

Web-Based Learning Project: Design Document

Dragon Practice Modules
Module 1: Controlling Dragon's Microphone

Revision as of: August 2, 2013

Table of Contents

1) Introduction	4
2) Problem Analysis	5
a) Problem Identification (Needs Assessment)	5
b) Problem Statement	5
3) Goal Statement and Learning Objectives	6
a) Instructional Goal Statement	6
b) Learning Objectives	6
4) Instructional Context	7
a) Personnel	7
b) Technology	7
c) Hardware and Operating System Requirements	8
d) Contextual Analysis	8
5) Learner Characteristics	9
a) Description of Learners (Learner Analysis)	9
b) Learner Motivation	9
c) Learner Issues	9-10
d) Learners’ Strengths and Weaknesses	11
6) Learning Task Map	12
7) Task Objective Assessment Blueprint (TOAB)	13-14
8) Implications of Design	15
a) Global Instructional Strategies	15
b) Accessibility	15
c) Underlying Instructional Method	16
d) Instructional Issues and Remedies	16
9) WBI Timeline	17
10) WBI Strategy Units (Instructional Plan)	18-21
11) Measurement of Learning	22-23
12) Implementation Report	24
a) Demographics	24
b) Training/Instructions	24
c) Reviewer Results	25
i) Instructional Design Expert Reviewers Summary	25
ii) Expert Dragon Learner (Former Dragon Students) Reviewers Summary	25
iii) Novice Dragon Learner (Current Dragon Students) Reviewers Summary	25
iv) Dragon Subject Matter Expert Observations Summary	25
13) Recommended Revisions For Future Development	26
a) Conclusions as of 7/31/13	26
b) Recommendations	26-27

Introduction

Voice recognition technology has become even more of a mainstream data entry tool since its conversion from discrete to continuous speech in the mid-90s. Yet, many people fail to take advantage of its speed and accuracy—in large part due to insufficient computer skills and inconsistent technical support and generic training tools that may not reflect the projects people are working on for work or school.

To achieve the “promised” performance levels espoused in late-night commercials, the Dragon NaturallySpeaking Professional manufacturer, Nuance, has a 290-page User Manual, “Ask the Dictator” videos demonstrating various Dragon tools and an extensive knowledgebase on the Nuance website—all of which presume a level of computer skill proficiency on the part of the Dragon learner that all too frequently does not exist.

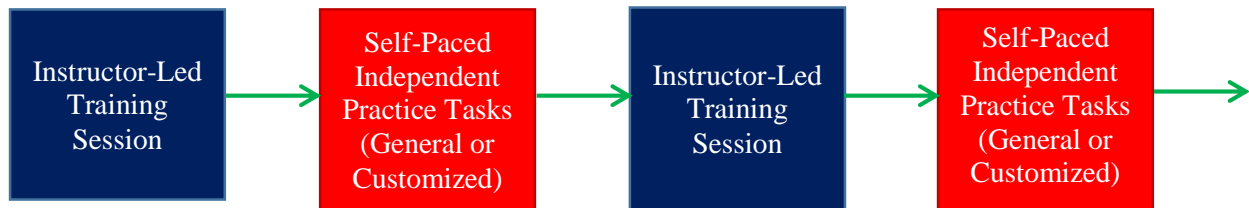
Instructors can provide immediate feedback and additional opportunities to practice during instructor-led sessions. However, when students struggle between their instructor-led sessions, they may take longer to accomplish tasks or they may abandon all of their independent practice efforts. Offering a web-based series of practice modules that review topics introduced in class may offer the necessary support to help students practice effectively between sessions anywhere, anytime and as often as they like.

Project Map:

Computer Help, Education & Site Support, CHESS, offers Dragon training in hybrid courses divided between instructor-led (face-to-face) courses facilitated onsite or in web-based sessions using Adobe Connect, Skype or similar web conferencing tools. Between sessions, learners may choose from general or customized skill building practice tasks to complete independently.

The intended integration/workflow while learners are in training is illustrated below:

During Training Courses:



When Dragon learners complete a class, they have a number of ongoing training support options through CHESS. The majority of customers purchase training or technical support as needed. CHESS offers support plans that include access to the Moodle-based learning management system (LMS) with practice modules in an effort to reduce ongoing consultation costs while supporting Dragon mastery.

After Training Courses:



Problem Analysis

Problem Identification (Needs Assessment)

In the current training courses, learners must have a high level of computer skills to use Dragon NaturallySpeaking software. In addition, learners may be long-term typists, have physical disabilities, extremely busy schedules, etc. where practice tasks completed during class may not be sufficient to transition successfully to voice recognition software. Existing video demonstrations intended to support progress do not always incorporate scaffolding lessons.

None of the existing manuals, videos, tutorials or job aids addresses the primary issue Dragon learners report. The primary issue is change—or more precisely—the fear of change. The secondary issue is that the existing Dragon training materials require a high level of computer skill.

Not everyone knows whether they have the computer skills necessary to embark on learning Dragon. In addition, people may be uncomfortable acknowledging their deficiencies in the initial Dragon training sessions. Providing learners with the option of *independently* reviewing new material which includes reminders, step-by-step instructions with increasingly more difficult activities, may foster the transition to using voice recognition software as a primary tool.

At this point, WBI’s primary drawback is immediate feedback—particularly in the earlier stages of their instructor-led training sessions. The secondary problem may be in aligning practice activities with the relevant work for learners. These two elements are easier to manage when facilitating training sessions in person; careful development of modules that can be adapted to suit the individual needs of the learner will remain the challenge.

Actual	Problem Gap	Optimal
People with insufficient computer skills	Missing basic computer literacy relative to connecting and controlling the microphone correctly for Dragon	Connect analog or USB microphone and control Dragon’s microphone correctly
People making inconsistent progress between training sessions	Review/participate in practice modules on their own timeline for the duration they wish.	Increase quality and quantity of completed Dragon practice modules

Problem Statement

Dragon learners frequently require additional support, or training, to improve their basic computer skills in order to master their use of Dragon NaturallySpeaking Professional. Independent practice activities, help manuals and online videos may presume that Dragon learners possess a higher level of computer skills and further frustrate rather than support skill building progress between instructor-led training sessions. To master Dragon skills, Dragon learners may benefit from having WBI practice modules available to review between their instructor-led sessions and to support their continued use after they have completed their training sessions.

Goal Statement & Learning Objectives

Module 1: Controlling Dragon's Microphone

Instructional Goal Statement

After completion of the instruction, Dragon learners should be able to control the microphone to dictate text or navigate between applications.

Learning Objectives

Conceptual Learning Objectives (LO1):

When dictating text that is used frequently in a business document, Dragon learners can complete the following with 100% accuracy:

1. Identify when the microphone is on or off.
2. Identify verbal, keyboard or mouse alternatives to activate Dragon.
3. Identify advantages/disadvantages of alternative microphones for Dragon.
4. Identify Best Microphone Position for microphone.
 - a. Headset position (Thumb's width)
 - b. Desktop position
 - c. Handheld position

Procedural Learning Objectives (LO2):

When dictating text that is used frequently in a business document, Dragon learners can complete the following with 100% accuracy:

5. Activate Dragon using built-in verbal commands
 - a. Wake-Up/Listen to Me (microphone on, requires verbal OR physical activation)
 - b. Stop Listening/Go-to-Sleep (microphone off, requires verbal OR physical activation)
 - c. Microphone Off (microphone off, requires physical activation)
6. Activate Dragon with Mouse-based control
 - a. Click RED Button in Dragon Toolbar for On/Off Control
 - b. Click Dragon Icon in Notification Area
7. Activate Dragon with Keyboard-based control
 - a. PRESS Plus Key (default)
 - b. PRESS User-Defined Keyboard Alternate
8. Demonstrate microphone control
 - a. Open/Close DragonPad
 - b. Dictate several lines of practice text

Instructional Context

Personnel

Due to the limited time constraints and number of Instructional Designers and SMEs available, we use a concurrent design, or collaborative prototyping, approach as noted below:

Tasks	Team Member (s)	Required Duties
<u>Initial WBID Tasks:</u> Analysis of Problem Evaluation Planning	PM and ID	<ul style="list-style-type: none"> Analyze current problem Determine whether problem can be solved through training or alternative methods Determine whether WBI is effective environment for achieving learning goals.
Concurrent Design Stage: Pre-Planning Activities		
Establish budgetary constraints Hire additional consultants Outline timeline for project	PM PM ID	<ul style="list-style-type: none"> Manages team and budget Reviews/approves deliverables
Concurrent Design: Design Tasks		
Create Assessment Tasks Develop Instructor Materials Develop Learner Handouts Formative Review 1	ID ID, I/SME ID, I/SME LER	<ul style="list-style-type: none"> Aligns objectives with assessment tasks Organize objectives into modules for instructor Organize objectives into handouts for learner Evaluate instructional strategies
Concurrent Design: Development Tasks		
Design Storyboard/Lesson Identify/Develop Media Formative Review 2 Design Learning Solution Website/Moodle/Testing Summative Review 1 (Prototype) Revisions/Redesign	ID, I/SME ID, I/SME LER ID, I/SME PM LER ID, I/SME	<ul style="list-style-type: none"> Creates storyboards to align with learning goals Identify, organize & integrate media Evaluate instructional strategies Convert storyboards into prototype Upload and test prototype in LMS Evaluate instructional strategies Revise and redesign prototype
Prior to Implementation Stage		
Update Website Launch & Lunch Pizza Party~Celebrate!!	PM LER, PM, ID, I/SME	<ul style="list-style-type: none"> Upload and test REVISED prototype in LMS Launch learning solution and celebrate!

Key:
 David, Project Manager (PM)
 Elicia, Instructional Designer (ID)
 David or Elicia, Instructor/Subject Matter Expert (I/SME)
 Learner & Expert Reviewers (LER)
 Includes individuals with disabilities (blind, low-vision, quadriplegic, deaf, learning)

Technology:

The Dragon practice modules will be supported through Moodle (www.davidandelicia.com). Dragon learners will have an email message including links to the practice module site. Moodle was chosen as the learning management system due to its low cost and ability to support accessibility for people with disabilities.

Hardware and Operating System Requirements

Dragon learners will use their computers, individual Dragon software licenses and microphones that they already use daily with Dragon. Due to the extensive use of videos in this WBI and that Dragon learners may use any number of devices provided that the devices meet the minimum system requirements for key devices noted in the following table:

Personal Computer (PC)	Mac Computer
<p><u>Compatible and Current Versions of:</u></p> <ul style="list-style-type: none"> 🔴 Adobe Flash Player, 10.x or later 🔴 Internet Explorer, 8.x or later 🔴 Firefox, 18.x or later 🔴 Chrome, 25.x or later 🔴 Windows Media Player, RealPlayer or QuickTime <p><u>Minimum Hardware Requirements:</u></p> <ul style="list-style-type: none"> 🔴 2 GHz, or faster processor 🔴 Noise cancelling microphone 🔴 1 GB RAM, or greater (prefer 2 GB RAM, or greater) 🔴 800 x 600 screen resolution (prefer: 1024 x 768) <p><u>Supported Operating Systems:</u></p> <ul style="list-style-type: none"> 🔴 Microsoft® Windows 7 and higher, 32-bit/64-bit 🔴 Microsoft Windows Vista SP2, 32-bit/64-bit 🔴 Windows Server 2008 SP2 and R2, 32-bit/64-bit 	<p><u>Compatible and Current Versions of:</u></p> <ul style="list-style-type: none"> 🔴 Adobe Flash Player, 10.x or later 🔴 Internet Explorer, 8.x or later 🔴 Firefox, 18.x or later 🔴 Chrome for Mac, 25.x or later 🔴 RealPlayer or QuickTime <p><u>Minimum Hardware Requirements:</u></p> <ul style="list-style-type: none"> 🔴 2 GHz, or faster processor 🔴 Noise cancelling microphone 🔴 1 GB RAM or greater (prefer 2 GB RAM, or greater) 🔴 800 x 600 screen resolution (prefer: 1024 x 768) <p><u>Supported Operating Systems:</u></p> <ul style="list-style-type: none"> 🔴 Macintosh OS X 10.6 (Snow Leopard) or later

Contextual Analysis:

When considering the instructional methods, the following holds true:

Main Elements	Aspects
Organizational Infrastructure	<p>CHESS is comprised of:</p> <ul style="list-style-type: none"> • Consulting Instructors who are independent contractors located throughout the United States. • Ohio-based office with secured development and production server to support WBI learning modules, LMS system requirements and learner data.
Allocation and Competencies of Personnel	<ul style="list-style-type: none"> • Consulting Instructors possess relevant technical qualifications, certifications and experience including, but not limited to, the Dragon NaturallySpeaking Professional, Legal and Dragon Medical Practice Edition 2, Microsoft Office 2007, 2010 and 2013, Adobe Connect, Skype and other video conferencing technologies. • Consulting Instructors possess relevant teaching, or training, credentials. • Consulting Instructors responsible for technical support and software updates as required.
Learner Location and Technology	Learners located throughout the United States; primarily in Ohio. All Dragon learners' computers must meet or exceed the Hardware and Operating System Requirements as outlined above.

Learner Characteristics

Description of Learners:

Dragon learners come from varied backgrounds and industries. They possess a wide range of computer skills, from novice to expert, and use business and specialized software applications. The Dragon software family targets different audiences, but Dragon learners typically fall into three categories—people using Dragon for performance improvement, people needing computer accessibility or people requiring both performance improvement and computer accessibility.

Business professionals using Dragon, especially those in the medical and legal industries, are highly educated and usually know how to type, even if they are “hunt and peck” typists. As more businesses downsize, people who had support staff for typing find that their business day starts earlier and ends much later—Dragon helps reduce the time spent typing while not sacrificing detail. Medical professionals pay \$500-\$2000/month in transcription fees and wait for their documents to be returned to submit them for payment to insurance companies. Dragon promises to reduce transcription turnaround time, increase quality of details without sacrificing the total number of patients served each day, or eliminate redundant tasks between the patient/client visit and payment.

Learner Motivation:

Business professionals, who also have physical disabilities, seek to benefit from the performance improvements and use Dragon to gain access to any software on a computer by voice—while remaining competitive. They may be using accommodation software such as screen readers, magnifiers or speech output so integrating Dragon can pose more cognitive challenges than when integrating Dragon with standard business applications. Business professionals who were in “non-computer” types of jobs may have little or no prior knowledge of computers and may be completing training on a variety of software tools in conjunction with their Dragon training.

For these reasons, the motivational strategy, or framework, that seems well-suited to the instruction is Keller’s ARCS Model as it supports “. . . learner attention. . . relevance. . . confidence. . . and satisfaction” (Davidson-Shivers, 2006, p. 227); which are among the key characteristics of the instructor-led sessions. Specifically, the topics will be numbered for the purposes of reference, but can be completed in any sequence so Dragon learners can choose the topics that capture their interest or seem most relevant to what they are struggling with. Further, students will build their confidence in their Dragon skills as they complete each topic’s project and can immediately apply what they have learned. Applying what they have learned to something in their specific work or school situation gives them a sense of accomplishment and may even motivate them to review topics they were not as interested in initially.

Learner Issues:

Dragon learners typically incorporate Dragon after using their “primary” software applications. Further, they may have a “finely-tuned” job routine (workflow) memorized. As noted, learners’ true computer skills may be unknown, over-exaggerated or “just right” to support learning the Dragon software. Instructor-led, structured Dragon training reveals learners’ software skills almost immediately. Dragon is used in conjunction with applications like Microsoft Word, Excel, and etc. with built-in commands to work in concert with Microsoft while following the “Microsoft Way.” So, if customers have developed “their own way” of accomplishing tasks, they may have a “catching up” process to complete while learning new Dragon features and techniques.

Some Dragon learners may resent the learning curve, the different software/equipment along with the change in office dynamics that speaking aloud could impose. In other words, Dragon learners who

“choose” the transition for the productivity benefit Dragon offers may have very different attitudes and motivation than those who “need” the transition due to a learning or physical accommodation need. Dragon learners, who are the owners of their businesses, or natural leaders in the office, will navigate through “coworker” concerns such as:

- Speaking “private” or “personal” matters aloud
- Disrupting other people in close proximity
- Recognition that they are completing higher quality assignments earlier/faster

Dragon learners may not speak English as their first language, and even those who do, are not necessarily well versed in the “parts of speech” or in using proper grammar or punctuation. Understanding that Dragon is a “phrase-based” tool, as described in the User’s Guide, is not easily grasped. Further, using “pauses” to switch from dictation to command and control is challenging to master for most people. People without prior dictation experience may have a hard time speaking their punctuation while composing.

Even the most confident people may feel self-conscious speaking the majority of their “work product” aloud in an office place. They may feel that they are drawing unwanted attention to what they may be saying and how quickly they are finishing their work. Customers already working in call centers seem to adjust fairly quickly as they and their coworkers sit close to one another and talk to customers (aloud) on the phone all day while using a microphone or headset.

People who have “heard” about Dragon frequently have preconceptions about how the software works and what it can do—when the software doesn’t “line up” with their expectations, they may not want to use the software—regardless of the quality/type of training, training materials or support offered.

Dragon learners are routinely referred to CHES for training through the Ohio Rehabilitation Services Commission (ORSC); specifically, through the Bureau of Vocational Rehabilitation (BVR) or the Bureau of Services for the Visually Impaired (BSVI). Privacy for these individuals is mandatory, so collaboration activities must be carefully controlled to avoid revealing personally identifiable information without explicit consent from the protected individuals.

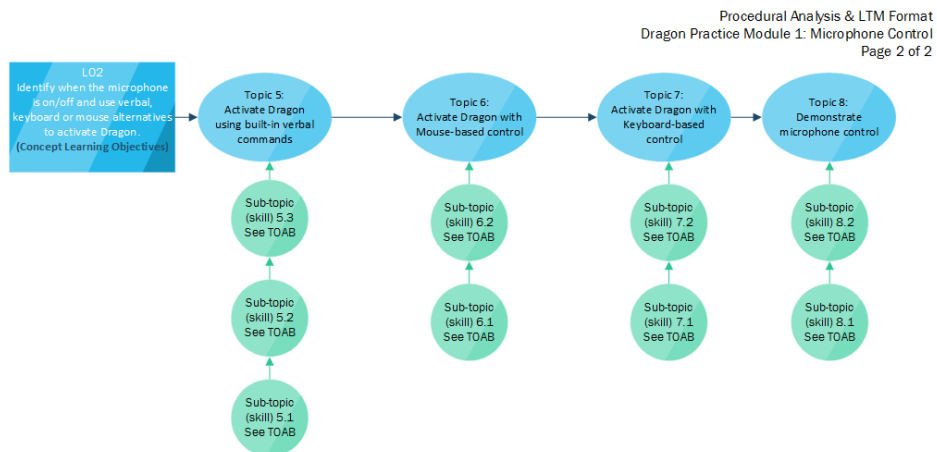
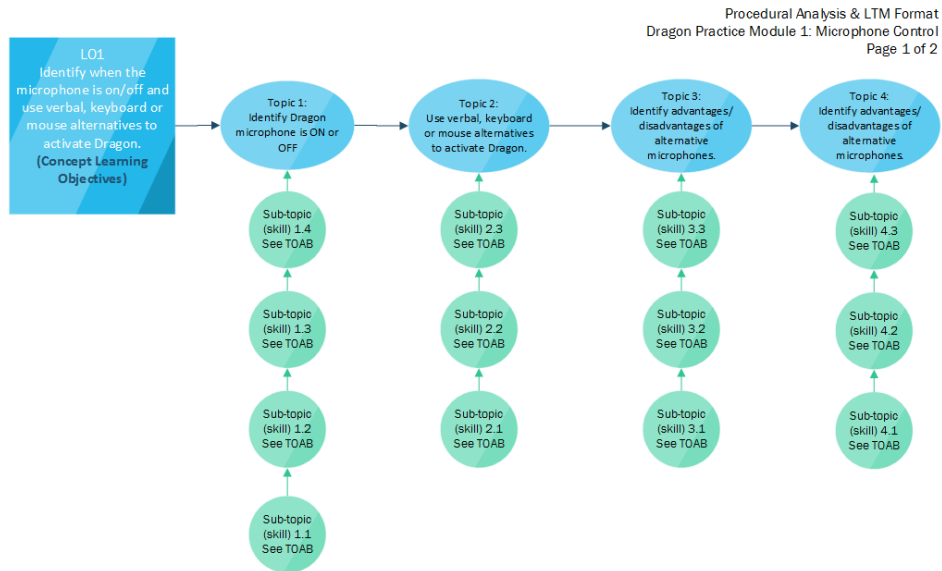
Similar policies restrict peer-to-peer collaboration for government, non-profit and academic organizations that refer students to CHES.

Summary of Learners Strengths and Weaknesses:

	Characteristics	Description	ID Implication
Strengths	Motivated	Learners are motivated to reduce costs, improve detail and remove barriers to employment.	Learners will likely spend extra time learning independently.
	Computer savvy customers	Learners already knowledgeable about their software will find they have a shorter learning curve.	Training materials should include customers’ workflows—relevancy needs to be clear. Use software “known” to customers to reduce cognitive load.
	Open minded; leaders in their businesses	Learners who are leaders in their businesses will be leaders in learning.	Support materials need to be positive and focused on “leadership” or “performance.”
	Well-educated	Learners have already established good “habits” for learning new things.	Training materials need to be offered in forms (paper-based) and digital to satisfy different learning needs.
Weaknesses	Long-term computer users who are actually novices.	Learners may need to “re-learn” or “catch up” on skills they thought they were knowledgeable.	Keep instruction flexible—particularly regarding amount of content and pace. Provide checklist so learners can self-select topics in an order.
	Dragon “Practice” viewed as a distraction and treated “separately.”	Setting aside “Dragon practice” time separate from regular work activities creates a separation that doesn’t need to exist.	WBI training topics should be 15-30 minutes in length with clearly relevant examples to help see Dragon as part of the daily workflow.
Potentially difficult content areas	Accessibility	Not all Dragon learners can independently configure the microphone.	WBI materials need to be available in alternative formats AND segmented small enough to account for fatigue and other physical issues.
	Recognizing that the microphone is plugged into the correct jack	Distinguishing between analog and digital jacks/ports.	WBI Practice materials need to include high quality images and videos for identification and confirmation.
	Identifying whether the microphone is on/off	Recognizing the frequently used blocks of text may occur across multiple applications. Using “global” availability is the default, and usually best choice.	Provide examples showing how text/graphic custom commands may be useful in more than one application; particularly MS Word and MS Outlook.
	Choosing appropriate activation strategy	Dragon learners should check existing commands before creating new commands that could be difficult to remember or duplicates.	Training materials should include a review of existing built-in commands. Training module/materials should offer “proven” file naming strategies.
	Privacy Issues	Dragon learners may be part of protected populations requiring strict adherence to maintaining privacy.	Collaboration facilitated through wiki with sample data provided; identifying users by first name, or by microphone, only.

Learner Task Map

Bloom’s Taxonomy is used to connect the learning objective with an appropriate instructional design as noted in the TOAB that starts on page 9:



Task Objective Assessment Blueprint (TOAB)

Bloom’s Taxonomy is used to connect the learning objective with an appropriate instructional design as noted below:

Learning objective	Content		Bloom’s Taxonomy (Outcome Level)	Assessment
<p>LO1: When dictating text that is used frequently in a business document, Dragon learners complete the following with 100% accuracy:</p> <p>Identify when the microphone is on/off and use verbal, keyboard or mouse alternatives to activate Dragon. (Concept Learning Objectives)</p>	<p>Topic 1: Identify Dragon microphone is ON or OFF</p>	<p>Sub-Topic 1.1: Define “Dragon Toolbar”</p>	<p>Knowledge</p>	<p>Topic 1 Quiz: Multiple Choice to <u>Correctly identify:</u></p> <ul style="list-style-type: none"> • Dragon Toolbar • Notification Area • Microphone Color Meaning • Proper Microphone position
		<p>Sub-Topic 1.2: Identify “Notification Area”</p>		
		<p>Sub-Topic 1.3: Identify color of microphone (red, green, yellow)</p>		
		<p>Sub-Topic 1.4: Identify position of microphone</p>		
	<p>Topic 2: Use verbal, keyboard or mouse alternatives to activate Dragon.</p>	<p>Sub-Topic 2.1: Review Verbal Commands</p>	<p>Comprehension</p>	<p>Topic 2 Topic: Completion Table to <u>Correctly identify:</u> Verbal, Keyboard and Mouse alternatives for activating Dragon</p>
		<p>Sub-Topic 2.2: Review Keyboard Shortcuts</p>		
		<p>Sub-Topic 2.3: Review Mouse Options</p>		
	<p>Topic 3: Identify advantages and disadvantages of alternative microphones for Dragon.</p>	<p>Sub-Topic 3.1: Explain Alternative Microphones</p>	<p>Comprehension</p>	<p>Topic 3 Quiz: Completion Table to <u>Correctly identify:</u> Microphones and the associate advantages and disadvantages</p>
		<p>Sub-Topic 3.2: Explain Advantages</p>		
		<p>Sub-Topic 3.3: Explain Disadvantages</p>		
	<p>Topic 4: Identify Best Microphone Position for a specific microphone.</p>	<p>Sub-Topic 4.1: Explain Headset position (Thumb’s width)</p>	<p>Comprehension</p>	<p>Topic 4 Quiz: Record Question and Responses as outlined (Recording Task 1)</p>
		<p>Sub-Topic 4.2: Explain Desktop position</p>		
		<p>Sub-Topic 4.3: Explain Handheld position</p>		

Learning objective	Content		Bloom's Taxonomy (Outcome Level)	Assessment
<p>LO2: When dictating text that is used frequently in a business document, Dragon learners complete the following with 100% accuracy:</p> <p>Activate Dragon using built-in verbal commands, Mouse-based control, Keyboard-based control</p> <p>(Procedure Learning Objectives)</p>	<p>Topic 5: Activate Dragon using built-in verbal commands</p>	<p>Sub-Topic 5.1: Wake-Up/Listen to Me (microphone on, requires verbal OR physical activation)</p>	Application or Synthesis	<p>Topic 5 Quiz: Record Question and Responses as outlined (Recording Task 2)</p>
		<p>Sub-Topic 5.2: Stop Listening or Go-to-Sleep (microphone off, requires verbal OR physical activation)</p>	Application or Synthesis	
		<p>Sub-Topic 5.3: Microphone Off (microphone off, requires physical activation)</p>	Application or Synthesis	
	<p>Topic 6: Activate Dragon with Mouse-based control</p>	<p>Sub-Topic 6.1: Click RED Button in Dragon Toolbar for On/Off Control</p>	Application or Synthesis	<p>Topic 6 Quiz: Record Question and Responses as outlined (Recording Task 3)</p>
		<p>Sub-Topic 6.2: Click Dragon icon in Notification Area</p>		
	<p>Topic 7: Activate Dragon with Keyboard-based control</p>	<p>Sub-Topic 7.1: PRESS Plus Key (Default)</p>	Application or Synthesis	<p>Topic 7 Quiz: Record Question and Responses as outlined (Recording Task 4)</p>
		<p>Sub-Topic 7.2: PRESS User-Defined Keyboard Alternative</p>		
	<p>Topic 8: Demonstrate microphone control</p>	<p>Sub-Topic 8.1: Open/Close DragonPad</p>	Application or Synthesis	<p>Topic 8 Quiz: Real-Life Scenario: Dictate Question and Answer dialog as outlined (Dictation Task 1)</p>
<p>Sub-Topic 8.2: Dictate several lines of practice text</p>				

Implications of Design

Global Instructional Strategies

Dragon learners range in age from 10-92 years of age with the majority falling between 31-50 years of age. Dragon learners come from varied professional and educational backgrounds. Dragon learners may also have significant physical disabilities, may be working, pursuing new employment or attending school. Dragon learners may not speak English as their first language, so any self-paced practice modules or materials distributed through the collaborative sessions should be written in the simplest language possible; preferably, no higher than a 8th grade reading level.

Accessibility

Web-based instruction must be accessible by screen reading/magnifying tools (JAWS, Kurzweil 3000, ZoomText, etc.) and account for data entry (responses) by voice, keyboard, mouse or stylus if computer-based, and converted to audio format for print-based assessments. For people who have significant disabilities, individual customization of training materials is highly likely.

Videos should have complimentary handout (scripts) that are readable with JAWS or easy to enlarge with applications like ZoomText. Video Scripts are produced (dictated) so instructors can read/refer to them while recording each video. While recording, Dragon is loaded/on to capture the ACTUAL words—in case the instructor deviates or embellishes the written script. Then, the original script is edited to match what the instructor says but also include headings and images for navigation/reference.

In this way, people who are deaf, visually impaired or physically disabled have an alternative to all video information that is substantively identical.

The instruction will be:

1. Problem-centered and intended to answer questions related to Dragon while progressing from the simplest computer tasks to more complex computer tasks.
2. Relevant to Dragon learners by using general workflows simulating “real life” exercises such as completing business documents/worksheets/reports/presentations, navigating the Internet and communicating via Email, Instant messaging and Social Networking tasks.
3. Facilitated with demonstrations and practice activities for Dragon Learners to review key concepts and features as needed.
4. Collaborative between instructor, student and student peers by using multiple formative assessments with immediate, constructive feedback to promote confidence and continued practice on progressively challenging tasks.
5. Performance oriented so novices can progress at their pace while experts can skip topics they have mastered. Similar, if not identical, assessment questions, activities and scenarios will be administered in pre-test and post-tests as well as part of formative assessments to support Dragon skills mastery.

Underlying Instructional Method

The web-based instruction (WBI), based on Instructional Design and Technology (IDT) learning theories, will be designed to stimulate learning while meeting the learning styles and accessibility needs of the Dragon learners. Learning theories stem from the behavioral, cognitive and constructivist perspectives on human learning and have been categorized using Bloom’s Taxonomy and Gagne’s Events to help Instructional Designers identify the appropriate instructional strategies to support learners as they are introduced to, and master, the learning content. (Gagne et. al., Principles of Instructional Design p. 61)

To develop a meaningful and relevant “practice” experience with appropriate assessment devices to determine the learners’ level of understanding with regard to learning objectives after completing the lesson, the majority of instructional methods will come from the cognitive and constructivist strategies. Cognitivist instructional methods are appropriate for concept learning or rule learning while constructivist instructional methods are appropriate for problem-solving.

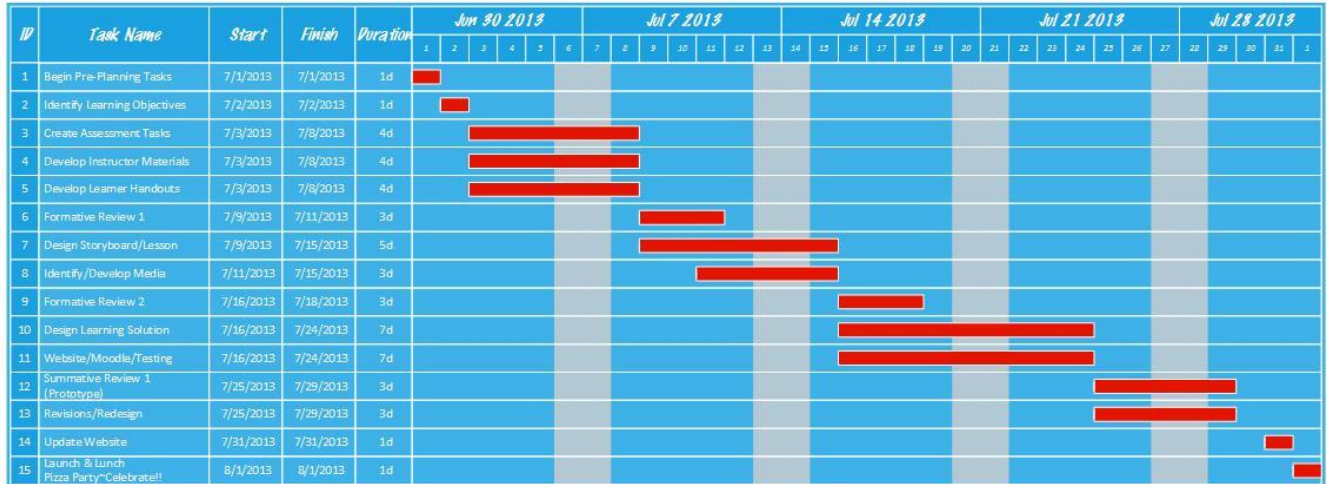
Instructional Issues and Remedies

The potential issues and remedies of the WBI design are compiled in the table below:

Learning Objective	Potential Issues	Possible Remedies
LO1 and LO2	Physical/Learning Disabilities	<ul style="list-style-type: none"> • Alternative media format • “Study Buddy” or study partner • Personal Care Assistant (PCA) available
	English as Primary Language	<ul style="list-style-type: none"> • Precise directions • Avoid questionable humor • Allow additional time for completion • Provide alternative language
	Prerequisite Gaps	<ul style="list-style-type: none"> • Refresher Computer Skill Building Sessions available in the WBI • Computer Skills Inventory
	Technology Gaps	<ul style="list-style-type: none"> • Provide Hardware Requirement Checklists • Program system check, “Pilot” session • Post Technical Support hours available for “one-on-one” troubleshooting • Notification Process for Site-related problems (power outage, unusual site load, etc.)
	Time Management/Pacing	<ul style="list-style-type: none"> • Additional practice sessions • Shorter modules • Permit multiple repetitions
	Reflection and Feedback Gaps	<ul style="list-style-type: none"> • Discussion Board for collaboration with other students • Wiki page for sharing successes • Performance-based assessments

WBI Timeline

The approximate timeline to produce a single module (Topic 1 of 8) for the Dragon Practice Modules is compiled in the Gantt chart below:



In practice, the time to produce the first two units was less than half the time allowed with the first two units up before 7/15/13; however, with the Dragon Learner feedback during the development process (collaborative prototyping), the initial topics were subdivided into 8 topics. All 8 topics were “live” by 7/30/13 and are now under continuous review by current and former Dragon students, IDT Graduate Student Reviewers and Dragon Subject Matter Experts (SMEs).

Website: www.davidandelicia.com

Choose “Guest” Login and the password is: password

Public access will continue through 8/31/13.

WBI Strategy Units

Instructional Plan

The instructor-led “Microphone Control” lesson is conducted initially in the first 2-hour session of training; however, many of the topics are revisited through additional training sessions—most Dragon Learners contract for a minimum of 18 hours of instruction.

Initially, this lesson was subdivided into two WBI units—separating the conceptual from the practical and instruction as noted in the learning objectives. During the initial week of development, the two units were reviewed by 9 Dragon Learners currently at the beginning of their training. With one exception, the Dragon Learners reported that the WBI units were too overwhelming. They took too long to review, covered too many details too fast. What was “okay” with instructors who were giving feedback immediately during our training sessions needed to be further subdivided with the practice tasks offered more often—instead of just the two “capstone” projects for each of the two units.

UPDATE: As of July 15, 2013, these units were subdivided into a total of 8 topics.

Using Gagne’s Events (Gagne et. al., Principles of Instructional Design p. 61) as a framework, the first of eight topics is outlined below:

Event	Strategies	Details	Content Reference	Resources/Materials to Develop
E1:Gain Attention Overview of purpose for the unit of instruction.	<p>Review situations involving microphone control</p> <p>Demonstrate typical microphone control issues that occur while dictating in a typical business office</p> <p>Students who believe they have mastered the skill building topics reviewed in the video are invited to complete the Topic 8 project.</p> <p>.</p>	Images of “good/bad” examples of people dictating in an office	LO: 1 &2	<p>Scenario video of good/bad situations of microphone issues in office—a fair amount of humorous pictures included.</p> <p>Video script/handout Analog, USB connection Job Aid/handouts</p> <p><u>Resources:</u> Video and Still Cameras Microphones (all types) PC and Mac computers Android, IOS tablets Dragon Professional Human (Dragon tamer) Word, Excel & PowerPoint Captive 6 and 7 Web 2.0 Technologies Moodle (or Blackboard)</p>

<p>E2: Inform Learner of Instruction: Lesson Objectives</p> <p>Relevance of Lesson to Individual Learner</p>	<p>Visual Display of Learning Objectives</p>	<p>Summarize conceptual and procedural objectives</p>	<p>LO: 1 &2</p>	<p>Syllabus, a.k.a. Resources Handout with checklist to use as a guide—an alternative to a rubric.</p> <p>Scenario Outline Handout</p> <p><u>Resources:</u> Word & PowerPoint</p>
<p>E3: Stimulate recall of PRIOR learning (and connecting/transferring to NEW content)</p>	<p>Recall examples of other microphone uses in business (phone/cell/speaker/T V/Radio/Video)</p>		<p>LO: 1</p>	<p>Video of typical microphone uses and issues in office with business phone, cell phone, speaker phone, video conferencing, etc. in addition to using a Dragon-based headset.</p> <p><u>Resources:</u> Video and Still Cameras Microphones (all types) PC and Mac computers Android, IOS tablets Dragon Professional Human (Dragon tamer) Word, Excel & PowerPoint Captivate 6 and 7 Web 2.0 Technologies Moodle (or Blackboard)</p>
<p>E4: Present Stimuli (Content) (demonstrate)</p> <p><u>Reminder:</u> Syllabus provides “roadmap” through this unit of instruction.</p> <p><u>Reminder:</u> Repeat as needed</p>	<p>Demonstrate use of Dragon microphone control</p>	<p>Demonstrate use of Dragon microphone control</p> <ul style="list-style-type: none"> • Verbal • Mouse • Keyboard 	<p>LO: 1 &2</p>	<p>Video of Dictating short passages of text while controlling the microphone ON/OFF:</p> <ul style="list-style-type: none"> • Verbal • Mouse • Keyboard <p><u>Resources:</u> Video and Still Cameras Microphones (all types) PC and Mac computers Android, IOS tablets Dragon Professional Human (Dragon tamer) Word, Excel & PowerPoint Captivate 6 and 7 Web 2.0 Technologies Moodle (or Blackboard)</p>

<p>E5: Guide Learning Present opportunities for practice</p> <p><u>Reminder:</u> Repeat as needed</p>	<p>Instruction within WBI reviewed by Dragon learner during independent practice sessions between instructor-led sessions</p> <p>Similar to instruction introduced with instructor during instructor-led training sessions</p>	<p>Dragon Learners presented sample lines of text to dictate</p>	<p>LO: 1 &2</p>	<p>Syllabus, a.k.a. Roadmap</p> <p>Checklist with Rubric</p> <p><u>Job Aids:</u></p> <ul style="list-style-type: none"> • Uploading recordings and documents to Moodle (Blackboard) Completed as of 7/31/13 • How to create recording using Windows Sound Recorder Completed as of 7/31/13 • How to create recording using Audacity (planned) • How to create recording using Jing (planned) • How to create recording using VoiceThread (planned) • How to create recording using Audio Boo (planned) <p><u>Resources:</u> Video and Still Cameras Microphones (all types) PC and Mac computers Android, IOS tablets Dragon Professional Human (Dragon tamer) Microsoft Word Web 2.0 Technologies Moodle (or Blackboard)</p>
<p>E6: Elicit Performance Provide feedback on practice performance.</p> <p><u>Reminder:</u> Repeat as needed</p>	<p>Individual Independent Practice</p>	<p>Dragon Learners dictate sample lines of text</p>	<p>LO: 1 &2</p>	<p>Progressively (scaffolded) dictation samples</p> <p><u>Resources:</u> Video and Still Cameras Microphones (all types) PC and Mac computers Android, IOS tablets Dragon Professional Human (Dragon tamer) Microsoft Word Web 2.0 Technologies Moodle (or Blackboard)</p>

<p>E7: Provide Meaningful/Relevant Feedback</p> <p>Assess performance</p> <p><u>Reminder:</u> Repeat as needed</p>	<p>Demonstrate, compare/review text dictated</p>	<p>Instructor dictates sample for Dragon Learner to review</p>	<p>LO: 1 &2</p>	<p>Formative Assessments: 1-Multiple Choice 4-“Test Wiki” Completions 2-Recordings</p> <p><u>Resources:</u> Video and Still Cameras Microphones (all types) PC and Mac computers Android, IOS tablets Dragon Professional Human (Dragon tamer) Microsoft Word Web 2.0 Technologies Moodle (or Blackboard)</p>
<p>E8: Assess Performance</p>	<p>Checklist OR Quiz/Game</p>	<p>Dragon Learner may take performance based test or play Dragon game</p>	<p>LO: 1 &2</p>	<p>Checklist with Rubric</p> <p>Quiz/Game (under development)</p> <p><u>Resources:</u> Video and Still Cameras Microphones (all types) PC and Mac computers Android, IOS tablets Dragon Professional Human (Dragon tamer) Microsoft Word Web 2.0 Technologies Moodle (or Blackboard)</p>
<p>E9:Enhance Retention</p> <p>Advise scores for performance or provide feedback on progress</p>	<p>Scenario-based project or task</p>	<p>Scenario-based project or task to be completed independently by Dragon Learner</p>	<p>LO: 1 &2</p>	<p>Summative Assessment (Repeat of Pre-Flight) Scenario-Based</p> <p>Recommended Dictation Samples for Further Review</p> <p><u>Resources:</u> Video and Still Cameras Microphones (all types) PC and Mac computers Android, IOS tablets Dragon Professional Human (Dragon tamer) Microsoft Word Web 2.0 Technologies Moodle (or Blackboard)</p>

Measurement of Learning

The goal of providing practice modules in the form of web-based, and self-paced, instruction is to support the independent practice in transition to using voice recognition technology. Dragon learners need a way to measure, or assess, their progress to determine whether or not they have mastered a particular topic. The assessments – much like the individual topics – have been segmented to introduce individual tools and assess mastery with those tools regardless of the order of the topics selected by the Dragon learner—or whether or not the Dragon learner completes a topic or not. These practice modules must be scaffolded to ensure success. In addition, Dragon learners—not the instructors—determine when they will submit a completed topic project and are not required to submit a project at all.

Each of the scenario-based, authentic business projects are similar to the introductory or "refresher" video in terms of tasks and terminology; however, they are different enough so Dragon learners are required to apply what they have learned, or reviewed, in order to successfully complete the project and attain the 100% mastery level. Instructors still review each uploaded/completed project and provide feedback within 24 hours of submission at this time since an economical solution for reviewing both the recorded dictation file and transcribed file simultaneously is not available.

Novice Dragon learners can use their keyboard or mouse to complete the projects; however, experienced or expert Dragon learners can complete the review projects using Dragon. Projects with short answer or fillable tables become customized “Job Aids” for Dragon learners to add to their digital or print-based library for future reference.

UPDATE:

As noted in the *WBI Strategy Units* section (page 17), the two units initially included in this module were further subdivided into 8 topics. This provided more opportunities for practicing the connection and activation options for Dragon while still incorporating dictation opportunities. Additional dictation passages will be added and randomized.

A summary of Module 1 assessments and associated topics are listed below and current samples are included in the appendices:

Topic Number	Project and Assessment	
<u>Topic 1:</u> Microphone Identification	<u>Topic 1 Project:</u> Identify Your Microphone	<u>Assessment type:</u> T/F, M/C and Short answer
<u>Topic 2:</u> Microphone Control	<u>Topic 1 Project:</u> Activate Dragon : Activate Dragon Microphone	<u>Assessment type:</u> T/F, M/C and Fillable Table (Short Answer)
<u>Topic 3:</u> Microphone Alternatives	<u>Topic 1 Project:</u> Dragon Microphone Types and Styles	<u>Assessment type:</u> T/F and Fillable Table (Short Answer)
<u>Topic 4:</u> Microphone Position	<u>Topic 1 Project:</u> Dragon Microphone Position	<u>Assessment type:</u> Record, Save and Upload file with script provided
<u>Topic 5:</u> Verbal Microphone Activation	<u>Topic 1 Project:</u> Verbal Microphone Activation	<u>Assessment type:</u> Record, Save and Upload recording with script provided
<u>Topic 6:</u> Mouse-Based Microphone Activation	<u>Topic 1 Project:</u> Mouse-Based Microphone Activation	<u>Assessment type:</u> Record, Save and Upload recording with script provided
<u>Topic 7:</u> Keyboard-Based Microphone Activation	<u>Topic 1 Project:</u> Keyboard-Based Microphone Activation	<u>Assessment type:</u> Record, Save and Upload recording with script provided
<u>Topic 8:</u> Application & Reflection Project	<u>Topic 1 Project:</u> Application and Reflection Project Directions	<u>Assessment type:</u> Record, Save and Upload recording with script provided DICTATE, Save and Upload document file Using information recorded, add “favorite microphone” to Microphone Wiki

Implementation Report

Demographics

As noted in the *Learner Characteristics* (page 8) and *Implications for Design* (page 14) sections, Dragon learners vary a great deal in their background, vocation, education, ethnicity, age and gender. Further, they may have language and physical barriers that require modification to typical teaching tools and strategies.

For these reasons, collaborative prototyping—a highly iterative process—is the model used for implementing this WBI as noted below.

Expert reviewers fall into three categories: (1) Instructional design reviewers, Dragon Learner Expert Reviewers and (3) Dragon Subject Matter Experts (SMEs). Dragon Learner Novice Reviewers reviewers are all current Dragon students.

Training/Instructions

The instructions for IDT Experts, Dragon Experts and Dragon Learners are different—in an effort to gain a variety of perspectives relative to the effectiveness of the WBI. Dragon SMEs are also the instructors, so their observations are noted separately.

For the IDT Expert Reviewers—IDT Professor, IDT Graduate Assistant and IDT Graduate students provided feedback through the month of July 2013 via BlackBoard journal/wiki, email correspondence and in-class discussion.

IDT Graduate students also completed an instructional design survey form for feedback on the prototype was provided via email. A 1-page help note was provided to login to the CHESS LMS. IDT Graduate student reviewers' (names removed to maintain privacy) feedback surveys have been added in their entirety in the appendices and summarized below.

For Dragon Learner Expert Reviewers—*former* Dragon students who use Dragon Professional as their primary input tool—were asked to navigate through the learning module, complete each topic project and provide feedback incorporating responses to:

- Are the materials (handouts/videos/LMS descriptions) required, helpful or both to completing the project?
- Are the topics and projects relevant to questions or problems you have had with controlling Dragon's microphone?
- Would you come back to this resource for help in the future?

For Dragon Learner Novice Reviewers—*current* Dragon students—were asked to navigate through the learning module, complete each topic project and provide feedback incorporating responses to:

- Are the materials (handouts/videos/LMS descriptions) required, helpful or both to completing the project?
- Are the topics and projects relevant to questions or problems you are having with controlling Dragon's microphone?
- Are the topics and projects similar to the topics and projects covered in your training sessions?
- Would you prefer to work on these topics and projects *without an instructor-led session*?
- Would you come back to this resource for help in the future?

Reviewer Results

The reviewer results are summarized below and the specific updates made as of 7/31/13 are noted in the appendices.

Instructional Design Expert Reviewers Summary:

A summary of recommendations is noted below:

- Reminder on including job aids for microphone connection types—confirmed it should be pre-requisite but could also be a tool to reflect on prior introduction/learning
- Asked for further clarification on system resources—noted them more prominently in Design document
- Cite the motivational model used and include a sample test item or indicate how an alternative assessment will be used for the objective
- Provide more detail on “why” these practice modules may be beneficial
- Consider creating a “navigation” Moodle video/help note
- Suggested larger icons to improve navigation

Expert Dragon Learner (Former Dragon Students) Reviewers Summary:

A summary of recommendations is noted below:

- Make images larger and increase the font size
- Provide checklist so topics can be skipped, or noted, when completed
- Offer access to LMS as part of annual support plan

Novice Dragon Learner (Current Dragon Students) Reviewers Summary:

A summary of recommendations is noted below:

- Topics are too detailed and go too fast—do them like we do in class
- Add more practice projects sooner—I’m still learning which jacks to use
- Make images larger and increase the font size
- Offer access to LMS as part of annual support plan

Dragon Subject Matter Expert Observations Summary:

At the end, or beginning, of each training session, current Dragon students have reviewed/completed topics as part of their training and the CHESS collaborative prototyping style of WBI development. The following was observed:

- Students have occasional difficulty with controlling the videos—especially when using Dragon and having to remember to start the video, but turn Dragon’s microphone off while listening to the video
- Students need an introduction to and further practice with web-based learning management systems—particularly with regard to terminology such as links, navigate, download, upload, etc.
- Students may benefit from verbal directions built-in to LMS instead of reading descriptions—particularly for students with learning/reading comprehension disabilities (dyslexia, dysgraphia, etc.)
- Students may be getting their microphones connected consistently; however, an additional “sound quality” review/check is needed.

All recommendations have led to revisions made and *completed as of 7/31/13* with the exception of incorporation within the annual support plan as the CHESS until the new support plans take effect on October 1, 2013.

Recommended Revisions for Future Development

Conclusions as of 7/31/13

As noted throughout this design document, the development process used for designing this WBI has and will continue to include the actual “End Users” of this instruction through a collaborative prototyping process. As students with different backgrounds (education, computer skills, vocational goals, accessibility alternatives, etc.) use the WBI, additional revisions are anticipated.

The Dragon Professional software and hardware requirements are constantly updated which will require ongoing revisions to the WBI content. Further, the Moodle learning management system is satisfactory for our current modules, but other learning management systems may be required in the future that may require revisions to the WBI content.

In anticipation of these ongoing revisions, all of the content is generated apart from the learning management system. Quizzes and projects are designed using standard business application software or e-learning authoring software and modified to suit the learning management system requirements as needed. This reduces the turnaround time on updates while also providing an accessible backup in the event that there are issues with the learning management system requiring that the WBI be deployed elsewhere.

Additional modules, and their respective topics, may be added as needed.

Recommendations as of 7/31/13

In addition to recommendations noted, and completed, on page 24, the revisions below are under development:

1. Adding a microphone “sound quality” checking tool—possibly in the form of a game. Currently working programming a tool to show three microphone output levels on something like a car speedometer indicating that the sound quality is:
 - Okay for fun and games, not so hot for Dragon
 - Okay for conferencing (Skype, Adobe Connect, etc.), might be okay for Dragon
 - GREAT for Dragon—and will be GREAT for recording sound in other programs too
2. Adding text-captioning (via Captivate) for videos—currently, the videos are all saved as Captivate files and can have text-captioning added upon request.
3. Exploring additional text-captioning options for people who are deaf or hard of hearing for our videos to incorporate a real-time sign language interpreter. The product *iCommunicator 5.2* (<http://www.icommunicator.com/>) offers these features but may or may not be updated for the current editions of Dragon so CHESS will be in touch with the developer. This feature may require an alternative video.
4. Adding more microphone control projects—perhaps in the form of a timed game. This has not been added so far since this activity is conducted during instructor-led sessions so instructors know how each person connects a microphone. This is especially relevant when personal care attendants/assistants help Dragon learners with headset microphones.



5. Adding several projects where students control an activity after successfully connecting the microphone—this could also be in the form of a game and does not necessarily have to involve the Dragon software. For instance, making a call through Skype reviews the same steps needed to “speak with Dragon.” This is one of the activities used in the instructor-led sessions that may be worth incorporating.
6. Creating alternative help sheets for using Audacity (for our Mac users), VoiceThread and Audio Boo so students are not limited to Windows Sound Recorder for producing their projects.
7. Developing additional wiki-based projects for collaboration without personally identifiable information.
8. Update current personal release form (used for marketing purposes) and submit to ORSC for approval to use as part of WBI. Then, more collaborative projects may be added.