



# An empirical study of narrative imagery in implicit and explicit contexts



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## ABSTRACT

This study investigates if imagery is an inherent construct to narrative by playing a role in storytelling and comprehension. Visualization activities consist of ones that depend on pictures or physical objects and those do not depend on extraneous visual artifacts. The understandings of both types of visualization will contribute to their application and integration. In light of rapid development of technology and drastic increase of multimedia representations in social communication, applying storytelling approach to system design is increasingly relevant to many researchers who are eager to bring visual thinking to the classroom, alternative to applying physical visual artifacts. In this study, we looked into the cognitive process evoked in the comprehension of narrative and its similarity to imagery as an individual cognition. We transformed a course into conversational narrative and participants were randomly assigned into three sections, two were in narrative text and one was in expository text. Sections 1 and 2 were in narrative text, but only participants from section 1 were prompt for image creation before writing essays. Section 3 was in expository text and participants were also prompt for image creation before writing essays. The independent samples *t*-test was used to compare the mean scores of three groups on creativity score and word total across the sections. Our study found that narrative was able to activate the imagery world of the participants without giving them further instructions explicitly suggesting so. The implicit imagery context created by reading narratives had a stronger impact on creativity than that of explicit imagery creation context that did not involve of narrative comprehension. The study suggests that narrative innately provides some sort of control to its user cognitively and can be integrated with other types of media in design.

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## 1. Introduction

Under the new era of information transfer, educators are facing the task of designing rich instructional content by innovatively applying content development methods to various contexts. Among the methods, adopting storytelling in content design is an interest of many educators who want to expand the boundaries of teaching and learning in formal education by encouraging originality and visual thinking.

Storytelling holds a unique place in content representation due to its syntactic structures and language use. Adopting storytelling in system content design has been suggested to elevate the level of interactivities where the interaction between humans and machine is dominant. This effect can be credited to a meditative process initiated by story reading when one actively participates in the interpretation and generation of meanings. The meditative process also implies a similarity between imagery and visual thinking. Imagery is comparably well-known to scholars in narrative studies and is associated to rich cognitive activities involving deep

thinking, self-awareness, personal world (Battersby, 2006; Bruner, 2004), imagination, and emotions (Gernsbacher, Goldsmith, & Robertson, 1992; Oatley, 1999). Regardless, imagery is not a clearly defined concept in either literature.

### 1.1. Image-making and narratives

As a traditional form of representation, narrative implies that a text transfers a linear structure of thoughts. Chatman (1990) also calls it events-telling. Events-telling can be applied to all representational formats or media, linguistics, image, video, or combination of them. Narrative texts also come in different forms with varied narrativity. Novels, short stories, fairy tales, newspaper articles, and comic scripts are all narrative (Bal, 1997). Films, video games, and most TV shows and advertisements also belong to this structure. In this study, narrative also called narrative text.

The image-making quality of narrative is the key to narrative studies. The image-making quality of narrative has been demonstrated from three domains of knowledge: human oral practice, literature genre, and knowledge representation. In early human history, formal communication is solely depended on reciting a great amount of information by memory. The image-creating

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mediation and the dynamics of composition of narrative in oral performance create seamless continuity between the worlds of narrator and narrate, reflecting the application of mental model. In the literary world, though applying a different type of rhetoric, the image-making quality of narrative has become a familiar concept since the eighteenth century when image-making developed into a significant genre. This literary genre emphasizes the effects of mental imageries and suggests writers to outwardly represent them. In knowledge representation, the image-making quality of narration also has long been recognized. Minsky (1982) argues that typical story plots are image-like narrative frames or scenarios. Empirical studies also emphasize that narrative is important in the education of young children because of the mental activity it encourages (Britton & Pellegrini, 1990; McCabe & Peterson, 1991). The claim that the effect created by reading narratives is similar to that of imagination is a frequent assumption by narrative supporters. Due to this, Chatman (1990) strongly proposes to investigate what accounts for narrative's difference from other written format, argumentation and description.

### 1.2. Imagery as a narrative construct

Narrative has long been seen as a unique method of knowledge representation. As an energetic information carrier, narrative approach has advantages in supporting different cognitive utilities (Britton & Pellegrini, 1990; Bruner, 2002; Bruner, 2004; Chatman, 1990; McCabe & Peterson, 1991; Wertsch, 1991). Several traits known to imagery have been proposed. We summarize the traits in the following table as the imagery construct associated to narrative texts.

In order to appreciate narrative texts, individuals need to apply imagery activities to reach genuine understanding and go through cognitive procedures such as to convey emotions (Frith & Frith, 1999; Gernsbacher et al., 1992), form the concept of self (Battersby, 2006; Bruner, 2004; Foucault, 1997; Gergen & Gergen, 1988), transcend meanings (Green & Brock, 2000; Turner, 1996), and differentiate levels of meanings. As Bruner (1990) suggests, narrative texts throw light on the internal structures of thinking. In knowledge representation, Minsky (1982) argues that typical story plots are image-like narrative frames or scenarios, which allow reasoning by analogy for any content there in and help bridge gaps that logic finds hard to cross. More importantly, these cognitive procedures come from and are supported by sensory data in narrative comprehension (Wu, 2008). Sensory data are context sensitive like time, place, and persons, and are fundamentals of the physical world and form the environment of the individual. Narrative is rich in this context related information. The symbolic function of narrative or imagery allows the blur of the boundary between the pure reactivity and the sensory data, and with the sense of emotion, they truly become one and connotatively so allowing the individuals to broaden their horizons. This is also what Nehaniv (1999) argues about narrative. He suggests that narrative provides a means for agents to escape from the pure reactivity to the sensory data. This is true to imagery activities as well.

In other words, mental activities of imagery and appreciation of narratives both do not only provide an individual with sensory experience when one interacts with the sensory data same as in

the physical world, but they also function as qualitative features and experiences through providing one with emotions or connecting to one's own emotions. "[I]n a variety of ways, narratives provide evidence for the nature of mind" (Chafe, 1990, p. 79). Therefore, there are reasons to believe that narrative creates experiences that are image-making. However, more issues are worthy of study. For example, how would the individual create images while interpreting narrative? Is the impact of narrative imagery detectable? Does narrative imagery contribute to actual cognitive tasks? These questions were the interests of this study.

The values of narrative as a content design method are intuitive to many though its efficient implementation depends on provision of theory and empirical results. Empirical studies of narrative are few (Dunbar, 2005; Herman, 2000). Design criteria and related pedagogies applicable to the adult learning contexts are almost nonexistent. To our knowledge, no study has been carried out investigating narrative effects directly associated to imagery (see Table 1).

This paper reports an experiment that observed the proposed role of imagery in narrative by evaluating student performance in essays writing as one of the major learning tasks. In this study, we did not individually evaluate all the five imagery traits proposed that are related to narrative texts: function as qualitative features and experiences, convey emotions, form the concept of self, transcend meanings through building mental images (like frame, schema with coherence), and differentiate levels of meanings, though several survey questions were applied to collect related information as supportive data in the empirical study. Rather, we verified if there is an imagery construct in narrative comprehension by comparing the creativity of the essays written by two groups of users under if narrative is the study context or not. The understanding is that it is rather fruitful to evaluate this narrative imagery role through its cognitive tasks involved. Also in this, we assumed that creativity and imagery are correlated, and imagery supports creativity. This is also supported by the literature background discussed later. In addition, we were interested to know the difference between narrative imagery implicit to the narrative comprehension and imagery prompted by encouraging explicit image creation with or without narrative context. The distinction between imagery in an implicit context and an explicit context can further tell us the role of narrative imagery.

In the study, we transformed the content of an online short course into using scenarios as two major characters converse over different aspects of the course topic. This is an online course for a certificate program for library and information science profession for professional training. The transformation of the course content format allows the empirical contrast between conversational narrative text and plain text (similar to lecture notes) that were offered to different student groups.

## 2. Literature background

### 2.1. Imagery and cognitive functions

The experience of mental imagery has nonpropositional structures. Imageries function as markers and artifacts to separate

**Table 1**  
Imagery construct of narrative texts.

Function as qualitative features and experiences	Chafe (1990) and Wu (2008)
Convey emotions Form the concept of self	Frith and Frith (1999) and Gernsbacher, Goldsmith, and Robertson (1992) Battersby (2006), Bruner (2004), Foucault (1997), and Gergen and Gergen (1988)
Transcend meanings through building mental images (like frame, schema with coherence)	Green and Brock (2000) and Turner (1996)
Differentiate levels of meanings	Bruner (1990) and Minsky (1982)

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