

FROM ADDIE TO RAPID PROTOTYPING: MAKE IT FASTER, CHEAPER, AND BETTER



THE UNIVERSITY OF THE AIR



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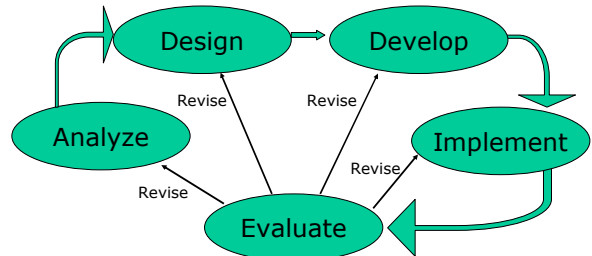


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Why ADDIE model is not popular?



ADDIE model: a model for Instructional Design process



Gagne, R.M., Wager, W.W., Golas, K. C., & Keller, J. M. (2005). *Principles of instructional design* (5th Ed.). Wadsworth/Thomson Learning, p.21

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Why ADDIE model is not popular?



.We have no time for ADDIE! It is time consuming, we have no time to follow each step.

.ADDIE process produces boring courseware!

.It only has empty boxes, and doesn't tell what to do in each of the boxes in any details.

.The world has been changed: faster changing speed, but slower economy, information age, etc.

Can we do it cheaper, faster, and better?

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From ADDIE to Rapid Prototyping



- **ADDIE model or Rapid Prototyping**
 - **What is "Rapid Prototyping" and how do we do it? Two RP models**
- **Five(5) Factor Model for Course Design**
 - **Input-Output-Structure-Strategies-Environment Model**
- **Goal-based Scenarios and Story centered Curriculum**
 - **Architecture for effective courseware for any subject matters**

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What is "Rapid Prototyping" and how do we do it?

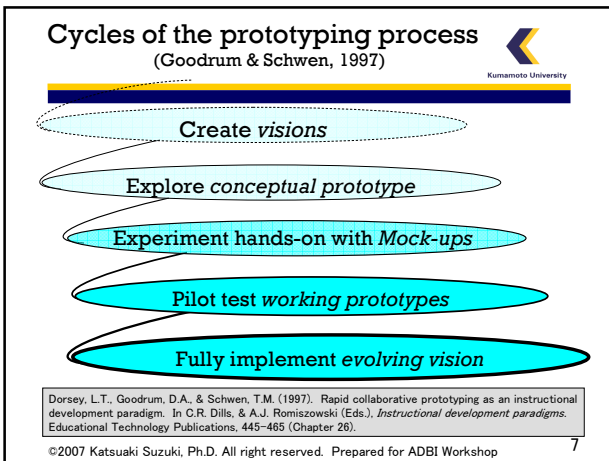


- **Prototype: a working portion of the final product that can be immediately implemented with a group of learners or reviewed by experts**
- **Rapid prototyping: a process to produce a prototype earlier in courseware development, in order to review and fix the prototype before going into full development.**
- **Benefit: So, we can develop courseware faster, cheaper, and better!**

Dorsey, L.T., Goodrum, D.A., & Schwen, T.M. (1997). Rapid collaborative prototyping as an instructional development paradigm. In G.R. Dills, & A.J. Romiszowski (Eds.), *Instructional development paradigms*. Educational Technology Publications, 445-465 (Chapter 26).

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Two Rapid Prototyping Models

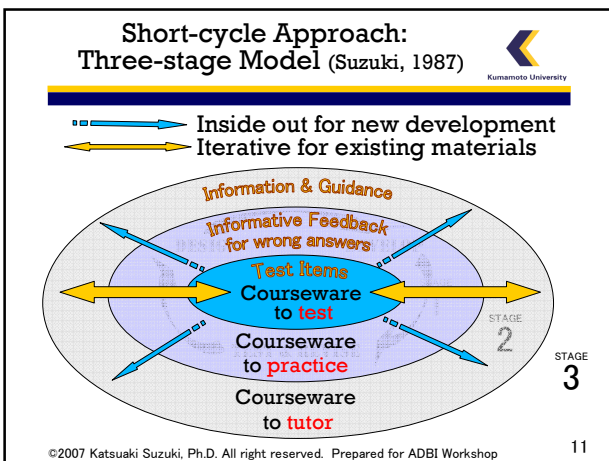
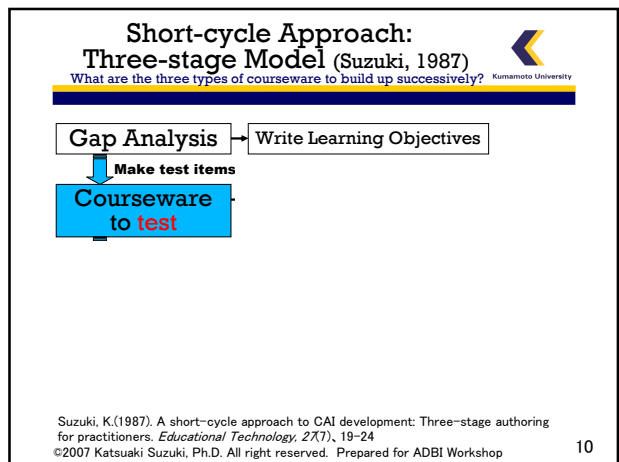
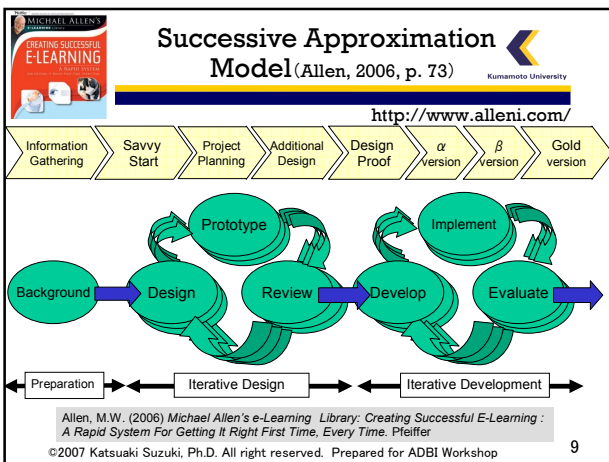
Successive Approximation Model

(Allen, 2006)

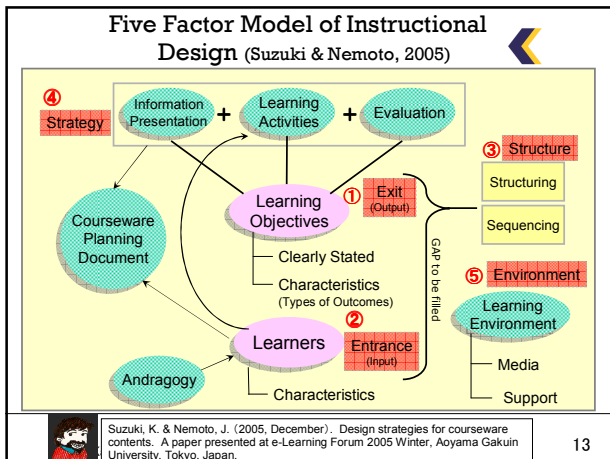
Short-cycle Approach: Three-stage Model

(Suzuki, 1987)

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Factor 1: Exit (Output) Learning Objectives

- **Clearly stated using observable verbs**
 - E.g., “state” “demonstrate” “apply”
 - Instead of “understand” “comprehend”
- **Specify types of objectives, or characteristics of learning outcomes**
 - **Cognitive, Affective, or Psychomotor (Brain, Heart, or Muscle)**
 - **Reproductive vs. Productive**

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Factor 2: Entrance (Input) Learner Characteristics

- **Assess your Learner's Status-quo**
 - If they have reached the Exit already, there is no need to teach them
 - The Gap between Goal (Exit) and Entrance is what you need to teach
 - Other Learner characteristics may affect how you should teach them
- **Andragogy vs. Pedagogy**
 - Educational Methods for adult learners may be different from those for children

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Factor 3: Structure Structuring and Sequencing

- **Structuring**
 - Identify components of learning from entrance to exit
 - Layout in a map so that relationships of the components are shown (e.g., A and B should be mastered before C)
- **Sequencing and Learner Control**
 - Suggest sequence of learning based on structure map
 - Allow learners decide the order of learning by providing a menu

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Factor 4: Strategy

- **Information Presentation**
 - Clear presentation of new information
 - Use of familiar examples
 - Not only telling, but also showing
- **Learning Activities**
 - Let the learners demonstrate what they understand
 - Easy to difficult, basic to advance
 - Learn by feedback for mistakes
- **Evaluation for mastery learning**
 - Test before the learner proceed to the next
 - Review if necessary and re-evaluate

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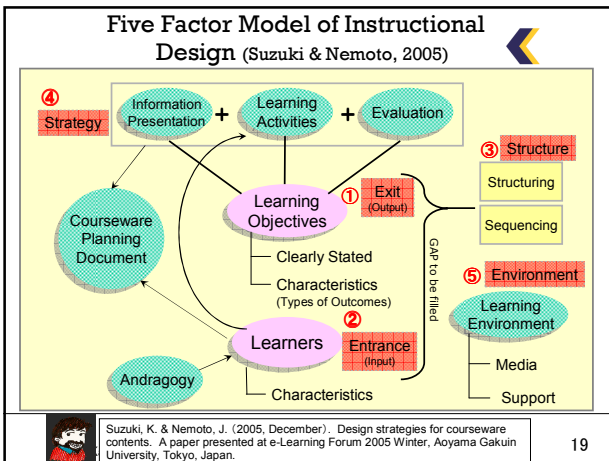
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Factor 5: Learning Environment

- **Media**
 - Combination of media for effective environment
 - Media Selection for efficiency
 - Allow learner's initiatives when appropriate
- **Support (Scaffolding)**
 - Provide advices, directions, helps when requested
 - Direct the learners to advices, directions, helps when necessary

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5 factor model revisited

- Important factors are the same no matter how you go about it.
- **Order is not critical**, take a good care of the 5 factors, in any order, if you would like to develop a good quality courseware.
- Make your courseware development faster, cheaper, but **maintain the quality**: faster, cheaper, and **better!**

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Goal-based Scenarios (GBS)

- Proposed by Roger C. Schank
- Learning by Doing, learning by making mistakes in real-world simulations (safe environment) and think why it happened
- Great Success in corporate training in 1990's
- Extended into Story Centered Curriculum in college settings
- Virtual World Academy at <http://www.engines4ed.org/>

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Building Consensus : A Goal-based Scenarios example

Source: The Institute for the Learning Sciences, Northwestern University (1998). Community partnering for environmental results: a learning-by-doing approach to building public outreach skills (Scenario 1: Evans Bay) (ver.1). U.S. Environmental Protection Agency

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Building Consensus : A Goal-based Scenarios example

Kumamoto University

Questions to ask to the Expert

- Who is this expert?
- Show me the text.
- Does it mean to "do your homework" in a community?
- How do I determine who the...

Source: The Institute for the Learning Sciences, Northwestern University (1998). Community partnering for environmental results: a learning-by-doing approach to building public outreach skills (Scenario 1: Evans Bay) (ver.1). U.S. Environmental Protection Agency

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Goal-based Scenarios Architecture: Seven Components

Kumamoto University

Nemoto, J., & Suzuki, K. (2004, August). GBS checklist for training application. A paper presented at the International Symposium and Conference on Educational Media in Schools, Kansai University, Osaka, Japan, August 3-4, 2004 (Proceedings, 75 - 82).

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Story Centered Curriculum at Carnegie Mellon University West

Kumamoto University

Scenario 1: Focus on Interests

Well, I was really counting on that increase, I moved into a new house this year. Even when I calculated that additional income I had to move all the way to Pleasanton to have enough room for a nursery for the new baby.

What the story's character says (photo & text or video)

Please select a response:

- Tell Peter that you understand his difficulties, but point out the company's...
- Tell Peter you understand his concerns, and try to find out if he has additional co...
- Tell Peter you understand his difficulties regarding his family's situation and the lo...
- Tell Peter that you appreciate his sharing these feelings, and point out that the situ...

List of possible reactions for a student to select (links)

A button to go back to Menu

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Story Centered Curriculum at Carnegie Mellon University West

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Student selection leads to different reactions of the character with another set of possible reactions

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Story Centered Curriculum at Carnegie Mellon University West

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Professor appears and express his opinion (short video or text)

List of resources for students to select & examine (links)

Notes: Tips, Traps, and Other Useful Information

Insights from a Seasoned Professional:

- What role does documentation play in my job?
- Why is immediately turning to code often the wrong thing to do?
- How important is technology to...
- Should I use web-based tools?
- Why is requirements in...
- How do I determine who the...
- What role does architecture...
- How does perspective design...
- What is the point of a plan?
- What is a common planning me...
- How can a project contribute...
- substant?
- How does a good plan help me...
- What is the Carnegie Mellon we...
- What's an example of the issue...
- How important is this product?

Tips and Traps:

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A simple architecture for Story Centered Curriculum

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Qualities of a successful learning experiences (Broadbent, 2002)

Engaging,
Fun,
Relevant,
Fast-paced

Learner's Point of View

Material well-received
by learners, students
learned what was
planned, no disruptions

Instructor's Point of View

High passing rate,
100% attendance,
profitable

Administrator's
Point of View

Materials flowed well,
treated main issues,
exercises supported the
course

Instructional Developer's
Point of View

Broadbent.B.(2002). *ABCs of e-learning: Reaping the benefits and avoiding the pitfalls.* Jossey-Bass/Pfeiffer, ASTD.
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