

# The Impact on Final Sculpture by the Sequence of Parts: Exemplified by the Architecture Geometry in DefiZen Puzzle Block

劉宣麟、鄧志堅

E-mail: 364914@mail.dyu.edu.tw

## ABSTRACT

The purpose of this study is to investigate the influence of information sequence on the final interpretation of information package proposed by Edward De Bono. As brain is a self-organizing system, the information come earlier will dominate the shape of information package as new information come along the way. It is because the information is stacked up in the brain as the brain processes it. Two kinds of building blocks, DefiZen and Kongming lock, is used to illustrate this theory. Twelve subjects are selected and given with a fixed sequence and a random order sequence, respectively, to compare the final results of the building blocks with the corresponding one of standard building blocks and evaluate its difference. The fixed sequence is constructed in accordance with the reasonable steps in building the standard building blocks. Whereas the random order sequence is generated by computer randomization. The KJ method is used to cluster the results of the experiment according to the similarity of Dendrogram to evaluate the differences between various experimental results and standard pattern. Looking at the twelve subjects' works in the experimentation, the results show that the similarity difference between DefiZen house blocks and its standard model in fixed sequence is 61, whereas the difference in random order sequence is 75. This means that to work out the standard house blocks the fixed sequence is easier arranged than the standard model. In Kongming lock experiments, there are four experiments fail to complete the assembly when using the fixed sequence, whereas eight experiments fail when using the random order sequence. This also shows that in assembling the Kongming lock the fixed order sequence performs better than the random order sequence. According to these two experiments, the fixed sequence is clearly better than the random order sequence in terms of completing the standard model blocks. This also shows that the order of the information indeed influences the final interpretation of the information package.

Keywords : Cluster

## Table of Contents

封面內頁 簽名頁 摘要 iii ABSTRACT iv 誌謝 vi 目錄 vii 圖目錄 ix 表目錄 xiii 第一章 緒論 1 第一節 研究背景 2 第二節 研究動機 2 第三節 研究目的 3 第四節 研究限制 4 第五節 研究的架構與流程 4 第二章 文獻探討 6 第一節 思考法的概念 6 第二節 積木之定義與歷史 13 第三節 幾何圖形辨識 25 第四節 KJ法 27 第三章 研究方法 29 第一節 Rhinoceros的介紹 29 第二節 水平思考式積木繪圖程序 29 第三節 垂直思考式積木繪圖程序 43 第四節 KJ法的應用 59 第五節 集群的應用 59 第四章 先前實驗與實驗過程 61 第一節 先前實驗 61 第二節 實驗過程 69 第五章 結論與建議 108 參考文獻 110 附錄一 112 附錄二 113 附錄三 114 附錄四 115 附錄五 116 附錄六 117 附錄七 118 附錄八 119 附錄九 120 附錄十 121

## REFERENCES

- 1.川喜田二郎(1983), 發想法 - 創造性開發????, 中央公論社, 東京。
- 2.五十嵐 加奈子(2009), 樂高積木的創意奇想世界, DK出版社, 倫敦。
- 3.李宏偉(1997), 應用水平思考法(一), 桂冠圖書股份有限公司, 台北市。
- 4.李宏偉(1997), 應用水平思考法(二), 桂冠圖書股份有限公司, 台北市。
- 5.沈士涼(1987), KJ法應用實務, 超越企管顧問股份有限公司, 台北市。
- 6.唐芸洲(1895), 中外戲法圖說。
- 7.陳龍安(2007), 創意思考教學的策略與技法, 開創教學新境界-創意教學的理論與實務國際學術研討會, 頁95-130, 高雄市。
- 8.黃山?(2010), 創意教學對學童創造力與問題解決能力影響之研究: 以樂高機器人為例, 大葉大學工業工程與科技管理研究所碩士論文。
- 9.蕭孟莛(2007), 五連方塊組合試題難度之探討, 國立臺灣科技大學技術及職業教育研究所碩士論文。
- 10.謝君白(1996), 水平思考法, 桂冠圖書股份有限公司, 台北市。
- 11.Arnold, G. and C. Frank. (1857). The Magician's Own Book, Dick & Fitzgerald, New York, NY.
- 12.Bishop, A. J. (1980) Spatial abilities and mathematics education---A review. Educational Studies in Mathematics, 11, 257-269.
- 13.Duval, R. (1995). Geometrical Pictures: Kinds of Representation and Specific Processings. In R. Sutherland & J.Masan's (Eds.), Exploiting Mental Imagery with Mathematics Education, 61,142-157. Springer, Berlin.
- 14.Wyatt, E. M. (1997) Wonders in Wood: 46 Puzzles and Other Novelties to Make and Solve, 2nd Ed., Linden Publishing, Fresno, CA.
- 15.Freudenthal, H. (1971) Geometry between the devil and the deep sea. Educational Studies in Mathematics, 3, 413-435.