.2.1</td>
<td>Application</td>
<td>Performance</td>
<td>Choose all the words that would always appear on the perfect page. Put those in the WITH ALL THE WORDS field. Think of all the distracting pages that might also turn up because one or more of your search terms has multiple meanings. Put those in the WITHOUT field.</td>
<td></td>
</tr>
<tr>
<td>2.2.2</td>
<td>Application</td>
<td>Performance</td>
<td>Use exact phrase in the search query.</td>
<td></td>
</tr>
<tr>
<td>2.2.3</td>
<td>Application</td>
<td>Performance</td>
<td>Change the URL for search by trimming it. Trace your way back to the top and drill down again step by step.</td>
<td></td>
</tr>
<tr>
<td>2.2.4</td>
<td>Application</td>
<td>Performance</td>
<td>Use the URL which helped you find relevant results in similar to or linked to field to get more results.</td>
<td></td>
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<td>Section</td>
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<tr>
<td>2.3</td>
<td>Comprehension &amp; Application</td>
<td>Paper-and-Pencil</td>
<td>Completion by entering data in the google spreadsheet</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Identify the data for hardware components from search results and given a spreadsheet students will input data on Tablet computer specifications.</td>
<td></td>
</tr>
<tr>
<td>2.3.1</td>
<td>Knowledge &amp; Application</td>
<td>Paper-and-Pencil</td>
<td>Completion by entering data in worksheet</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Select and filter specifications for tablet computers.</td>
<td></td>
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<tr>
<td>2.3.2</td>
<td>Knowledge</td>
<td>Paper-and-Pencil</td>
<td>Completion by entering data in worksheet</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Identify individual hardware components from the specification</td>
<td></td>
</tr>
<tr>
<td>2.3.3</td>
<td>Application</td>
<td>Performance</td>
<td>Observation of collaborative activity in google spreadsheet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Transfer data from hardware specifications to the google spreadsheet</td>
<td></td>
</tr>
<tr>
<td>3.0</td>
<td>Synthesis, Analysis &amp; Evaluation</td>
<td>Performance</td>
<td>Project presentation of paper in google docs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Debate through collaboration in the spreadsheet compare and contrast the hardware features and interactions of all microcomputer components to evaluate ROI and present summary in google docs.</td>
<td></td>
</tr>
<tr>
<td>3.1</td>
<td>Analysis</td>
<td>Performance</td>
<td>Observation of activity in google spreadsheet</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Compare hardware specifications of different tablet computers by looking at the data in the spreadsheet.</td>
<td></td>
</tr>
<tr>
<td>3.2</td>
<td>Knowledge</td>
<td>Paper-and-Pencil</td>
<td>Completion by entering comments in cells in google</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Identify data cells with problems</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>3.2.1</td>
<td>Comprehension</td>
<td>Performance</td>
<td>Observation of activity in google spreadsheet</td>
<td>Locate the problem cell</td>
</tr>
<tr>
<td>3.2.2</td>
<td>Comprehension &amp; Application</td>
<td>Performance</td>
<td>Observation of activity in google spreadsheet</td>
<td>Include comments in the problem cell to invite collaborative discussion.</td>
</tr>
<tr>
<td>3.3</td>
<td>Analysis</td>
<td>Performance</td>
<td>Observation of activity in google spreadsheet</td>
<td>Compare, contrast debate and examine the hardware specifications, along with their costs of all tablets in the google spreadsheet by posting comments.</td>
</tr>
<tr>
<td>3.4</td>
<td>Evaluation</td>
<td>Performance</td>
<td>Observation of activity in google spreadsheet</td>
<td>Evaluate and justify which is a best buy after looking at all comments and post key points in the spreadsheet.</td>
</tr>
<tr>
<td>3.5</td>
<td>Synthesis</td>
<td>Paper-and-Pencil</td>
<td>Completion by writing a paper in google docs.</td>
<td>Compile a report in google docs summarizing your decision taking hints from key points in the spreadsheet.</td>
</tr>
</tbody>
</table>
PROJECT GOAL STATEMENT:

Learners will use google docs to collaboratively gather and analyze computer hardware data and present a paper to support their decisions on which tablet computer to buy within a budget of $500.

ATTENTION

A1 Perceptual Arousal

- Students watch a 3 minute video of bridging our future, envisioned by intel to see what can be achieved combining technology and collaboration.
  
  http://youtu.be/BYMd-7Ng9Y8

A2. Inquiry Arousal

- Students are asked if they are eyeing an iPad, a Windows RT slate, or one of the many Android tablets available and if so what they plan to use it for.

A3. Variability

- Learners will be kept interested and engaged by varying instructional methods by interspersing demonstration, lecture, watching video or screencast and practice.

RELEVANCE

R1. Goal orientation

- The plus points of collaboration in helping make a decision will be emphasized.

- Effective use of keywords to make search results relevant will be pointed out to
obtain desired search results.

- The connection to prior knowledge will be emphasized by pointing out the relevance of knowledge of hardware components in their ability to make an informed decision.

R2. Motive matching

- Learners are asked to think of factors they will consider while shopping for a new tablet computer that best fits their personal computing needs. They probably have made up their mind whether they want an iPad, an Android, or a Windows Surface and if so why?

- If not, they are asked to consider some important factors. Do they need a tablet that offers lots of apps? Do they want a slate that can be easily held with one hand, or one with a larger 10-inch screen? Do they need memory card slots for additional storage? Or do they need one with 4G cellular connectivity so they can use their tablet to get online anywhere?

R3. Familiarity

- Analogies of situations in workplace will be provided. For instance while troubleshooting computers collaborating with peers in tech forums will help them solve the problem faster within a timeframe.

- Analogies of computer specifications with component costs will be provided to help them make their decisions to search only for tablet computers with features they are going to use so they don’t go overboard and keep budget in mind.

CONFIDENCE

C1. Learning requirements

- Tasks, objectives and what outcomes are expected will be explained clearly.

- The tasks and objectives will be clustered into three phases.
Learners will know well ahead of time, the time frame in which these chunked outcomes are expected of them.

C2. Success opportunities

- Examples of acceptable achievements will be provided by showing projects of prior learners both high quality ones and mediocre ones.
- Motivational messages and feedback will be provided from time to time.

C3. Personal control

- Learners will be moderately challenged to use effective search strategy learnt to search for specific hardware component for the lowest price. This will be done by each individual separately and then after 15 mins they will be asked to post their results in the common google docs. This will give them an opportunity to show off their individual findings based on their efforts and abilities.

SATISFACTION

S1. Natural consequences

- Learners will have the sense of having accomplished something both individually and also as a group when they know they can make informed decisions based on authentic data collected.
- Their newly learnt collaborative skills will come to their aid in their work situations to troubleshoot and repair computers when they seek collaborative help in tech forums.

S2. Positive consequences

- Scaffolding elements will be provided in the form of prompts and cues.
- Procrastinators will be reminded of the time limit to accomplish tasks.
- Motivational messages will be sent from time to time.
- Constructive feedback will be provided.

**S3. Equity**

- Make turn-around time for tasks short so learners can see what they have accomplished quickly.
- Refer to positive feelings the learner will have on successful completion of the project.
- Reward early completion through positive feedback.

INSTRUCTOR GUIDE

INTRODUCTION

Wish learners Good morning and welcome them to the class to gain attention. Let them know that the instruction will begin within a few minutes of their taking a seat and settling down. Ask each learner to log into their computers.

INFORM LEARNERS OF PURPOSE

Inform the learners the goal of the lesson. ‘After 3 hours of instruction they will be able to collaboratively analyze computer hardware data using google docs and make recommendations on which tablet device to buy on a budget of $500’ Let the learners know that this lesson not only increases their conceptual knowledge of hardware components and effective search techniques, but also introduces them to collaborating in the cloud using google docs. The conceptual knowledge of hardware components and the analytical problem solving skills gained will help them in their 21st century workplace. Last but not the least the valuable skills of collaboration will always come to their rescue when they work with others. They will learn to be tolerant and listen to other people’s ideas while working as a group. Ask learners to take the survey to understand their perception of collaboration.

STIMULATE LEARNER’S INTEREST AND MOTIVATION

Direct the learner’s attention to the screen to view a 3 minute video on YouTube (http://youtu.be/BYMd-7Ng9Y8) of bridging our future, envisioned by Intel to see what can be achieved combining technology and collaboration. After watching the video sum up by drawing parallels to the current project and let them know that we hope they appreciate the valuable mix of technological and collaborative skills they will gain from this lesson.
PROVIDE OVERVIEW

Explain to the learners that instruction will consist of three parts. First everybody will create a google+ account and join google docs and google spreadsheet as a collaborator. Second they will use effective search strategies to optimize their search results to find tablet computer specifications. They will then transfer individual hardware component details by completing data entry in the google spreadsheet. Third they will collaborate and discuss and arrive at a conclusion on which tablet computer to buy on a budget. They will document their explanations in the google doc and present their recommendations.
RECALL RELEVANT PRIOR KNOWLEDGE

Ask learners to remove handout1 (Appendix C) from their packets and work on the concept map to recall prior knowledge of hardware components. After 5 minutes, discuss and review the answers with them.

INSTRUCTION - PHASE 1: CREATE A GOOGLE+ ACCOUNT & BECOME A COLLABORATOR IN GOOGLE DOCS.

Begin 1st phase of instruction by asking learners if they have a google+ account. If yes ask them to log into their accounts and send instructor an email. Direct the attention of those who don’t have an account to the screen to see a demo of how to create a google+ account. Distribute Handout 2 (Appendix D) to students. Keep a copy for reference. Ask students to follow the following steps to become a collaborator in google docs. Begin demonstration.

1. Check if the computer is connected to the internet by launching the browser and see if you can access the home page.

2. Type the URL in the address bar. http://docs.google.com

3. If you already have a Google account type in your email and password to sign in. Otherwise click on the Get Started button to sign up with Google.
4. Fill in all of the required form fields to sign up for the account, read through the Terms of Service, and click on **I Accept. Create My Account.**

5. You will need to verify your email address you used to create the account by signing into it and clicking on the link that Google Docs sends you. By doing so you will be taken to a page that looks similar to the one below. Now you are ready to start creating, sharing and collaborating on documents.
6. Send an email to your instructor.

Once you receive emails from all the learners divide them into appropriate number of
groups and share the google doc and spreadsheet. One example is created
(http://bit.ly/10W68qr ) create one set for each group by following the steps given below.

2. Check the box next to the file or folder you'd like to share.
3. Click the Share icon .
4. Choose a visibility option: "Private," "Anyone with the link" or "Public on the
   web."
5. Type the email addresses of the people you want to share with in the text box
   below "Add people."
6. Choose the access level "Can edit." from the drop-down menu next to each
   collaborator from three options "Can view," "Can comment" (Google documents
   and presentations only), "Can edit."
7. Click **Share & save**.
INSTRUCTION PHASE2: HOW TO PERFORM EFFECTIVE SEARCH TO FIND HARDWARE SPECIFICATIONS FOR TABLET COMPUTERS.

Refer the learners to follow the NETS acronym written by Bernie Dodge by writing the URL on the whiteboard. [http://webquest.sdsu.edu/searching/fournets.htm](http://webquest.sdsu.edu/searching/fournets.htm)

Direct learners attention to the screen. Demonstrate the following steps on the screen.

Identify one relevant search result and enter the data in the shared google spreadsheet ([http://bit.ly/10W68gr](http://bit.ly/10W68gr)). This is a model for them to follow. Then let them know that they have a time limit of 1 hr to search for tablet computers and enter the details of the spec in the shared google spreadsheet. Also let them know each one can work on search independently but enter data simultaneously in the shared spreadsheet.


2. Follow search strategies mentioned in the website to
   a. Narrow down the search to find specifications of tablet computers.
   b. Use exact phrase if you know the name of the tablet computer for which you are trying to find the spec.
   c. If you find a terrific page nestled deep down inside a folder inside a folder inside a folder. It is most likely that there are other pages too. How do you find them? Trim the URL step by step.
   d. If you found something you like use similar to feature to find more pages of the same type.
3. Once you find the spec enter the data into the cells in the shared google spreadsheet (http://bit.ly/10W68qr) by breaking it down by hardware component features (hard drive capacity, memory capacity, ports etc.).

4. Enter the cost details of each tablet computer in the spreadsheet.
INSTRUCTION PHASE 3: PRESENTING RECOMMENDATIONS OF COLLABORATIVE ANALYSIS

Direct learners attention to the screen. Demonstrate the following steps on the screen.

Identify one relevant data cell and enter the comment in the shared google spreadsheet (http://bit.ly/10W68qr). This is a model for them to follow.

1. Direct learners to the shared google spreadsheet which has data. ( http://bit.ly/10W68qr)
2. Click on the cell and enter the comment to start a dialogue on why you think that feature is beneficial. ( A sample entry is provided in cell D4)
3. Ask learners to post their comments and opinions after evaluating each hardware feature for each of the tablets in the spreadsheet.
4. Ask learners to nominate a leader for their group.
5. Direct the learners to the google doc to post their recommendations as key points.
6. Ask the leader to finalize the set of key points for their group and write a one page summary of their group’s recommendations to buy a tablet computer.
7. Direct the learners’ attention to the screen. Display the recommendations in google docs on screen so everybody can view. One person from each group presents their recommendations to class.

Let the learners know that you will be available to answer any questions. Keep circulating around the class to see that all learners are actively engaged and observe if they have progressed from one step to another. You can provide active feedback by posting some comments on the shared google docs as to why you think that it is a valid point in the argument. Let the learners know that they have a time limit of 1hr to submit their recommendations.
CONCLUSION

After viewing presentations of all groups congratulate them on a job well done. Provide feedback on their work and tell them you enjoyed reading their recommendations and hope they enjoyed the lesson. Ask students to take end of instruction survey. Re-motivate and close by telling them that today’s lesson not only taught them problem solving skills of analyzing data but also prepared them for the 21st century work force where collaboration is the key to completing a time bound project successfully.
## PART 5: LEARNER CONTENT

### 5A. LEARNING MATERIALS

The learners’ will use different kinds of material to help them in this class. They will watch a video to understand how other students are combining technology and collaboration. They will use a concept map to recollect their prior knowledge of hardware components. They will use handouts of printed material giving them step by step instructions on how to create a google+ account and use google docs. They will be provided URLs of website to learn search techniques to help them conduct effective search with particular focus on searching for tablet computer specs.

An overview table of learning materials is given below.

<table>
<thead>
<tr>
<th>MATERIALS</th>
<th>PURPOSE</th>
<th>WHEN IT WILL BE USED</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 minute video on YouTube (<a href="http://youtu.be/BYMd-7Ng9Y8">http://youtu.be/BYMd-7Ng9Y8</a>) of bridging our future, envisioned by Intel</td>
<td>Stimulate Learner’s Interest and Motivation</td>
<td>In the beginning of instruction. After informing the learners the purpose of the instruction.</td>
</tr>
<tr>
<td>Handout 1- Concept Map (<a href="#">Appendix C</a>)</td>
<td>Learners’ recall prior knowledge of hardware components</td>
<td>After the learners' have watched the introductory video and been provided an overview of the course.</td>
</tr>
<tr>
<td>Handout 2-Step by step instructions with screen capture graphics on how to Create a google+ account &amp; become a collaborator in google docs. (<a href="#">Appendix D</a>)</td>
<td>To help learners follow along with instructor demo of Instruction- Phase 1: Create a google+ account &amp; become a Collaborator in google docs.</td>
<td>After recall of prior knowledge activity. During Phase 1 of instruction.</td>
</tr>
<tr>
<td>Google spreadsheet shared by instructor</td>
<td>To enable learners to have a shared worksheet for</td>
<td>End of phase1 of instruction</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td><strong>End of phase 1 of instruction.</strong></td>
<td><strong>To enable learners to have a shared document to present their recommendations.</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>The web site by Bernie Dodge to follow the NETS acronym</strong> [<a href="http://webquest.sd">http://webquest.sd</a> su.edu/searching/fournets.html](<a href="http://webquest.sd">http://webquest.sd</a> su.edu/searching/fournets.html)</th>
<th><strong>To help learners to learn the four techniques to become a better searcher and apply it in Instruction Phase 2: How to perform effective search to find hardware specifications for tablet computers.</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>After Phase 1 instruction. Before the beginning of phase 2 instruction.</strong></td>
<td><strong>End of phase 1 of instruction.</strong></td>
</tr>
</tbody>
</table>
5B. ASSESSMENT MATERIALS

The following assessment materials are being provided to help the instructor recognize whether or not the learners have met the instructional objectives.

A concept quiz with answer sheet is provided for scoring the quiz. (Appendix C)

A check list with a rubric is provided for grading the progressive tasks leading to the presentation of recommendations in the google docs. (Appendix E & Appendix F)

The learners are also provided with a copy of handouts and rubrics to self check their work. (Appendix C, Appendix D & Appendix F)
<table>
<thead>
<tr>
<th>TECHNOLOGY TOOL</th>
<th>WHY IT IS NECESSARY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor computer with windows 7 operating system with internet access</td>
<td>Instructor has to provide a hands-on demo of the instruction. The college has recently upgraded all computers with windows 7 OS. So instructor can use one of these computers.</td>
</tr>
<tr>
<td>Student computers with windows 7 operating system with internet access</td>
<td>Students need computers to do their projects. As most of the instruction is project based learning and is done using computers.</td>
</tr>
<tr>
<td>Projectors connected to instructor computer</td>
<td>Hands-on demonstration can be beamed to the screen for learners to follow along.</td>
</tr>
<tr>
<td>YouTube video (<a href="http://youtu.be/BYMd-7Ng9Y8">http://youtu.be/BYMd-7Ng9Y8</a>)</td>
<td>Learners watch introductory video on YouTube to see the application of collaboration and technology</td>
</tr>
<tr>
<td>Website for NETS acronym written by Bernie Dodge (<a href="http://webquest.sdsu.edu/searching/fournets.htm">http://webquest.sdsu.edu/searching/fournets.htm</a>)</td>
<td>Learners are referred to this website to learn effective search techniques which they can use while searching for tablet computers with particular hardware configurations.</td>
</tr>
</tbody>
</table>
PART 6. FORMATIVE EVALUATION PLAN

Formative evaluation is being planned to review the design of the instructional materials for their strength and weaknesses and revise them accordingly. Every effort has been made to include 4 out of the 6 stages of formative evaluation (Smith & Ragan), namely expert reviews, one-to-one evaluation, small group evaluation and field trial.

FORMATIVE EVALUATION PLAN: DETAILING THE MAIN STEPS

Who are the stakeholders?

INSTRUCTOR/DESIGNER/EVALUATOR: S. Ganapathi. She is responsible for the successful implementation of the course and for its content. She is a lone designer/instructor creating the instruction.

STUDENTS: The adult learners enrolled in the Computer Hardware Technology course have a direct impact on the success of the instruction. Some will have a direct impact on the design when they give their feedback as part of the review.

What is being evaluated?

The formative evaluation plan evaluates the course objectives, instructional strategies, assessment items and motivational items. The head of the Computer Science department, Mr. Chris Fielder (SME) will be involved in reviewing the course objectives and ensuring the content is accurate and up to date. Most other evaluations mentioned above will be done by the instructor and the students. Tutorials, videos, practice exercises, assessments will be reviewed by the instructor. In the try out the student participants will be asked to review and comment on the materials. Based on this the time required to implement the instruction will also be evaluated.

Who are the Evaluators and Reviewers?
EVALUATOR/INSTRUCTOR/DESIGNER: S. Ganapathi is the main evaluator. She has been an instructor at a professional career college for several years. She has the content knowledge because of her CompTIA A+ certification, has teaching experience with the target audience in the face-to-face course. She is totally involved in the design and development of this instruction.

EXPERT REVIEWER (SUBJECT MATTER): Mr. Chris Fielder, Head of Department Computer Science, career college. He has a master’s degree in computer science. He will provide his input on course objectives and instructional strategies.

EXPERT REVIEWER (TECHNICAL SUPPORT): Mr. R. Smith who is a MCSE and has several computer certifications will provide the computer administrative support when needed.

END-USER REVIEWER: Learners from the Hardware Technology course will be asked to participate in the end-user reviews during the formative evaluation. Three students will be identified after the pre-test.

When and how should formative evaluation take place?

Formative evaluation is an ongoing process from the beginning of the development of the instruction. All inputs from the main evaluator, SME, technology expert, student review and feedback will be incorporated into the prototype every two weeks till it reaches completion.
6A. EXPERT REVIEW OF ASSESSMENT SPECIFICATIONS AND BLUEPRINTS

Subject matter expert, Mr. Chris Fielder and instructor/designer Ms. S. Ganapathi will review the content for accuracy and completeness. The four main areas of review will be instructional goals, instructional content, technology and message design. Each of these categories will be further detailed by three criteria, efficiency, effectiveness and appeal. (Please see evaluation matrix table Appendix G for evaluation questions and who will review them). Expert reviewer for technology related questions will be Mr. Ron Smith, the computer administrator in addition to SME and the instructor/designer. End-user reviewers for the one-to-one evaluation and small group evaluations will be selected students from the computer hardware technology class who have scored well in the pre-test.

6B. ONE-TO-ONE EVALUATION

Instructional prototypes will be reviewed with one-to-one tryout with the three students identified after a preliminary test to check learning outcomes. During one-to-one evaluation, as stated by Tessmer, 1993, one learner at a time will review the instruction with evaluator and give comments upon it. The purpose is to identify gross problems in the instruction, such as typographical errors, unclear sentences, poor or missing directions, etc. Once again based on the feedback changes will be incorporated in the prototype and the instruction will be ready for the small group trial. (The specific questions that will be asked in the one-to-one tryout are available in the evaluation matrix Appendix G)
6C. SMALL GROUP EVALUATION

A small group of 12 enrolled students will be involved in the small-group tryout to get feedback on how well the course accomplishes the learning objectives and how long the instruction lasts. It will also be checked if problems from the one-to-one evaluation have been rectified and data will be collected on attitude and time. Based on their feedback any remaining errors and adjustments will be made and instruction prototype will be taken to its “final” form.

The purpose of small group evaluation, as mentioned by (Smith & Ragan, 1999, p. 342) is "to check the efficacy of the revisions based on one-to-one data, to ascertain how well the instruction works with more varied learners, and to see how well the instruction teaches without the designer's intervention". (See Appendix G for evaluation matrix of specific questions)

6D. FIELD TRIAL

Due to time constraints the initial implementation of the instruction will be the field trial. During this stage of evaluation the expert reviewer, Mr. Chris Fielder who is head of department computer science, will also sit in the class. Information will be collected about performance, time and attitude as well as information from the expert reviewer regarding the administration of the instruction for process evaluation. The feedback from the field trial which is the first course offering will be implemented for subsequent offerings.
EDTECH 503 INSTRUCTIONAL DESIGN PROJECT

PART 7: FORMATIVE EVALUATION REPORT

7A. EVALUATION SURVEY OR RUBRIC


<table>
<thead>
<tr>
<th>EVALUATION</th>
<th>SPECIFIC EVALUATION QUESTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EFFECTIVENESS</strong></td>
<td></td>
</tr>
<tr>
<td>Goals</td>
<td>Is the information accurate?</td>
</tr>
<tr>
<td></td>
<td>Are the goals and objectives clear?</td>
</tr>
<tr>
<td></td>
<td>Are the goals and objectives achievable?</td>
</tr>
<tr>
<td></td>
<td>Are the goals and objectives appropriate for classroom instruction?</td>
</tr>
<tr>
<td>Content</td>
<td>Does the information cover the content properly?</td>
</tr>
<tr>
<td></td>
<td>Does the content match the objectives?</td>
</tr>
<tr>
<td></td>
<td>Are activities and final project congruent?</td>
</tr>
<tr>
<td></td>
<td>Do activities promote learning?</td>
</tr>
<tr>
<td>Technology</td>
<td>Is there computer access to the instructor and other learners?</td>
</tr>
<tr>
<td></td>
<td>Does the computer have internet access?</td>
</tr>
<tr>
<td></td>
<td>Does the instructor computer have access to You tube videos to show introductory video?</td>
</tr>
<tr>
<td></td>
<td>Are student computers allowed access to computer manufacturer and other hardware retailer web sites?</td>
</tr>
<tr>
<td>Message Design</td>
<td>Are messages an integrated whole?</td>
</tr>
<tr>
<td></td>
<td>Are supporting graphics of screenshots appropriate?</td>
</tr>
<tr>
<td></td>
<td>Do learners understand the instruction?</td>
</tr>
<tr>
<td></td>
<td>Are there design features which are distracting?</td>
</tr>
<tr>
<td></td>
<td>Are directions clear?</td>
</tr>
<tr>
<td></td>
<td>Is time allotted for the course appropriate?</td>
</tr>
<tr>
<td></td>
<td>Does the text stand alone if the graphics are unavailable?</td>
</tr>
</tbody>
</table>

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### EFFICIENCY

<table>
<thead>
<tr>
<th><strong>Goals</strong></th>
<th>Is the purpose stated concisely?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Do goal and lesson objectives align with each other?</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Is the content presented in a clear and concise manner?</td>
</tr>
<tr>
<td></td>
<td>Is the content appropriate for Computer Hardware Technology?</td>
</tr>
<tr>
<td></td>
<td>Is the content up to date covering current hardware technologies and collaboration efforts?</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Do the technology applications like embedded reference links work properly?</td>
</tr>
<tr>
<td></td>
<td>Does the firewall prevent students from accessing links in their search results?</td>
</tr>
<tr>
<td></td>
<td>Is organization and structure of the message logical and coherent?</td>
</tr>
<tr>
<td><strong>Message Design</strong></td>
<td>Are titles and subtitles used while organizing the content?</td>
</tr>
<tr>
<td></td>
<td>Are there asynchronous and synchronous types of activities for both student and instructor?</td>
</tr>
</tbody>
</table>

### APPEAL

<table>
<thead>
<tr>
<th><strong>Goals</strong></th>
<th>Are the goals relevant to learners?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Content</strong></td>
<td>Is the content interesting?</td>
</tr>
<tr>
<td></td>
<td>Is the content presented geared towards using web 2.0 tools which are student-centric?</td>
</tr>
<tr>
<td></td>
<td>Is the content challenging at the same time being enjoyable?</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Are instructions logical and easy?</td>
</tr>
<tr>
<td></td>
<td>Is it easy for students to access materials?</td>
</tr>
<tr>
<td></td>
<td>Is it easy for the instructor to upload and update material (google docs)?</td>
</tr>
<tr>
<td></td>
<td>Do all hyperlinks function correctly?</td>
</tr>
<tr>
<td><strong>Message Design</strong></td>
<td>Is the language level and tone suitable for adult learners?</td>
</tr>
<tr>
<td></td>
<td>Has good use of white space been made avoiding clutter?</td>
</tr>
<tr>
<td></td>
<td>Are there typographical, spelling, grammar or punctuation errors?</td>
</tr>
<tr>
<td></td>
<td>Do graphics and video enhance the instruction?</td>
</tr>
</tbody>
</table>
B. RESULTS OF EXPERT REVIEW

After reviewing the instructional material, Mr. Chris Fielder provided the results in the form of a google doc (http://bit.ly/15cBscq). In general he answered all the questions in the questionnaire by criteria effectiveness, efficiency and appeal. The results indicate he did not find any problems. However Ms. Ganapathi as main evaluator did notice that though instructor computers and student computers have internet access they were restricted from accessing YouTube. This matter was brought up with the server administrator. It was explained that this feature was required to show the introductory video. Finally it was agreed to provide You Tube access only to the instructor computer.

7C. COMMENTS ON CHANGE

At this stage no changes are proposed and instruction will be taken into its first offering. However there is some apprehension regarding the time allotted. After the 1st offering, which is the field trial if it is found that students are not able to complete their recommendations and present it in a timely manner then the following strategy will be adopted.

Time allotted for phase 2- search for tablet specs will be reduced by providing students links to websites of manufacturers and asking students to perform an internal search of those websites. Then the extra time gained in Phase 2 can be utilized in phase 3- presentation of recommendations.
PART 8: AECT STANDARDS GRID

PROFESSIONAL STANDARDS ADDRESSED (AECT)

The following standards, developed by the Association for Educational Communications and Technology (AECT), and used in the accreditation process established by the National Council for Accreditation of Teacher Education (NCATE), are addressed to some degree in this course. The numbers of the standards correspond to the numbers next to the course tasks show on the list of assignments. Not all standards are addressed explicitly through student work.

<table>
<thead>
<tr>
<th>Standard 1: DESIGN</th>
<th>Assignments meeting standard in whole or part</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Instructional Systems Design (ISD)</td>
<td>X ID Project</td>
</tr>
<tr>
<td>1.1.1 Analyzing</td>
<td>X ID Project; ID Case Analysis</td>
</tr>
<tr>
<td>1.1.2 Designing</td>
<td>X ID Project</td>
</tr>
<tr>
<td>1.1.3 Developing</td>
<td>X ID Project</td>
</tr>
<tr>
<td>1.1.4 Implementing</td>
<td>X ID Project</td>
</tr>
<tr>
<td>1.1.5 Evaluating</td>
<td>X Selected Discussion Forums; ID Project</td>
</tr>
<tr>
<td>1.2 Message Design</td>
<td></td>
</tr>
<tr>
<td>1.3 Instructional Strategies</td>
<td>X ID Project</td>
</tr>
<tr>
<td>1.4 Learner Characteristics</td>
<td>X ID Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Standard 2: DEVELOPMENT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 (includes 2.0.1 to 2.0.8)</td>
<td>X ID Project</td>
</tr>
<tr>
<td>2.1 Print Technologies</td>
<td>X Reading Quiz; ID Project</td>
</tr>
<tr>
<td>2.2 Audiovisual Technologies</td>
<td></td>
</tr>
<tr>
<td>2.3 Computer-Based Technologies</td>
<td>X (all assignments)</td>
</tr>
<tr>
<td>2.4 Integrated Technologies</td>
<td></td>
</tr>
</tbody>
</table>

| Standard 3: UTILIZATION | |

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3.0 (includes 3.0.1 & 3.0.2)

3.1 Media Utilization  
3.2 Diffusion of Innovations

3.3 Implementation and Institutionalization  

3.4 Policies and Regulations

Standard 4: MANAGEMENT

4.0 (includes 4.0.1 & 4.0.3)

4.1 Project Management
4.2 Resource Management
4.3 Delivery System Management
4.4 Information Management

Standard 5: EVALUATION

5.1 Problem Analysis  
5.2 Criterion-Referenced Measurement  
5.3 Formative and Summative Evaluation

5.4 Long-Range Planning
COURSE GOALS & OBJECTIVES

The overall goal for the course is for each student to consider and use the systematic process of instructional design to create an instructional product. To achieve this goal, students will engage in activities that promote reflective practice, emphasize realistic contexts, and employ a number of communications technologies. Following the course, students will be able to:

1. Discuss the historical development of the practice of instructional design with regard to factors that led to its development and the rationale for its use
2. Describe at least two reasons why instructional design models are useful
3. Identify at least six instructional design models and classify them according to their use
4. Compare and contrast the major elements of three theories of learning as they relate to instructional design
5. Define “instructional design.”
6. Define the word “systematic” as it relates to instructional design
7. Define “learning” and synthesize its definition with the practice of instructional design
8. Relate the design of instruction to the term “educational (or “instructional”) technology”
9. Describe the major components of the instructional design process and the functions of models in the design process
10. Provide a succinct summary of various learning contexts (declarative knowledge, conceptual, declarative, principle, problem-solving, cognitive, attitudinal, and psychomotor)
11. Build an instructional design product that integrates major aspects of the systematic process and make this available on the web.
a. Describe the rationale for and processes associated with needs, learner, context, goal, and task analyses
   i. Create and conduct various aspects of a front-end analysis.
   ii. Identify methods and materials for communicating subject matter that are contextually relevant.

b. Describe the rationale for and processes associated with creating design documents (objectives, motivation, etc.)
   i. Construct clear instructional goals and objectives.
   ii. Develop a motivational design for a specific instructional task.
   iii. Develop assessments that accurately measure performance objectives.

c. Select and implement instructional strategies for selected learning tasks.
   i. Select appropriate media tools that support instructional design decisions.

d. Describe the rationale and processes associated with the formative evaluation of instructional products.
   i. Create a plan for formative evaluation

12. Identify and use technology resources to enable and empower learners with diverse backgrounds, characteristics, and abilities.

13. Apply state and national content standards to the development of instructional products.

14. Meet selected professional standards developed by the Association for Educational Communications and Technology.

15. Use various technological tools for instructional and professional communication.
AECT STANDARDS (APPLICABLE TO EDTECH 503)

1.0 Design

1.1 Instructional Systems Design

1.1.a Utilize and implement design principles which specify optimal conditions for learning.

1.1.b Identify a variety of instructional systems design models and apply at least one model.

1.1.1 Analyzing

1.1.1.a Write appropriate objectives for specific content and outcome levels.

1.1.1.b Analyze instructional tasks, content, and context.

1.1.2 Designing

1.1.2.a Create a plan for a topic of a content area (e.g., a thematic unit, a text chapter, an interdisciplinary unit) to demonstrate application of the principles of macro-level design.

1.1.2.b Create instructional plans (micro-level design) that address the needs of all learners, including appropriate accommodations for learners with special needs.

1.1.2.d Incorporate contemporary instructional technology processes in the development of interactive lessons that promote student learning.

1.1.3 Developing

1.1.3.a Produce instructional materials which require the use of multiple media (e.g., computers, video, projection).

1.1.3.b Demonstrate personal skill development with at least one: computer authoring application, video tool, or electronic communication application.
1.1.4 Implementing

1.1.4.a Use instructional plans and materials which they have produced in contextualized instructional settings (e.g., practica, field experiences, training) that address the needs of all learners, including appropriate accommodations for learners with special needs.

1.1.5 Evaluating

1.1.5.a Utilize a variety of assessment measures to determine the adequacy of learning and instruction.

1.1.5.b Demonstrate the use of formative and summative evaluation within practice and contextualized field experiences.

1.1.5.c Demonstrate congruency among goals/objectives, instructional strategies, and assessment measures.

1.3 Instructional Strategies

1.3.a Select instructional strategies appropriate for a variety of learner characteristics and learning situations.

1.3.b Identify at least one instructional model and demonstrate appropriate contextualized application within practice and field experiences.

1.3.c Analyze their selection of instructional strategies and/or models as influenced by the learning situation, nature of the specific content, and type of learner objective.

1.3.d Select motivational strategies appropriate for the target learners, task, and learning situation.

1.4 Learner Characteristics

1.4.a Identify a broad range of observed and hypothetical learner characteristics for their particular area(s) of preparation.
1.4.b Describe and/or document specific learner characteristics which influence the selection of instructional strategies.

1.4.c Describe and/or document specific learner characteristics which influence the implementation of instructional strategies.

2.0 Development

2.0.1 Select appropriate media to produce effective learning environments using technology resources.

2.0.2 Use appropriate analog and digital productivity tools to develop instructional and professional products.

2.0.3 Apply instructional design principles to select appropriate technological tools for the development of instructional and professional products.

2.0.4 Apply appropriate learning and psychological theories to the selection of appropriate technological tools and to the development of instructional and professional products.

2.0.5 Apply appropriate evaluation strategies and techniques for assessing effectiveness of instructional and professional products.

2.0.6 Use the results of evaluation methods and techniques to revise and update instructional and professional products.

2.0.7 Contribute to a professional portfolio by developing and selecting a variety of productions for inclusion in the portfolio.

2.1 Print Technologies

2.1.3 Use presentation application software to produce presentations and supplementary materials for instructional and professional purposes.

2.1.4 Produce instructional and professional products using various aspects of integrated application programs.
2.3 Computer-Based Technologies

2.3.2 Design, produce, and use digital information with computer-based technologies.

3.0 Utilization

3.1 Media Utilization

3.1.1 Identify key factors in selecting and using technologies appropriate for learning situations specified in the instructional design process.

3.1.2 Use educational communications and instructional technology (SMETS) resources in a variety of learning contexts.

3.3 Implementation and Institutionalization

3.3.1 Use appropriate instructional materials and strategies in various learning contexts.

3.3.2 Identify and apply techniques for integrating SMETS innovations in various learning contexts.

3.3.3 Identify strategies to maintain use after initial adoption.

4.0 Management

*(none specifically addressed in 503)*

5.0 Evaluation

5.1 Problem Analysis

5.1.1 Identify and apply problem analysis skills in appropriate school media and educational technology (SMET) contexts (e.g., conduct needs assessments, identify and define problems, identify constraints, identify resources, define learner characteristics, define goals and objectives in instructional systems)
design, media development and utilization, program management, and evaluation).

5.2 Criterion-referenced Measurement

5.2.1 Develop and apply criterion-referenced measures in a variety of SMET contexts.

5.3 Formative and Summative Evaluation

5.3.1 Develop and apply formative and summative evaluation strategies in a variety of SMET contexts.

*SMET = School Media & Educational Technologies*
APPENDIX A: REFERENCES


APPENDIX B

SURVEY 1: LEARNER ANALYSIS TECHNOLOGY READINESS.
(CHECK HERE FOR ONLINE SURVEY 1 LINK)

1. What is your gender?
   - Female
   - Male

2. What is your age?
   - 18 to 24
   - 25 to 34
   - 35 to 44
   - 45 to 54
   - 55 to 64
   - 65 and above

3. Do you have access to a computer at home to do your homework?
   - Yes
   - No

4. Do you send emails or browse the internet?
   - Yes
   - No

5. Do you use search engines like google or bing to find information on the internet?
6. Which social networking website do you use most often?

☐ Facebook
☐ Linkedin
☐ Instagram
☐ Pinterest

7. In a typical day, about how much time do you spend using social networking websites?

Hours

Minutes

8. If you need help with your homework whom would you first approach?

☐ Call a friend or contact them through facebook
☐ Tutor or a parent
☐ email the teacher

9. Would you prefer working alone on a project or like to work in a group?

☐ Alone
☐ Group

10. Given a computer can you identify all the hardware components?

☐ Yes
☐ No
SURVEY 2: ARE YOU READY FOR 21\textsuperscript{st} CENTURY LEARNING?
(CLICK HERE FOR ONLINE SURVEY 2 LINK)

1. How likely are you to refer to a wiki to find out about something you don't know?

- Most likely
- least likely

2. Have you ever watched an educational video on YouTube to learn something?

- Yes
- No

3. Have you ever used Google Drive or SkyDrive to store files?

- Yes
- No

4. Given a choice to save your school work would you prefer to save it on the SkyDrive or print a copy and file it in your physical folder?

- Print and save it on paper.
- Save it in the cloud based hard drive.

5. Do you think social networking sites can have educational value?

- Yes
- No

6. Do you think you can understand concepts better if you have access to technology in the classroom?

- Yes
7. When you use technology to learn do you have a positive attitude to the learning experience?

- Yes. I enjoy learning using technology
- No. I feel it is cumbersome.

8. When I am using technology and it doesn't go as planned, I see those moments as a learning opportunity.

- * Strongly agree
- Neither agree nor disagree
- Strongly disagree

9. Do you think schools should allow you to bring your own device (BYOD) laptop or tablet computer to do school work?

- Yes
- No

10. How motivated are you to do a group project if you had the choice of working from home and interacting with your group using the web? (You don't have to be online at the same time)

- Highly motivated. I can work from anywhere and anytime I choose.
- Not sure
- Not motivated. I prefer the face to face setting
Fill in the blanks to show the hierarchy of system unit components.

```
System Unit
  ---------------------------
<table>
<thead>
<tr>
<th>Processor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>Floppy Disk Drive</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>DVD Drive</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>CD Drive</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>RAM</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>VGA</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>EEPROM</td>
</tr>
<tr>
<td>---------------------------</td>
</tr>
<tr>
<td>DVI</td>
</tr>
</tbody>
</table>
  ---------------------------
```
a. Storage
b. Memory
c. Magnetic
d. Optical
e. AMD
f. ROM, Read-only memory
g. AGP
h. Hard
i. BD, Blu-ray
Collaborating with Others Using Google Docs - Tutorial

Google Docs provides a great set of free tools that allow you to work process documents, create PowerPoint presentations, create questionnaires and forms, and more. One great service these tools provide is the ability to share your documents and collaborate with others. (Source: Google Docs Help)

Here's what you can do with documents:

- Upload Word documents, OpenOffice, RTF, HTML, or text files to create documents from scratch.
- Use a simple WYSIWYG editor to format your document, spell-check them, etc.
- Invite others by e-mail address to edit or view your documents and spreadsheets.
- Edit documents online, with whomever you choose.
- View your documents and spreadsheets’ revision history and rollback to any version.
- Publish documents online to the world, as Web pages or post documents to your blog.
- Download documents to your desktop as Word, OpenOffice, RTF, PDF, HTML, or zip.
- Link your documents out as attachments.

Here's what you can do with spreadsheets:

- Import and export of xls, csv, txt, and ad-hoc formatted data.
- Use intuitive navigation and editing, like any traditional document or spreadsheet.
- Use formatting and formula editing in spreadsheets so you can calculate results and make your data look just the way you want it.
- Chat in real-time with others who are editing your spreadsheet.
- Embed a spreadsheet, or a piece of a spreadsheet, in your blog or website.

Here's what you can do with presentations:

- Share and edit presentations with your friends and coworkers.
- Import existing presentations as .pptx and .pps File types.
- Export your presentations using the Save as PDF and Save as PPT features from the File menu.
- Edit your presentations using our simple WYSIWYG editor.
- Insert images and videos, and format your slides to fit your preferences.
- Allow real-time viewing of presentations, online, from separate remote locations.
- Publish and embed your presentations in a website, allowing access to a wide audience.

When you share a file you've created in Google Docs, you can invite others to be owners, collaborators, or viewers.

Owners:
- Can edit documents, spreadsheets and presentations, and invite more collaborators and viewers.
- Can delete documents, spreadsheets and presentations, and thereby remove access for collaborators and viewers. Please note: to fully delete a document, spreadsheet or presentation, and remove access to it, you must delete it and then empty Trash.

Collaborators:
- Can edit documents, spreadsheets and presentations.
- Can invite or delete other collaborators and viewers if the owner has given them permissions.
- Can export a copy of the document, spreadsheet or presentation to their local hard drive.

Viewers:
- Can see the most recent version of a document, spreadsheet or presentation, but can't make any changes.
- Can export a copy of the document, spreadsheet or presentation to their local hard drive.

Access with Google Accounts

Documents and spreadsheets if they are published, or accessed by invitation, anyone can view them without a Google Account.

Presentations: anyone can view if they are published. If a user is invited, a Google Account is needed.

Sharing: Adding viewers and collaborators

There are two ways you can share your Google Docs:

- From the Docs list, select the checkbox next to the item(s) you want to share and click More Actions Manage Sharing.
- Enter the e-mail addresses of the people or mailing list that you’d like to add.
- Choose as Collaborators or as Viewers from the drop-down list.
- Add a message and click Send Invitation (this is optional).
## APPENDIX E: CHECKLIST

### COLLABORATING WITH GOOGLE DOCS & SPREADSHEET

<table>
<thead>
<tr>
<th>Checklist Items</th>
<th>Yes</th>
<th>No</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have all the students logged into their computers?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have they connected to the internet and accessed the website <a href="http://docs.google.com">http://docs.google.com</a>?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did you receive an email from each student in the class from their gmail account?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did each of them receive instructor email and click on the link to join as a collaborator in google docs?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Did each of the students join as a collaborator in google spreadsheet?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On monitoring the spreadsheet can you see data entry by each student at least in one cell?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are they posting the data correctly by breaking up the hardware specification?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are they posting the cost details?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### GOOGLE DOCS PRESENTATION OF RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Checklist Items</th>
<th>Yes</th>
<th>No</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are students posting their thoughts as comments in the cell?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you see active participation from all the students?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are all the comments in spreadsheet summed up and posted in google docs?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do the postings show co-relation between the data and costing in the spreadsheet?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**APPENDIX F: GRADING RUBRIC**

| Google docs Worksheet (20 Points) | Research efforts carefully documented. Explanation for choosing the tablet computer is logical and based on facts. Recommendations show logical thinking & problem analysis is presented in a clear manner backed by data. (18-20) | Entries don’t reflect research efforts only some random notes to indicate the initial spadework. Recommendations are not backed by data and are not very clear. (15-18) | Neither research efforts nor recommendations are clearly indicated. (8-15) |
| Google Docs Spreadsheet (20 Points) | Correct components identified. Cost effective pricing clearly documented showing individual component pricing and total within the allocated budget. (18-20) | Correct components identified. Pricing documented without keeping budget in mind. (15-18) | Neither components nor pricing is identified correctly. (8-15) |
| Web2.0 google docs Presentation (20 Points) | Excellent content, All parts of the recommendation are backed up by facts which are clearly documented. No spelling or grammatical errors. (18-20) | Content presentation has minor flaws and does not fully reflect search efforts. One or two spelling & grammatical errors are found in the recommendations. (15-18) | Content presentation is like a patch up job. It does not have a logical thought flow. More than two grammatical or spelling errors. (8-15) |
### APPENDIX G: FORMATIVE EVALUATION MATRIX

#### QUESTIONS

<table>
<thead>
<tr>
<th>Evaluation Criteria</th>
<th>Specific Evaluation Questions</th>
<th>Methods and Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EFFECTIVENESS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goals</td>
<td>Is the information accurate?</td>
<td>Subject Matter Expert (HOD computer Science) with checklists.</td>
</tr>
<tr>
<td></td>
<td>Are the goals and objectives clear?</td>
<td>Expert review (HOD as the main evaluator)</td>
</tr>
<tr>
<td></td>
<td>Are the goals and objectives achievable?</td>
<td>Expert review (main evaluator &amp; instructor)</td>
</tr>
<tr>
<td></td>
<td>Are the goals and objectives appropriate for classroom instruction?</td>
<td>Expert review (main evaluator and instructor), Extant data (performance in google docs spreadsheet activity, collaborative data entries in google docs for final projects, assessments)</td>
</tr>
<tr>
<td>Content</td>
<td>Does the information cover the content properly?</td>
<td>Subject Matter Expert (HOD computer Science) with checklists</td>
</tr>
<tr>
<td></td>
<td>Does the content match the objectives?</td>
<td>Expert review (main evaluator &amp; instructor)</td>
</tr>
<tr>
<td></td>
<td>Are activities and final project congruent?</td>
<td>End-user survey, Expert review (main evaluator &amp; instructor)</td>
</tr>
<tr>
<td></td>
<td>Do activities promote learning?</td>
<td>Extant data (Presentation in google docs, discussions, emails, polls)</td>
</tr>
<tr>
<td>Technology</td>
<td>Is there computer access to the</td>
<td>Expert (Computer portal)</td>
</tr>
<tr>
<td>Question</td>
<td>Evaluation Method</td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>instructor and other learners?</td>
<td>administrator with checklists)</td>
<td></td>
</tr>
<tr>
<td>Does the computer have internet access?</td>
<td>Expert (Computer portal administrator with checklists)</td>
<td></td>
</tr>
<tr>
<td>Does the instructor computer have access to YouTube videos to show introductory video?</td>
<td>Expert (Computer portal administrator with checklists)</td>
<td></td>
</tr>
<tr>
<td>Are student computers allowed access to computer manufacturer and other hardware retailer web sites?</td>
<td>Observation by instructor &amp; Expert (Computer portal administrator with checklists)</td>
<td></td>
</tr>
<tr>
<td><strong>Message Design</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are messages an integrated whole?</td>
<td>Expert review (main evaluator)</td>
<td></td>
</tr>
<tr>
<td>Are supporting graphics of screenshots appropriate?</td>
<td>Expert review (main evaluator), one-to-one tryout, small group tryout</td>
<td></td>
</tr>
<tr>
<td>Do learners understand the instruction?</td>
<td>One-to-one tryout, expert review (main evaluator &amp; instructor)</td>
<td></td>
</tr>
<tr>
<td>Are there design features which are distracting?</td>
<td>One-to-one tryout, expert review (main evaluator &amp; instructor), End-user questionnaire, small group tryout</td>
<td></td>
</tr>
<tr>
<td>Are directions clear?</td>
<td>One-to-one tryout, expert review (main evaluator &amp; instructor), End-user questionnaire, survey</td>
<td></td>
</tr>
<tr>
<td>Is time allotted for the course appropriate?</td>
<td>One-to-one tryout, expert review (main evaluator &amp; instructor), End-user questionnaire, small group tryout</td>
<td></td>
</tr>
<tr>
<td><strong>APPEAL</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
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<td>---</td>
</tr>
<tr>
<td>Does the text stand alone if the graphics are unavailable?</td>
<td>One-to-one tryout, expert review (main evaluator)</td>
<td></td>
</tr>
<tr>
<td><strong>Goals</strong></td>
<td>Are the goals relevant to learners?</td>
<td>End-user survey</td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Is the content interesting?</td>
<td>End-user survey</td>
</tr>
<tr>
<td></td>
<td>Is the content presented geared towards using web 2.0 tools which are student-centric?</td>
<td>Expert review (main evaluator &amp; instructor), observation, small group tryout</td>
</tr>
<tr>
<td></td>
<td>Is the content challenging at the same time being enjoyable?</td>
<td>Expert review (main evaluator &amp; instructor), one-to-one tryout, small group tryout</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Are instructions logical and easy?</td>
<td>Expert review (main evaluator &amp; instructor)</td>
</tr>
<tr>
<td></td>
<td>Is it easy for students to access materials?</td>
<td>One-to-one tryout, small group tryout</td>
</tr>
</tbody>
</table>
|  | Is it easy for the instructor to upload and update material (google docs)? | Expert review (main evaluator & instructor)
Expert review (Web portal administrator) |
<p>|  | Do all hyperlinks function correctly? | Expert review (main evaluator &amp; instructor) |
| <strong>Message Design</strong> | Has good use of white space been | One-to-one tryout, Expert review (main evaluator &amp; instructor), |
| EFFICIENCY |
| Is the purpose stated concisely? | Subject Matter Expert (HOD computer Science) with checklists |
| Goals | Do goal and lesson objectives align with each other? | End-user survey |
| Content | Is the content presented in a clear and concise manner? | Subject Matter Expert (HOD Computer Science) with checklists, observation, small group tryout |
| Content | Is the content appropriate for Computer Hardware Technology? | Interview SME (HOD Computer science), Small group tryout |
| Content | Is the content up to date covering current hardware technologies and collaboration efforts? | Interview SME (HOD Computer science), Small group tryout |
| Technology | Do the technology applications like embedded reference links work properly? | Expert review (main evaluator &amp; instructor, web portal administrator), small group tryout |
| Technology | Does the firewall prevent students from accessing links in their search | Expert review (main evaluator &amp; instructor, web portal administrator), Small group tryout. |</p>
<table>
<thead>
<tr>
<th>Message Design</th>
<th>Are there asynchronous and synchronous types of activities for both student and instructor?</th>
<th>Expert review (main evaluator &amp; instructor), Small group tryout, questionnaire, survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are titles and subtitles used while organizing the content?</td>
<td></td>
<td>One-to-one tryout, Expert review (main evaluator &amp; instructor)</td>
</tr>
</tbody>
</table>

Is organization and structure of the message logical and coherent?  

Expert review (main evaluator & instructor), Small group tryout