# HKIER Newsletter

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## Research Notes and Innovations

# Virtual Scaffolding in Serious Gaming

*By Prof. Morris Jong (CAITE)*

The rapid development of information and communication technology (ICT) over the last decade has largely changed the landscape of human interactivities. Researchers and educators have been looking for innovative and pedagogical use of ICT for supporting learner-centric education. Constructivist online game-based learning (COGBLe) is one of the important areas attracting a lot of attention these years.

Contemporary COGBLe work can be divided into two main genres, namely EIG (education in games) and GIE (games in education). The former focuses on leveraging *commercial off-the-shift games*, making use of existing "educative" contents in the games for educational purposes. The latter focuses on developing *serious games* which are underpinned by specific pedagogical paradigms and implemented with particular educational objectives and contents.

In the *New Media Consortium Horizon Report 2015*, "games and gamification" is regarded as one of the most important developments in technology for K–12 education in the coming triennium. Prof. Morris Jong and his research team members have been investigating the possibility of introducing COGBLe into formal school education. One of their GIE initiatives is VISOLE (Virtual Interactive Student-Oriented Learning Environment) — a pedagogical approach to integrating serious gaming into formal curriculum learning and teaching in schools. Drawing upon the VISOLE pedagogy, they developed Farmtasia®, a multi-player online serious game based on a thematic topic, *Agriculture*, in the Hong Kong secondary geography education curriculum. Prof. Jong showed that VISOLE had significantly positive pedagogical effects on the majority of students in his previous

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evaluative study, except for those (non-gamer students) who had no or very little prior experience and interest in online gaming.

Rather than simply concluding that VISOLE (or serious gaming) is unsuitable for non-gamer students, in his Early Career Scheme (ECS) project grant funded by the Research Grants Council (RGC), Prof. Jong and his team have further investigated how to enhance the game design of Farmtasia® so as to better facilitate the learning/gameplay process for non-gamer students. Drawing on the notion of virtual mentoring, they have introduced a number of *non-player characters* (NPCs) functioning as "virtual scaffolds" into Farmtasia®. These NPCs will appear in the early rounds of the game. For instance, players will meet an NPC, *the orchardist*, when preparing to plant fruit trees in the orchard, and will meet an NPC, *the agricultural biochemistry specialist*, when planning to purchase fertilizer

and feed to be used in the farm. The interactions between players and the NPCs in the revised version of Farmtasia® are in the form of dialogues. While interacting with different NPCs, they will obtain guidance on how to manipulate different gameplay operations for carrying out various tasks related to cultivation, horticulture, and pasturage. Through the dialogues, they can also learn how to look up and make use of the contextual information in the virtual world (such as date, time, temperature, humidity, wind speed, and market prices of various farm products) when deriving operational strategies to yield quality farm products. Moreover, according to players' on-going gameplay process, the NPCs will proactively appear in the game and provide them with just-in-time advice via additional dialogue moves, such as pumping for supplementary information, corrections of misconceptions, and requests for the player to perform specific actions in the game.

01  Prof. Morris Jong and his research team
    members
02  NPC in Farmtasia®: Orchardist
03  NPC in Farmtasia®: Agricultural
    biochemistry specialist

In a recent learning experiment involving 128 non-gamer students, Prof. Jong has compared the effectiveness of the revised version of Farmtasia®, i.e., with the NPC scaffolds (the experimental group) with that of the original version (the control group), in terms of knowledge acquisition. In the experiment, the experimental-group participants significantly outperformed the control-group participants, with a considerable effect size. The findings of this study have been disseminated in Prof. Jong's recent keynote speech delivered at the 23rd International Conference on Computers in Education.

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## Awards

Professor Morris Jong has been awarded the Early Career Researcher Award 2015, conferred by the Asia-Pacific Society for Computers in Education (APSCE). The award presentation ceremony was held at the 23rd International Conference on Computers in Education in December 2015.

At CUHK's Teaching and Learning Innovation Expo 2015 held in December 2015, our project "Flipped Teaching for Excellence in Methodology Training for Teachers of English in Primary and Secondary Schools" was awarded the Poster Commendation Award. This project was supported by the Micro-Module Courseware Development Grant 2015, CUHK. For more details about the project, please visit: http://caite.fed.cuhk.edu.hk/projects/english-flipped/



Prof. Jong receiving the Early Career Researcher Award

## Newly Funded Projects in the Academic Year of 2015–2016

| Project title | Period | Funded by | Principal Investigator | Co-Investigators |
|---|---|---|---|---|
| Harnessing Mobile Technology in Outdoor Experiential Learning: Teacher Facilitation in Context-aware Social Inquiry Activities | 01/2016–12/2017 | Research Grants Council | Morris Jong | Tom Chan, Leo Hue, Vincent Tam, Sui-chu Ho |
| Does Test Enhance Memory Under the Influence of Divided Attention and/or Anxious Mood? | 01/2016–12/2017 | Research Grants Council | Chi-shing Tse | W. H. Wong, Wai-shing Tse |
| Effective Use of Cloud Computing to Facilitate e-Learning in Schools | 01/2016–12/2016 | Education Bureau | Morris Jong | Qiao-ping Zhang, Wilfred Lau, Vincent Tam, Chi-shing Tse |
| Specification for Enhancing WiFi Infrastructure in Schools | 01/2016–12/2016 | Education Bureau | Morris Jong | Weiqin Chen, Junjie Shang |
| Parent Education on e-Learning | 01/2016–12/2016 | Education Bureau | Morris Jong | Wilfred Lau, Chi-shing Tse |
| Information Technology in Education Professional Development for Teachers in Special Schools Admitting Students With Intellectual Disabilities | 11/2015–02/2017 | Education Bureau | Morris Jong | Chi-shing Tse, Leo Hue, Chi-hung Leung |
| To Enhance Students' Interaction and Collaboration by Computer-supported Collaborative Learning Systems | 10/2015–09/2016 | Education Bureau | Morris Jong | Chi-shing Tse, Tom Chan |
| Effective Use of Free Learning Management Systems to Facilitate the Implementation of e-Learning | 10/2015–09/2016 | Education Bureau | Morris Jong | Chi-shing Tse, Wilfred Lau |
| Writing Mobile Apps for Investigative Study of Physics | 04/2016–03/2017 | Education Bureau | Morris Jong | Yip-cheung Chan, Junjie Shang, Chi-shing Tse |

## New Publications

- Jong, M. S. Y., & Dong, A. M. (2015). Meta-work on leveraging COGBLe in formal school education. In T. Kojiri, T. Supnithi, Y. Wang, Y.-T. Wu, H. Ogata, W. Chen, S. C. Kong, & F. Qiu (Eds.), *Workshop proceedings of the 23rd International Conference on Computers in Education* (pp. 692–695). Hangzhou, China: ICCE 2014 Organizing Committee.

- 莊紹勇、蔣宇、董安美（2015）。《遊戲化學習》。北京，中國：北京師範大學出版社。

**Programmes for Professional Development**

## 校董基礎培訓課程

在校本管理精神下，資助學校在運作上享有更大自主權，亦可靈活運用資源，給予學生優質教育；學校亦須增加透明度，加強問責機制，並容許主要持份者參與校政決策。身為法團校董會成員，校董須帶領學校改善工作，並推動學生全人發展，角色至為重要。香港中文大學自2011–2012年起受教育局委託及資助，開辦校董基礎培訓課程，協助現任及擬任校董了解其角色與權責，以及學校行政運作和管理技巧。課程協同主任為彭新強教授及譚偉明博士。直至本年度，估計報讀人數累計已超過三千人。

課程分為課程甲和課程乙，前者是為不熟悉教育及學校運作的人士舉辦，而後者則為熟悉教育及學校運作的人士舉辦。於2015–2016年，還試辦了課程S，為辦學團體屬校校董舉辦，使他們掌握有關法團校董會運作的重要知識。每所學校法團校董會的校董以團隊形式完成全部五個課節合共15小時課程。

課程S旨在：（1）令學員深入了解相關辦學團體的辦學理念，及其為屬校所訂定的抱負及辦學使命；（2）使參與的每個法團校董會校董團隊，在校本管理精神下，對校董的角色與功能有更深入的理解；

（3）拓展其對教育議題的視野，為學校的改變及改進作好準備。

課程S五個課節共有10個單元，包括：

- 單元一：辦學團體的辦學理念、學校的抱負及辦學使命
- 單元二：與法團校董會運作相關的重要文件（例如：法團校董會章程、辦學團體與法團校董會間的服務合約等）
- 單元三：學校問責與校董領導的角色和責任
- 單元四及五：學校人力資源管理的理念、政策與規劃
- 單元六：財務管理與監控
- 單元七：學校管治的法律議題
- 單元八：有效組織法團校董會會議
- 單元九：支援學生多元學習的需要
- 單元十：學校、家庭與社區聯繫

校董基礎培訓課程本年度仍在招生，費用全免。有興趣的人士可按個別培訓需要，選擇合適的課程，詳情可瀏覽網頁（http://www.fed.cuhk.edu.hk/schoolmanager/）。