Knowledge Building System  
Version 1.0

# Design Foundations

## The Definition of Knowledge

* A video game system where characters need to build ‘Knowledge’ to be able to perform all the actions in-game.
* ‘Knowledge’ is gained by ‘Learning’ using a character’s ‘Cognitive Systems’ and ‘Memory Systems’.

## Text Generation In-Game (Sensory Memory)

* Text is generated in the game for the player to read as is typical in many games.
* This text is created immersively from hearing NPCs talk, the player using reading materials, and the player’s internal thought processes which expresses itself in text.
* The text will be presented to the player in a window on screen for them to read. The display area will be called ‘Sensory Memory’. As things continue to occur in the game, the Sensory Memory window will generate new text at the bottom and roll off the oldest text at the top as the window fills up.
* If the text is allowed to roll off the screen, it cannot be accessed again.

## Text Storage System (Short-Term Memory)

* As noted in 1.1, text will be generated on screen in a window labeled as ‘Sensory Memory’. The text can also be stored in another area of the game called ‘Short-Term Memory’.
* The Short-Term Memory stores all the text displayed in the Working Memory in sequential order up to a limit of characters where the oldest text will roll off the screen and become inaccessible. The Short-Term Memory area has a much greater capacity for text than the Working Memory area.

## Text Parsing in Memory Systems (Working, Short-Term, and Long-Term)

* Within , the player can interact with the text through a ‘Text Parser’.
* A Text Parser is a software component that breaks a series of text into smaller parts based on a set of rules. The Text Parser has various capabilities that require the player to apply their character’s ‘Information Processing Systems’ to access the different functions.
* The ultimate purpose of the Text Parser is to provide the player with units of words that can be organized and combined in various ways to create text information that is stored in ‘Long-Term Memory’.
* NOTE: Both the ‘Text Parser’ and ‘Information Processing Systems’ will be addressed in more detail in later sections. For now, we will continue to lay out how knowledge is organized in the game.

## Information in Long-Term Memory

* Long-Term Memory is where text information is stored in large quantities for a long period of time, if not permanently.
* The text stored in Long-Term Memory is created by the player in the Short-Term Memory using the Text Parser. This text represents ‘Knowledge’ the player knows about the game world.

## Categorization of Knowledge

* Knowledge in the game is organized and composed of various elements including a system to organize knowledge into ‘Knowledge Categories’ to be able to categorize the knowledge to allow for the locating and organization of information for later use in game.
* Knowledge Categories include ‘General, Domain Specific, Values & Beliefs, Experiences, and Sub-Conscious’. Below each of the categories is a hierarchy of sub-categories to further organize and categorize the information.
* Eventually the bottom level of hierarchical organization for each knowledge category is reached to reveal ‘Concepts’ where actual text information that player develops from the Text Parser can be arranged and organized into ‘Conceptual Frameworks’.

## Concepts & Conceptual Frameworks

* Concepts are composed of a word or compound word title with different kinds of templates that player fills words into using the information from the text parser.
* As the templates are filled-in, various effects will happen affecting all areas of the game. This is meant to simulate how gaining knowledge in life leads to more and more opportunities and possibilities.
* As concepts are more understood, levels of mastery will be obtained by applying the concepts to the game world.

## Next Steps

* Detailed description of Text Parser and how on-screen text is processed into knowledge.
* Detailed description of Information Processing Systems characters have and how that interacts with the Text Parser.
* Detailed description of the hierarchies of Knowledge Categories which will look slightly different for each unique main category.
* Detailed description of the various Conceptual Framework templates as required. There are many methods on the ideas list to implement across the various types of concepts that are sure to emerge.
* Detailed description of the application and mastery of concepts.

# Text Parsing System

## Notes

* The tradeoff could come in that short term memory can only hold so much stuff, so you have to choose what to include or remove before you can ‘process’. This would mean you cannot flip back and forth but still this might work.

## Initial Text Appearance

* Text is generated in the game window called Working Memory. The Working Memory has limited capacity for text.
* As the player interacts with the game world, text will be generated in the working memory window. The player controls when more text comes into the window by pressing a key to advance to the next section etc.
* If the player advances Working Memory window text without doing any Text Parsing to it, all the bulk text will move to Short-Term Memory. This will quickly fill up the Short-Term Memory where the oldest text will roll off screen and become inaccessible to the player.

## Working Memory Text Parsing

* The main focus of text parsing in the Working Memory window is to eliminate text that has no knowledge building use to save space for processing in the Short-Term Memory.
* Text parsing in the Working Memory also the player to devise responses to direct communications such as when an NPC is talking to the player character, and the player needs to formulate a response using constructed knowledge made with the Text Parser in Working Memory.