Rocky Mountain

Alchemy

Turning the Plain
Into the Precious

Navigation Models

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Introduction

Key structures

A key technique or strategy for gaining and maintaining attention and for increasing learner engagement and motivation is the variance of navigation models (how a learner goes through the training).

This paper illustrates the major navigation structures available in courseware design. While there are more models possible, we will focus on the following structures:

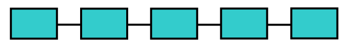
- Linear
- Cyclical
- Hierarchical Tree (Unbound)
- Hierarchical Tree (Bound)
- Hub
- Nodal Web
- Web

As with interactions, we'll also take a look at how navigation structures can be combined and/or nested.

Linear

Intro

The following diagram illustrates the linear structure:



In a linear structure, the learner is forced down a single path regardless of the choices made. This structure is the result of using artificial feedback (e.g., the learner does not experience the results of actions and/or decisions).

Because of the comparatively simple structure, linear designs are typically the cheapest option for design and programming.

Use

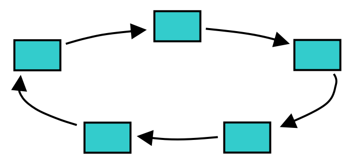
Linear structures are most appropriate when the objective itself is simple and/or of lesser importance (e.g., when hierarchical structure would be overkill). Tight budgets can also force your hands toward this structure. If this is the case, make every attempt to provide clear and robust feedback to help the learner understand the consequences of his/her actions and/or decisions.

NOTE: Some linear training is so well written that the learner feels as though he/she is actually in a hierarchical structure. While more challenging, it is not impossible to create a rock solid, engaging, and motivational learning event with a linear structure.

Cyclical

Intro

The following diagram illustrates the cyclical structure:



As the name implies, the cyclical structure provides a repetitive sequence of events.

Use

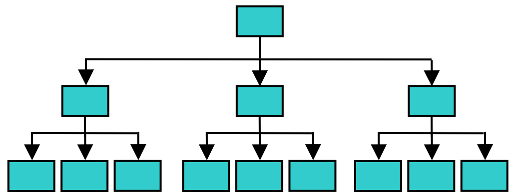
This structure is appropriate when covering domains with a cyclical nature (e.g., the seasons, call flows, closed system processes). This structure can also be used as a strategy for building in complexity (i.e., a tutorial or discovery based learning approach building in complexity with each pass through the cycle).

NOTE: When designing a cyclical structure, make sure to include an exit point for the learner.

Hierarchical Tree (Unbound)

Intro

The following diagram illustrates the hierarchical tree – unbound structure:



An unbound hierarchical tree is the purest structure for providing natural feedback (i.e., allowing the learner to experience the consequences of all actions and/or decisions). In true application of this structure, each action and/or decision the learner can make has its own separate path. This design yields the highest possible fidelity to the real world.

Use

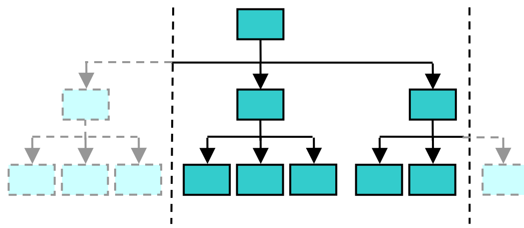
This structure is most appropriate when the learner is given the opportunity to complete the process a number of times allowing the learner to discover the best path by experiencing the positive and negative consequences of decisions made throughout the process.

NOTE: The costs of designing and programming a true unbound hierarchical tree can become quite high. This structure should be applied when the objectives are mission critical and highly complex, thus justifying the expense.

Hierarchical Tree (Bound)

Intro

The following diagram illustrates the hierarchical tree – bound structure:



A less expensive alternative to the unbound hierarchical tree, the bound tree allows *limited* exploration of multiple paths. In a bound tree, at key points, the learner is provided with artificial feedback (instead of natural feedback) and automatically relocated to either a previous decision point or parallel resultant point. This complex point deserves an example:

Our scenario is set in a nuclear power plant. It is time for a union-required break, but an alarm is sounding. The learner has decided to ignore the alarm until after the break. In an unbound structure, a path would be designed and programmed showing all the future consequences of this decision. In a bound structure, the learner may be given artificial feedback such as, "Taking a break when the alarm is sounding could have disastrous effects for you, the plant, and your community." Next, the learner could be sent back to an earlier decision point (e.g., "Let's try that again from when the alarm first sounded."). In this case, the learner has the opportunity to make the correct decision. Another option is to send the learner to a parallel point in the scenario as though he/she had made desired choice (e.g., "Instead of taking your break, let's find the cause of the alarm.").

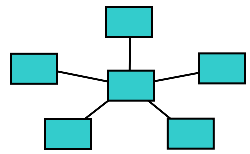
Guidelines

This structure should be considered when the objective is fairly complex and is fairly important, but does not warrant an unbound tree approach.

Hub

Intro

The following diagram illustrates the hub structure:



The hub structure is so named because it resembles the hub of a wheel with spokes coming out of it.

Use

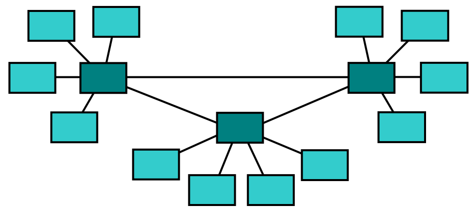
Hub structures are typically used to present a key piece of information, then provide multiple links to allow the learner to explore to gather more information. A hub can also be used to create sub-menus (e.g., select a topic).

NOTE: The Explore element of the Discovery Based Learning Model is typically designed using a hub structure.

Nodal Web

Intro

The following diagram illustrates the nodal web structure:



The nodal web structure is an extension of the hub structure. The nodal web is a series of connected hubs, typically linked at their anchor screens. The entire Internet can be seen as a highly complex nodal web.

Use

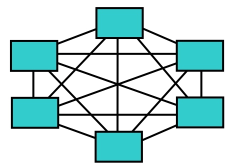
A nodal web structure can be used to create a series of lessons or topics that do not have to be covered in any particular order. This structure also supports an explore-it strategy where the learner is free to select a topic then decide how deep into the topic they wish to explore.

NOTE: Because of the inherent complexity of a nodal web, learners can often become lost. When implementing a nodal web design, it is important to provide learners with advanced navigational tools (e.g., "you are here" navigation bars, site maps, next/back buttons, home or key screen buttons) to enable quick and easy access to their original path.

Web

Intro

The following diagram illustrates the web structure:



A web structure differs from the nodal web design in that there are no "main pages" for the topics. This a pure interconnected series of pages with access to any screen (typically available through links or an index strategy).

Use

The web structure is used for pure exploration in learner-directed learning (i.e., the learner decides what's important to him/her and makes navigation decisions based on own interests and needs). In such cases, a proper sendoff is critical to success (e.g., providing solid guidance, setting expectations, making coaching available).

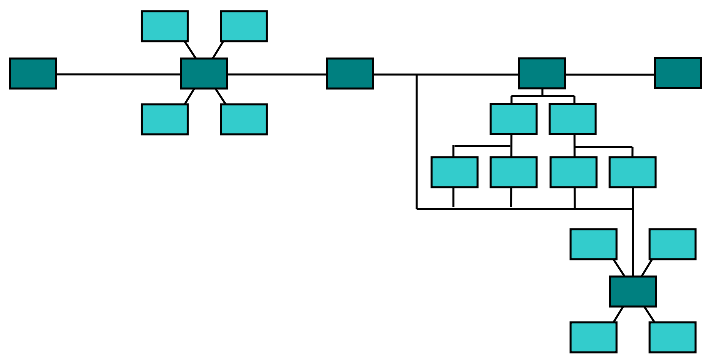
NOTE: This approach typically benefits from a solid search engine and permanent links to a home or anchor screen.

Combinations

Intro

The "blocks" of the diagrams on the preceding pages do not necessarily represent one single screen, but may actually represent a set of screens organized in either the same navigation structure or a completely different one.

The following diagram illustrates a combination structure:



If the primary navigation structure is illustrated using a series of boxes representing the overall flow of a program, the secondary navigation structures are what occur within each of those boxes. For example, the combination structure illustrated above uses a linear structure as the primary structure, however the second block is a hub structure and the fourth block is a hierarchical tree; this hierarchical tree ends with another hub structure.

NOTE: The number of combinations is endless; whatever your requirements to achieve and/or test your objectives, a structure can be designed that will be an absolute fit.

The role of interactions

Interactions play a major role in navigation structures. It is through interactions these structures are executed (e.g., a hub structure may be achieved through the use of an image map).

Summary

Key points

Although there are really only a few major navigation structures, they can be combined and nested into an unlimited number of variations. The major structures covered in this section include:

- Linear
- Cyclical
- Hierarchical Tree (Unbound)
- Hierarchical Tree (Bound)
- Hub
- Nodal Web
- Web

Note: No matter what kind of timeframe you're working with, one of the most helpful things you can do is to layout a course map and flowchart of your training. Plan your learning sequences, basic interactions, and navigation structures before you begin writing a single screen of your course.

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