Completion Report
Project Supported by LTC/OBA Funding*

(Period covered: <u>05/06/2008</u> – <u>31/10/2011</u>)

Part I: General Information

Funding Source (please tick ✓ as appropriate): ☐ LTC ☑ OBA Funding

Project Code:	2007-08/OBA/SD2 (8B1M)	**Host Department:**	SD

Project Title: Design Play Toolkit - Interactive Education Toolkit Integrating of Capstone Project Development Processes for School of Design

Project Team:

Project Leader (Name & Dept):	Team Member(s) (Name & Dept):
Rémi Leclerc (SD)	Bruce Wan (SD)

Part II: Project Details

1. Financial Information

(a) Overview

Approved Funding:	+	Additional Funding Received (if any):	=	Total Funding Received:

Source of Additional Funding:	

(b) Project Expenditure (see appendix)

Please refer in appendix to the Financial Statement for Design Play Toolkit-Interactive Education Toolkit Integrating Capstone Project Development Processes for School of Design for the period ended 23 July 2012 (Work Programme: 8B1M).

2. Project Schedule

	Start date (dd/mm/yyyy):	Completion date (dd/mm/yyyy):
Dates as Stated in Original Proposal:	15/05/2008	15/01/2010

	Start date (dd/mm/yyyy):	Completion date (dd/mm/yyyy):
Actual Start and Completion Dates:	05/06/2008	31/10/2011

	Total no. of extension(s) obtained :	Obtained during the project period:
Project Period Extension(s) (if any):	3 time(s)	For a total of 21 month(s)

Reason(s) for Extension(s) (if any):	Difficulty in finding suitable RA and service provider for the development of a Rich Internet Application (RIA) demonstration unit and animation.

* *LTC: Learning and Teaching Committee*
   OBA Funding: Funding for Promoting Outcome-Based Approaches to Student Learning

3. Project Implementation

(a) Project objectives

Laying appropriate foundations for the development of a project is perceived and generally accepted in the design discipline as insurance for a successful outcome, a guarantee of success. Or so it seems.

Through learning by doing, School of Design (SD) students at The Hong Kong Polytechnic University (PolyU) are acquiring the skills necessary for defining such foundational project components as a project brief or a design process.

However, while they should be enjoying the process, many are struggling to produce outcomes that are relevant to these processes, hence failing to create appropriate learning and design value from their projects. This suggests there may be discontinuities in their network of ambitions and perspectives, thus threatening their attainment of learning outcomes, more specifically in Capstone projects, where students are required to demonstrate holistically their competence in line with the programme outcomes, integrating generic competences such as design brief analysis, project planning, or research and analysis into formal academic knowledge and professional skills.

An initial enquiry into the reality of students' experience of the initial project development phases leading up to a formulation of a design statement and early specifications for a design concept has provided insight into the critical process within student projects. More specifically this research project focused on the way students link developmental steps, and how disruptions in this fundamental initial stage of the project occur.

Based on findings from this initial PolyU DGRF-funded research project (Design Play – An Inquiry into Design Education Processes in Hong Kong's Multicultural Contexts), this implementation project intends to establish a set of specifications for the definition of an appropriate interactive design education toolkit. Its aim is to enhance student learning experiences of Capstone project development processes for SD cross-cultural contexts.

More specifically the project's objectives are to:
- Assist SD educators in controlling student's attainment of Client and Capstone Projects' complex set of subject Learning Outcomes and integrating generic skills with professional outcomes.
- Assist SD students in contextualizing the relevance of integrating both process and outcome in design's holistic cultural practice.
- Support SD's transition from teaching-centered to student-centered learning practices
- Enhance SD students' ability to ascertain the relevance and limitations of their control over the creative process.
- Improve the alignment of SD's subdegree and undergraduate learning outcomes to facilitate student articulation to higher studies
- Enhance Capstone Project development learning experiences for School of Design crosscultural contexts.

(b) Overview of specific work undertaken for achieving the project objectives (including any changes to original proposal)

Preliminary assessment for initial iteration of outcomes: Review of DGRF Design Play Research Project
1. Assessment of needs based on preliminary DGRF-funded Design Play research project: An Inquiry into Education Design Processes in Hong Kong's Multicultural Contexts
3. Establishment of a set of specifications for the definition of an appropriate interactive education design process toolkit
2. Interviews with staff and students
3. Toolkit initial iteration

Design Play Toolkit initial iteration trial runs in semester 1 "client" capstone projects
1. Toolkit trial runs in subdegree and undergraduate "client" capstone projects
2. Student /teacher toolkit assessment: collection of questionnaire feedback
3. Pilot Study 2 toolkit trial run assessment report

Design Play Toolkit interim iteration trial runs in semester 2 "final" capstone projects
1. Toolkit trial runs in subdegree and undergraduate "final" capstone projects
2. Student/teacher toolkit assessment: collection of questionnaire feedback
3. Pilot Study 3 toolkit trial run assessment report

Implementation - Design Play Tool kit final iteration
1. Review of trial runs

2. Integration of review in toolkit models, RIA demonstration unit, and animation video

Dissemination of outcomes
Dissemination of outcomes in curricula, conferences, and seminars

(c) Difficulties encountered, if any, which have affected progress, and remedial actions taken

- Difficulty in finding suitable RA and service provider for the development of a Rich Internet Application (RIA) demonstration unit and animation video significantly delayed completion and submission of deliverables, resulting in an overall 21 months extension of project period.
- Approved funding did not match requested funding. As a consequence the team experienced difficulty in meeting the project's objectives. Nevertheless Investigators devised a series of models and tools integrating Design Play knowledge for dissemination of elements and principles applicable in design curricula and project development.
- Whereby more experienced designers such as postgraduate students, practitioners, and academics, seem to appreciate and accept the value of the toolkit, unsurprisingly undergraduate novice and junior students take a longer time to appreciate the system as a valuable pedagogical and professional instrument. An integration of Design Play knowledge into visual tools and models enforced better appreciation of the toolkit.
- Reticence from colleagues in adopting a model they are not familiar with has resulted in it not being applied in certain curricula. This could be the model is more suitable for product design, interactive design, service system design, branding, and strategic design, hence its successful implementation in curricula teaching those design disciplines. Application for GRF funding was attempted for full development of RIA software on the basis of work done (i.e. an RIA demo unit and an animation video). This was aimed at supporting dissemination among academics and practitioners inside and outside of PolyU. Review of current project may direct a second application.
- Due to post requirements, both investigators were required to discharge heavy administration and teaching duties. Investigators are hopeful the new workload system will free some teaching duties to focus on research.

(d) Deliverables/useful findings/good practices emerged
Overview
This research project has provided Investigators with the knowledge base necessary to further substantiate the relevance of Play to Design, and define specifications for a Rich Internet Application (RIA) demonstration unit, and explanatory animation video. The RIA provides designers and design managers with an innovation and management project tool search engine and a project management visualisation platform.

Users, Personas, and Scenarios
Investigators probed into undergraduate and postgraduate students' appreciation of the relevance of design to play to inform the development of a Play inspired design RIA. These include:
- User interviews
- User experience studies for the design of a RIA Graphic User interface GUI
- Investigation into different levels of design expertise, with undergraduate and postgraduate design students, and novice, junior, and senior design practitioners
- RIA usage scenarios demonstrating three different design practice expertise levels possibly operating the interactive system

Design Play Toolkit
A series of models and tools produced as a result of the investigations helped specify the structure of an RIA demonstration unit, and animation video. Tables 1 and 2 below summarize the dual narrative nature of the Design Play project's structure.

Design Play Toolkit – models and tools
Principles described in the tables below provided the foundation for the development of the following models and tools:
- Design Play innovation Tool Taxonomy: a reasoned categorization of planning, researching, innovation, tools recognised
- Design Play Heptasteps: a diachronic narrative design process narrative radial chart enunciating project step actions, tangible outcomes, cognitive objectives, actions, and tool categories along a learning timeline
- Design Play Continuum: a synchronic narrative design process narrative timeline demonstrating the relevance of Paidia/Ludus (i.e. free play/rule-based game play) play structures to the divergent/convergent, and diachronic/synchronic design process characteristics
- Design Play Roadmap: a synchronic table locating areas of investigation which determine project parameters of tools to be used in design project development steps.

- Design Play Taxonomy: a table aligning play and design activities based on a summary of play theory, and design practices.

Visual Literacy in Design	
Design Principles	Design Elements
Design Play Cognitive Literacy models	
Design Play Continuum	Design Play Taxonomy
Design Play toolkit	
Design Play Heptasteps	Design Play Roadmap
Diachronic	Synchronic
Sequential	Non-linear
Strategies	Tactics
Narrative	Event-based
Cycles	Agile
Syntax	Paradigm
Grammar	Vocabulary

Table 1. Design Play toolkit elements and principles

Design Play continuum iterative cycles	
Divergent	Convergent
Paidia	Ludus
Free Play	Rule-based Game Play

Table 2. Design Play continuum iterative cycles

Design Play Rich Internet Application (RIA) and animation video

Models and tools described above provided the basis for the specification of an RIA demonstration unit and subsequent explanatory animation video. The RIA demonstration unit was developed as a software prototype to test and demonstrate how all models and tools generated on the basis of the knowledge generated by the research project could work as an innovation and project management tool search engine and project visualization platform. The animation video is intended as a walk-through presentation of the software.

Outcomes thus generated include:
- Design of the RIA's GUI and features supporting the design workflow with work space and tool bars
- Development of key features allowing users to identify appropriate design tools:
    - 'Project Brief Scan' document parsing feature identifying project key words for tool identification
    - 'Grabber' design tool search feature
    - 'Search Box' design tool search feature
    - 'Guided Questions' design tool search feature
    - 'Favourite Tool' evaluation feature
    - 'Note' feature for posting personal comments on tool value
    - 'History' of tool search feature
- Development of key features allowing users to visualize design processes
    - Design project flow 'Work Space' feature
    - 'GANTT Chart' project process view feature
    - 'Project Timeline' project process view feature
    - 'Cover Flow' project process view feature showcasing uploaded project outcome visuals
    - 'Table View' project process view feature showcasing uploaded project outcome visuals
    - 'Spiral View' project process view feature showcasing uploaded project outcome visuals
    - 'Tunnel View' project process view feature showcasing uploaded project outcome visuals
    - 'Design Process' feature summarizing design tools used provides users with statistics of tools used in a project.

- Design of the system integrating interactive design toolkit
- Interactive demonstration of the Design Play system
- A 6mn animation video illustrating the system's features and highlighting its value

(e) Dissemination activities taken/planned to sustain impact
Dissemination activities taken: conferences & seminars
- DesignEd Conference at Business of Design Week BoDW 2008 paper presentation and publication in proceedings. Paper title: *Design Play - An Inquiry into Tertiary Design Education Processes in Hong Kong's Multicultural Contexts: Student Perspectives*
- DesignEd Conference at Business of Design Week BoDW 2009 paper presentation and publication in proceedings. Paper title: *Design Play Toolkit - Elements for an Interactive Education Toolkit Integrating Design Development Processes: Initial Iterations*
- School of Design School Research Committee SRC Research Seminar Series 2009
- International Toy Research Association ITRA International Congress Bursa 2011 paper presentation. Paper Title: *Play, Toys, and Design Thinking: Using Toy Design as a Means to Acquire Generic Design Thinking Skills*

Dissemination activities taken: contribution to educational curricula through lectures and application in projects at PolyU
Online sharing of models and tools for design tool identification, process visualization and project management, was made through lectures, screen presentations, seminars, workshops, and tutorials. Course contents varied from application of knowledge in group and individual workshops, or project development.
PolyU School of Design SD
Higher Diploma in Multimedia Design and Technology Subjects
- SD3026 Summer Project (6 Credits, average 12 students)
- SD3004 Independent Project (6 Credits, average 150 students)
Bachelor (Hons) in Design Subjects
- SD400 (6 Credits, average 12 students)
- SD4432 (3 Credits, average 7 students)
- SD4433 (9 Credits, average 7 students)
- SD3464 (3 Credits, average 15 students)
Masters in Design (Strategies) Subjects
- SD5001 (3 Credits, average 35 students)
- SD5014 (3 Credits, average 25 students)
- SD5302 (3 Credits, average 5 students)
PolyU Hong Kong Community College HKCC
Associate Degree Scheme in Design (IPD) Subjects
- CC3415 Client Project (6 Credits, average 15 students)
- CC3428 Final Project (9 Credits, average 15 students)
PolyU Management and Executive Development Centre MEDC
Diploma of Attainment in Toy, Entertainment and Education Product Design
- Module 1 Integration of Design into Corporate Strategy (17 students)
- Module 1 Integration of Design into Corporate Strategy (17 students)

Dissemination activities planned to sustain impact
Dissemination at PolyU
- Further implementation of Design Play in SD undergraduate and postgraduate design education curricula
- Under the aegis of the Educational Development Centre EDC, dissemination of Design Play knowledge and Toolkit will enable students from other PolyU Departments (such as the Faculty of Business, Faculty of Communication and Faculty of Engineering, School of Hotel and Tourism Management, the ITC, and the IC) in lectures, seminars, and/or other educational settings, with the necessary methods to integrate fundamental design strategic notions for project development management, and establish creative processes for socially relevant innovation.
Dissemination outside PolyU
- DesignEd Conference at Business of Design Week BoDW 2012: paper presentation and publication in proceedings
- International Toy Research Association ITRA World Congress Denmark 2013: paper presentation and publication in proceedings
- Online posting of demonstration animation video of toolkit
- Application for further funding to develop RIA
- Journal paper publication

(f) Self-evaluation or additional information/remarks

The project has enhanced Outcome-Based Education as follows:

Teaching experiences
- Substantiated the relevance of Play to Design processes
- Improved this project Investigators' teaching of Design processes in several SD Undergraduate and Postgraduate curricula
- Nurtured best educational practices to foster students' appreciation of design processes' mechanisms and narratives by highlighting their synchronic and diachronic natures through play theory
- Established teaching strategies to ensure student capstone project quality
- Contributed visual educational models to support teaching and learning experiences of design processes
- Improve teachers' management of (i.e. save) tutorial time
- Assisted SD educators in controlling student's attainment of Client and Capstone Projects' complex set of subject Learning Outcomes and integrating generic skills with professional outcomes.

Learning experiences
- Supported SD's transition from teaching-centered to student-centered learning practices
- Facilitated students' appreciation of the purpose and structure of design processes
- Enriched students' learning experiences of design thinking, strategic design, and the planning and management of design thinking processes, helping them take better control over their design projects
- Enhanced SD students' ability to ascertain the relevance and limitations of their control over the creative process.
- Enhanced Capstone Project development learning experiences for School of Design crosscultural contexts.
- Assisted SD students in contextualizing the relevance of integrating both process and outcome in design's holistic cultural practice.
- Improved the alignment of SD's subdegree and undergraduate subject outcomes to facilitate student articulation to higher studies
Referring to the toolkit and models thus created, students are able to:
- Support the development of self-directed learning practices at SD
- Identify key project issues and stakeholders and holistically articulate strong arguments to contribute to the success of student projects
- Select and develop appropriate tools and methods for effective student project development
- Enable flexible means to adjust student project development and produce measurable outcomes
- Establish criteria to allow students possess ownership of project outcome assessment
- Provide a clear study path for students to better reflect on their learning experiences
- Identify individual student study issues to facilitate integration of professional to high-order thinking generic skills accrued throughout the curriculum

Name of Project Leader: _____ REMI LECLERC _____ Date: _____ July 20th, 2012 _____
(in block letters)

(a) Rating and comments/recommendations on the following areas of the project

(please put a ✓ in 1 of the following 2 ratings and provide comments)

Areas	Rating		Comments and Recommendations
	Satisfactory	*Needing attention*	
Overall financial management/ use of funding	√		
Overall project progress	√		
Outputs /deliverables / dissemination	√		May need to translate academic jargons into more user-friendly terms/ concepts in order to be useful as a tool kit; Need to raise money to design the necessary user-interface.
Overall rating / comments on the project (Please suggest remedial actions if the rating is 'Needing attention')	√		

(b) Issues requiring the attention of FLTC/Dean of School and/or the funding authority

None

(c) Outputs/deliverables/good practices of the project that can be shared with other subjects, programmes or departments within the Faculty, or with the wider PolyU community

The PI has already mentioned the dissemination of the project output (the Design Play Toolkit) through conferences, online posting and workshops in taught subjects within PolyU. To allow for wider dissemination, it is recommended that the PI can put together a web site on this project with a concise introduction to this Design Play Toolkit, relevant resources and references to published papers so that other design educators can easily access to the Toolkit.

(d) Additional comments/remarks

As the PI expects to build an RIA application to support the Design Play Toolkit, I would suggest the PI to consider applying for ITF funding (tier 3), which is more focusing towards midstream/downstream research and should provide sufficient funding to develop an application for real trail.

Name of D/SLTC Chair
(or HoD/Dean of School). ___FUNG HO YIN___   Date: __30/8/2012__
(in block letters)

^ *To be prepared by HoD/Dean of School **if** the PL is also the D/SLTC Chair, **or if** the Centre/Unit/Office does not have a DLTC.*

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(a) Overall rating on the project (please put a ✓ in 1 of the following 2 ratings):

☑ Satisfactory

☐ Needing attention

(b) Overall comments and recommendations on the project:

Project resulted in several papers and was disseminated through several subjects.

(c) Issues requiring the attention of the funding authority:
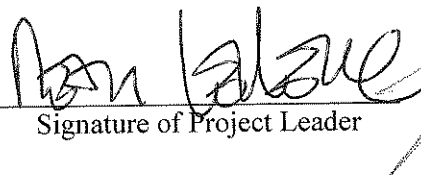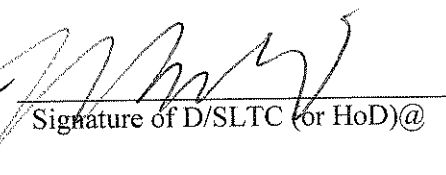
Name of FLTC Chair/ Dean of School: _____ Prof. Cees de Bont _____ Date: _____ 3 0 AUG 2012 _____

(in block letters)

The Dean of School **or** HoD of the Centre/Unit/Office needs not fill this part if he/she has already commented in Part III.

(Response and follow-up plan is required from the Project Leader if there is any area rated as 'needing attention' in Part III and/or IV.)

Name of Project Leader: _____ REMI LECLERC _____ Date: _____ 3 0 AUG 2012 _____

(in block letters)

_____ _____ _____
Signature of Project Leader   Signature of D/SLTC (or HoD)@   Signature of FLTC/ Dean of School

REMI LECLERC   FUNG HO YIN   Prof. Cees de Bont
_____ _____ _____
(Name in block letters)   (Name in block letters)   (Name in block letters)

@ To be signed by HoD **if** the PL is also the DLTC Chair, **or if** the Centre/Unit/Office does not have a DLTC; **leave** this blank **if** the PL is also the SLTC Chair.

The Project Leader and D/SLTC Secretary should each keep a copy of this *Completion Report* for records.
A copy of this *Completion Report* will be submitted along with the *F/SLTC Annual Report (Form 20)* to LTC/WGOBE as a supporting document.

Appendix
Financial Statement for Design Play Toolkit-Interactive Education Toolkit Integrating Capstone Project Development Processes for School of Design for the period ended 23 July 2012 (Work Programme: 8B1M).

THE HONG KONG POLYTECHNIC UNIVERSITY
School of Design
Financial Statement for Design Play Toolkit-Interactive Education Toolkit Integrating Capstone Project Development Processess for School of Design
for the period ended 23 July 2012
(Work Programme: 8B1M)

currency HKD

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13		
	Actual	Actual	Actual	Actual	Actual	Actual	Encumbrance	Tot
Budget Allocated for the year	234,875.00	234,875.00	-	-	-	-		10,
Unspent balance c/f	-	-	157,445.00	49,684.00	25,684.00	10,684.00 *		
	234,875.00	234,875.00	157,445.00	49,684.00	25,684.00	10,684.00		10,
Less: Expenditure & Commitment								
Subordinate Staff Wages	-	59,571.43	77,726.45	-	-	-	-	
Other Staff Cost	-	14,800.00	9,970.00	-	-	-	-	
Contract for Service	-	-	-	-	15,000.00	-	-	
Subordinate Staff MPF	-	3,058.57	4,064.82	-	-	-	-	
Research/Other Expenses	-	-	16,000.00	24,000.00	-	-		
Total Expenditure	-	77,430.00	107,761.27	24,000.00	15,000.00	-	-	
Net Surplus / (Deficit)	234,875.00	157,445.00	49,683.73	25,684.00	10,684.00	10,684.00		10,

*Note: Unspent balance c/f from 2011/12 is subject to President's approval.