



## Contemporary Issues

## Integrating Leonardo da Vinci's principles of demonstration, uncertainty, and cultivation in contemporary nursing education



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## SUMMARY

Nurses today are facing an ever changing health care system. Stimulated by health care reform and limited resources, nursing education is being challenged to prepare nurses for this uncertain environment. Looking to the past can offer possible solutions to the issues nursing education is confronting. Seven principles of da Vincian thinking have been identified (Gelb, 2004). As a follow-up to an exploration of the *curiosità* principle (Butts & Story, 2013), this article will explore the three principles of *dimostrazione*, *sfumato*, and *corporalita*. Nursing faculty can set the stage for a meaningful educational experience through these principles of demonstration (*dimostrazione*), uncertainty (*sfumato*), and cultivation (*corporalita*). Preparing nurses not only to manage but also to flourish in the current health care environment that will enhance the nurse's and patient's experience.

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## Introduction

Nursing education has been called to action by recent reports from the Institutes of Medicine (IOM) (2011), the Robert Wood Johnson Foundation (RWJF) (2010), and Benner et al. (2010). This call has mandated that the profession changes how it educates young nurses to meet the changing landscape of healthcare and needs of new generations. Radical change in education steeped in tradition is no easy task, but the past just may offer potential solutions and guidance to answer this call to change by exploring the innovative works of one of history's greatest thinkers, Leonardo da Vinci.

Leonardo da Vinci's genius continues to set the standard of scholarly inquiry far beyond the Renaissance Period in Italy. Gelb (2004) examined Leonardo's works and developed *Seven Da Vincian Principles* that reflected Leonardo's everyday genius. Gelb's intense study of Leonardo moved him to express passion for and amazement of his work, "As I learn more about Da Vinci, my sense of awe and mystery multiplies. All great geniuses are unique, and Leonardo was, perhaps, the greatest of all geniuses" (2004, p. xiii).

The seven principles include: *curiosità*, *dimostrazione*, *sensazione*, *sfumato*, *arte/scienza*, *corporalita*, and *connessione*. Through enacting these principles, Gelb (2004) aimed to unleash the boundlessness of the human potential. Leonardo's approach to learning and cultivation of intelligence can be applied to inspire and guide individuals to meet their full human potential. Having previously delineated the benefits of

Leonardo's principle of curiosity in a more authentic learning experience (Butts and Story, 2013), the authors focus this article on three of Leonardo's seven principles—*dimostrazione*, *sfumato*, and *corporalita*—as identified by Gelb. When appropriate, other literature directly interpreting Da Vinci's work or relevant to the concepts identified by Gelb will be presented to substantiate those notions. Similarly, this article will provide an explanation of these three principles, connection of these principles to nursing education, and exemplars for their use in nursing education or the clinical setting. With the recent calls to action, these authors' hope that this series of articles will stimulate critical debate, critique of current practices, and innovative thinking about nursing education while offering possible solutions gleaned through the authors' personal experiences. Additionally, the value and challenges of implementing such strategies will be explored.

*Dimostrazione*

According to Gelb (2004), *dimostrazione*, or demonstration, is the dedication to test knowledge through experience, persistence, and a willingness to learn from mistakes. At the heart of this principle is making the most out of every experience by questioning established dogma. This questioning, often generated through curiosity, initiates the testing of conventional wisdoms. Leonardo's type of direct observation led to reasoning contemplation and empirical scrutiny (Wray, 2005). Leonardo explained this principle in his own words.

To me it seems that all sciences are vain and full of errors that are not born of experience, mother of all certainty...that is to say, that

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do not at their origin, middle or end, pass through any of the five senses.

[(Wray, 2005, p. 9)]

Leonardo's independent thinking and questioning of authority embodies this principle. In the midst of superstition and astrology, Leonardo was learning by discovery and experience. Discovery and experience does not mean that the learning process is mistake free. For individuals making mistakes and learning from them will often uncover the greatest genius. Case in point, one of Leonardo's most notable artistic accomplishments, *The Last Supper*, is riddled with errors (Clark, 1952). Leonardo did not stop learning or trying despite failures and mistakes. Eyewitnesses to Leonardo and experts studying his work recognized his demonstration of persistence and his multiple intelligences as phenomenal. Leonardo even recognized his own persistence and abilities as strengths and secrets of his genius and expertise as a scientist in various sciences, mathematician, astronomer, painter, sculptor, philosopher, and inquisitive thinker. That persistence and willingness to learn from his mistakes added to his genius.

Questioning establishment goes back to the time of Socrates, circa 469 to 399 B.C., or even earlier, in Athens, Greece (Xenophon, 1923). Socrates' eloquent and oracle questioning and testing of knowledge through experience, demonstration, and persistence in public forums became known as the Socratic Method (May, 2000). Socrates' striving for the improvement and perfection of one's rational self is an example of a demonstration of persistence and willingness to learn from mistakes.

A demonstration of persistence in learning new things and willingness to learn from one's own mistakes first begins with questioning the established and traditional way of life. For instance, nursing students and faculty are rooted in a certain traditional culture of teaching and learning. When nursing students begin learning within their roots and the roots of the traditional nursing learning culture, these roots provide the basis for questioning the old, learning from mistakes, acquiring new knowledge, and then demonstrating a transformation of knowledge into practice.

### Sfumato

Facing and embracing the unknown, or uncertainty, is the centerpiece of the sfumato principle, which literally means "going up in smoke," or evaporating (Gelb, 2004). This principle holds open those things that are ambiguous, paradoxical, and uncertain. Sfumato in art refers to painting with translucent layers of color so that a deep volume and form are created. Going up in smoke, or uncertainty and tension of opposite sides, is a label used by Gelb (2004) and others to capture the meaning of sfumato. Leonardo was famous for the technique

of sfumato as he used these transitions to create depth and form, which produced a smoky, hazy, and blending quality (Clark, 1952; Gelb, 2004). Leonardo underscored his art and science forms through many written entries, convoluted doodles in his notebooks, and his obsession with hair plaits and tendrils. His stunning paintings and drawings with knots and elaborate interlacing nonstop lines revealed his own complexity, uncertainty, and genius as well as his uncanny ability to recognize and embrace his pursuit of the unknown.

Leonardo's endless questioning and attention to detail led to superior insight and magnificent discoveries, but he was also faced with the enormity of the unknown and uncertainty. The tensions of discovery through questioning and uncertainty became a theme in some of his most notable works, such as *The Mona Lisa*. An example of Leonardo's use of sfumato in the *Mona Lisa* was his blending of the tones to eliminate sharp lines, creating an evaporating, uncertain atmospheric effect. The many mysteries behind her smile and perfect beauty have baffled scholars to date (Gelb, 2004).

Uncertainty is ubiquitous and affects everyone (Lindley, 2006). Each human being lives with uncertainty. When the uncertainty meter rises, the person often begins to experience undesired emotions that are not always understood and result in unwanted bodily sensations such as a sickening feeling. Uncertainty has been studied consistently in the 20th century, especially in the mathematics discipline where logic and probabilities are statistically calculated. Lindley (2006) spent years studying probabilities and logic using Bayesian statistics. Only a rare number of objective uncertainties exist on which most all people agree. Lindley (2006) gave the example of uncertainty as gambling. Uncertainty in everyday life occurs on a uniquely personal level between self and the world. Most people do not have comfort when they experience a personal sense of uncertainty, thus they often deny its existence or neglect to acknowledge or embrace it. Lindley (2006) emphasized that in order to understand and cope with uncertainty, people need to recognize its existence, bring it out in the open, and embrace it. Leonardo embodied uncertainty in this very way as evidenced by his daily life and ways of being in the world (Gelb, 2004).

Having a high tolerance for ambiguity is a desirable quality of genius as holding on to illusions, or maybe more accurately delusions, of certainty become harder to maintain. Composure in the company of paradox is necessary to maintain sanity in a rapidly changing world especially with the information inundation that people of modern society experience (Gelb, 2004). In nursing, for example, uncertainty is everywhere—in education, in practice, and in decision making. Nursing students must learn to tolerate a level of ambiguity in learning, in clinical practice, and in decision making in general. Ambiguity can be viewed as a more sound way to decision making. Benner et al. (2010) emphasized a need for clinical reasoning and multiple ways of thinking to bring about integration between nursing education and practice. Considered judgments and intuitive expertise in practice result from clinical reasoning that originated from uncertainty.

### Corporalita

Leonardo stressed the importance of cultivating physical attributes while maximizing intellectual abilities. Leonardo's physique was just as legendary as his genius, as evidenced by the Amboise Leonardo Da Vinci statue, and his physique often being his and others' subject of inquiry. The Amboise statue distinguishes the principle of corporalita, which is a term that represents a system's thinking or holistic approach to life, interconnects all things, and is a cultivation of grace, ambidexterity, fitness, and poise (Gelb, 2004). In addition to a system's thinking approach, one centerpiece to this principle is that exercise and diet promote health and well-being. Leonardo's holistic approach to health included an upfront and personal set of rules (Gelb, 2004; see Table 1). Holistic health promotion dates back more than 5,000 years and was based

**Table 1**  
Da Vincian rules for health.

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- Be aware of anger and avoid grievous moods.
  - Rest your head and keep your mind cheerful.
  - Be covered well at night.
  - Exercise moderately.
  - Shun wantonness, and pay attention to diet.
  - Eat only when you want and sup light.
  - Keep upright when you rise from the dining table.
  - Do not be with the belly upwards or the head lowered.
  - Let your wine be mixed with water, take a little at a time, not between meals and not on an empty stomach.
  - Eat simple (i.e., vegetarian) food.
  - Chew well.
  - Go to the toilet regularly!
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Quoted from: Gelb (2004). *How to Think Like Leonardo da Vinci*. New York: Delta Trade Paperbacks, p. 194.

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