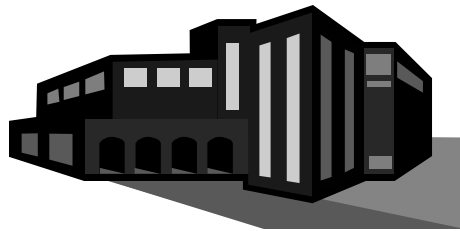


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ISD Process Design – EME5601 Final Assignment

A Rapid Prototyping Model for the Aggressive Development of Online Courses at a Georgia Community College.



Introduction

College X is a moderately sized community college in Northern Georgia serving the residents of Cobb county and the northwestern Atlanta area. With a student population of 13, 000 among her three campuses, College X is neither large or small by community college standards. As is the case with many community colleges, College X offers a wide range of two year AA degrees and technical training certifications. Course types range from traditional college general education courses (College Algebra, Chemistry) to more advanced hands on courses for certification in EMT, Radiology Tech, HVAC, and law enforcement. Although some professors have ventured into the online learning arena, nearly all of College X's courses are traditional face to face courses, televised courses, or self study video/paper based courses. The main campus college is organized as follows:

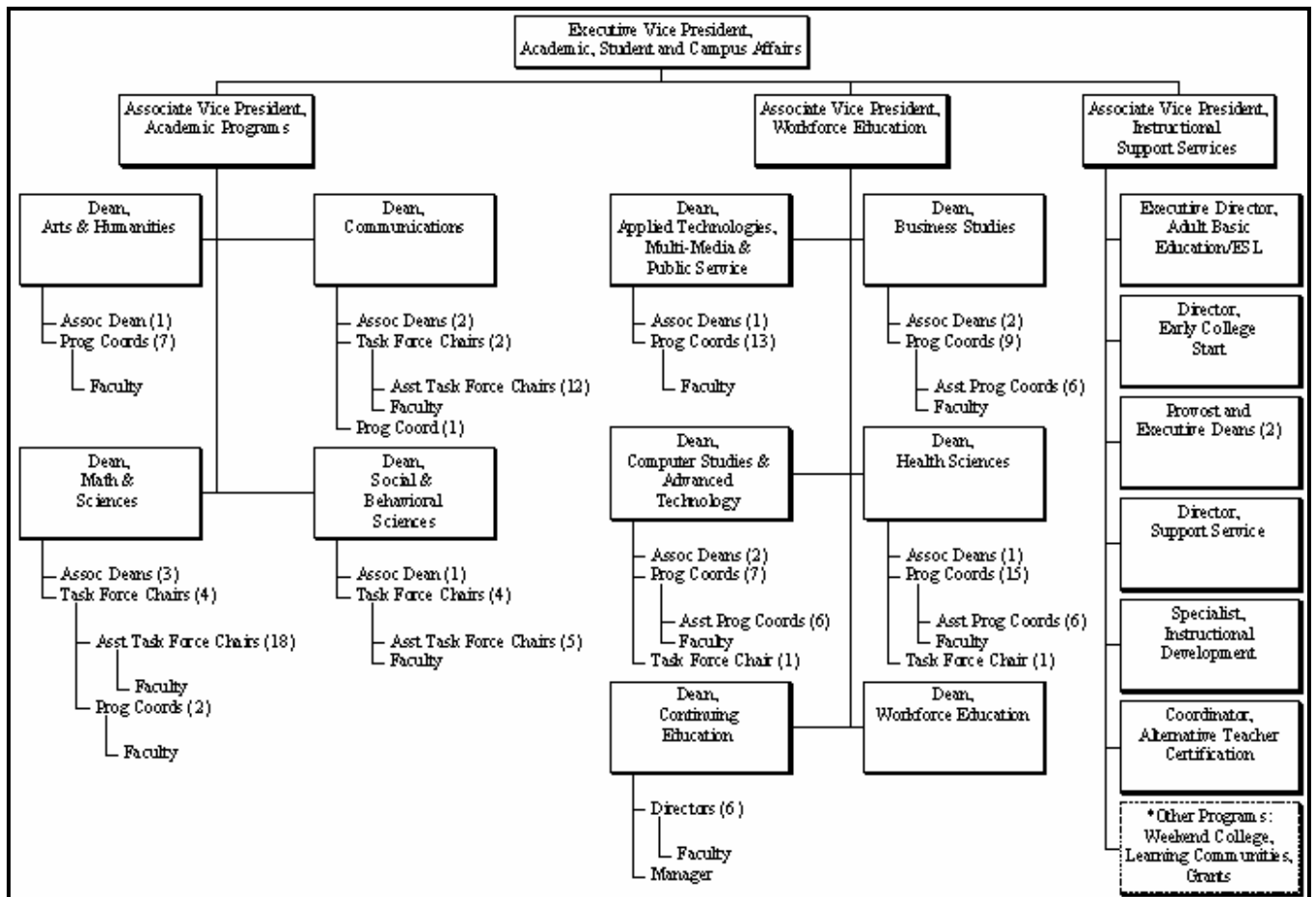


Figure 1.1 College X organizational chart. From: www.window.state.tx.us/tspr/acc/ex2-1.gif

Consumers of training and classes produced at College X are local area students. Being a community college, College X has no specific training department, instructional design cycle, or mandated course development process. "Training" is College X's only product. Each department claims responsibility for establishing learning

objectives and quality standards for the courses that fall within its domain. Each month a team of department faculty meet to review general course content, objectives, and course offerings. New courses are likewise discussed and outlined in these department meetings. The outcomes of such meetings are the production or revision of (a) a list of mandatory objectives for each course and (b) an official syllabus. Both are then filed with the college. Course instructors are held responsible for meeting the objectives outlined for each course. New faculty may access the official course syllabus as a starting point for specific course design. The specific pace, instructional materials, textbooks, and layout of courses is left up to course instructors to choose before the semester begins.

Gaps in Current Educational Process

As stated above, the current approach to course development at College X is generic at best. It is based on the concept of a general course outline designated by faculty such that specific course instructors fill in the course with content and tests as they see fit. Many of the course objectives are quite old. The original authors are not known in some cases such that dialog between an instructional designer and that person is not possible.

The college does have an office dedicated to aiding faculty with instructional technology, best practices and instructional design. Use of this resource is voluntary, and is mostly accessed for help with instructional technology implementation. As a result, few people with an understanding of a systems approach to instructional design are ever involved in course creation at College X.¹ Recently, one of the college's instructional designers reported that many of the faculty admit the counsel of an instructional designer would be extremely helpful to them. The majority of the rest were completely unaware of what an instructional designer did. While this situation presents sufficient grounds for the implementation of an ISD model at the college, it is not the primary impetus behind the ISD process design presented in this report.

As of June 2007, College X officially announced its intention to create a full scale distance learning program by 2009. The explosion of web based learning worldwide and the ubiquity of such programs at most colleges nationwide has made College X look outdated. While population growth in Cobb county has grown the college significantly over the last ten years, current administration hopes to tap into Atlanta's educational market potential with its new online program.

Until a few years ago, most tenured faculty felt moving into web based education was unnecessary; even faddish. As retiring faculty were replaced by younger instructors and administrators, this position was replaced by one of openness towards online learning. Increased student requests for online courses in addition to a loss of potential students to other colleges with such programs has helped to change faculty thinking.

With both of these issues at large, College X, had to formulate and adopt a carefully crafted ISD process.² A tailored instructional design model would serve two

¹ Many courses at the college level receive no design thought apart from dividing content to spread evenly across the semester. Students helplessly attend class while a professor talks for the entire semester. The typical course is instructor centered with little thought to the nature and needs of the learner. This fact is so widespread that "coping with" woefully taught/structured courses is seen as a normal and expected part of the college experience.

² "Administrators must approve a unified framework and design (perhaps through the selection and support of courseware, such as WebCT or Blackboard) that will give the curriculum a unified appearance and structure. If

primary purposes: (a) it would ensure the safe restructuring of traditional face to face courses into an online course design, and (b) it would guide the creation of new courses for the online environment. If the systematic design of instruction is needed for face to face courses, where a live instructor can quickly adapt the course to body language and feedback from students, how much more the need for a clear ISD model when instructors and students will be separated by the internet.

College X has a clear gap between its present practice, or lack of practice, of course design and what is necessary for the construction of pedagogically sound web delivered distance courses. Even if an acceptable ISD model had been in use by College X faculty it would not be sufficient for the creation of distance learning courses, as few of the popular ISD models were constructed with the unique constraints of online learning in mind.³ Without adopting a normative system to guide new course creation as well as old course translation into online format, College X runs the following risks:

- (a) Instructors may “dump” courses designed for classroom delivery into online structures without rhyme or reason.
- (b) Courses will be improperly chunked and sequenced for online delivery.
- (c) Student achievement in online courses will drop because they are not designed to create a community of learners.⁴
- (d) Courses will frustrate students because the types of learning outcomes in those courses were not matched with the right instructional strategy or delivery technology for an online environment.
- (e) Significant financial loss may visit College X in 2011-2012 as word spreads about the low quality of online courses.

While traditional ISD models would produce quality instruction if used to create single online courses, using them for the development of scores of courses in a college setting raises serious problems:

(1) In traditional company settings, the company owns the intellectual property rights to courses delivered online or taught by trainers. It does not need “buy in” from trainers on the issue of course design. In college settings all of the instructors own or feel entitled to substantial control over the content in their courses, and the design of their courses. In their view, being subject matter experts qualifies them to design the courses, not simply author its content. Therefore, a college cannot make an ISD model normative for a major transition to online learning without wresting some control from faculty members. This transition from each faculty member holding 90% of the design

courseware is not used, administrative policies concerning individual course designs and the use of technology to implement them must be in place. All persons working with course design must understand the institution’s design parameters and the process for creating course sites.” Lynnette Porter, *Developing an Online Curriculum: Technologies and Techniques*. Information Science Publishing., 2004. p 32.

³ See introductory comments about this issue in: Willis, Lucinda & Lockee, Barbara. *A Pragmatic Instructional Design Model for Distance Learning*. International Journal of Instructional Media, Vol31 n1, p9. See also Mark Bullen & Diane Janes, *Making the Transition to E-Learning: Strategies and Issues.*, Information Science Publishing. 2007. p270.

⁴ “Palloff and Pratt (1999) have devoted much of their scholarship to the development of ‘learning communities.’ They advocate that without establishing a community of learners in a distance setting, the potential for success is limited.” Simonson, Smaldino, Albright, Zvacek, *Teaching and Learning at a Distance: Foundations of Distance Education 3rd Ed.*, Pearson 2006. p159.

control for courses they teach (i.e. a craftsman approach) to instructional designers and others having a major say in the process (i.e. an industrial approach) is a political issue not addressed by previous ISD models.⁵

(2) In traditional ISD models, instructional *materials* are not designed/modified until the end of the design process. With the above political issue now charging the course design climate, leaving the selection of course materials or instructional strategies until the end is risky. The full first half of traditional ISD processes contains discussion about analysis findings such that course design and delivery materials remain abstract for much of the process. Faculty, not being used to this approach, may communicate that they were misled or under other impressions earlier in the traditional ISD process because the final concrete course design was not what they envisioned throughout the process. If this results in withholding of their approval, the design process is bogged down, precious funds are wasted, and the confidence of faculty towards transitioning into online learning is compromised.

(3) In the corporate world, the instructional designer is *the* course designer and central figure in the design process. The SME is a consultant called in when necessary. In the academic world, these rolls switch. The faculty member claims the right to be *the* course designer while the instructional designer takes the role of a consultant called in when necessary. In academia, faculty buy-in must be carefully sought by both the college and the instructional designer for the design process to continue according to a structured ISD model.

(4) Traditional instructional design models do not address the time constraints presented by a scenario where scores of courses must be produced rapidly by variety of people in a team setting. At College X, where scores of courses need to be redesigned within a few years, the traditional ISD process is simply too lengthy. Rapid prototyping strategies must be introduced.

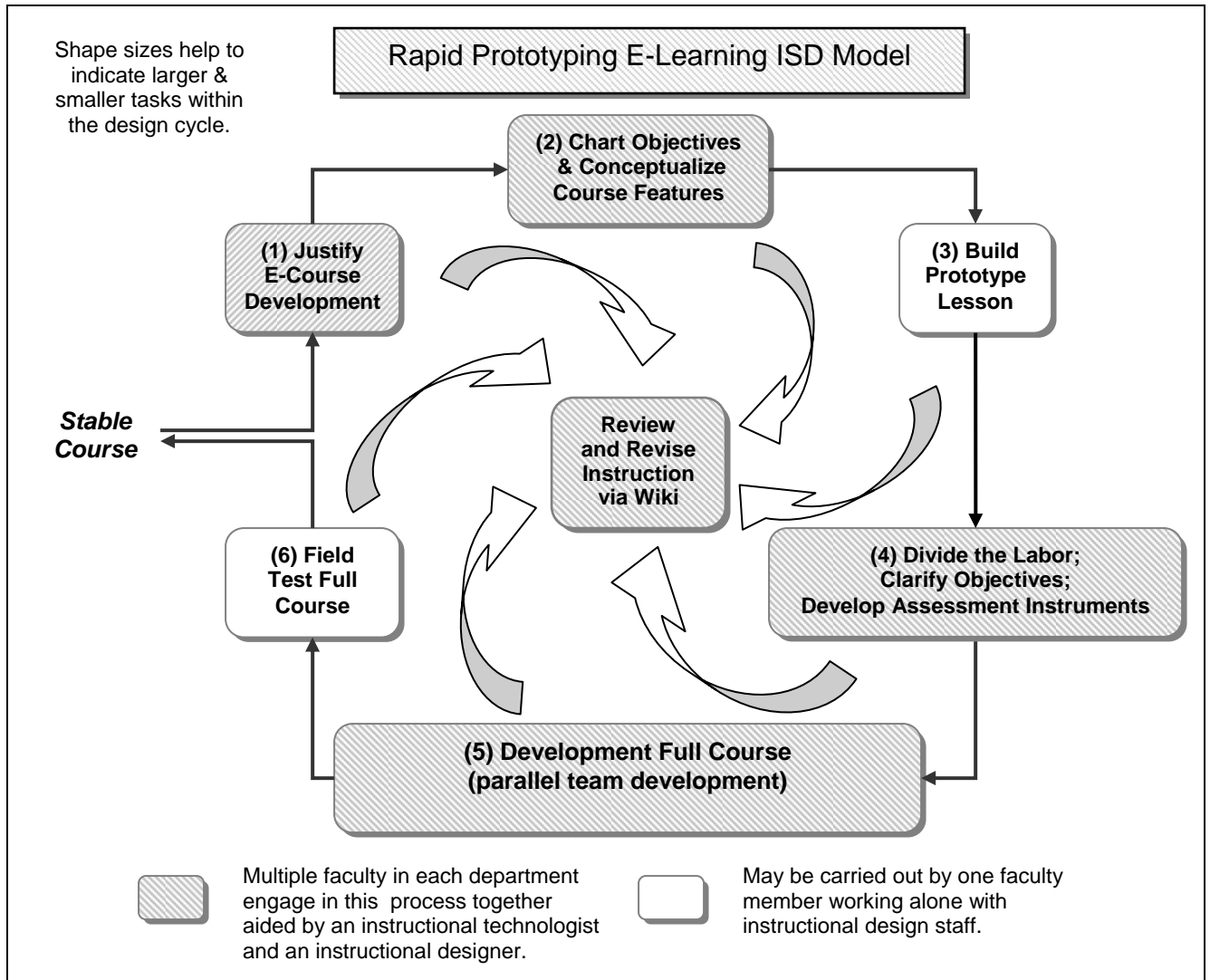
Strategic issue: One might argue that if each professor was assigned the task of redesigning any courses they taught, and was aided by an instructional designer, most of the needed courses could be converted into online format in a year or two. This scenario may not be conducive to having faculty rotate the courses they teach online. If Dr. Dave designed course A to be taught online, but next semester was asked to teach course B online (which was designed by Dr. Fay) tension could mount. Faculty members could not be expected to teach online courses another faculty member had designed in previous semesters. Some institutions do allow multiple versions of the same online course (i.e. one created by Dr. Dave and one by Dr. Fay). When faculty depart, they can be expected to want to take down the online course they created, thus necessitating new faculty to either produce online courses immediately or “borrow” the online course design from another faculty member still teaching (who may not be comfortable with that).

For these reasons, it is clear that College X is in need of a special ISD model to fit its large scale course transitioning mandate, the politics of its academic environment, and the timeframe of the overall project.

A Distance Education and Course Translation ISD Model for Rapid Prototyping

⁵ See chapter 16; “Fast Prototyping as a Communication Catalyst for E-Learning Design” in Mark Bullen & Diane Janes, *Making the Transition to E-Learning: Strategies and Issues.*, Information Science Publishing. 2007. p267.

A partial solution for the College X's scenario has been pioneered and found successful by faculty of the University of Lugano in Switzerland. After spending millions of dollars only to see the university's original instructional design ideas end in failure, an alternative model which incorporated fast prototyping was found to be successful.⁶ Their "eLab Model" has been taken and tailored to fit the needs of College X. Traditional ISD models were kept in mind (to safeguard the integrity of the overall instructional design process). Below is a diagram of the *Rapid Prototyping E-Learning ISD Model* followed by explanations of its main stages.



⁶ Ibid., 268.

**(1) Justify
E- Course
Development**

Nearly all of the traditional ISD models begin with one or more stages of analysis. A gap between ideal and real performance is identified⁷ by means of *needs assessment*. Using *needs analysis*, environmental and knowledge deficiencies are sought for as causes of a discovered performance gap.⁸ Potential *learners are analyzed* for characteristics that will need to be known if accurate training materials or environmental changes are to be made.⁹ *Environmental, job, and task analysis* is done to discover characteristics of the environment that affect learning, and performance. Accurate descriptions of jobs must be known before tasks can be isolated for training or reassigned to new jobs. All of these aspects of “analysis” reflect the fact that in a large percentage of ISD work, instructional designers begin in the dark when it comes to knowing what is really going on, what needs to be taught, and what learners are like.

In the academic environment, this is not true for the most part. Colleges know what must be taught, they know who their learners are and what entry behaviors are required for the average course. Even though they do not follow an ISD model, years of teaching has gleaned much of the information that front end analysis might have discovered in a shorter time span.

For this reason, the rapid prototyping model used at College X begins with a single step – justifying the need for an online course. This step does not require that all department faculty participate. None the less, all faculty are informed of the commencement of the justification process for a new course and are invited to share their input.

(1) Justify Online Course Development		
Begin official College course design process by informing all department faculty that dialog is being initiated on the development of a new online course or the transfer of a classroom course into online format.		
1.1	How much of this course is deliverable online?	None / All / Major portions
1.2	Do we possess the necessary technology to teach all or portions of this course online effectively?	Yes / No / Maybe
1.3	Would placing this course online align with our institution's development agenda and mission?	Yes / No / Maybe
1.4	Can the type of learners at our institution participate in an online version of this course (assuming reasonable technology learning curve) comfortably?	Yes / No / Maybe
1.5	Were any questions answered with “Maybe?” If so, refer them to the assigned instructional technologist, for clarification and assistance in decision making.	Return to 1.1 with clarified answers.
1.6	If any answers are “No” do not proceed with course development. If all answers are “Yes”, proceed to stage 2 of rapid prototyping model.	
Inform department dean and lead instructional developer of the outcome of 1.6.		

⁷ William Rothwell, H.C. Kazanas, *Mastering the Instructional Design Process: A Systematic Approach 3rd Ed*, Pfeiffer 2004. p 36.

⁸ *Ibid.*, 62.

⁹ *Ibid.*, 89.

**Review
and Revise
Instruction
via Wiki**

While certain questions above (1.1, 1.2) would traditionally fall into latter ISD steps like “Design Instructional Materials” they are simple enough to be answered after basic conversation with an instructional technologist.

It would be logical to address stage (2) in the rapid prototyping process at this point. None the less, the central stage in the model occurs during and after each of the major six stages as represented by the grey arrows in the diagram. For this reason it is introduced now.

As noted in the “Strategic Issue” box above, each academic institution must decide whether or not it will allow faculty to retain control and copyrights over its courses or if the institution will retain them itself. This model supposes that multiple faculty members play a part in the development of online courses for their department.¹⁰

The simultaneous creation of content objects and lessons by several professors at once (stage 5) is a major feature of the rapid prototyping strategy in this module. For it to occur successfully there must be a vehicle for rich communication, revision, review, and exchanges between department faculty and design professionals during course development. Under normal circumstances, it would not be reasonable to expect the majority of a department’s faculty to meet regularly to work on course design with the frequency required by the rapid prototype model. This fact would normally make this aspect of rapid prototyping impossible. As a workaround, College X’s rapid prototyping model advocates the use of Web 2.0 technologies (wikis) to allow faculty to communicate daily throughout the semester regarding course design without the need to meet physically.

While there does not seem to be a precedent for specifying that technology be part of an ISD model, it seems practical and necessary to this situation. This model requires the construction of an officially approved wiki to be used as (a) a central hub for communication between department faculty on all aspects of course design and (b) as a storyboarding tool which will make all aspects of course development available to any team player throughout the instructional design cycle. Those familiar with wikis know that their strength lies in their ability to facilitate ongoing, flexible, documentable, asynchronous communication between people a snap.¹¹

Throughout the remainder of this document, stage (2) will be referred to as it relates to each stage of the design process. While faculty are free to agree to meet in person when necessary, it should now be understood that a convenient vehicle is in place to facilitate department wide dialogue without disturbing the normal routine of department life and activity.

¹⁰ As faculty create SCO’s (also known as RCO’s) they may place copyright logos on anything they produce. The university agrees to keep this content in place and not reproduce course material (other than in course form) without permission from the author. While the college retains the right to use the courses, professors retain copyright over any specific content they have created. Students come out in front as course material is created by the joint efforts of multiple professors in each subject area.

¹¹ Unlike email, wikis allow an unlimited number of people to work on one single storyboard or document from anywhere in the world. Changes are all documented under a “history” link and can be reverted to whenever necessary. A dialog link allows for ongoing dialog about the contents of a page or storyboard without actually writing on the page. Faculty can see any discussion going on regarding the development of part of a course even if not present at the time of the original conversation.

(2) Chart Objectives & Conceptualize Course Features

The goal of stage (2) is for faculty to come together online or in person to “brainstorm” the ideal features and characteristics that the online course should embody. Faculty can discuss concerns, design ideas, worries about particular parts of the course, questions about facilitation and so forth. All of these issues can be brought up early on rather than after course design is too far along to conveniently address them. The collaborative conceptualization of a course by multiple faculty members in a department addresses two major issues that are unique to the college environment:

(a) Multiple professors in the department may wind up teaching this course online. Any professor that could potentially be asked to teach the course online using the new online design becomes a key stakeholder in the design process. Ensuring future users have a say in the course design raises the likelihood of support on their part in the future of the college’s online program. (Cont... on next page)

(2) Chart Objectives & Conceptualize Course Features

Set a date to have faculty, instructional designer, and instructional technologist meet to discuss course objectives and concepts. Discuss the following questions below as needed to facilitate brainstorming.

2.1	<ul style="list-style-type: none"> • What is the course’s purpose?* • How does it fit with other courses in the curriculum? * • How do you believe the course will change for the worse if it is put online? • How could the course change for the better online (What can be done online that can’t be done f2f?) • Which skills should be developed or enhanced by taking this course? * • What fears do you have about teaching this course online? • What ideas do you have for navigational features of this course when we design that feature? • What are other schools doing with their version of this course (f2f or online) that are superior? • What problems to students tend to have with this course? • What learning resources would you like to see used in an online version of this course? • How effective will this course be in a year?* • How will the course fit into any planned curriculum changes over the next year?* • What proposed changes in subject matter, professional requirements (e.g., for certification within a profession, such as accounting), or academic requirements (e.g., for accreditation) will have an impact on this course? * • How can motivation be sustained in the online course? • How will any planned technology upgrades or budget changes affect this course?* • Who is available to teach this course, or multiple sections of this course, each time it is offered? * 	<p>Post answers around the room and on a designated course brainstorming area of the wiki.</p> <p>The goal is a written description of an “ideal” course for this subject matter.</p>
<p>* From Lynnette Porter, <i>Developing an Online Curriculum; Technologies and Techniques</i>. Information Science Publishing., 2004. p 44.</p>		

If time permits, proceed to course objectives discussion. If not, reschedule. Questions 2.2 -2.8 are ideally suited for discussion on a wiki. It may even be preferable to do so as a document will ultimately result.

(b) Unlike trainers in corporate environments, faculty in a department form a significant part of the “management” and “administration” of the college. They can already identify many “logistics” issues that SME’s in corporate settings may not be aware of.

A group of college faculty in a brainstorming session can make short work of much of the analysis that an instructional designer would have to do. In a sense this is a form of front end analysis in reverse as all of the “data” is being brought to a centralized meeting to meet instructional designers. Faculty can combine years of trial and error experience to raise all sorts of issues that an instructional designer may not arrive at until completing a product and putting it through formative evaluation!

Once all major issues and ideas are brainstormed, faculty can begin taking steps towards course design by charting out course content in the form of subject matter and performance objectives. As the highest SME’s in their fields, professors reduce the need for front end analysis that aims to discover what needs to be taught. If they don’t know; no one else does.

If the course already exists in face to face format, faculty should begin with the officially approved syllabus and course objectives on file at College X. If the course is new, these objectives will be created at this point.

(2) Chart Objectives & Conceptualize Course Features... Cont.		
Follow steps 2.2 to chart out basic subject matter and general course objectives.		
2.2	Does the college have a set of objective for this course already?	Yes / Make copies available to faculty at meeting and on the wiki. No / Move on to 2.3.
2.3	Collectively, list out all of the knowledge, skills, and attitudes that a high quality course on this subject would cover. Review all official objectives for relevance, thoroughness, and accuracy.	Post objectives visibly around the meeting room or type them in a pre-designated wiki brain-storming area.
2.4	Re-write content from 2.3 into a list of clear objectives and sub-objectives.	If possible number objectives in agreed upon format (1.1, 1.2, 2.1, etc...) and create a table of objectives. If possible, introduce “Writing Objectives job aid 3.2 early at this point and have it explained.
2.5	Identify and list pre-requisite skills (if any) for the course.	
2.6	Come to a consensus on a basic sequencing order that objectives must be taught in.	Are there any subskills required to perform an objective which change this sequence? If so, revise 2.4.
2.7	Select overall course structure. For structures 1-4 see footnote. ¹² (Instructional technologists should guide this decision based on the features of the colleges LMS. If the college has not yet purchased one, this will aid in the decision)	1. Linear–traditional instruction 2. Branched-designed instruction 3. Hypercontent-desinged 4. Learner-directed design. 5. Combination of 1-4. Produce a diagram numbered with objectives.

¹² Simonson, Smaldino, Albright, Zvacek, *Teaching and Learning at a Distance: Foundations of Distance Education 3rd Ed.*, Pearson 2006. p136.

2.8	Place course objectives chart and sequence diagram on the instructional design wiki.	
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(3) Build Prototype Lesson

Stage (3) is a key step in the rapid prototyping aspect of this ISD model. In rapid prototyping “the ISD model is telescoped so that analysis, design, and development occur simultaneously rather than sequentially. This is facilitated by use of design prototypes that are constructed and implemented while needs assessment continues. The results of prototype tryouts can then provide further data for needs assessment.”¹³

In this stage, one faculty member must be selected to design a prototype of what will potentially be one lesson (or perhaps the introduction) in full working online format. This is scheduled and completed with the help of an instructional designer, college web designer and an instructional technologist if necessary.

(3) Build Prototype Lesson.		
One faculty member must be assigned to follow these procedures and create a lesson prototype.		
3.1	Select one objective from 2.8	
3.2	Clarify the objective by rewriting it as a statement of what students will do to demonstrate that they have learned.	(Use jobaid 3.2) See. Appendix.
3.3	Break down the objective into a flowchart of behaviors or into categorized clusters of facts.	
3.4	Write out several simplified objectives to further guide the instruction of the behaviors and facts charted in 3.3	
3.5	Write out a lesson plan using job aid 3.5	Use jobaid 3.5
3.6	Decide on the specific activities that will be used within the larger instructional strategy for this lesson. (Readings, questions, synchronous chat, posting forum discussion, product creation, handouts, problem based learning, flashcards, simulation, game based learning, case study, journaling, etc...)	Use jobaid worksheet 3.6
3.7	Decide on what media and resources will be used to communicate information during the prototype lesson. (online video, audio mp3 recording, print based materials, charts, diagrams, photos, simulations, textbooks, etc...)	Use jobaid worksheet 3.6.
3.8	Consult with instructional technologist, instructional designer, or college web designer to generate screen layout for entire lesson. (navigation/colors/fonts/etc...)	Use copies of Form 3.8 Storyboard worksheet and give to web designer when done.
3.9	Coordinate between instructional technologist and web designer to locate any media from 3.6 and 3.7 that will need to be recorded, found, downloaded and embedded into online course.	Use copies of Form 3.9 Media Content Needs.
3.10	Provide course wording, and script to web designer along with copies of form 3.8.	
3.11	Edit and approve prototype lesson.	

¹³ William Rothwell, H.C. Kazanas, p. xxxii.

Review
and Revise
Instruction
via Wiki

Reactions to Prototype Lesson. Once the web address for the prototype is available, all involved department faculty members should be encouraged to try it out. At least one student should also be invited to test the online lesson. Comments about the prototype can be posted on a specified page of the wiki or discussed in a faculty meeting.

At this point, the live prototype serves to make the course, that all faculty are working together to create, very tangible even though the course does not yet exist. The prototype should generate substantial discussion on navigation, page layout, usability, graphics, colors, fonts. Equally important, faculty may have renewed interest in many of the questions discussed under 2.1.

Discussion of any newly aroused concerns can be held in a meeting or online via wiki. The end goal is to draft a set of agreements on as many issues as possible so as to homogenize the course as faculty move forward with course design. Features such as the following should be addressed:

- Terminology that will be used to designate parts of the course.
- Course introduction.
- Course sequencing.
- Screen navigation.
- Style and aesthetic features.
- Course structure – see 2.7.
- Learning activities that would be ideally suited for this course.
- Media/content that may be available or re-usable throughout multiple parts of the course. (i.e. a set of videos, recordings, graphics, articles)

Following this discussion, revisions to the prototype should be made and all faculty given the new web address. The prototype now serves as an example or point of reference for the rest of the faculty as the full course is designed.

**(4) Divide the Labor;
Clarify Objectives;
Develop Assessment Instruments**

In traditional instructional design process, the steps listed in stage (4) of our model can be quite laborious. Unfortunately they are extremely crucial for aligning assessment with instruction in addition to ensuring the objectives are learner centered. Therefore, in order to speed up a laborious process which can not be skipped, the College X rapid prototyping model advocates a unique procedure at the beginning of stage (4): Divide the Labor.

Rather than have a single instructional designer work through all of the objectives with a fine tooth comb (a very tedious process) and then write assessment questions for each objective, the task is divided among as many faculty as possible. All faculty members in the department engaged in the course design should be given a portion of the course objectives (see 2.8) to (a) clarify the objectives and (b) develop assessment instruments for them. As multiple professors simultaneously undertake this task, the high quality of the traditional ISD designed lesson can be achieved in a fraction of the time. (This assumes the professors can be taught to “clarify objectives”) It also lightens the load from off of the shoulders of any one faculty member or instructional designer.

(At some point before beginning this process it would be imperative to have an instructional designer review the process of writing clear learner centered objectives and selecting assessment items that match the behavior type in each objective.

(4) Divide the Labor; Clarify Objectives; Develop Assessment Instruments		
Ideally, this stage is begun with a meeting or a video presentation (on the wiki) by an instructional designer. (a) Writing learner centered performance objectives and (b) writing appropriate assessment items to match the behavior in each objective must be learned. An instructional designer must also be available as a consultant to all faculty engaged in this process.		
4.1	Divide objectives from 2.8 among all faculty involved in course design.	Allow faculty to pick objectives by topic of interest or use some other logical means of assigning them. Post the list on the wiki.
4.2	Faculty must clarify each objective assigned to them by rewriting each as a statement of what students will do to demonstrate that they have learned.	(Use job aid 3.2)
4.3	Faculty should break down each objective into a flowchart of behaviors necessary to accomplish the objective or organized clusters of facts required for objective mastery.	Instructional designer should provide help with content analysis procedures.
4.4	Write out several simplified objective statements to guide instruction of the facts/behaviors charted in 4.3. Write them in terms of what the learner will do to master the steps listed in 4.3	Type these on a designated location on the wiki along with the objectives being produced by other faculty. Identify them by numbers agreed on in 2.4 and 2.8
4.5	Faculty should create two test items to measure the learners mastery of the objective. Essay, fill-in-the-blank, completion, multiple-choice, true/false, matching, project)	Assessment items should be written next to each objective on the wiki. Instructional designers should aid writing assessment items.
4.6	Instructional designer reviews objectives and assessment items on wiki pages so as to give feedback. He/she remains available as a consultant throughout the process.	

As with any other stage, this stage could theoretically be followed by review and revision of anything done in the design process so far. At this point, all of the objectives, the ideal course design, the assessment items, and the prototype should be available on the wiki for faculty to view, edit, question, and discuss.

**(5) Development Full Course
(parallel team development)**

Having clarified the objectives, written assessment items for each one, agreed upon course sequencing and structure, faculty can be given the signal to create

the remaining lessons for the course. All faculty simultaneously create one lesson per course objective. Each lesson occupies approximately 45-50 minutes of instruction and learning. Lessons are further subdivided into three or four “activities” of 5-15 minutes each .

By having all faculty simultaneously design a few lessons (as SCO's/RCO's), the course is developed in a much shorter time span and with much less load on College X personnel. All faculty members have a hand in course design and thus an ownership in the future course that they may be asked to teach.

(5) Development of Full Course.		
Each faculty member must follow these procedures to create lessons for the objectives assigned to them.		
5.1	Faculty attend meeting or watch video of instructional designer explaining characteristics of quality online learning, what online students need/want, and how to foster community among students.	
5.2	Faculty write out a lesson plan using job aid 3.5 as a guide for quality instructional strategy.	Use job aid 3.5
5.3	Faculty decide on the specific activities that will be used within the larger instructional strategy for this lesson. (Readings, questions, synchronous chat, posting forum discussion, product creation, handouts, problem based learning, flashcards, simulation, game based learning, case study, journaling, etc...)	Use job aid worksheet 3.6
5.4	Faculty decide on what media and resources will be used to communicate information during the prototype lesson. (online video, audio mp3 recording, print based materials, charts, diagrams, photos, simulations, textbooks, etc...)	Use job aid worksheet 3.6.
5.5	Faculty may consult with instructional technologist, instructional designer, or college web designer to generate screen layout for entire lesson. Navigation/colors/fonts/etc... have already been established.	Faculty fill in the wiki storyboard pages assigned to their objectives. They inform web designer when assigned wiki storyboard pages are completed.
5.6	Faculty should coordinate between instructional technologist and web designer to locate any media from 5.4 and 5.5 that will need to be recorded, purchased, downloaded and embedded into online course.	Use wiki page version of Form 3.9 Media Content Needs, assigned to each objective.
5.7	Faculty should inform web designer when course wording and lesson script has been completely entered into steps 5.4, 5.5.	Web designer populates course templates with content from wiki storyboard pages.
5.8	Faculty members review at least one other faculty member's official course lesson with a view to critiquing the quality of the instructional materials used. Instructional designers review all of the course lessons.	Concerns are discussed verbally on appropriate wiki pages.
5.9	Instructional designer works with web designers to make sure lessons align in the sequence agreed upon by faculty.	

5.9	Instructional designer compiles assessment items from stage (4) into tests and assessment tools for the course.	Tests are posted on course wiki for faculty review.
5.10	Faculty revise and approve final versions of tests used with the new course.	
5.11	Assessment instruments are given to web design staff to build into the course pages.	

(6) Field Test Full Course

Following the approval and assembly of all course components the full course version is assigned to a faculty member to pilot test for a semester. This is the primary point of formative evaluation for the course. While some might argue that formative evaluation should occur before the course is pilot tested with paying students, this is another feature of rapid prototyping. Rather than do away with formative evaluation, we simply risk using the course while it is still “green” for only one semester. The positive side of this is that no purer form of formative evaluation is available than pilot testing of this sort.

Throughout the course of the pilot semester the instructor will log student comments, complaints, and opinions of the course, as well as his/her own personal estimation of the course’s strengths and weaknesses. Before the semester even ends, the faculty member communicates with other faculty, instructional designers, and web designers about changes that need to be made in the course.

Provided student experiences in the pilot designed course are not overwhelmingly negative, the suggestions collected during the pilot testing semester can be implemented and a fully tested course made ready for use the following semester. After the course is used for several semesters or years the course will re-enter the design cycle at stage (1) again regarding whether or not a new online course to replace it is justifiable.

Implications for Staffing

Because the rapid prototyping model makes significant use of current faculty, there will not be a significant need to increase personnel at College X. The one clear need will be for the hiring of an additional number of staff to equip the Instructional Design office at College X to facilitate this aggressive move into Online education. The initial recommendation is to hire 5 additional personnel (whether instructional designer or instructional technologists – depending on their skill sets to provide at least one instructional designer/technologist for every two major departments in the college. At that rate, new hires will be working on at least two course redeployments at all times. If the program is successful, and new students join College X via online classes, the new hires will be clearly a good investment.

Ultimately, the effectiveness of College X’s venture into online learning will be seen in the response of students who take the courses. Furthermore, if courses satisfy customers expectations for quality online training, College X should see a significant upswing in the number of Atlanta residents signing up for distance courses.

Conclusion

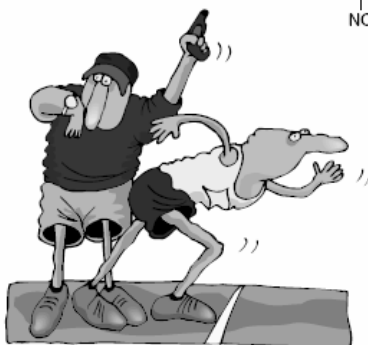
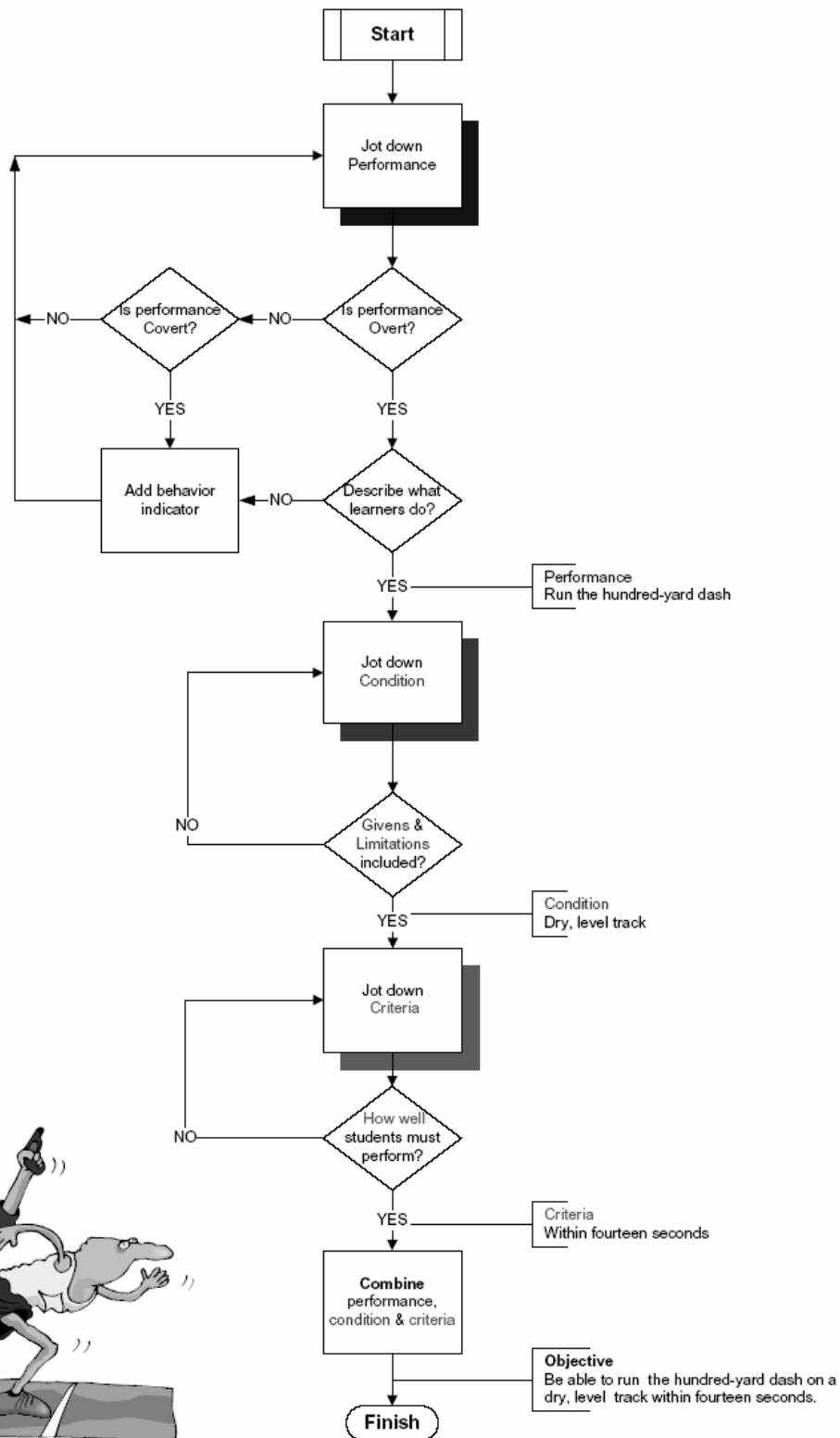
The reasons for the use of a rapid-prototyping design cycle arose from the fact that College X: (a) had a large volume of courses which needed to be redesigned for

online learning in a few years; (b) possessed no ISD model to speak of; (c) faced a political situation among faculty-as-gatekeepers that the traditional ISD models did not address (d) had faculty who insisted on playing the role of course designers but lacked the time to proceed through full length ISD models.

The benefits of this model are primarily in the area of communication and time saving. It fosters communication among people who do not have backgrounds in ISD but insist on playing a controlling role in instructional design. The process, once adjusted to by faculty, should allow each department to roll out at least four online courses during the course of a calendar year. By cutting down the time involved in instructional design, as well as spreading the workload across the college faculty, it stands to reason that the cost of instructional design should drop significantly. Furthermore, the use of wikis and LMS web page templates should drastically cut down on the cost of meetings, paper, and wasted time. Faculty are now able to work digitally on instructional design at all hours of the day.

This model, as does any model, faces certain challenges. The primary challenge lies in the potential lack of design flow or interaction between Lessons created by different faculty. Second, some faculty may be resistant to using wiki technology on such an intense scale. Thirdly, the issue of course ownership or teaching courses that were not completely designed by oneself is a potential problem for any college offering online courses. Finally, this model assumes faculty can come a consensus on the way a course should be taught. Furthermore it assumes faculty will even agree to build courses together. This concern may be the greatest challenge of all.

Appendix (see next page).



3.2 Job Aid Worksheet – copyright 1997 William Horton Consulting

Goals and objectives				
ID	Project	Scope	Identification	Owner
	After experiencing this: <input type="checkbox"/> Course or document <input type="checkbox"/> Lesson, chapter, or cluster <input type="checkbox"/> Topic or page <input type="checkbox"/> Content module <input type="checkbox"/> Media element		This group of consumers:	Will achieve this result: <input type="checkbox"/> do (action): <input type="checkbox"/> be able to (action): <input type="checkbox"/> feel (emotion): <input type="checkbox"/> believe (claim): <input type="checkbox"/> understand (concept):
Objectives				
	Group of consumers What group of consumers?	Result What must they do, learn, feel, believe, or understand?	Conditions In what circumstances? With what resources available?	Success To what degree must they succeed? Time required? Per cent successful?

Use these features to design the layout of your lesson/activity.

- 1. Gain attention:** In order for any learning to take place, you must first capture the attention of the student. A multimedia program that begins with an animated title screen sequence accompanied by sound effects or music startles the senses with auditory or visual stimuli. An even better way to capture students' attention is to start each lesson with a thought-provoking question or interesting fact. Curiosity motivates students to learn.
- 2. Inform learners of objectives:** Early in each lesson students should encounter a list of learning objectives. This initiates the internal process of expectancy and helps motivate the learner to complete the lesson. These objectives should form the basis for assessment and possible certification as well. Typically, learning objectives are presented in the form of "Upon completing this lesson you will be able to. . . ." The phrasing of the objectives themselves will be covered under Robert Mager's contributions later in this chapter.
- 3. Stimulate recall of prior learning:** Associating new information with prior knowledge can facilitate the learning process. It is easier for learners to encode and store information in long-term memory when there are links to personal experience and knowledge. A simple way to stimulate recall is to ask questions about previous experiences, an understanding of previous concepts, or a body of content.
- 4. Present the content:** This event of instruction is where the new content is actually presented to the learner. Content should be chunked and organized meaningfully, and typically is explained and then demonstrated. To appeal to different learning modalities, a variety of media should be used if possible, including text, graphics, audio narration, and video.
- 5. Provide "learning guidance" :** To help learners encode information for long-term storage, additional guidance should be provided along with the presentation of new content. Guidance strategies include the use of examples, non-examples, case studies, graphical representations, mnemonics, and analogies.
- 6. Elicit performance (practice):** In this event of instruction, the learner is required to practice the new skill or behavior. Eliciting performance provides an opportunity for learners to confirm their correct understanding, and the repetition further increases the likelihood of retention.
- 7. Provide feedback:** As learners practice new behavior it is important to provide specific and immediate feedback of their performance. Unlike questions in a post-test, exercises within tutorials should be used for comprehension and encoding purposes, not for formal scoring. Additional guidance and answers provided at this stage are called formative feedback.
- 8. Assess performance:** Upon completing instructional modules, students should be given the opportunity to take (or be required to take) a post-test or final assessment. This assessment should be completed without the ability to receive additional coaching, feedback, or hints. Mastery of material, or certification, is typically granted after achieving a certain score or percent correct. A commonly accepted level of mastery is 80% to 90% correct.
- 9. Enhance retention and transfer to the job:**

Knowledge object

Form copyright © 2009 William Horton Consulting, Inc.

ID		Project	Scope	Page	Owner
Goal		Prereq usities		Related specifications	
Output formats		<input type="checkbox"/> Web (HTML) <input type="checkbox"/> Slides (PPT) <input type="checkbox"/> Paper (Word) <input type="checkbox"/>		Parent: Typography: Layout: Template:	
Title (& subtitle)		Content (how you will meet the goal)		Practice & feedback (test or activity)	
Introduction		<input type="checkbox"/> Cluster of knowledge objects <input type="checkbox"/> Learning activity <input type="checkbox"/> Content modules Description or specification _____		Summary or reflection	
Motivation				Related resources	
Context (location indicator)				Related knowledge objects	
Menu entry		Keywords (index terms)		Description	
Access				T = link to F = link from	

Layout

ID	Project	Scope	Identification	Owner
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Transition in:

Background Color: Picture:

Top margin: pixels

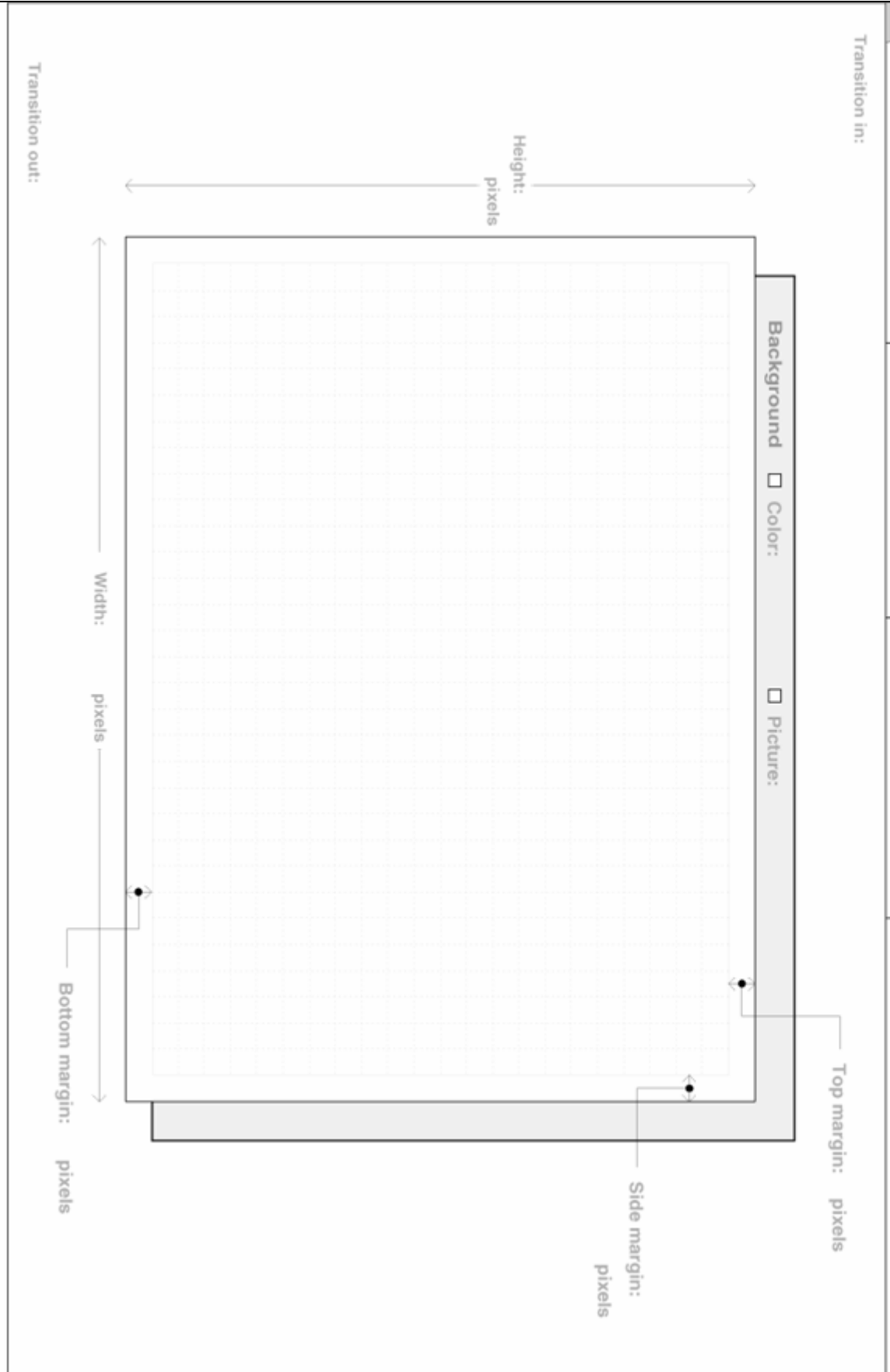
Side margin: pixels

Height: pixels

Width: pixels

Bottom margin: pixels

Transition out:



Content module specification

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ID		Scope		Identification		Owner	
Project Training course: Principles of object-oriented programming		Main content module for Lesson 2		OOPS-Content-Lesson 2 Version 1.1 - 25-Feb-97		Copyright © 1997 William Horton Consulting, Inc. 838 Spruce St., Boulder, CO 80302 303.445.6964 william@horton.com	
Goal Explain the concept of inheritance in object-oriented programming		Point it makes Classes inherit methods and variables from their parent classes. An object created from a class contains all the methods and variables of its class, including those the class inherited from its parents.		Topic in which it appears Lesson 2: Inheritance (Main topic) OOPS-Topic-Lesson2			
Meta-info		Media element		Medium		Size	
		Classes spawning classes		Animation (Macromedia Director 5.0)		600 x 400 pixels, 15 seconds	
		Voice-over narration		WAV sound file			
		Text narration		Displayed text			
				<p>Female narrator at moderate pitch. Record at 22 KHz, 6-bit, monophonic</p> <p>Summarizes voice narration. Not necessarily the same. Follows typography specification: OOP-Type-Lesson.</p>			
Other information		Related specifications		Control buttons			
<p>Layout: OOPS-Layout-Lesson</p> <p>Interactivity: OOPS-Interact-Lesson-Play</p> <p>Timeline: OOPS-Timeline-Lesson-Play</p> <p>Typography: OOPS-Type-Lesson</p> <p>Storyboard: OOPS-SB-Lesson Access</p>		<p><input checked="" type="checkbox"/> Play</p> <p><input checked="" type="checkbox"/> Stop</p> <p><input type="checkbox"/> Pause</p> <p><input checked="" type="checkbox"/> Replay</p> <p><input type="checkbox"/> Loop</p>		<p><input checked="" type="checkbox"/> Rewind, Start</p> <p><input type="checkbox"/> Play reverse</p> <p><input type="checkbox"/> Fast forward</p> <p><input checked="" type="checkbox"/> End</p> <p><input type="checkbox"/> Setup</p>		<p><input checked="" type="checkbox"/> Previous</p> <p><input checked="" type="checkbox"/> Next</p> <p>Integrate these buttons with the navigation buttons for the topic.</p>	