(Optional) Rapid Prototyping EduTech Wiki Entry

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Rapid prototyping

Rapid prototyping (also rapid prototyping design, RAD) is a general design method.

See also: [user-centered design](https://edtechbooks.org/-rBE) and [R2D2](https://edtechbooks.org/-rBE) (an other agile instructional design method).

Contents

1 The model

According to Joe Hoffman and Jon Margerum-Leys ([HTML](#) retrieved 29 May 2006), the general rapid prototyping model can be summarized as follows:

1. concept definition
2. implementation of a skeletal system
3. user evaluation and concept refinement
4. implementation of refined requirements
5. user evaluation and concept refinement
6. implementation of refined requirements

2 Rapid prototyping as instructional design method

Agile methods have been always very popular in education since this is how teachers operate in the classroom. However, until recently [instructional design methods](#) were rather dominated by

heavier [instructional systems design](#) models.

2.1 Tripp and Bichelmeyer

Tripp and Bichelmeyer (1990: 36) define a model that presents "that occur in a rapid prototyping environment, when prototyping is specifically used as a method for instructional design. The overlapping boxes are meant to represent the fact that the various processes do not occur in a linear fashion. In other words, the analysis of needs and content depends in part upon the knowledge that is gained by actually building and using a prototype instructional system."
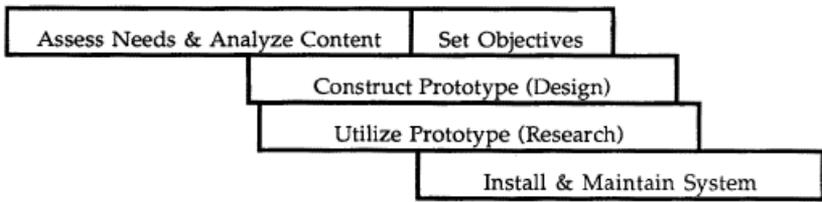
Tripp and Bichelmeyer rapid prototyping ISD model

2.2 Lot Like Agile Methods Approach (LLAMA)

A model created and "sold" by [Torrance eLearning](#). Unfortunately we only found [videos](#) that explain this method.

2.3 Successive Approximation Model

The Successive Approximation Model (SAM) was developed by [Michael Allen](#) and Richard Sites. There are two main versions:

- SAM_1 for small projects: A Design - Develop - Evaluate loop
- SAM_2 for larger projects: A three stage model: Preparation - Iterative Design - Iterative Development.
 - Iterative Design includes a Design - Prototype - Evaluate Loops

- Iterative Development includes a Evaluate - Develop - Implement Loop

2.4 eLab Model

The eLab model considers fast prototyping as a communication "catalyst" that is particular suitable in situations where [change management](#) issues exist:

- It allows to promote the discussion within the project group in a focused way, by concentrating on the facts and the results, rather than on theories and prejudices against technologies.
- It will allow to build shared understanding among the different professionals involved in the project and builds trust: two important conditions for the success of the project.

The authors summarize their model with the following diagram:
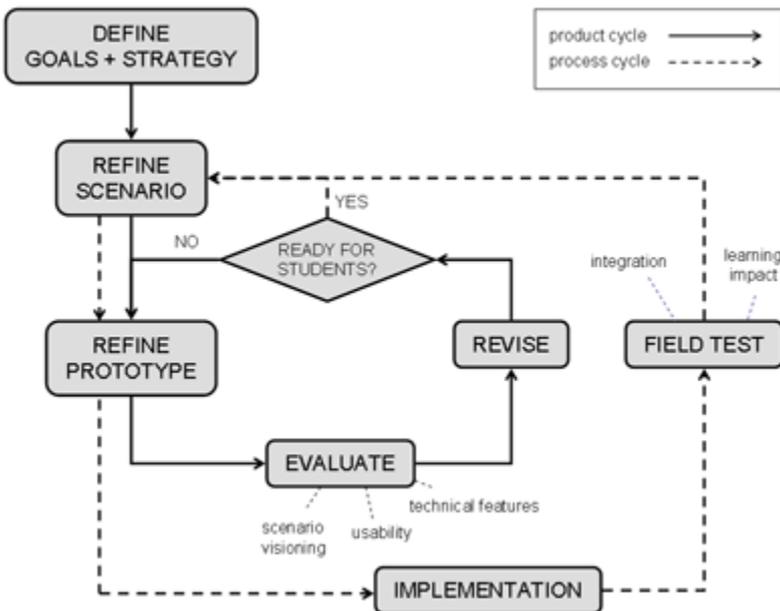
The eLab prototyping model (Botturi, Cantoni, Lepori, Tardini 2007)

This design method:

- makes the design and development process open to new emerging ideas
- makes the design open to emerging needs from test and evaluation phases
- let's teachers focus on pedagogical design (teaching) instead of course materials preparation and technology
- stimulates discussion with external partners.

2.5 Discussion

Botturi et al (2007) identify three main issues one has to deal with, plus pitfalls to avoid

1. Cost: "Fast prototyping costs. What is developed risks being rejected and 'demolished', even if in critical and fruitful demolition. In order to be cost effective, a sound ratio between prototype scale and the final product is needed; when this is not feasible, examples taken from other experiences may be used."
2. Shared understanding: "Fast prototyping is particularly helpful in order to provide a shared understanding of what the final e-learning course is likely to be; it offers the development team a common background where many misunderstandings can be avoided."
3. Training effect: "E-learning is a new world: it happens quite often that people working in course development do not have extensive experience. Fast prototyping provides them with a common language and an initial experience of e-learning."

Botturi et al (2007) identify two pitfalls to avoid:

- "The first pitfall is the 'quick and dirty' effect, i.e. a very rapid,

but low quality development may negatively affect further developments, hindering understanding, collaboration and commitment. The second one is just at the opposite pole in the 'speed' scale: the non-fast prototyping case. Here the prototyping phase is extended so much that it only delivers a late contribution, which often has to be accepted as time resources do not allow substantial revisions."

3 Software

A lot, e.g. alone for the [SCRUM](#) method, Wikipedia lists over 15

Example:

- [Pivotal tracker](#), a free for education web 2.0 tool plus [Gooddata](#) analytics.

4 Links

- [The Agile Elearning Design Manual - Think Small (Iterations, Action Maps, Storyboards, and Mini-Modules)](#), by Sumeet Moghe, June 2009.
- https://edtechbooks.org/-ZuRV
- http://www.agilealliance.com/
- [Approach: the fastprototyping](#) (eLab page).
- [Agile Modeling (AM) Home Page](#)
- [Scrum](#) (Wikipedia). Scrum is an agile software development method.
- [Evidence Based Scheduling](#), by Joel Spolsky, 2007.
- [You may kiss the bride and update the Scrum board](#). Agile development isn't just for software anymore. By Phil Johnson, ITworld August 09, 2012.

In project oriented learning

- [Scrum in the Classroom](#) by John Miller, 2012.
- [Let's Scrum](#) by Rebecca Pope-Ruark, PhD, Michelle Eichel, Sarah Talbott, Kasey Thornton, 2012.

5 References

- Allen, Michael W. (2012). Leaving Addie for SAM: An Agile Model for Developing the Best Learning Experiences, ASTD Press, [ISBN 978-1-56286-711-9,](#) [Store](#)

- Botturi, L., Cantoni, L., Lepori, B. & Tardini, S. (2007). Fast Prototyping as a Communication Catalyst for E-Learning Design. In M. Bullen & D. Janes (eds), *Making the Transition to E-Learning: Strategies and Issues. Hershey*, PA: Idea Group, pp. 266-283. [PDF Preprint](#)

- Tripp,Steven, Bichelmeyer,Barbara, Rapid prototyping: An alternative instructional design strategy, Educational Technology Research and Development, 38, 1, 3/18/1990, Pages 31-44, [DOI 10.1007/BF02298246](#) (*[Access restricted](#)*)

- Luqi. (1989). Software evolution through rapid prototyping.Computer, 22(5), 13-25. [Abstract / PDF](#)

- Peter Rawsthorne, Cape Breton University & Memorial University of Newfoundland, Agile Instructional Design, [PDF](#) (from [\[1\]](#))

Schmidt, M. (n.d.). *EME 6606: Advanced Instructional Design*. EdTech Books. https://edtechbooks.org/eme_6606